HyNet North West

2023 ENVIRONMENTAL STATEMENT ADDENDUM CHANGE REQUEST 2

HyNet Carbon Dioxide Pipeline DCO

Planning Act 2008

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

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1. INTRODUCTION

1.1. PURPOSE OF 2023 ES ADDENDUM CHANGE REQUEST 2

1.1.1. An Environmental Statement (ES) was submitted to the Planning Inspectorate ('the Inspectorate') in October 2022 as part of a Development Consent Order (DCO) application (EN070007) for the HyNet Carbon Dioxide Pipeline development (hereafter referred to as the 'DCO Proposed Development'). The ES sets out the findings of the full Environmental Impact Assessment (EIA) that was carried out for the DCO Proposed Development. The previously submitted ES is hereafter referred to as the '2022 ES'.

1.1.2. A number of confirmatory environmental surveys completed following the finalisation of the 2022 ES were submitted and accepted by the Examining Authority (ExA) as part of the Applicant's Section 51 advice response on 14 March 2023. The 2023 ES Addendum Change Request 1 (herein referred to as 'ES Addendum 1') was submitted and accepted by the ExA on 9th May 2023 to set out updates to the findings of the 2022 ES and subsequent confirmatory survey reports due to 18 proposed design changes to the DCO Proposed Development. ES Addendum 1 and confirmatory surveys, along with the 2022 ES, form the starting point for this 2023 ES Addendum Change Request 2 (herein referred to as the 'ES Addendum 2').

1.1.3. This ES Addendum 2 addresses two proposed changes to the DCO Proposed Development – the inclusion of one additional design option (to be progressed alongside the design that was assessed in the 2022 ES) and one design change.

1.1.4. The proposed design option and design change are described in **Table 1-1** of this ES Addendum 2. Each proposed design change has been assigned a unique reference number Post Submission (PS xx).

1.1.5. The purpose of this ES Addendum 2 is to ensure that the environmental impacts of the proposed design option and design change have been appropriately assessed with any likely significant environmental effects identified, and to satisfy the requirements of the Infrastructure Planning (EIA) Regulations 2017 (as amended).

1.1.6. The proposed amendments to the DCO Proposed Development are depicted in an update to **Figure 3.2** presented in **Appendix C** of this ES Addendum 2.

Table 1.1 – Overview of Proposed Design Option/Change

Reference	Description	Chapters scoped in
PS25 (proposed design option)	Introduction of an additional option of crossing Alltami Brook with an embedded pipe bridge. The Applicant's preferred approach for the crossing of Alltami Brook remains the trenched crossing as assessed in the 2022 ES, and this additional option is being introduced following consultation with Natural Resources Wales (NRW). The location of the crossing would remain the same as in the 2022 ES and there will be no changes to the Newbuild Infrastructure Boundary. This option proposes to construct a concrete bridge across Alltami Brook and install the Newbuild Carbon Dioxide Pipeline within it. The Newbuild Carbon Dioxide Pipeline approaches either side of the Brook would be buried by open-trenched installation as assessed in the 2022 ES. The concrete bridge would be supported by concrete piers on either side of the Brook and would span the watercourse. The clearance over the Brook would be designed to avoid any increase in local flood risks. PRoW 414/39A will need to be permanently diverted around the embedded pipe bridge. This design option will be progressed alongside the original trenched crossing that was presented in the 2022 ES. This ES Addendum 2 reports the effects associated with the embedded pipe bridge.	3, 4, 6, 9, 10, 12, 14, 16, 18
PS26 (proposed design change)	Reduction of the Newbuild Infrastructure Boundary to remove a Heavy Goods Vehicle (HGV) turning circle and an extension of the Newbuild Infrastructure Boundary to include a section of the maintenance track and watercourse along Chester Road East at the 2 Sisters Food Group facility. This change will reduce the impacts of the DCO Proposed Development on the 2 Sisters Food Group facility and is being proposed in response to engagement with the 2 Sisters Food Group.	9, 16, 18

1.1.7. This ES Addendum 2 provides information regarding the likely impacts of the proposed design option (PS25) and design change (PS26) and the implications of these in relation to the DCO Proposed Development assessments undertaken in the 2022 ES and ES Addendum 1. However, it does not duplicate the 2022 ES or the ES Addendum 1 and should be read in conjunction with these documents. For further detail regarding the structure of this ES Addendum, please see the 'Structure of the ES Addendum' section below.

SCOPE OF THE ES ADDENDUM

1.1.8. This ES Addendum 2 only presents new assessment work where the proposed design option and design change to the DCO Proposed Development are considered to have potentially resulted in a material change to the content of the 2022 ES or ES Addendum 1. Where there are no changes to the chapters from the 2022 ES or ES Addendum 1, the original conclusions in the 2022 ES or ES Addendum 1 are unchanged.

1.1.9. Further details on the EIA methodology can be found in **Chapter 5** of the 2022 ES **[APP-057]**. The significance criteria adopted in this ES Addendum 2 are the same as those outlined in **Section 5.11** of the 2022 ES **[APP-057]**.

1.2. STRUCTURE OF THE ES ADDENDUM

1.2.1. This ES Addendum 2 is structured as follows:

- **2023 ES Addendum Change Request 2:** Main Text (document reference **D.7.22**) – Chapter 1 sets out the introduction, Chapter 2 sets out changes to the 2022 ES required from PS25 and Chapter 3 sets out changes required to the 2022 ES from PS26.
- **Appendix A:** Non-Technical Summary (NTS) (document reference **D.7.22.1**) – includes updates required to the NTS in the form of an addendum.
- **Appendix B:** Appendices addenda (document reference **D.7.22.2**) – includes ES Appendices that have required updates to text as set out in **Table 1.2**
- **Appendix C:** Figures (document reference: **D.7.22.3**) – includes figures produced for the ES Addendum 2 as set out in **Table 1-2**.

1.2.2. The main text of this ES Addendum 2 considers each chapter of the 2022 ES in turn. Within each technical chapter the updated information is presented under the same section headings as the original assessment of the 2022 ES. The ES Addendum 2 should therefore be read in conjunction with, and as an addendum to, the 2022 ES, the confirmatory environmental surveys and ES Addendum 1, where applicable.

1.2.3. A summary of the changes to the 2022 ES, the confirmatory environmental surveys and ES Addendum 1 is provided in **Table 1-2**. Where no change to the technical chapter and associated figures and appendices present within the

2022 ES is necessary, no additional text regarding that topic has been included within this ES Addendum 2.

Table 1.2 – Summary of the updates made to documents included within this ES Addendum

Examination Library Reference	Document	Summary of updates included in this ES Addendum, where required
CR1-024	D.6.1 Environmental Statement - Non-Technical Summary	Proposed design option PS25 has changed to the following sections of the Non-Technical Summary: • 3.1 – Key Elements of the Proposed Development • 3.4 – Decommissioning • 5.7 – Landscape and Visual No update required for proposed design change PS26. All other sections and text of the Non-Technical Summary remains unchanged and valid.
CR1-026	D.6.1a Environmental Statement - Non-Technical Summary (Welsh Translation)	As per CR1-024 above. No Welsh translation has been undertaken of the NTS addenda provided in Appendix A of this ES Addendum 2.
APP-053	D.6.2.1 Environmental Statement Volume II – Chapter 1 Introduction	No update required as a result of design option PS25 and design change PS26. Chapter 1 of the 2022 ES remains unchanged and valid.
APP-054	D.6.2.2 Environmental Statement Volume II – Chapter 2 The Project	No update required as a result of design option PS25 and design change PS26. Chapter 2 of the 2022 ES remains unchanged and valid.
APP-055	D.6.2.3 Environmental Statement Volume II – Chapter 3 Description of the Proposed Development	Proposed design option PS25 required a description of the characteristics of the Alltami Brook embedded pipeline bridge option for the construction, operation and decommissioning phases of the DCO Proposed Development. No update required for proposed design change PS26. All other sections and text of Chapter 3 remains unchanged and valid. No update required to Chapter 3 of ES Addendum 1 **[CR1-124]** as a result of design option PS25 and design change PS26.
APP-056	D.6.2.4 Environmental Statement Volume II – Chapter 4 Consideration of Alternatives	Proposed design option PS25 required further design options to be added for the Alltami Brook crossing including proposed design option PS25. No update required for proposed design change PS26. All other sections and text of Chapter 4 remains unchanged and valid. No update required to Chapter 4 of ES Addendum 1 **[CR1-124]** as a result of design option PS25 and design change PS26.
APP-057	D.6.2.5 Environmental Statement Volume II – Chapter 5 EIA Methodology	No update required as a result of design option PS25 and design change PS26. Chapter 5 of the 2022 ES remains unchanged and valid.
APP-058	D.6.2.6 Environmental Statement Volume II – Chapter 6 Air Quality	Proposed design option PS25 required an update to the assessment of likely impacts and effects and Table 6.7 with the inclusion of the Alltami Brook embedded pipe bridge option which presented only negligible effects. No update required for proposed design change PS26. All other sections and text of Chapter 6 remains unchanged and valid. No update required to Chapter 6

Examination Library Reference	Document	Summary of updates included in this ES Addendum, where required
		of ES Addendum 1 **[CR1-124]** as a result of design option PS25 and design change PS26. Proposed design option PS25 and design change PS26 as set out in **Table 1.1** do not result in changes to the likely significant effects as reported in the 2022 ES for air quality. The 2022 ES conclusions are therefore not materially changed for this topic.
APP-059	D.6.2.7 Environmental Statement Volume II – Chapter 7 Climate Resilience	No update required as a result of design option PS25 and design change PS26. Chapter 7 of the 2022 ES remains unchanged and valid.
APP-060	D.6.2.8 Environmental Statement Volume II – Chapter 8 Cultural Heritage	No update required as a result of design option PS25 and design change PS26. Chapter 8 of the 2022 ES remains unchanged and valid.
AS-025	D.6.2.9 Environmental Statement Volume II – Chapter 9 Biodiversity Rev B	Proposed design option PS25 requires an update to the assessment of likely impacts and effects for the construction, operation and decommissioning stages. The decommissioning of the Alltami Brook embedded pipe bridge option also required an update to residual effects. Table 9.6 and 9.7 of the ES Addendum 1 **[CR1-124]** has also been updated and replaced. Proposed design change PS26 requires an update to baseline conditions due to the change of the Newbuild Infrastructure Boundary at the 2 Sisters Group facility. Proposed design option PS25 and design change PS26 as set out in **Table 1.1** does not result in changes to the likely significant effects as reported in Chapter 9 **[AS-025]** or ES Addendum 1 **[CR1-124**] for biodiversity. The 2022 ES conclusions are therefore not materially changed for this topic.
APP-062	D.6.2.10 Environmental Statement Volume II – Chapter 10 Greenhouse Gases	Proposed design option PS25 requires an update to the assessment of likely impacts and effects for the construction stage to include the additional materials and associated embodied carbon and emissions from transport required for the Alltami Brook embedded pipe bridge option. No update required for proposed design change PS26. All other sections and text of Chapter 10 remains unchanged and valid. No update required to Chapter 10 of ES Addendum 1 **[CR1-124]** as a result of design option PS25 and design change PS26. Proposed design option PS25 and design change PS26 as set out in **Table 1.1** do not result in changes to the likely significant effects as reported in the 2022 ES for greenhouse gases. The 2022 ES conclusions are therefore not materially changed for this topic.
APP-063	D.6.2.11 Environmental Statement Volume II – Chapter 11 Land and Soils	No update required as a result of design option PS25 and design change PS26. Chapter 11 of the 2022 ES remains unchanged and valid.
APP-064	D.6.2.12 Environmental Statement Volume II – Chapter 12 Landscape and Visual	Proposed design option PS25 requires an update to baseline conditions, assessment of likely impacts and effects and residual effects to include a new Viewpoint P2c to consider the visual impacts of the Alltami Brook embedded pipe

Examination Library Reference	Document	Summary of updates included in this ES Addendum, where required
		bridge option. Additional information has been added to **Tables 12.1, 12.2** and **12.4** of ES Addendum 1 **[CR1-124].** The assessment concluded that the Alltami Brook embedded pipe bridge option (PS25) would have a moderate adverse (significant) effect during the construction and decommissioning stages on Viewpoint P2c. These effects are similar to those already reported for other above ground infrastructure, namely the AGIs and BVSs along the DCO Proposed Development in the 2022 ES **[APP-064]** and ES Addendum 1 **[CR1-124]**. Proposed design change PS26 would result in relatively small-scale change which is unlikely to result in significant landscape or visual effects. No update is required to Chapter 12 of the 2022 ES and ES Addendum 1. Proposed design option PS25 and design change PS26 as set out in **Table 1.1** do not result in changes to the likely significant effects as reported in the 2022 ES for landscape and visual effects. The 2022 ES conclusions are therefore not materially changed for this topic.
APP-065	D.6.2.13 Environmental Statement Volume II – Chapter 13 MA&D	Proposed design option PS25 has potential for impacts from flood risk and ground stability. A qualitative flood risk assessment has been undertaken for the Alltami Brook embedded pipe bridge crossing option in the FCA in Appendix B of ES Addendum 2 which concluded the flood risk to be negligible. There is evidence of historical localised landslips in the area of Alltami Brook. The risk of landslips occurring as a result if the embedded pipe bridge will be managed through the design of the DCO Proposed Development to applicable standards and the implementation of the CEMP (which requires controls to be put into place to prevent entry of material into Alltami Brook). In addition, the only potential receptor of harm are construction workers, who are excluded from the MA&D assessment, as their health and safety are managed via other regulatory regimes including the Health and Safety at Work etc. Act 1974. Therefore, proposed design option PS25 is not considered likely to change the vulnerability of the DCO Proposed Development to a MA&D event. No update required as a result of design change PS26 and Chapter 13 of the 2022 ES remains unchanged and valid.
APP-066	D.6.2.14 Environmental Statement Volume II – Chapter 14 Material Assets and Waste	Proposed design option PS25 requires an update to the assessment of likely impacts and effects for the construction stage to include the additional materials required for the Alltami Brook embedded pipe bridge option. No update required for proposed design change PS26. All other sections and text of Chapter 14 remains unchanged and valid. No update required to Chapter 14 of ES Addendum 1 **[CR1-124]** as a result of design option PS25 and design change PS26.

Examination Library Reference	Document	Summary of updates included in this ES Addendum, where required
		Proposed design option PS25 and design change PS26 as set out in **Table 1.1** do not result in changes to the likely significant effects as reported in the 2022 ES for material assets and waste. The 2022 ES conclusions are therefore not materially changed for this topic.
APP-067	D.6.2.15 Environmental Statement Volume II – Chapter 15 Noise and Vibration	No update required as a result of design option PS25 and design change PS26. Chapter 15 of the 2022 ES remains unchanged and valid.
APP-068	D.6.2.16 Environmental Statement Volume II – Chapter 16 Population and Human Health	Proposed design option PS25 requires an update to the assessment of likely impacts and effects as a result of PRoW 414/39A requiring a permanent diversion as a result of the Alltami Brook embedded pipe bridge option. Proposed design change PS26 requires an update to the assessment of likely impacts and effects and residual effects as the change to the Newbuild Infrastructure Boundary will reduce impacts on the 2 Sisters Food Group facility. No update required to Chapter 16 of ES Addendum 1 **[CR1-124]** as a result of design option PS25 and design change PS26. Proposed design option PS25 and design change PS26 as set out in **Table 1.1** do not result in changes to the likely significant effects as reported in the 2022 ES for population and human health. The 2022 ES conclusions are therefore not materially changed for this topic.
APP-069	D.6.2.17 Environmental Statement Volume II – Chapter 17 Traffic and Transport	Proposed design option PS25 will likely require the use of larger vehicles, with pre-cast beams transported on tractor and trailer and potentially the use of cranes, which will require more consideration in terms of enabling access to the work site. The construction traffic will be managed by the implementation of the mitigation measures set out in the Outline Construction Traffic Management Plan (OCTMP) **[REP3-TBC**]. All the traffic and transport effects associated during the Construction Stage will be temporary, over a duration of 25 weeks, with the embedded pipe bridge anticipated to generated up to 135 two-way HGV trips. These trips would arrive to the DCO Proposed Development working area via the A55, part of the Strategic Road Network, and consequently the changes in traffic volume and composition will be imperceptible, and adverse impacts are not anticipated to be significant. Therefore, no update required, and Chapter 17 of the 2022 ES remains unchanged and valid. Proposed design change PS26 requires no update to Chapter 17, therefore Chapter 17 of the 2022 ES remains unchanged and valid.
APP-070	D.6.2.18 Environmental Statement Volume II – Chapter 18 Water Resource and Flood Risk	Proposed design option PS25 requires an update as additional consultation has been undertaken with NRW regarding Alltami Brook crossing options. Mitigation and enhancement measures have been updated to include two additional REAC requirements should the Alltami Brook embedded pipe bridge option be adopted.

Examination Library Reference	Document	Summary of updates included in this ES Addendum, where required
		Proposed design change PS26 updated to consider the assessment of likely impacts and effects via further detailed assessment undertaken in Appendix 18.2 in Appendix B of ES Addendum 2 (see below). No update required to Chapter 18 of ES Addendum 1 **[CR1-124]** as a result of design option PS25 and design change PS26. Proposed design option PS25 and design change PS26 as set out in **Table 1.1** do not result in changes to the likely significant effects as reported in the 2022 ES for water resources and flood risk. The 2022 ES conclusions are therefore not materially changed for this topic.
APP-071	D.6.2.19 Environmental Statement Volume II – Chapter 19 Combined and Cumulative Effects	No update required as a result of design option PS25 and design change PS26. Chapter 19 of the 2022 ES remains unchanged and valid.
APP-072	D.6.2.20 Environmental Statement Volume II – Chapter 20 Summary of Likely Significant Effects	Proposed design option PS25 requires an update to **Table 20.1** of ES Addendum 1 **[CR1-124]** to incorporate one change to the likely significant effects for Landscape, where the effects for visual assessment have been updated to include an additional viewpoint P2c. Proposed design change PS26 requires an update to **Table 20.1** of ES Addendum 1 **[CR1-124]** to incorporate one change to the likely significant effects for Population and Human Health, where the effect of temporary loss of land and disruption to access to 2 Sister's Food Group during the construction phase has reduced.
Appendices		
Most appendices provided for the 2022 ES and ES Addendum 1 require no update for proposed design option PS25 and design change PS26 and remain valid and unchanged except for: • Appendix 6-1 [APP-081] • Appendix 12-4 [CR1-030] • Appendix 18-2 [APP-164] • Appendix 18-3 [APP-165] • Appendix 18-5 [AS-004 – AS-006]		
APP-081	D.6.3.6.1 Environmental Statement - Chapter 6.1 - Construction Dust Assessment	Proposed design option PS25 requires an update to assess the impact of construction dust associated with installing the Alltami Brook embedded pipe bridge option. Proposed design change PS26 requires no update.
CR1-030	D.6.3.12.4 Environmental Statement - Appendix 12.4 Visual Analysis	Proposed design option PS25 requires Table 1.1 to be updated to include a new viewpoint (Viewpoint P2c) and associated impacts of the Alltami Brook embedded pipe bridge option. Proposed design change PS26 requires no update.

Examination Library Reference	Document	Summary of updates included in this ES Addendum, where required
APP-164	D.6.3.18.2 Environmental Statement - Appendix 18.2 – Summary of Effects Appendix	Proposed design option PS25 requires **Tables 1.3, 4.1, 4.2 4.10, 4.14** and **4.16** in Appendix 12.2 of the 2022 ES to be updated to include the Alltami Brook embedded pipe bridge option. Operational and decommissioning stages of the assessment of likely impacts and effects section has been updated. The construction and operational stages of the summary of assessment of effects section has been updated. Proposed design change PS26 requires **Table 4-1** in ES Addendum 1 – Appendix A **[CR1-125]** to be replaced and considered the change of the Newbuild Infrastructure Boundary at 2 Sisters Food Group in the summary of assessment of effects section.
APP-165	D.6.3.18.3 Environmental Statement - Appendix 18.3 - Water Framework Directive Assessment	Proposed design option PS25 requires an update to introduction of WFD Assessment to include new activities associated with construction and operation stages at Alltami Brook, requiring operational impacts associated with PS25 to be assessed and therefore included in the assessment. Additional engagement with NRW has been carried out to discuss Alltami Brook crossing options. The embedded pipe bridge option has been added to **Tables 3-2, 3-4, 3-5** and **3-6** for screening and scoping. Detailed impact assessment has been updated to include the embedded pipe bridge option. Annex A has been updated to include additional meetings which have been undertaken since the submission of Appendix 18.3 of the 2022 ES **[APP-165].** Proposed design change PS26 requires an update to introduce of WFD Assessment regarding construction phase activities at Sandycroft Drain. Assessment of Sandycroft Drain updated to include assessment for a temporary watercourse crossing for screening and scoping and added as a relevant waterbody for the detailed impact assessment. Annex D has been updated to include an additionally activity to be assessed on Chester Road Drain North.
AS-004 – AS-006	D.6.3.18.5 Environmental Statement - Appendix 18.5 - Flood Consequences Assessment Parts 1-3	Proposed design option PS25 requires an update to the FCA to assess the flood risk of the Alltami Brook embedded pipe bridge option. Proposed design change PS26 requires no update.
Figures		
All figures provided for the 2022 ES and ES Addendum 1 require no update for proposed design option PS25 and design change PS26 and remain valid and unchanged except for Figure 3.2 **[CR1-101]**.		
CR1-101	D.6.4.3.2 Environmental Statement - Figure 3.2 DCO Proposed Development	Figure 3.2 has been updated to show the location of the Alltami Brook embedded pipe bridge option (PS25) and the Newbuild Infrastructure Boundary has been changed at the 2 Sisters Food Group facility (PS26).

2. DESIGN OPTION PS25 – ALLTAMI BROOK EMBEDDED PIPE BRIDGE

2.1. DESCRIPTION OF THE DCO PROPOSED DEVELOPMENT

INTRODUCTION

2.1.1. **Chapter 3: Description of the DCO Proposed Development** of the 2022 ES **[APP-055]** provides a description of the DCO Proposed Development for the purposes of identifying and reporting the potential environmental impacts and likely significant effects in the ES.

2.1.2. This ES Addendum 2 chapter only considers updates required for proposed design option PS25 as outlined in **Table 1-1** of this ES Addendum 2.

KEY ELEMENTS OF THE DCO PROPOSED DEVELOPMENT

2.1.3. An update to the text within **Section 3.2** of the 2022 ES **[APP-055]** is required due to proposed design option PS25. The bullet pointed list within **paragraph 3.2.1** of the 2022 ES **[APP-055]** requires the following bullet point to be inserted following the 'Six BVSs'.

- ***Embedded Pipe Bridge*** *– where the Stanlow AGI to Flint AGI Pipeline crosses Alltami Brook (**Work Number 43E**).*

2.1.4. The remaining text within **Section 3.2** of the 2022 ES **[APP-055]** remains unchanged and valid.

NEWBUILD CARBON DIOXIDE PIPELINE

Section 5

Route Description

2.1.5. An update to Section 3.3 of the 2022 ES [APP-055] is required due to proposed design option PS25. To explain the location of the embedded pipe bridge, the text in Paragraph 3.3.37 of the 2022 ES [APP-055] should be replaced with the following text:

The section crosses Alltami Brook, either via a trenched crossing or an embedded pipe bridge, and Brookside south west of The Northop Hall Country House Hotel and continues in a north westerly direction skirting around the south western edge of Northop Hall. The route continues to head north crossing the B5125 Stamford Way before reaching B5126 Connah's Quay Road, the boundary with Section 6.

2.1.6. The remaining text within Section 3.3 of the 2022 ES [APP-055] remains unchanged and valid.

ABOVE GROUND INFRASTRUCTURE

2.1.7. An update to **Section 3.4** of the 2022 ES **[APP-055]** is required due to proposed design option PS25. A description of the embedded pipe bridge characteristics should be included under the 'Introduction' subheading and a new subheading of 'Embedded Pipe Bridge' should be added to this section.

Introduction

2.1.8. Paragraph 3.4.2 of the 2022 ES [APP-055] should be replaced with the following text.

The above ground infrastructure consists of Above Ground Installations (AGIs), Block Valve Stations (BVSs), Cathodic Protection (CP) Cabinets, CP Test Points, and Marker Posts. An Embedded Pipe Bridge is included as an option.

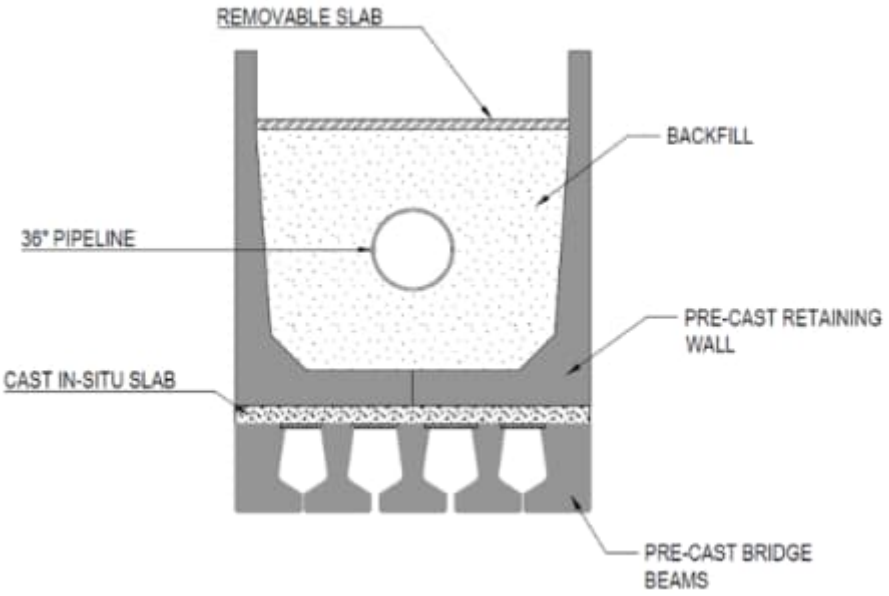
2.1.9. The following section of text to explain the characteristics of the embedded pipe bridge should be inserted after **paragraph 3.5.5** of the 2022 ES **[APP-055]**:

Embedded Pipe Bridge

The DCO Proposed Development includes an option to install an embedded pipe bridge across the Alltami Brook in case the preferred option of installing the pipeline beneath the watercourse via open-cut trench methodology is not authorised.

The bridge and its foundations will be primarily constructed from concrete. The pipeline will be installed and completely buried within the structure. Dependent on the final design of the bridge and the height off the ground, the sides of the bridge would have steel handrails or fencing for fall protection and security. Either end of the bridge would be gated and fenced off from the public to prevent trespassing.

For the purpose of this ES Addendum 2 the span of the Alltami Brook embedded pipe bridge option is approximately 15 m and will be approximately 4 m wide and 5 m in height. A conservative 1.5 m has been assumed for the vertical clearance above the Brook within the preliminary design; The final dimensions, including span and clearance will be determined at detailed design, based on detailed topographic surveys, ground investigations, flood modelling and ecology surveys and minimising the loss of vegetation. A sketch illustrating an indicative cross-section of the bridge is presented in ***Insert 2.1****. Further drawings are provided within* ***Alltami Brook Crossing - Options Appraisal (document reference D.7.27).***



Insert 2.1: A sketch illustrating an indicative cross section of the embedded pipe bridge design option.

Any rainfall infiltrating the U-shaped section of the bridge will be drained via pipes embedded into the walls and base of the concrete trough, similar to a French drain, where unpolluted surface water would discharge from the ends of the bridge.

No permanent lighting or power provision will be required.

It is expected that piled foundations will not be required due to the shallow bedrock within the gorge; however, piled foundations for the abutments, as an alternative to standard shallow and direct foundations, could be required depending on the actual soil conditions and the associated mechanical properties. This will need to be further investigated during detailed design.

2.1.10. The remaining text within **Section 3.4** of the 2022 ES **[APP-055]** remains unchanged and valid.

OTHER INFRASTRUCTURE

2.1.11. The description of the other infrastructure has not changed due to proposed design option PS25. Therefore, the text within **Section 3.5** of the 2022 ES **[APP-055]** remains unchanged and valid.

CONSTRUCTION OF THE DCO PROPOSED DEVELOPMENT

2.1.12. An update to **Section 3.6** of the 2022 ES **[APP-055]** is required due to proposed design option PS25. A new 'Embedded Pipe Bridge option' section should be added to this section.

2.1.13. The following text should be added after **paragraph 3.6.66** of the 2022 ES **[APP-055]:**

Embedded Pipe Bridge

Construction of the embedded pipe bridge option is anticipated to involve the following sequence of activities:

- *Site establishment – surface preparation for site access and temporary security fencing*
- *Temporary diversion of watercourse*
- *ground profiling and soil stabilisation*
- *construction of bridge abutments*
- *lifting and installation of pipe bridge sections*
- *Backfill and Pipeline installation*
- *Reinstatement of land and watercourse*

Temporary Diversion & Crossing of the Watercourse

The watercourse will need to be temporarily diverted around the works for the duration of construction. The preferred option is to culvert the watercourse such that the bedrock is not damaged, allow vehicles to cross, and to catch any construction debris. Sandbags will be placed at either end to guide the water, and pumps will be used if necessary for any overflow.

Ground profiling and soil stabilisation

The south east bank of Alltami Brook shows evidence of landslips so slope stabilisation works may be required. This may be achieved by re-profiling the ground levels to reduce slope angle, or by soil stabilisation. Methods for soil stabilisation, soil pinning or geotextile reinforcement shall be analysed during detailed design, and a suitable method shall be utilised.

Abutment Construction

The intention is to construct the abutments on the bedrock, although this will be confirmed at detailed design stage after ground investigations have been carried out to determine the depth and quality of the bedrock. If the bedrock is not confirmed to be of a sufficient depth or quality, piling may be necessary and further studies would be conducted to inform the piling design.

Bridge Construction

The pre-cast bridge sections will be installed on the abutments using cranes. A cast in-situ slab may be required to connect the bridge sections together and act as a supporting platform for the soils and side wall sections.

Backfill and Pipeline installation

The embedded pipe bridge shall be partially filled with site won soils or imported granular backfill, the pipeline would then be installed and the final backfilling to

the final soil level. Upon completion of backfilling and restoration, topsoil or organic surface material shall be returned to areas from where it was removed.

2.1.14. The remaining text within **Section 3.6** of **Chapter 3** of the 2022 ES **[APP-055]** remains unchanged and valid.

OPERATION AND MAINTENANCE

2.1.15. An update to **Section 3.7** of the 2022 ES **[APP-055]** is required due to proposed design option PS25.

Inspection

2.1.16. The following text should be inserted after **paragraph 3.7.12** of the 2022 ES **[APP-055]:**

The embedded pipe bridge option (if taken forward) will require inspection at regular intervals and after any extraordinary events (e.g. storm events) but no regular maintenance works are expected.

Table 3.4 in the 2022 ES **[APP-055]** requires updating to include the frequency of the inspections for the embedded pipe bridge so should be replaced with **Table 2.1** below.

Table 2.1 – Routine maintenance Activities and Frequency

Infrastructure	Maintenance / Inspection Activity	Indicative Frequency
Newbuild Carbon Dioxide Pipeline and Flint Connection to PoA Terminal Pipeline	Vantage point survey including pipeline easement.	Weekly
	Aerial survey using helicopters.	Fortnightly
	Electrical equipment, safety and protection devices and status checks.	Every six months
	Complete line walk.	Annually
	Coating defect survey.	Every four years
	Pipeline in-line inspection (using PIG).	An initial baseline survey upon commissioning and then every five years.
CP system	Check the operation and condition of the	Monthly

Infrastructure	Maintenance / Inspection Activity	Indicative Frequency
	transformer rectifier units.	
	Measure drain-point potential, the current of drainage stations and Alternating Current (AC) levels from the highest select points along the pipeline system.	Monthly
	Measure the: • Electrical continuity from the bonding devices and grounding systems • Settings and function from the safety and protection devices; and • Instant-off potentials at all test posts.	Twice annually
	Close interval potential survey and Direct Current (DC) voltage gradient survey	Typically, every four years.
AGI and BVS	Security visit	Weekly
	Maintenance visit	Quarterly
	Visual survey of valve surface works, instruments, and electrical equipment	Every three months
	Stroke testing and lubrication of valves	Every 12 months
	HIPPS testing	Every 12 months
	PIG launcher/receiver inspections	External – 12 months Internal – 24 months

Infrastructure	Maintenance / Inspection Activity	Indicative Frequency
Alltami Brook Embedded Pipe Bridge option	General (visual) inspection	Every 2 years
	Principal (close visual) inspection	Every 6 years

2.1.17. The remaining text within **Section 3.7** of the 2022 ES **[APP-055]** remains unchanged and valid.

DECOMMISSIONING

2.1.18. An update to **Section 3.8** of the 2022 ES **[APP-055]** is required due to proposed design option PS25. **Paragraph 3.8.2** of the 2022 ES **[APP-055]** should be replaced with following text:

Above ground features associated with AGIs, BVSs and Alltami Brook embedded pipe bridge option will be dismantled, cleared and the ground conditions restored to their previous condition. For the purposes of the ES, the method of removal is assumed to be no worse than the construction method. The full details will be developed at the decommissioning stage.

2.1.19. The remaining text within **Section 3.8** of the 2022 ES **[APP-055]** remains unchanged and valid.

2.2. CONSIDERATION OF ALTERNATIVES

INTRODUCTION

2.2.1. **Chapter 4: Consideration of Alternatives** of the 2022 ES **[APP-056]** sets out the reasonable alternatives that have been considered during the evolution of the DCO Proposed Development and design process as presented in **Chapter 3: Description of the DCO Proposed Development.**

2.2.2. This ES Addendum chapter updates the consideration of alternatives for the DCO Proposed Development resulting from proposed design option PS25 as outlined in **Table 1-1** of this ES Addendum 2.

2.2.3. **Appendix 4.1 – Guiding Principles, Factors and Criteria for Options Selection** of the 2022 ES **[APP-056]** remain unchanged and valid. The Figures provided within the 2022 ES **[APP-056]** remain unchanged and valid.

REQUIREMENT FOR CONSIDERATION OF ALTERNATIVES

2.2.4. The requirement for consideration or alternatives has not changed due to proposed design option PS25. Therefore, the text within **Section 4.2** of the 2022 ES **[APP-056]** remains unchanged and valid.

DO NOTHING ALTERNATIVE

2.2.5. The do-nothing alternative has not changed due to the proposed design option PS25. Therefore, the text within **Section 4.3** of the 2022 ES **[APP-056]** remains unchanged and valid.

THE NEED FOR THE DCO PROPOSED DEVELOPMENT

2.2.6. The need for the DCO Proposed Development has not changed due to the proposed design option PS25. Therefore, the text within **Section 4.4** of the 2022 ES **[APP-056]** remains unchanged and valid.

PIPELINE ROUTING

2.2.7. The pipeline route for the DCO Proposed Development has not changed due to the proposed design option PS25. **Paragraphs 4.5.54** to **4.5.57** of the 2022 ES **[APP-056]** provides details of the watercourse crossing for the pipeline at Alltami Brook. The following text should be added after **paragraph 4.5.56** of the 2022 ES **[APP-056]** which provides further design options for the Alltami Brook crossing including proposed design option PS25:

- *Trenchless (Micro-Tunnelling). Deep entrance and exit shafts would need to be excavated through the bedrock (at least 25m deep either side of the gorge). Excavating pits to these dimensions has been achieved before, but is a specialised activity which will take a number of months. There is limited site specific geotechnical data, however, the shaft on the south side would need to be sited to avoid encountering landfill material associated with construction of the A55 as well as historical mineworks.*

Micro-tunnelling would face similar risks of encountering mining works to those associated with an HDD crossing and would require larger temporary land take than open trench, due to the space required for creation and reinstatement of the shafts which require movement and storage of a considerable volume of excavated material. There are significant installation risks associated with this type of crossing design. As such micro-tunnelling is not the preferred option.

- *Embedded Pipe Bridge. This involves the construction of an above ground concrete bridge structure, backfilled with soil with the pipeline buried across it. Sizeable excavation, possibly including piling would be required for the supports, resulting in tree loss and visual impacts. A permanent adjustment to the route of the PRoW would be required to avoid the bridge structure. Given NRW's position that the open trenched method is not WFD-compliant (which the Applicant does not agree with), a further design option is proposed (PS25) which would utilise an embedded pipe bridge solution. The Applicant has sought to include this option in order that, should the Secretary of State not accept the conclusions of the WFD assessment presented and determines that derogation cannot be applied, an alternative, consentable option is included in the application.*

2.2.8. In addition, the 'Pipeline Bridge' heading in the 4th bullet of paragraph 4.5.56 of the 2022 ES **[APP-056]** should be changed to 'Steel Truss Bridge'.

2.2.9. A comparison of the environmental impacts associated with each crossing option is provided in the **Alltami Brook Crossing – Options Appraisal** report **[REP3-039]**.

ABOVE GROUND INSTALLATIONS (AGI) – ALTERNATIVE SITES

2.2.10. The AGI alternative sites have not changed due to the proposed design option PS25. Therefore, the text within **Section 4.6** of the 2022 ES **[APP-056]** and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

BLOCK VALVE STATIONS (BVS) – ALTERNATIVE SITES

2.2.11. The BVS alternative sites have not changed due to the proposed design option PS25. Therefore, the text within **Section 4.7** of the 2022 ES **[APP-056]** and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

CONSTRUCTION COMPOUND ALTERNATIVES

2.2.12. The construction compound alternatives have not changed due to the proposed design option PS25. Therefore, the text within **Section 4.8** of the 2022 ES **[APP-056]** remains unchanged and valid.

MITIGATION BY DESIGN

2.2.13. The mitigation by design has not changed due to the proposed design option PS25. Therefore, the text within **Section 4.9** of the 2022 ES **[APP-056]** and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

2.3. AIR QUALITY

INTRODUCTION

2.3.1. **Chapter 6 [APP-058]** of the 2022 ES reports the outcome of the assessment of the likely significant effects of the DCO Proposed Development on air quality.

2.3.2. This ES Addendum 2 chapter considers only the likely significant effects resulting from the proposed design option PS25 as outlined in **Table 1-1** of this ES Addendum 2.

2.3.3. **Appendices 6.1** of the 2022 ES **[APP-081]** has also been updated as a result of proposed design option PS25. The updated appendix addendum can be found in **Appendix B** of this ES Addendum 2.

LEGISLATIVE AND POLICY FRAMEWORK

2.3.4. There are no additional relevant legislation or policies relating to air quality due to proposed design option PS25. Since the publication of the 2022 ES **[APP-058]** and ES Addendum 1 **[CR1-124]** there have been no updates to relevant legislation and policy. Therefore, the text within **Section 6.2** of the 2022 ES remains unchanged and valid.

SCOPING OPINION AND CONSULTATION

2.3.5. The scoping opinion has not changed, and no additional consultation has been undertaken regarding proposed design option PS25 in relation to air quality.

2.3.6. No amendments to **Appendix 1.3 – Environmental Statement – Scoping Opinion Responses [APP-076]** are required in relation to air quality due to the proposed design changes. Therefore, the text within **Section 6.3** of the 2022 ES remains unchanged and valid.

SCOPE OF THE ASSESSMENT

2.3.7. The scope of the assessment for air quality has not changed due to proposed design option PS25. Therefore, the text within **Section 6.4** of the 2022 ES **[APP-058]** remains unchanged and valid.

ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

2.3.8. The assessment methodology and significance criteria for air quality has not changed due to proposed design option PS25. Therefore, the text within **Section 6.5** of the 2022 ES **[APP-058]** remains unchanged and valid.

BASELINE CONDITIONS

2.3.9. The baseline for the air quality assessment has not changed due to proposed design option PS25. Therefore, the text within **Section 6.6** of the 2022 ES **[APP-058]** remains unchanged and valid.

SENSITIVE RECEPTORS

2.3.10. The sensitive receptors for the air quality assessment have not changed for proposed design option PS25. Therefore, the text within **Section 6.7** of the 2022 ES **[APP-058]** remains unchanged and valid.

DESIGN DEVELOPMENT, IMPACT AVOIDANCE, AND EMBEDDED MITIGATION

2.3.11. The design development, impact avoidance and embedded mitigation for air quality have not changed due to proposed design option PS25. Therefore, the text within **Section 6.8** of the 2022 ES **[APP-058]** remains unchanged and valid.

PRELIMINARY ASSESSMENT OF LIKELY IMPACTS AND EFFECTS

2.3.12. There are changes to the likely impacts and effects previously identified within the 2022 ES. **Appendix 6.1** of the 2022 ES **[APP-081]** has also been updated as a result of proposed design option PS25. The updated appendix addendum can be found in **Appendix B** of this ES Addendum 2.

2.3.13. The information in **Table 2-2** below should be inserted into **Table 6.7** of the 2022 ES **[APP-058].**

Table 2.2 - Summary of Construction Dust Assessment

Construction Activity	Potential Impact	Demolition	Earthworks	Construction	Trackout
Embedded Pipe Bridge option	Dust Soiling	N/A	Negligible	Negligible	Low Risk
	Human Health	N/A	Negligible	Negligible	Low Risk
	Ecological	N/A	Negligible	Negligible	Low Risk

MITIGATION AND ENHANCEMENT MEASURES

2.3.14. The mitigation and enhancement measures for air quality have not changed due to proposed design option PS25. Therefore, the text within **Section 6.10** of the 2022 ES **[APP-058]** remains unchanged and valid.

RESIDUAL EFFECTS

2.3.15. No additional residual effects have been identified for air quality due to proposed design option PS25. Therefore, the text within **Section 6.11** of the 2022 ES **[APP-058]** remains unchanged and valid.

IN-COMBINATION CLIMATE CHANGE IMPACTS

2.3.16. There are no additional in-combination climate change impacts identified for the air quality assessment from proposed design option PS25. Therefore, the text within **Section 6.12** of the 2022 ES **[APP-058]** remains unchanged and valid.

MONITORING

2.3.17. Proposed design option PS25 does not change the requirements for monitoring measures during construction. Therefore, the text within **Section 6.13** of the 2022 ES **[APP-058]** remains unchanged and valid.

CONCLUSIONS

2.3.18. Proposed design option PS25 as set out in **Table 1.1** does not result in changes to the likely significant effects as reported in the 2022 ES **[APP-058]** for air quality. The 2022 ES conclusions are therefore not materially changed for this topic.

2.4. BIODIVERSITY

INTRODUCTION

2.4.1. **Chapter 9 [AS-025]** and the ES Addendum 1 **[CR1-124]** reports the outcome of the assessment of likely significant effects of the DCO Proposed Development on Biodiversity.

2.4.2. This ES Addendum 2 chapter considers only the likely significant effects resulting from proposed design option PS25 as outlined in **Table 1-1** of this ES Addendum.

LEGISLATIVE AND POLICY FRAMEWORK

2.4.3. There are no additional relevant legislation or policies relating to biodiversity due to proposed design option PS25. Since the publication of Chapter 9 **[AS-025]** and ES Addendum 1 **[CR1-124]** there have been no updates to relevant legislation and policy. Therefore, the text within **Section 9.2** of Chapter 9 **[AS-025]** and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

SCOPING OPINION AND CONSULTATION

2.4.4. The scoping opinion has not changed, and no additional consultation has been undertaken regarding proposed design option PS25 in relation to Biodiversity. Consultation has been conducted with Natural England in respect of other matters (primarily BNG), with discussions captured within the **Statement of Common Ground – Natural England [REP1-022].**

2.4.5. No amendments to **Appendix 1.3 – Environmental Statement – Scoping Opinion Responses [APP-076]** are required in relation to Biodiversity due to proposed design option PS25. Therefore, the text within **Section 9.3** of Chapter 9 **[AS-025]** and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

SCOPE OF THE ASSESSMENT

2.4.6. The scope of the assessment for Biodiversity has not changed due to proposed design option PS25. Therefore, the text within **Section 9.4** of Chapter 9 **[AS-025]** remains unchanged and valid.

ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

2.4.7. The assessment methodology and significance criteria for Biodiversity has not changed due to proposed design option PS25. Therefore, the text within **Section 9.5** of **Chapter 9 [AS-025]** remains unchanged and valid.

BASELINE CONDITIONS

2.4.8. The baseline for the Biodiversity assessment has not changed due to proposed design option PS25. Therefore, the text within **Section 9.6** of Chapter 9 **[AS-025]** and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

SENSITIVE RECEPTORS

2.4.9. The sensitive receptors for the Biodiversity assessment have not changed due to proposed design option PS25. Therefore, the text within **Section 9.7** of Chapter 9 **[AS-025]** remains unchanged and valid.

DESIGN DEVELOPMENT, IMPACT AVOIDANCE, AND EMBEDDED MITIGATION

2.4.10. The design development, impact avoidance, and embedded mitigation for Biodiversity have not changed due to proposed design option PS25. Therefore, the text within **Section 9.8** of Chapter 9 **[AS-025]** remains unchanged and valid.

ASSESSMENT OF LIKELY IMPACTS AND EFFECTS

2.4.11. There are updates to the likely impacts and effects previously identified within **Section 9.9** of Chapter 9 **[AS-025]** and ES Addendum 1 **[CR1-124]** as a result of proposed design option PS25.

Construction Stage

2.4.12. **Table 9.6** of the ES Addendum 1 [**CR1-124**] has been updated and should be replaced with **Table 2.3** below. There are updates to the 'Aquatic Habitat – watercourses', 'Riparian Mammals (Otter and Water vole)', 'Fish' and 'Aquatic Macroinvertebrates' rows to include reference to the embedded pipe bridge (PS25).

Table 2.3 - Likely Significant Effects during the Construction Stage

Ecological Receptor		Potential Impacts and Effects	Likely Significant Effects
Statutory Designated Sites (International and National)		Temporary land take will be required to facilitate trenchless installation techniques at the River Dee SAC and SSSI. However, at trenchless crossing locations, any temporary land take will be located on land outwith the boundary of the designated sites. Indirect impacts to water quality, hydrological and hydromorphological processes due to changes in groundwater and drainage links to the River Dee SAC during construction. Potential for pollution events, discharges of sediment, frac-out and release of drill fluid to ground or watercourses/waterbodies during construction. Potential for dispersal downstream in the event of discharge to watercourses, with potential for effects to be spread over a larger distance than the point of origin. Discharge of sediment or drill fluid may impact fauna and flora, both aquatic and terrestrial. Potential vibration caused by trenchless installation activities impacting on migratory fish / fish passage and other protected species that are features of the River Dee SAC. Potential disturbance as a result of construction activities / movements and noise to breeding and wintering birds / waterfowl which are qualifying features of the Mersey Estuary SPA & Ramsar & SSSI, and Dee Estuary SPA & Ramsar & SSSI. Potential for dust emissions, noise and vibration disturbance and artificial illumination of habitats from lighting due to the proximity of construction activities to the River Dee SAC and SSSI, Deeside and Buckley Newt Sites SAC, and Connah's Quay Ponds and Woodland SSSI. Temporary and short-term habitat severance/fragmentation of functionally linked habitat in proximity to statutory designated sites. Direct and indirect effects upon statutory designated sites, whilst temporary in nature, may result in negative effects significant at a National/International scale.	In the absence of secondary mitigation, construction could lead to effects of ***Moderate adverse*** *significance* (***Significant***)
Non-Statutory Designated sites		Temporary land take will be required for construction of the DCO Proposed Development within a number of non-statutory designated sites to facilitate open cut trench techniques, including Frodsham Helsby and Ince Marshes, Gowy Meadows and Ditches, Wood West of Crabwell Manor, Saughall Bank and Brook Park Farm Wood. Potential for pollution events, discharges of sediment, frac-out and release of drill fluid to ground or watercourses/waterbodies during construction. Potential for dispersal downstream in the event of discharge to watercourses, with potential for effects to be spread over a larger distance than the point of origin. Discharge of sediment or drill fluid may impact fauna and flora, both aquatic and terrestrial. Potential noise and vibration caused by trenchless installation activities, including sheet piling, impacting on migratory fish/fish passage and other protected species, such as otter and water vole identified within non-statutory designated sites. Potential disturbance as a result of construction activities / movements and noise to breeding and wintering birds / waterfowl which are noted features of Frodsham Helsby and Ince Marshes LWS, Gowy Meadows and Ditches LWS, Wervin Meadows LWS. Potential for dust emissions, noise and vibration disturbance and artificial illumination of habitats from lighting due to the proximity of construction activities. Temporary and short-term habitat severance/fragmentation of functionally linked habitat in proximity to non-statutory designated sites. Direct and indirect effects upon non-statutory designated sites, whilst temporary in nature, may result in negative effects significant at a National scale.	In the absence of secondary mitigation, construction could lead to effects of ***Moderate adverse*** *significance* (***Significant***)
Habitats of Principal Importance (excluding waterbodies and watercourses)	Woodland	Temporary short-term and permanent direct and indirect loss and/or damage (through compaction and disturbance) of woodland (including deciduous woodland functionally linked to Annex I woodland (**paragraph 9.6.12**)) within and adjacent to the footprint of the Newbuild Infrastructure Boundary due to open cut trench techniques. Woodland habitats applicable include: • Deciduous and / or Lowland Mixed Deciduous woodland located at: - Woodland within the Gowy Meadows & Ditches LWS (SJ 43854 72961)	In the absence of secondary mitigation, construction could lead to effects of ***Moderate adverse***

Ecological Receptor		Potential Impacts and Effects	Likely Significant Effects
		- Wood West of Crabwell Manor LWS (SJ 37962 69677) - Church Lane (SJ 30286 66981), - Small woodland at SJ 25822 67958 (Northop Hall) - Woodland strip associated with Northop Hall Brook (SJ 25462 68931) - Small woodland at SJ 25275 70122 • Ancient Woodland located at: - Flint AGI, (SJ 25245 70815) - Northop Hall (SJ 26353 67697) - Wepre Brook (SJ 27164 67443) - Alltami Brook (SJ 27620 67143); and, - Ancient Woodland associated with Deeside and Buckley Newt Sites SAC at SJ 28808 67098. Permanent and temporary fragmentation of woodland due to land clearance requirements to facilitate construction. Potential for dust emissions, noise and vibration disturbance, and artificial illumination from lighting due to the proximity of construction activities. Damage to retained habitat due to changes in hydrological conditions. Damage to retained woodland (e.g., damage to roots of trees), impacting receptor health or longevity. Where trenchless installation techniques are proposed at watercourses (e.g., the River Dee SAC and Shropshire Union Canal LWS), this may require deep excavations within adjacent terrestrial habitats to facilitate the equipment and crossing methodology. Direct and indirect effects upon Habitats of Principal Importance, including temporary and short-term impacts, and permanent impacts, may result in negative effects significant at a National scale.	*significance* (***Significant***)
	Hedgerows	Temporary and permanent direct and indirect loss and/or damage (through compaction and disturbance) of all hedgerows within the footprint of the Newbuild Infrastructure Boundary due to open cut trench techniques. Hedgerows include: • Species-rich intact and defunct hedgerows, • Species-poor intact and defunct hedgerows; and, • Hedgerows with trees, species rich and species poor. Temporary and short-term fragmentation of hedgerows due to land clearance requirements to facilitate construction. Potential for dust emissions, noise and vibration disturbance and artificial illumination from lighting due to the proximity of construction activities. Damage to retained habitats/features (e.g., damage to roots of trees and hedgerows), impacting receptor health or longevity. Where trenchless installation techniques are proposed at watercourses (e.g., the River Dee SAC and Shropshire Union Canal LWS), this may require deep excavations within adjacent terrestrial habitats to facilitate the equipment and crossing methodology. Direct and indirect effects to hedgerows, including both temporary and short term, and permanent effects, may result in negative effects significant at a County scale.	

Ecological Receptor		Potential Impacts and Effects	Likely Significant Effects
	Coastal and Floodplain Grazing Marsh	Temporary short-term and permanent direct and indirect loss and/or damage (through compaction and disturbance) of Coastal and Floodplain Grazing Marsh habitat within the footprint of the Newbuild Infrastructure Boundary due to open cut trench techniques. Coastal and floodplain grazing marsh habitat is located at Frodsham, Helsby Marshes LWS and Gowy Meadows and Ditches LWS. Damage to retained habitat due to changes in hydrological conditions. Potential for dust emissions, noise and vibration disturbance and artificial illumination from lighting due to the proximity of construction activities. Damage to retained habitats/features (e.g., damage to roots of trees and hedgerows), impacting receptor health or longevity. Direct and indirect effects to coastal and floodplain grazing marsh, including both temporary and short term, and permanent effects, may result in negative effects significant at a Local scale.	
Aquatic habitat - Watercourses		Direct loss of habitat from open cut trench crossing techniques, both at the bank and in-channel resulting in a potential loss of sensitive life stage dependent habitat types, flow refugia and cover. Installation of cofferdams and overpumping of water may lead to a potential disruption in flow dynamics and associated sedimentation processes, with consequential further loss of sensitive habitat both upstream and downstream of the crossing point. Permanent direct and indirect loss and/or damage to riparian habitat associated with construction activities (for example open cut trench, trenchless crossing techniques, installation of an embedded pipe bridge). Where temporary culverts are to be installed at watercourse crossing points, there is potential for direct impacts through localised loss and/or damage to aquatic and riparian habitats. Accidental pollution and discharge of materials (sediment/drill fluid) into watercourses (including blow-out/frac-out from trenchless installation techniques) may impact water quality, which may negatively impact aquatic ecology (for example, increased turbidity and consequent reduction in dissolved oxygen) and potentially a decrease in biodiversity through a loss of sensitive habitat. Potential for pollution event dispersal downstream in the event of discharge to watercourses, with potential for effects to be spread over a larger distance than the point of origin. Construction activities in close proximity to water may result in the spread of invasive non-native species. Direct and indirect effects to aquatic habitats, including both temporary and short term, and permanent effects, may result in negative effects significant at a County scale.	In the absence of secondary mitigation, construction could lead to effects of ***Moderate adverse*** *significance* (***Significant***)
Aquatic habitat - Ponds		Permanent direct loss of a single waterbody 141 at SJ 44609 74749 near Stanlow Refinery to facilitate construction. Construction activities in close proximity to water may result in the spread of invasive non-native species. Accidental pollution and discharge of materials (sediment / drill fluid) into ponds may impact water quality, which may negatively impact aquatic ecology (for example, reduction in oxygen content or increased turbidity) and potentially decrease biodiversity through loss of habitat. Direct and indirect effects to ponds, including both temporary and short term, and permanent effects, may result in negative effects significant at a Local scale.	In the absence of secondary mitigation, construction could lead to effects of *Negligible significance* (*Not Significant*)
Great Crested Newt		Direct mortality and/or injury of GCN as a result of habitat clearance and construction activities (e.g. vehicle movement/activity, pollution events) within 250m of a confirmed GCN waterbody. GCN have been confirmed within the following waterbodies: England: 43, 46, 166, 167, 169, 171; Wales: 9, 14, 15, 31, 35, 38, 49, 154, 155, 157, 161; Where ponds were not able to be surveyed for a minimum of 4 visits to confirm GCN presence in Wales and in the Red Risk Zone in England, the likely presence of GCN was considered based on the survey results of ponds in the surrounding area and professional judgement. The following waterbodies were assessed as having precautionary GCN presence:	In the absence of secondary mitigation, construction could lead to effects of ***Moderate adverse*** *significance* (***Significant*****)**

Ecological Receptor		Potential Impacts and Effects	Likely Significant Effects
		England: 42, 47, 48, 49, 52; Wales: 10, 11, 12, 50, 121, 148. Temporary (short-term) and permanent loss and/or damage to supporting terrestrial habitats within 250 m of a confirmed GCN waterbody, for example as a result of topsoil stripping and vegetation clearance, and temporary removal of connective features, such as hedgerows to facilitate construction. Temporary short-term reduction in foraging and sheltering opportunities and temporary severance of commuting habitats. Whilst waterbodies are to be retained, with the exception of one waterbody, given the proximity of works, potential for temporary disturbance of GCN within or adjacent to waterbodies as a result of indirect impacts (e.g. light spill, dust, vibration). Direct and indirect effects to great crested newt, including both temporary and short term, and permanent effects, may result in negative effects significant at a National scale.	
Bats	Roosts	Direct mortality and/or injury of bats as a result of habitat clearance (particularly trees with bat roosts or bat roost potential) and construction activities. Construction of the DCO Proposed Development may result in the direct permanent loss of bat roosts and/or features with the potential to support roosting bats. Bat roosts (shown in **Appendix 9.3 – Bat Activity Report (Revision B) (Volume III); Figure 9.3.3 - Confirmed Bat Roosts (Revision B))** have been recorded within: - B97 (single common pipistrelle day roost) - B113 (single common pipistrelle day roost) - B133 (Four common pipistrelle's and three soprano pipistrelle's day roost) - Seventeen tree roosts comprising: o T1 (single common pipistrelle potential day roost) o T49 (single soprano pipistrelle day roost) o T70 (single soprano pipistrelle day roost) o T111 (single common pipistrelle and a single *Myotis sp.* day roosts) o T159 (single soprano pipistrelle day roost) o T190 (single common pipistrelle day roost) o T200 (single soprano pipistrelle day roost) o T220 (single common pipistrelle day roost) o T234 (single soprano pipistrelle day roost) o T238 (two soprano pipistrelle's day roost) o T283 (single common pipistrelle day roost) o T321 (noctule maternity roost) o T325 (potential brown long-eared bat day roost along the tree line associated with T325, T326 and T327) o T326 (potential brown long-eared bat day roost along the tree line associated with T325, T326 and T327) o T327 (potential brown long-eared bat day roost along the tree line associated with T325, T326 and T327)	In the absence of secondary mitigation, construction could lead to effects of ***Moderate adverse*** *significance* (***Significant***)

Ecological Receptor		Potential Impacts and Effects	Likely Significant Effects
		o T365 (single common pipistrelle day roost) o T371 (single common pipistrelle day roost) - Five structures and 35 trees were precautionarily assessed as a bat roost (due to access restrictions), comprising: o B79, B80, B125, B126, and B127; and o T4, T11, T13, T16, T17, T18, T25, T26, T27, T28, T34, T36, T37, T165, T230, T265, T349, T376, T377, T419, T422 – T431, T435, T491, T495, T496 and T499. Construction (including 24 hour working at trenchless crossing locations over a four week duration (TRS 01, TRS 02, TRS 28, TRS 31/32, TRS 38 and TRS 37)) may result in temporary short-term disturbance of roosting bats and potential for permanent or temporary functional loss of a roost, or roosts, due to the proximity to construction and associated disturbance (noise, vibration, and light levels). Direct and indirect effects to roosting bats, including both temporary and short term, and permanent effects, may result in negative effects significant at a Local scale.	
	Foraging and Commuting Bats	Construction (including 24-hour working at trenchless crossing locations over a four week duration (TRS 01, TRS 02, TRS 28, TRS 31/32, TRS 38 and TRS 37), may result in temporary short-term disturbance of foraging and commuting bats due to the proximity to construction and associated disturbance (noise, vibration, and light levels). Permanent or temporary (short-term) loss of foraging and commuting habitats as a result of construction of the DCO Proposed Development. A number of 'Excellent' hedgerows (as defined in **Appendix 9.4 - Bats and Hedgerow Assessment (Revision C) (Volume III)** will be impacted through the removal of sections of hedgerow to facilitate construction. Excellent hedgerows identified comprise H28, H66, H67, H82, H91, H145, H196, H199, H202, H206, H229, H236, H237, H238, H247, H267, H283, H289, H348, H349, H350, H353, H354, H374, H398, H399, H400, H402, H403, H405, H406, H414, H419, H420, H421, H422, H429, H482, H488, H489, H491, H940, H974, H1004 and H1011. Of these, 23 hedgerows are currently considered Important FCRs on a precautionary basis and comprise: H66, H67, H145, H199, H202, H206, H229, H237, H267, H349, H350, H354, H399, H400, H402, H405, H406, H419, H421, H488, H491, H940, H974. Permanent or temporary (short-term) severance of habitats, for example hedgerows, as a result of construction of the DCO Proposed Development. Given the short term, temporary and localised nature of construction of the DCO Proposed Development, despite the localised severance of hedgerows to facilitate construction, alternative linear features and flight lines will remain intact. In the context of the impacts of construction of the DCO Proposed Development a value of Local is considered proportionate for all species. Direct and indirect effects to foraging and commuting bats, including both temporary and short term, and permanent effects, may result in negative effects significant at a Local scale.	In the absence of secondary mitigation, construction could lead to effects of ***Moderate adverse*** *significance* (***Significant***)
Badger		Direct permanent and / or temporary (short-term) functional loss of three outlier setts (S19, S20 and S26) and a single annex sett (S32) may occur as a result of construction. Direct mortality and/or injury to badger as a result of construction activities (e.g., entrapment in voids or vehicle collision risk). Temporary and permanent loss of habitat, such as scrub, grassland and hedgerows impacting foraging and commuting opportunities, as well as potential sett building habitat. Temporary short-term indirect impacts, for example noise, light, dust, visual and vibration disturbance, may occur as a result of construction of the DCO Proposed Development. Temporary short-term disturbance to foraging and commuting badgers may occur at trenchless crossing locations where 24 hour working is proposed over a four-week duration (TRS 01, TRS 02, TRS 28, TRS 31/32, TRS 38 and TRS 37), Temporary short-term and permanent habitat fragmentation/severance.	In the absence of secondary mitigation, construction could lead to effects of *Minor adverse significance* (*Not Significant)*

Ecological Receptor	Potential Impacts and Effects	Likely Significant Effects
	Direct and indirect effects to commuting badger, including both temporary and short term, and permanent effects, may result in negative effects significant at a Local scale.	
Riparian Mammals (Otter and Water vole)	Direct mortality and/or injury to riparian mammals as a result of construction activities. Direct loss of resting places (holts and burrows) as a result of permanent or temporary land take to facilitate construction. Water vole burrows are present within West Central Drain A, West Central Drain B, Hapsford Brook, Thornton Ditches, Thornton Main Drain, Gowy Tributary 2 and the River Gowy. Potential otter holts or lay-ups were recorded on Thornton Uplands, Thornton Ditch 4 and 6 and Wepre Brook. Watercourses which have been precautionarily assessed for the presence of otter and water vole include East and West Central Drains and Elton Land Ditches, Gale Brook, Stanney Main Drain and Stanney Mill Brook, and Alltami Brook. Permanent direct and indirect loss and/or damage to riparian habitat associated with construction (for example open cut trench, trenchless crossing techniques, installation of an embedded pipe bridge). Temporary and short-term loss of foraging and commuting habitats as a result of construction activities. Temporary and short-term disturbance (through noise, vibration, and light) and displacement of animals through loss of suitable sheltering, foraging or commuting habitat during construction activities along and adjacent to watercourses. Temporary and short-term riparian habitat degradation and alteration of aquatic habitats and water quality as a result of pollution events in the absence of mitigation, resulting in impacts to foraging and commuting opportunities. Direct and indirect effects to riparian mammals, including both temporary and short term, and permanent effects, may result in negative effects significant at a County scale.	In the absence of secondary mitigation, construction could lead to effects of ***Moderate adverse*** *significance* (***Significant***)
Barn Owl	Direct mortality and/or injury of barn owl as a result of construction activities. Permanent and temporary short-term loss and/or damage to habitat used by foraging and commuting barn owls e.g. loss of grassland and hedgerows. Permanent and/or temporary short-term loss and disturbance to nesting and / or roosting sites. Confirmed nesting sites comprise BOB3 (SJ35043 66642) and T465 (SJ 41653 71153), with T471 precautionarily assessed as a nesting site (due to access restrictions). Temporary and short-term disturbance and displacement due to increased noise, vibration, visual, dust and light pollution during construction which may also lead to reduced breeding and fledging of chicks. Temporary short-term disturbance to foraging and commuting barn owls and temporary short-term disturbance and displacement of potential nesting and / or roosting sites may occur at trenchless crossing locations where 24-hour working is proposed over a four-week duration (TRS 01, TRS 02, TRS 28, TRS 31/32, TRS 38 and TRS 37), Direct and indirect effects to barn owl, including both temporary and short term, and permanent effects, may result in negative effects significant at a County scale.	In the absence of secondary mitigation, construction could lead to effects of ***Moderate adverse*** *significance* (***Significant***)
Wintering Birds (including redshank)	Direct mortality and/or injury to wintering birds as a result of construction activities. Temporary (short-term) and permanent loss, including functional loss, of foraging, commuting, and sheltering habitats used by wintering birds. Temporary short-term disturbance and displacement effects associated with construction affiliated operations, including increased noise, light, vibration and plant or personnel movements. This is also applicable at the River Dee trenchless crossing location (TRS 28) where 24 hour working is proposed over a four-week duration. Increased disturbance may lead to increased use of energy resources coupled with a decrease in foraging time, leading to depletion of fat reserves and overall decline in condition and breeding success. This is of particular importance for redshank. Given the topography of the landscape comprising steep sided banks associated with the river at low tide (when birds utilise the mud flats), redshank (and other bird species) are likely to be sheltered from disturbance effects, particularly personnel movements, associated with construction. On the northern bank in particular, given the presence of a popular cycle pathway, any birds using mudflats along this stretch will be habituated to a degree of disturbance associated with	In the absence of secondary mitigation, construction could lead to effects of ***Moderate adverse*** *significance* (***Significant***)

Ecological Receptor	Potential Impacts and Effects	Likely Significant Effects
	recreational movements along the riverbank (e.g. cyclists, dog walkers, walkers). Redshank were recorded using the bare banks of the River Dee during winter months and were not recorded regularly on any other survey transect throughout the year. Given the above, redshank are assessed to be of Local value. Temporary short-term habitat degradation through incidental pollution events, such as chemical spills and construction drainage run-off, impacting waterbodies and terrestrial habitat that may be used for foraging or roosting. Direct and indirect effects to wintering birds, including both temporary and short term, and permanent effects, may result in negative effects significant at a Local scale.	
Breeding Birds	Direct mortality and/or injury as a result of construction activities; accidental loss of nests either directly or indirectly (e.g. through displacement of parent birds leading to loss of chicks/eggs). Temporary (short-term) and permanent loss of nesting and foraging habitats during construction, for example hedgerow, individual trees, and scrub. Temporary short-term disturbance and displacement associated with construction affiliated operations, including increased noise, light, vibration and plant or personnel movements. This is also applicable at trenchless crossing locations where 24-hour working is proposed over a four-week duration (TRS 01, TRS 02, TRS 28, TRS 31/32, TRS 38 and TRS 37). Increased disturbance may lead to increased use of energy resources coupled with a decrease in foraging time, leading to depletion of fat reserves and overall decline in condition and breeding success. Temporary (short-term habitat degradation through incidental pollution events, such as chemical spills and construction drainage run-off, impacting waterbodies and terrestrial habitat that may be used for foraging or nesting. Direct and indirect effects to breeding birds, including both temporary and short term, and permanent effects, may result in negative effects significant at a Local scale.	In the absence of secondary mitigation, construction could lead to effects of *Minor adverse significance* (*Not significant)*
Fish	Direct and indirect loss of sensitive fish habitat which may impact fish populations as a result of construction techniques (e.g., open cut trench crossing techniques). Habitat severance and barriers to fish migration may occur where there is a requirement for the creation of dry-works areas and temporary culverts. Temporary short-term disturbance and/or dispersal of fish populations from works areas due to increased noise, light and vibration impacts associated with construction including open cut trench and trenchless crossings, and installation of an embedded pipe bridge (for example, drilling activities, pile driving and vehicle/plant movements), leading to disturbances to fish migrations, spawning and embryo mortality. Use of artificial lighting during proposed 24-hour working associated with the River Dee (TRS 28) trenchless crossing may result in temporary short-term disturbance and / or dispersal of fish populations. Temporary short-term habitat and water quality degradation as a result of incidental pollution events (suspended sediment or pollutant run off) may result in direct and indirect mortality and/or injury of fish. Where temporary culverts are to be installed at watercourse crossing points, there is potential for direct impacts through localised loss and/or damage of habitats. Direct and indirect effects to fish, including both temporary and short term, and permanent effects, may result in negative effects significant at a Regional scale.	In the absence of secondary mitigation, construction could lead to effects of ***Major adverse*** *significance* (***Significant***)
Aquatic Macroinvertebrates	Temporary short-term direct and indirect habitat loss through open cut trench crossing techniques. Temporary short-term disturbance and/or dispersal of aquatic macroinvertebrates from works areas due to increased noise, light and vibration impacts associated with construction of open cut trench crossings and installation of an embedded pipe bridge (for example, pile driving and vehicle/plant movements).	In the absence of secondary mitigation, construction could lead to effects of *Minor adverse*

Ecological Receptor	Potential Impacts and Effects	Likely Significant Effects
	Temporary short-term habitat and water quality degradation as a result of incidental pollution events (suspended sediment or pollutant run off) may result in direct and indirect mortality. Where temporary culverts are to be installed at watercourse crossing points, there is potential for direct impacts through localised loss and/or damage of habitats. Direct and indirect effects to aquatic macroinvertebrates, including both temporary and short term, and permanent effects, may result in negative effects significant at a local scale.	*significance* (*Not significant)*
Macrophytes	Open cut trench crossing techniques have the potential to impact macrophyte communities both directly, through riverbank and channel bed removal, and indirectly through water quality degradation as a result of incidental pollution events (suspended sediment or pollutant run off). Where temporary culverts are to be installed at watercourse crossing points, there is potential for direct impacts through localised loss and/or damage of habitats. Direct and indirect effects to macrophytes, including both temporary and short term, and permanent effects, may result in negative effects significant at a less than local scale.	In the absence of secondary mitigation, construction could lead to effects of *Negligible significance* (*Not Significant)*

Operational Stage

2.4.1. **Paragraphs 9.9.5** and **9.9.6** of Chapter 9 **[AS-025]** have been updated as a result of proposed design option PS25 and should be replaced with the following text:

The majority of the DCO Proposed Development entails the construction of the underground Newbuild Carbon Dioxide Pipeline. The operational Newbuild Carbon Dioxide Pipeline is therefore of negligible concern to ecological receptors. The DCO Proposed Development does include the construction of permanent above ground infrastructure associated with AGIs, BVSs and the optional Alltami Brook embedded pipe bridge (if taken forward), located within the Newbuild Infrastructure Boundary. Other permanent above ground infrastructure includes Cathodic Protection Transformer Rectifier Cabinets and Test Posts, and Marker Posts. Whilst maintenance of the Newbuild Carbon Dioxide Pipeline may be required throughout its life, this is likely to be a rare occurrence and impacts associated with such maintenance activities would be short term, temporary and localised. There are currently no planned maintenance activities across the design life of the system; these would only be required in case of extraordinary events.

Operation of the DCO Proposed Development will require new external lighting at each of the AGI and BVS locations, where perimeter, local task and emergency lighting would be required. Where lighting is required, this would be of short duration during personnel site presence and during low-light conditions (e.g., winter and night-time working) and would otherwise as default be unlit/ turned off. Stanlow AGI will require permanent lighting, however, given its siting within a highly industrialised location where extensive lighting is already present; the requirement for permanent lighting at the AGI is considered to be of negligible significance. No permanent lighting or provision of power is anticipated to be required at the embedded pipe bridge at Alltami Brook.

2.4.2. The following text should be inserted after **paragraph 9.9.11** of Chapter 9 **[AS-025]:**

If taken forward, the Alltami Brook embedded pipe bridge will be a long-term feature on the banks of the Alltami Brook, and a vertical clearance of a minimum of 1.5m in height above the watercourse has been assumed for this assessment.

Foraging and commuting opportunities for mobile species, both terrestrial and aquatic, are not anticipated to be permanently restricted due to the location and clearance of the embedded pipe bridge which will continue to allow species to commute and traverse the banks and watercourse channel.

The shading effects associated with the embedded pipe bridge are not anticipated to result in the restriction of fish passage, due to the set-back design

of the bridge abutments; or a change in macrophyte community, due to the absence of this receptor at Alltami Brook within the baseline assessment. Therefore, the embedded pipe bridge at Alltami Brook is considered to be of Negligible significance during the operation phase.

Decommissioning Stage

2.4.3. The following text should be inserted after **paragraph 9.9.15** of Chapter 9 **[AS-025]:**

If taken forward, the Alltami Brook embedded pipe bridge will be removed, with ground conditions restored to the condition recorded pre-construction or else restored in line with/complementing the habitat baseline recorded at the time of decommissioning, where possible. The buried Newbuild Carbon Dioxide Pipeline sections will be capped and left in situ. It is anticipated that the dismantling and removal of the embedded pipe bridge and associated abutments, will largely follow the same process as the Construction Stage, with access and site preparation works required, which will include the removal of vegetation adjacent to the embedded pipe bridge. Ecology surveys will be undertaken to determine the requirement for, and extent of, appropriate mitigation and/or licencing to ensure decommissioning works do not have a significant impact on ecological receptors.

When considering decommissioning, similar impacts to those identified during the construction stage are anticipated. With the implementation of appropriate mitigation measures prior to, during and following decommissioning, likely significant effects on ecological receptors during decommissioning are precautionarily assessed to be of no more than ***Minor Adverse significance (not significant).***

MITIGATION AND ENHANCEMENT MEASURES

2.4.4. The mitigation and enhancement measures for Biodiversity have not changed due to proposed design option PS25. Therefore, the text within **Section 9.10** of Chapter 9 **[AS-025]** and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

RESIDUAL EFFECTS

2.4.5. The following text should be inserted after **paragraph 9.11.1** of Chapter 9 **[AS-025];**

If taken forward, the Alltami Brook embedded pipe bridge would result in a change in the residual effects within ***Section 9.11*** *of Chapter 9* ***[AS-025]*** *and ES Addendum 1* ***[CR1-124]*** *during the decommissioning stage only.*

In the event that the Alltami Brook embedded pipe bridge is taken forward, potential residual effects upon the below receptors have been precautionarily identified. These have been identified based on the impacts of

decommissioning and removal of the embedded pipe bridge being akin to those anticipated during the construction stage. Following the implementation of mitigation, the following receptors have been precautionarily assessed to be at risk of residual effects that are ***Minor Adverse*** *(****Not Significant):*** *Statutory Designated Sites (consideration of functionally linked woodland habitat), Non-statutory Designated Sites; Woodland and Ancient Woodland; Aquatic Habitat-Watercourses; Bats-Roosts; Riparian Mammals; and Fish.*

Table 9.7 of the ES Addendum 1 **[CR1-124]** has been updated and should be replaced with **Table 2.4** below.

Table 2.4 - Summary of Residual Effects

Description of the effect		Significant Effects	Mitigation and Enhancement measure	Residual Effect		
				Construction	Operation	Decommissioning
Statutory Designated Sites		***Moderate adverse (Significant)***	D-BD-001, D-BD-002, D-BD-004, D-BD-007, D-BD-009, D-BD-013, D-BD-015, D-BD-018, D-BD-019, D-BD-041, D-BD-042, D-BD-054, D-LV-036, D-PD-001, D-PD-004, D-AQ-004,	*Minor adverse significance (Not significant)*	*Negligible (Not Significant)*	*Minor adverse significance (Not significant)*
Non-Statutory Designated Sites		***Moderate adverse (Significant)***	D-BD-001, D-BD-002, D-BD-004, D-BD-007, D-BD-009, D-BD-013, D-BD-015, D-BD-018, D-BD-019, D-BD-041, D-BD-042, D-BD-054, D-LS-001, D-LV-034, D-LV-036, D-PD-004, D-AQ-004, D-WR-067	*Minor adverse significance (Not significant)*	*Negligible (Not Significant)*	*Minor adverse significance (Not significant)*
Habitats of Conservation Importance	Woodland and Ancient Woodland	***Moderate adverse (Significant)***	D-BD-001, D-BD-004, D-PD-004, D-BD-008, D-BD-009, D-BD-010, D-BD-013, D-BD-015, D-BD-062, D-BD-063, D-LV-014, D-LV-015, D-LV-017, D-LV-018, D-LV-019, D-LV-020, D-LV-026, D-LV-028, D-LV-030, D-LV-031, D-LV-032, D-LV-033, D-LV-034, D-LV-036, , D-AQ-004	*Minor adverse significance (Not significant)*	*Negligible (Not Significant)*	*Minor adverse significance (Not significant)*
	Hedgerows	***Moderate adverse (Significant)***	D-BD-001, D-BD-004, D-PD-004, D-BD-009, D-BD-012, D-BD-013, D-BD-015, D-BD-031, D-BD-032, D-BD-033, D-BD-062, D-LV-016, D-LV-026, D-LV-028, D-LV-032, D-LV-033, D-LV-034, D-LV-036, D-AQ-004	*Minor adverse significance (Not significant)*	*Negligible (Not Significant)*	*Negligible (Not Significant)*
	Coastal and Floodplain Grazing Marsh	***Moderate adverse (Significant)***	D-BD-001, D-BD-004, D-BD-009, D-BD-015, D-BD-062, D-LS-001, D-LS-026, D-LV-034, D-LV-036 , D-AQ-004	*Minor adverse significance (Not significant)*	*Negligible (Not Significant)*	*Negligible (Not Significant)*
Aquatic habitat – Watercourses		***Moderate adverse (Significant)***	D-BD-001, D-BD-002, D-BD-004, D-BD-009, D-BD-011, D-BD-015, D-BD-018, D-BD-019, D-BD-046, D-BD-048, D-BD-049, D-BD-052, D-BD-054, D-BD-059, D-BD-060, D-BD-064, D-LS-026, D-LV-034, D-PD-004, D-PD-009, , D-AQ-004, D-WR-003, D-WR-005, D-WR-009, D-WR-022, D-WR-023, D-WR-027, D-WR-028, D-WR-029, D-WR-035, D-WR-044, D-WR-050, D-WR-062, D-WR-063	*Minor adverse significance (Not significant)*	*Negligible (Not Significant)*	*Minor adverse significance (Not significant)*
Aquatic habitats - Ponds		*Negligible (Not Significant)*	D-BD-001, D-BD-002, D-BD-004, D-BD-009, D-BD-011, D-BD-015, D-LS-026, D-LV-034, D-PD-004 , D-AQ-004, D-WR-003, D-WR-028, D-WR-035, D-WR-044	*Negligible (Not Significant)*	*Negligible (Not Significant)*	*Negligible (Not Significant)*

Description of the effect		Significant Effects	Mitigation and Enhancement measure	Residual Effect		
				Construction	**Operation**	**Decommissioning**
Amphibians (incl. great crested newt)		***Moderate adverse (Significant)***	D-BD-001, D-BD-002, D-BD-004, D-BD-009, D-BD-011, D-BD-015, D-BD-023, D-BD-044, D-BD-045, D-LV-034, D-PD-004, D-AQ-004	*Minor adverse significance (Not significant)*	*Negligible (Not Significant)*	*Negligible (Not Significant)*
Bats	Roosts	***Moderate adverse (Significant)***	D-BD-001, D-BD-002, D-BD-004, D-BD-009, D-BD-015, D-BD-024, D-BD-025, D-BD-026, D-BD-027, D-BD-028, D-BD-029, D-BD-030, D-BD-066, D-LV-034, D-PD-004, D-PD-013,	*Negligible (Not Significant)*	*Negligible (Not Significant)*	*Minor adverse significance (Not significant)*
	Foraging and commuting bats	***Moderate adverse (Significant)***	D-BD-001, D-BD-002, D-BD-004, D-BD-009, D-BD-015, D-BD-031, D-PD-004, D-PD-013,	*Minor adverse significance (Not significant)*	*Negligible (Not Significant)*	*Negligible (Not Significant)*
Badger		*Minor adverse (Not Significant)*	D-BD-001, D-BD-002, D-BD-004, D-BD-009, D-BD-015, D-PD-004, D-PD-013, D-PD-014, D-BD-020, D-BD-021, D-BD-022, D-BD-023, D-LV-034, D-AQ-004	*Negligible (Not Significant)*	*Negligible (Not Significant)*	*Negligible (Not Significant)*
Barn Owl		***Moderate adverse (Significant)***	D-BD-001, D-BD-002, D-BD-004, D-BD-009, D-BD-015, D-PD-004, D-PD-013, D-PD-014, D-BD-037, D-BD-038, D-BD-039, D-BD-040, D-BD-066, D-LV-034, D-AQ-004	*Minor adverse significance (Not significant)*	*Negligible (Not Significant)*	*Negligible (Not Significant)*
Riparian Mammals (Otter and Water vole)		***Moderate adverse (Significant)***	D-BD-001, D-BD-002, D-BD-004, D-BD-009, D-BD-015, D-BD-018, D-BD-019, D-BD-034, D-BD-035, D-BD-036, D-BD-050, D-BD-059, D-BD-060, D-LV-034, D-PD-004, D-AQ-004, D-WR-027, D-WR-028, D-WR-029, D-WR-062, D-WR-063	*Minor adverse significance (Not Significant)*	*Negligible (Not Significant)*	*Minor adverse significance (Not significant)*
Wintering Birds (including redshank)		***Moderate adverse (Significant)***	D-BD-001, D-PD-004, D-BD-004, D-BD-009, D-BD-015, D-PD-013, D-PD-014, D-LV-034, D-NV-009	*Minor adverse significance (Not Significant)*	*Negligible (Not Significant)*	*Negligible (Not Significant)*
Breeding Birds		*Minor adverse (Not significant)*	D-BD-001, D-BD-004, D-PD-004, D-BD-009, D-BD-015, D-BD-043, D-BD-066, D-LV-034, D-PD-013, D-PD-014,	*Negligible (Not Significant)*	*Negligible (Not Significant)*	*Negligible (Not Significant)*

Description of the effect	Significant Effects	Mitigation and Enhancement measure	Residual Effect		
			Construction	Operation	Decommissioning
Fish	***Major adverse (Significant)***	D-BD-001, D-BD-004, D-BD-002, D-BD-009, D-BD-015, D-BD-018, D-BD-019, D-BD-050, D-BD-051, D-BD-054, D-BD-056, D-BD-057, D-BD-058, D-LV-034, D-PD-004, D-WR-009, D-WR-022, D-WR-023, D-WR-027	*Minor adverse significance (Not significant)*	*Negligible (Not Significant)*	*Minor adverse significance (Not significant)*
Aquatic macroinvertebrates	*Minor adverse (Not significant)*	D-BD-001, D-BD-004, D-BD-009, D-BD-011, D-BD-015, D-BD-018, D-BD-019, D-BD-054, D-LV-034, D-WR-009, D-WR-022, D-WR-023	*Negligible (Not Significant)*	*Negligible (Not Significant)*	*Negligible (Not Significant)*
Macrophytes	*Negligible (Not Significant)*	D-BD-004, D-BD-009, D-BD-011, D-BD-019, D-BD-060, D-LV-034, D-WR-027, D-WR-028, D-WR-029	*Negligible (Not Significant)*	*Negligible (Not Significant)*	*Negligible (Not Significant)*

IN-COMBINATION CLIMATE CHANGE IMPACTS

2.4.6. There are no additional in-combination climate change impacts identified for the Biodiversity assessment as a result of proposed design option PS25. Therefore, the text within **Section 9.12** of Chapter 9 **[AS-025]** and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

MONITORING

2.4.7. Proposed design option PS25 does not change the requirements for monitoring measures during construction. Therefore, the text within **Section 9.13** of Chapter 9 **[AS-025]** and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

CONCLUSIONS

2.4.8. Proposed design option PS25 as set out in **Table 1.1** does not result in changes to the likely significant effects as reported in Chapter 9 **[AS-025]** or ES Addendum 1 **[CR1-124]** for biodiversity. The 2022 ES conclusions are therefore not materially changed for this topic.

2.5. GREENHOUSE GASES

INTRODUCTION

2.5.1. **Chapter 10: Greenhouse Gases [APP-062]** of the 2022 ES reports the outcome of the assessment of the likely significant effects of the DCO Proposed Development on climate in terms of greenhouse gas (GHG) emissions during construction, operation and end of life decommissioning.

2.5.2. This ES Addendum 2 chapter considers only the likely significant effects resulting from proposed design option PS25 as outlined **Table 1-2** of this ES Addendum 2.

LEGISLATIVE AND POLICY FRAMEWORK

2.5.3. There are no additional relevant legislation or policies relating to greenhouse gases due to proposed design option PS25.

2.5.4. Since the publication of the 2022 ES **[APP-062]** and ES Addendum 1 **[CR1-124]**, there have been updates to the Publicly Available Specifications (PAS): 2080 Carbon Management in Buildings and Infrastructure (PAS 2080) guidance. Therefore, the second bullet point under the Guidance subheading should be replaced with the following text:

- Publicly Available Specifications (PAS): 2080 Carbon Management in Buildings and Infrastructure (2023) (hereafter referred to as PAS 2080) **(Ref. 10.15)**; and

SCOPING OPINION AND CONSULTATION

2.5.5. The scoping opinion has not changed, and no additional consultation has been undertaken regarding proposed design option PS25 in relation to GHG.

2.5.6. No amendments to **Appendix 1.3 – Environmental Statement – Scoping Opinion Responses [APP-076]** are required in relation to GHG due to proposed design option PS25. Therefore, the text within **Section 10.3** of the 2022 ES **[APP-062]** remains unchanged and valid.

SCOPE OF THE ASSESSMENT

2.5.7. The scope of the assessment for GHG has not changed due to proposed design option PS25. Therefore, the text within **Section 10.4** of the 2022 ES **[APP-062]** remains unchanged and valid.

ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

2.5.8. The assessment methodology and significance criteria for GHG has not changed due to proposed design option PS25. Therefore, there text within **Section 10.5** of the 2022 ES **[APP-062]** remains unchanged and valid.

BASELINE CONDITIONS

2.5.9. The baseline for the GHG assessment has not changed due to proposed design option PS25. Therefore, the text within **Section 10.6** of the 2022 ES **[APP-062]** remains unchanged and valid.

SENSITIVE RECEPTORS

2.5.10. The sensitive receptors for the GHG assessment have not changed for proposed design option PS25. Therefore, the text within **Section 10.7** of the 2022 ES **[APP-062]** remains unchanged and valid.

DESIGN DEVELOPMENT, IMPACT AVOIDANCE, AND EMBEDDED MITIGATION

2.5.11. The design development, impact avoidance and embedded mitigation for GHG have not changed due to proposed design option PS25. Therefore, the text within **Section 10.8** of the 2022 ES **[APP-062]** remains unchanged and valid.

ASSESSMENT OF LIKELY IMPACTS AND EFFECTS

2.5.12. The preliminary assessment of likely impacts and effects has changed as a result of proposed design option PS25.

2.5.13. The construction of the Alltami Brook embedded pipe bridge option is estimated increase embodied carbon (A1-3) by approximately 108 tCO2e compared to the results reported in **Table 10.4** of the 2022 ES **[APP-062]**. Therefore, **Table 10.4** has changed and should be replaced with **Table 2.5** below which includes tCO2e for materials without PS25 as reported in the 2022 ES **[APP-062]** and tCO2e for materials with the PS25 option.

2.5.14. The tCO2e has increased primarily due the additional concrete required to construct the Alltami Brook embedded pipe bridge option plus small increases in quantities of steel, sand and aggregate required.

Table 2.5 – Estimated Embodied Emissions (A1-3)

Material	Embodied Carbon (tCO_2e)
Steel	51,925 (without PS25) 51,928 (with PS25)
Concrete	1,926 (without PS25) 2,027 (with PS25)
Sand	1,302 (without PS25) 1,305 (with PS25)
Earthworks	674

Material	Embodied Carbon (tCO_2e)
Aggregate	384 (without PS25) 385 (with PS25)
Copper	142
Polyethylene	78
Glass	19
Total	**56,450 (without PS25)** **56,558 (with PS25)**

2.5.15. The construction of the Alltami Brook embedded pipe bridge option is estimated to result in an increase in emissions from the transport of materials to site (A4) by 15 tCO2e compared to the results reported in **Table 10.5** of the 2022 ES **[APP-062]**. Therefore, **Table 10.5** has changed and should be replaced with **Table 2.6** below which includes tCO2e for materials without PS25 as reported in the 2022 ES **[APP-062]** and tCO2e for materials with the PS25 option.

2.5.16. The tCO2e has increased primarily due the additional concrete and sand required to construct the Alltami Brook embedded pipe bridge option plus small increases of aggregate required.

Table 2.6 - Estimated Emissions for the Transport of Materials to Site (A4)

Material	Transport to Site (tCO_2e)
Steel	1,071
Sand	834 (without PS25) 839 (with PS25)
Aggregate	534 (without PS25) 536 (with PS25)
Earthworks	292
Concrete	145 (without PS25) 153 (with PS25)
Polyethylene	2

Material	Transport to Site (tCO_2e)
Copper	2
Glass	1
Total	**2,881** (without PS25) **2,896** (with PS25)

2.5.17. Construction stage emissions from embodied carbon (A1-3) and transport of materials (A4) have increased by 0.1% as a result of the construction of the Alltami Brook embedded pipe bridge option. This does not materially impact the assessment of GHG emissions; therefore, the conclusions on the likely significant effects during the construction stage within **Section 10.9** of the 2022 ES **[APP-062]** remain unchanged and valid.

MITIGATION AND ENHANCEMENT MEASURES

2.5.18. The mitigation and enhancement measures for GHG have not changed due to proposed design option PS25. Therefore, the text within Section **10.10** of the 2022 ES **[APP-062]** remains unchanged and valid.

RESIDUAL EFFECTS

2.5.19. No additional residual effects have been identified for GHG due to proposed design option PS25. Therefore, the text within **Section 10.11** of the 2022 ES **[APP-062]** remains unchanged and valid.

MONITORING

2.5.20. Proposed design option PS25 does not change the requirements for monitoring measures during construction. Therefore, the text within **Section 10.12** of the 2022 ES **[APP-062]** remains unchanged and valid.

CONCLUSIONS

2.5.21. Proposed design option PS25 as set out in **Table 1.1** does not result in changes to the likely significant effects as reported in the 2022 ES **[APP-062]** for greenhouse gases. The 2022 ES conclusions are therefore not materially changed for this topic.

REFERENCES

Ref. 10.15 – BSI (2023) PAS 2080 Carbon Management in Infrastructure.

2.6. LANDSCAPE AND VISUAL

INTRODUCTION

2.6.1. **Chapter 12: Landscape and Visual** of the 2022 ES **[APP-064]** reports the outcome of the assessment of the likely significant effects of the DCO Proposed Development on landscape and visual receptors.

2.6.2. This ES Addendum 2 chapter considers only the likely significant effects resulting from proposed design option PS25 as outlined in **Table 1-1** of this ES Addendum 2.

2.6.3. **Appendix 12.4 – Visual Analysis [CR1-030]** has been updated to include an additional Viewpoint P2c and can be seen in **Appendix B** of this ES Addendum 2.

LEGISLATIVE AND POLICY FRAMEWORK

2.6.4. There are no additional relevant legislation or policies relating to landscape and visual due to proposed design option PS25. Since the publication of the 2022 ES and ES Addendum 1, there have been no updates to relevant legislation and policy for landscape and visual. Therefore, the text within **Section 12.2** of the 2022 ES **[APP-064]** and ES Addendum 1 **[CR1-124]**, remains unchanged and valid.

SCOPING OPINION AND CONSULTATION

2.6.5. The scoping opinion has not changed, and no additional consultation has been undertaken regarding proposed design option PS25.

2.6.6. No amendments to **Appendix 1.3 – Environmental Statement – Scoping Opinion Responses [APP-076]** are required in relation to landscape and visual due to proposed design option PS25. Therefore, the text within **Section 12.3** of the 2022 ES **[APP-064]** remains unchanged and valid.

SCOPE OF THE ASSESSMENT

2.6.7. The scope of the assessment for landscape and visual impacts has not changed due to proposed design option PS25. Therefore, the text within **Section 12.4** of the 2022 ES **[APP-064]** remains unchanged and valid.

ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

2.6.8. The assessment methodology and significance criteria for landscape and visual impacts has not changed due to proposed design option PS25. Therefore, the text within **Section 12.5** of the 2022 ES **[APP-064]** remains unchanged and valid.

BASELINE CONDITIONS

2.6.9. The baseline for the landscape and visual assessment has changed due to proposed design option PS25. Therefore, the information within **Table 2.7** below should be added to **Table 12.1** of ES Addendum 1 **[CR1-124]**.

Table 2.7 - Overview of Viewpoints

Viewpoint Ref.	Viewpoint Location	Identified Receptors
P2c	Alltami Brook, Northop Hall	Recreational users of Public Footpath - PRoW 414/39A

2.6.10. All other baseline conditions text within **Section 12.6** of the 2022 ES **[APP-064]** remains unchanged and valid.

SENSITIVE RECEPTORS

2.6.11. The sensitive receptors for the landscape and visual assessment have changed due to additional sensitive receptors in relation to visual amenity being identified as a result of proposed design option PS25. These additional sensitive receptor is outlined in **Table 2.7** above.

2.6.12. Therefore, the following sensitive receptor should be added to **paragraph 12.7.2** of the 2022 ES [**APP-064**]:

- *Recreational users of Public Footpath - PRoW 414/39A*

2.6.13. All other sensitive receptor text within **Section 12.7** of the 2022 ES [**APP-064**] and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

DESIGN DEVELOPMENT, IMPACT AVOIDANCE, AND EMBEDDED MITIGATION

2.6.14. The design development, impact avoidance and embedded mitigation for landscape and visual have not changed due to proposed design option PS25. Therefore, the text within **Section 12.8** of the 2022 ES **[APP-064]** remains unchanged and valid.

ASSESSMENT OF LIKELY IMPACTS AND EFFECTS

2.6.15. The assessment of likely impacts and effects for the landscape and visual assessment has changed. Proposed design option PS25 will require an additional viewpoint (Viewpoint P2c) to account for sensitive receptors associated with Public Footpath - PRoW 414/39A. At the time of writing no viewpoint photography has been undertaken and as such the assessment has been developed from a preliminary site walkover and desk study evidence.

SIGNIFICANT EFFECTS

Construction Stage

2.6.16. Due to the scale of the Alltami Brook embedded pipe bridge relative to the identified landscape character areas associated with the DCO Proposed Development, it is concluded that the embedded pipe bridge will not fundamentally alter the findings of the 2022 ES **[APP-064]** for construction landscape effects. Therefore, **Table 12.6** of the 2022 ES **[APP-064]** remains unchanged and valid.

2.6.17. Construction visual effects will change as a result of the Alltami Brook embedded pipe bridge option with the addition of Viewpoint P2c. **Appendix 12.4 – Visual Analysis [CR1-030]** has been updated to include an additional Viewpoint P2c and can be seen in **Appendix B** of this ES Addendum 2.

2.6.18. The assessment of Viewpoint P2c concluded that the construction visual effect would be **Moderate adverse (significant)**. Therefore, the information in **Table 2.8** below for Viewpoint P2c should be added to **Table 12.2** of ES Addendum 1 **[CR1-124]**.

Operational Stage

2.6.19. Operational visual effects have changed as a result of the addition of the Alltami Brook embedded pipe bridge option with the addition of Viewpoint P2c. **Appendix 12.4 – Visual Analysis [CR1-030]** has been updated to include an additional Viewpoint P2c and can be seen in **Appendix B** of this ES Addendum 2.

2.6.20. The assessment concluded that the operational visual effects for Viewpoint P2c would be *Minor adverse (not significant)* in Year 1 and *Negligible adverse (not significant)* in Year 15. Therefore, **Table 12-3** of ES Addendum 1 **[CR1-124]** remains unchanged and valid.

Table 2.8 - Construction Visual Effects

Viewpoint Reference and Type	Susceptibility, value, and overall sensitivity	Construction magnitude and effect
Viewpoints associated with the Newbuild Carbon Dioxide Pipeline route (P)		
P2c **Recreational users of Public Footpath PRoW 414/39A** **Distance to Newbuild Infrastructure Boundary: Approx. 0m (within boundary)**	Receptors are noted to be PRoW users associated with Public Footpath - PRoW 414/39A. PRoW users are likely to be traversing this route seeking enjoyment of the countryside with an appreciation for the wider landscape. The susceptibility of the receptor is recorded as High. The view is not taken from within nationally or regionally significant landscape. The view contains few detracting features and is representative of a more rural character, albeit with the A55 North Wales Expressway introducing an urbanising feature to the south and disrupting the overall tranquillity of the area to a degree. The value of the view is recorded as Low. Overall Sensitivity: **Medium**.	Construction activity associated with the DCO Proposed Development will be visible within the view. However, views will be filtered to some extent by the sloping topography and the existing vegetation and woodland cover that lines the western edge of the Brook. The scale of change is High. The DCO Proposed Development spans the length of the view including a minor PRoW diversion, with required vegetation removal, is likely to result in views towards construction activity. Dense vegetation alongside the sloping topography that defines the Brook will ensure that views towards the DCO Proposed Development will generally be localised. However, the presence of taller construction elements, including cranes when on site, will be more widely perceived. The geographical extent of change is recorded as Medium. The construction stage is short term, and the duration of change is therefore assessed as Low. Overall Magnitude: Medium. Overall Effect: ***Moderate adverse (significant).***

Decommissioning Stage

2.6.21. Decommissioning visual effects have changed as a result of the Alltami Brook embedded pipe bridge option with the addition of Viewpoint P2c. **Appendix 12.4 – Visual Analysis [CR1-030]** has been updated to include an additional Viewpoint P2c and can be seen in **Appendix B** of this ES Addendum 2.

2.6.22. **Paragraph 12.9.11** of 2022 ES **[APP-064]** should be replace with the following text:

*The Decommissioning Stage will see the removal of the AGIs, BVSs and the Alltami Brook embedded pipe bridge option only. The Newbuild Carbon Dioxide Pipeline and existing Flint Connection to PoA Terminal Pipeline will remain in-situ but will be considered safely decommissioned. During the decommissioning works it is anticipated that effects associated with the AGIs, BVSs and the Alltami Brook embedded pipe bridge option will be similar to those experienced during construction of the DCO Proposed Development as set out in **Appendices 12.3 [APP-140], 12.4 [CR1-030]** and **Table 1.1** of **Appendix B** of ES Addendum 2. Upon completion of the decommissioning these will reduce to not significant. This is due to the landscape returning to the baseline situation or similar.*

MITIGATION AND ENHANCEMENT MEASURES

2.6.23. The mitigation and enhancement measures for the landscape and visual assessment have not changed due to proposed design option PS25. Therefore, the text within **Section 12.10** of the 2022 ES **[APP-064]** remains unchanged and valid.

RESIDUAL EFFECTS

2.6.24. The residual effects for the landscape and visual assessment have changed as a result of a change in construction visual effects associated with the addition of Viewpoint P2c to account for the Alltami Brook embedded pipe bridge.

2.6.25. **Appendix 12.4 – Visual Analysis [CR1-030]** has been updated to include an additional Viewpoint P2c and can be seen in **Appendix B** of this ES Addendum 2. The assessment concluded that construction and decommissioning effects for Viewpoint P2c would be significant. Therefore, the information in **Table 2.9** below for Viewpoint P2c should be added to **Table 12.4** of ES Addendum 1 **[CR1-124].**

Table 2.9 – Viewpoint P2c

Description of the effect	Pre-mitigation significance of effects	Mitigation measure	Residual effect
Construction Effects			
Visual amenity receptors			
P2c **Recreational users of Public Footpath - PRoW 414/39A (as diverted)**	***Moderate adverse (significant)***	Construction Stage mitigation measures as set out in **Section 12.10** of the 2022 ES **[APP-064]**	***Moderate adverse (significant)***
Decommissioning Effects **Visual amenity receptors**			
P2c **Recreational users of Public Footpath - PRoW 414/39A (as diverted)**	During decommissioning**:** ***Moderate adverse (significant)*** End of Decommissioning: *Not significant*	Significant effects are expected to be short term and temporary reducing to not significant at the end of the Decommissioning Stage. Decommissioning design and works including further mitigation, will be undertaken in compliance with all necessary legislation, permits and best practice at that time. This will be set out in the end of life Decommissioning Environmental Management Plan (DEMP).	During decommissioning**:** ***Moderate adverse (significant)*** End of Decommissioning: *Not significant*

IN-COMBINATION CLIMATE CHANGE IMPACTS

2.6.26. There are no additional in-combination climate change impacts identified for the landscape and visual assessment from proposed design option PS25. Therefore, the text within **Section 12.12** of the 2022 ES **[APP-064]** remains unchanged and valid.

MONITORING

2.6.27. Proposed design option PS25 does not change the requirements for monitoring measures during construction. Therefore, the text within Section **12.13** of the 2022 ES **[APP-064]** remains unchanged and valid.

CONCLUSIONS

2.6.28. The assessment concluded that the Alltami Brook embedded pipe bridge option (PS25) would have a ***moderate adverse (significant)*** effect during the construction and decommissioning stages, a *minor adverse (not significant)* for the operation stage at Year 1 and a *Negligible adverse (not significant)* for the operation stage at Year 15 for new Viewpoint P2c. These effects are similar to those already reported for other above ground infrastructure, namely the AGIs and BVSs along the DCO Proposed Development in the 2022 ES **[APP-064]** and ES Addendum 1 **[CR1-124].**

2.6.29. Therefore, proposed design option PS25 as set out in **Table 1.1** does not result in changes to the likely significant effects as reported in the 2022 ES **[APP-064]** and ES Addendum 1 **[CR1-124]** for landscape and visual. The 2022 ES conclusions have therefore not materially changed for this topic.

2.7. MATERIALS AND WASTE

INTRODUCTION

2.7.1. **Chapter 14: Material Assets and Waste [APP-066]** of the 2022 ES reports the outcome of the assessment of the likely significant effects of the DCO Proposed Development on Material Assets and Waste.

2.7.2. This ES Addendum 2 chapter considers only the likely significant effects resulting from proposed design option PS25 as outlined **Table 1-1** of this ES Addendum 2.

LEGISLATIVE AND POLICY FRAMEWORK

2.7.3. There are no additional relevant legislation or policies relating to materials and waste due to proposed design option PS25. Since the publication of the 2022 ES and ES Addendum 1, there have been no updates to relevant legislation and policy. Therefore, the text within **Section 14.2** of the 2022 ES [**APP-066**] and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

SCOPING OPINION AND CONSULTATION

2.7.4. The scoping opinion has not changed, and no additional consultation has been undertaken regarding proposed design option PS25 in relation to Material Assets and Waste.

2.7.5. No amendments to **Appendix 1.3 – Environmental Statement – Scoping Opinion Responses [APP-076]** are required in relation to Material Assets and Waste due to the proposed design changes. Therefore, the text within **Section 14.3** of the 2022 ES [**APP-066**] remains unchanged and valid.

SCOPE OF THE ASSESSMENT

2.7.6. The scope of the assessment for Material Assets and Waste has not changed due to proposed design option PS25. Therefore, the text within **Section 14.5** of the 2022 ES **[APP-066]** remains unchanged and valid.

ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

2.7.7. The assessment methodology and significance criteria for Material Assets and Waste has not changed due to proposed design option PS25. Therefore, the text within **Section 14.5** of the 2022 ES **[APP-066]** remains unchanged and valid.

BASELINE CONDITIONS

2.7.8. The baseline for the Material Assets and Waste assessment has not changed due to proposed design option PS25. Therefore, the text within **Section 14.6** of the 2022 ES **[APP-066]** remains unchanged and valid.

SENSITIVE RECEPTORS

2.7.9. The sensitive receptors for the Material Assets and Waste assessment have not changed for proposed design option PS25. Therefore, the text within **Section 14.7** of the 2022 ES **[APP-066]** remains unchanged and valid.

DESIGN DEVELOPMENT, IMPACT AVOIDANCE, AND EMBEDDED MITIGATION

2.7.10. The design development, impact avoidance and embedded mitigation for Material Assets and Waste have not changed due to proposed design option PS25. Therefore, the text within **Section 14.8** of the 2022 ES **[APP-066]** remains unchanged and valid.

ASSESSMENT OF LIKELY IMPACTS AND EFFECTS

2.7.11. Proposed design option PS25 will increase the material resource consumption required by the DCO Proposed Development. **Table 14.13** of the 2022 ES **[APP-066]** summarises the material quantities for the DCO Proposed Development used in the assessment in **Section 14.9** of the 2022 ES **[APP-066]**. The estimated quantities of materials have been updated to include the materials required for the Alltami Brook embedded pipe bridge option.

2.7.12. Therefore, **Table 14.13** of the 2022 ES **[APP-066]** should be replaced with **Table 2-10** below.

Table 2.10 - Indicative Bulk Material Resources Required for Construction

Material Asset	Estimated Quantities (tonnes)	Use of Material in the DCO Proposed Development	Consumption compared to baseline (material availability)
Aggregate	51,380 (without PS25) 51,540 (with PS25)	Required for road subbase and gravel.	2.7.13. 0.29% of Welsh baseline 0.07% of UK baseline
Concrete	13,960 (without PS25) 14,670 (with PS25)	Required for foundations and paving. Reinforced concrete and bridge beams for Alltami Brook embedded pipe bridge option.	0.26% of Welsh baseline (without PS25) 0.28% of Welsh baseline (with PS25) 0.02% of UK baseline
Copper (cabling)	40	Copper cabling, including plastic sheathed copper cable.	No baseline data available

Material Asset	Estimated Quantities (tonnes)	Use of Material in the DCO Proposed Development	Consumption compared to baseline (material availability)
Earthworks	35,840	Imported earthworks material.	No baseline data available
Glass / Plastic	50	Fibre optic cabling.	No baseline data available
Sand	80,300 (without PS25) 80,770 (with PS25)	Pipeline bedding, trench backfilling, and as a sand and cement grout mixture for filling microtunnels.	1.38% of Welsh baseline (without PS25) 1.84% of Welsh baseline (with PS25) (incorporated in aggregate for the UK baselined)
Steel	17,190	Required for the pipeline, associated valves, fencing, kiosks, control cabinets, etc.	0.40% of Welsh baseline 0.24% of UK baseline

2.7.14. The material quantities for the DCO Proposed Development, which includes the Alltami Brook embedded pipe bridge option, has increased for aggregate, concrete, sand and steel (note that the increase in steel is only 1 tonne, and has been rounded to the nearest 10 tonnes and incorporated within the data) in **Table 2.10** when compared with **Table 14.13** of the 2022 ES **[APP-066]** but the % increase in consumption compared to baseline is negligible.

2.7.15. As noted in the 2022 ES **[APP-066]**, operational and End of Life Decommissioning Stages are out of scope of the Material Assets and Waste assessment.

2.7.16. As such, there are no changes to the likely impacts and effects previously identified within **Section 14.9** the 2022 ES **[APP-066]**.

MITIGATION AND ENHANCEMENT MEASURES

2.7.17. There is no requirement to change either the mitigation or enhancement measures for Material Assets and Waste, in response to proposed design option PS25. Therefore, the text within **Section 14.10** of the 2022 ES **[APP-066]** remains unchanged and valid.

RESIDUAL EFFECTS

2.7.18. No additional residual effects have been identified for Material Assets and Waste, due to proposed design option PS25. Therefore, the text within **Section 14.11** of the 2022 ES **[APP-066]** remains unchanged and valid.

IN-COMBINATION CLIMATE CHANGE IMPACTS

2.7.19. There are no additional in-combination climate change impacts identified for the Material Asset and Waste assessment from proposed design option PS25. Therefore, the text within **Section 14.12** of the 2022 ES **[APP-066]** remains unchanged and valid.

MONITORING

2.7.20. Proposed design option PS25 does not change the requirements for monitoring measures during construction. Therefore, the text within **Section 14.13** of the 2022 ES **[APP-066]** remains unchanged and valid.

CONCLUSIONS

2.7.21. Proposed design option PS25 as set out in **Table 1.1** does not result in changes to the likely significant effects as reported in the 2022 ES **[APP-066]** for material assets and waste. The 2022 ES conclusions are therefore not materially changed for this topic.

2.8. POPULATION AND HUMAN HEALTH

INTRODUCTION

2.8.1. **Chapter 16: Population and Human Health** of the 2022 ES **[APP-068]** reports the outcome of the assessment of the likely significant effects of the DCO Proposed Development on Population and Human Health.

2.8.2. This ES Addendum 2 chapter considers only the likely significant effects resulting from proposed design option PS25 as outlined in **Table 1-1** of this ES Addendum 2.

LEGISLATIVE AND POLICY FRAMEWORK

2.8.3. There are no additional relevant legislation or policies relating to population and human health due to proposed design option PS25. The text within **Section 16.2** of the 2022 ES **[APP-068]** and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

SCOPING OPINION AND CONSULTATION

2.8.4. The scoping opinion has not changed, and no additional consultation has been undertaken regarding proposed design option PS25 in relation to Population and Human Health.

2.8.5. No amendments to **Appendix 1.3 – Environmental Statement – Scoping Opinion Responses [APP-076]** are required in relation to Population and Human Health due to proposed design option PS25. Therefore, the text within **Section 16.3** of the 2022 ES **[APP-068]** remains unchanged and valid.

SCOPE OF THE ASSESSMENT

2.8.6. The scope of the assessment for Population and Human Health has not changed due to proposed design option PS25. Therefore, the text within **Section 16.4** of the 2022 ES **[APP-068]** remains unchanged and valid.

ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

2.8.7. The assessment methodology and significance criteria for Population and Human Health has not changed due to proposed design option PS25. Therefore, there text within **Section 16.5** of the 2022 ES **[APP-068]** remains unchanged and valid.

BASELINE CONDITIONS

2.8.8. The baseline conditions for Population and Human Health have not changed due to proposed design option PS25. The text within **Section 16.6** of the 2022 ES **[APP-068]** and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

SENSITIVE RECEPTORS

2.8.9. The sensitive receptors for the Population and Human Health assessment have not changed due to proposed design option PS25. Therefore, the text within

Section 16.7 of the 2022 ES **[APP-068]** and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

DESIGN DEVELOPMENT, IMPACT AVOIDANCE, AND EMBEDDED MITIGATION

2.8.10. The design development, impact avoidance and embedded mitigation for Population and Human Health have not changed due to proposed design option PS25. Therefore, the text within **Section 16.8** of the 2022 ES **[APP-068]** remains unchanged and valid.

ASSESSMENT OF LIKELY IMPACTS AND EFFECTS

2.8.11. There are changes to the likely impacts and effects previously identified within the 2022 ES **[APP-068]** as PRoW 414/39A would require a permanent diversion as result of proposed design option PS25. The following text should be added after **paragraph 16.9.200** of the 2022 ES **[APP-068]**:

WCH

The Proposed Design Option PS25 will incorporate the embedded pipe bridge which spans Altami Brook. A section of PRoW 414/39A follows the route of Altami Brook within a valley, forming a circular walk from Northrop Hall aligned east to west on either side of the Brook. During operation, the proposed design of the embedded pipe bridge will prevent users from following the route of PRoW 414/39A and will therefore require permanent diversion.

Assuming a worst case assessment scenario, a permanent diversion of the PRoW is proposed around the north-west pier of the embedded pipe bridge, resulting in a small increased journey length with limited change to the route gradient. This would represent an overall minor magnitude of impact. This PRoW is of a medium sensitivity; therefore, the proposed diversion of this route will result in a Minor adverse (not significant), permanent, long-term effect on WCHs using this route.

2.8.12. The Outline Public Rights of Ways Management Plan **[REP3-028]** and Figure 17.6 – Public Rights of Way (PRoW) Diversions **[REP3-019]** will be updated with the permanent diversion of the PRoW should the Alltami Brook embedded pipe bridge option be progressed.

2.8.13. All other assessment of likely impacts and effects text within **Section 16.9** of the 2022 ES **[APP-068**] and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

MITIGATION AND ENHANCEMENT MEASURES

2.8.14. The mitigation and enhancement measures for Population and Human Health have not changed due to proposed design option PS25. Therefore, the text within **Section 16.10** of the 2022 ES **[APP-068]** remains unchanged and valid.

RESIDUAL EFFECTS

2.8.15. The residual effects for Population and Human Health have not changed due to proposed design option PS25. Therefore, the text within **Section 16.11** of the 2022 ES **[APP-068]** and ES Addendum 1 **[CR1-124]** remain unchanged and valid.

IN-COMBINATION CLIMATE CHANGE IMPACTS

2.8.16. There are no additional in-combination climate change impacts identified for the Population and Human Health assessment from proposed design option PS25. Therefore, the text within **Section 16.12** of the 2022 ES **[APP-068]** remains unchanged and valid.

MONITORING

2.8.17. Proposed design option PS25 does not change the requirements for monitoring measures during construction. Therefore, the text within **Section 16.13** of the 2022 ES **[APP-068]** remains unchanged and valid.

CONCLUSIONS

2.8.18. Proposed design option PS25 as set out in **Table 1.1** does not result in changes to the likely significant effects as reported in the 2022 ES **[APP-068]** or ES Addendum 1 **[CR1-124]** for Population and Human Health. The 2022 ES conclusions are therefore not materially changed for this topic.

2.9. WATER RESOURCES AND FLOOD RISK

INTRODUCTION

2.9.1. **Chapter 18: Water Resources and Flood Risk** of the 2022 ES **[APP-070]** reports the outcome of the assessment of the likely significant effects of the DCO Proposed Development on the Water Environment

2.9.2. This ES Addendum 2 chapter considers only the likely significant effects resulting from the proposed design option PS25 as outlined in **Table 1-1** of this ES Addendum 2.

2.9.3. **Appendices 18.2, 18.3** and **18.5** of the 2022 ES **[APP-164, APP-165, APP-166** and **APP-167]** have also been updated as a result of proposed design option PS25. The updated appendices addenda can be found in **Appendix B** of this ES Addendum 2.

LEGISLATIVE AND POLICY FRAMEWORK

2.9.4. There are no additional relevant legislation or policies relating to the water environment due to proposed design option PS25. Since the publication of the 2022 ES **[APP-070]** and ES Addendum 1 **[CR1-124]**, there have been no updates to relevant legislation and policy. Therefore, the text within **Section 18.2** of the 2022 ES **[APP-070]** and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

SCOPING OPINION AND CONSULTATION

2.9.5. The scoping opinion has not changed since the 2022 ES **[APP-070]** and ES Addendum 1 **[CR1-124]**. However, additional consultation has been undertaken with NRW regarding proposed design option PS25 in relation to the water environment.

2.9.6. Therefore, the text in **Table 2-11** below should be added to **Table 18-1** of the 2022 ES **[APP-070]**.

Table 2.11 - Summary of Consultation Undertaken

Body / organisation	Meeting dates and other forms of consultation	Summary of outcome of discussions
Natural Resource Wales (NRW)	Microsoft Teams meeting 2 February 2023	NRW requested additional baseline evidence to support the proposed engineering works at Alltami Brook to satisfy WFD assessment compliance, specifically regarding potential flow loss to groundwater and the impact on watercourses downstream. NRW also requested further information on the viability of alternative crossing options. The Applicant advised these details will be picked up and discussed at a separate meeting.

Body / organisation	Meeting dates and other forms of consultation	Summary of outcome of discussions
	Microsoft Teams meeting 6 February 2023	The Applicant discussed specific issues raised by NRW via the Relevant Representations relating to the Alltami Brook. A proposed methodology was presented by the Applicant to undertake a detailed geomorphological assessment of the Alltami Brook. NRW had raised an objection to this detailed assessment being deferred to detailed design in their Relevant Representations and therefore the Applicant proposed to bring forward this assessment to the Examination stage. NRW stated that the proposed geomorphological assessment would not address the groundwater and hydrogeological concerns and that ground investigation and borehole data is required. The Applicant explained that it has not been possible to obtain ground investigation and borehole data due to land access issues during the preparation of the DCO Application and current land access is for non-intrusive surveys only. NRW concluded that the geomorphological assessment is a good idea but needs to be informed by ground investigation. The Applicant reiterates that ground investigation is not feasible during Examination due to the land access issues. NRW would like to see an assessment of decommissioning of the pipeline. The Applicant explained that in line with industry practice, the buried sections of the pipeline would remain in situ to avoid significant environmental issues and disruption caused by the removal of a pipeline. Should the pipeline be removed, impacts would be no worse than those reported in the ES for the construction-phase depending on the actual future baseline and future legislation, which is unpredictable. The Applicant outlined the rationale for the open-cut trench crossing methodology on the Alltami Brook.
	Site visit to Alltami Brook with NRW and the Applicant 27 March 2023	The Applicant attended a site visit to the Alltami Brook with NRW representatives from Planning, Geomorphology, Hydrology and Groundwater. The Applicant described to NRW the options for the Alltami Brook crossing within the landscape setting and engineering context. An alternative embedded pipe bridge option was presented to NRW. NRW requested an options appraisal assessment report so they may understand the option design and the decision-making to come to the preferred solution. NRW's Geomorphologist identified the preferred solutions in order of preference as an embedded pipe bridge, bottomless-arched culvert, box culvert, with open-cut trench crossing being the least favoured. NRW would also like to see

Body / organisation	Meeting dates and other forms of consultation	Summary of outcome of discussions
		decommissioning of any solution, including the above ground options, at the end of the design life of the pipeline
	Microsoft Teams meeting 11 May 2023	The Applicant provided an update on items relating to the Alltami Brook crossing options. Specific matters relating to the Alltami Brook crossing are to be discussed in further detail with NRW at a meeting on 22 May 2023.
	Face to face meeting with NRW and the Applicant 22 May 2023	The Applicant shared a draft of the Alltami Brook Crossing - Options Appraisal report **[REP3-039]** with NRW in advance of the meeting on 18th May 2023. The Applicant presented a summary of all the Alltami Brook crossing options including the open cut and embedded pipe bridge options with NRW. The hydrogeological preliminary observations and conditions, site observations and historic data were also shared with NRW. The Applicant shared their current position; that the Open Trench option is the preferred solution from an environment, engineering, operations and safety perspective. Next steps are for NRW to review the Alltami Brook Crossing - Options Appraisal report **[REP3-039]** in detail and for the Applicant to complete a Preliminary Hydrogeological Appraisal and issue to NRW and the Examining Authority to inform the DCO examination.

2.9.7. No amendments to **Appendix 1.3 – Environmental Statement – Scoping Opinion Responses [APP-076]** are required in relation to the water environment due to proposed design option PS25. Therefore, all other text within **Section 18.3** of the 2022 ES **[APP-070]** remains unchanged and valid.

SCOPE OF THE ASSESSMENT

2.9.8. The scope of the assessment for the water environment has not changed due to proposed design option PS25. Therefore, the text within **Section 18.4** of the 2022 ES **[APP-070]** and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

2.9.9. The assessment methodology and significance criteria for the water environment has not changed due to proposed design option PS25. Therefore, the text within **Section 18.5** of the 2022 ES **[APP-070]** remains unchanged and valid.

BASELINE CONDITIONS

2.9.10. The baseline for the water environment assessment has not changed due to proposed design option PS25. Therefore, the text within **Section 18.6** of the 2022 ES **[APP-070]** and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

SENSITIVE RECEPTORS

2.9.11. The sensitive receptors for the water environment assessment have not changed for proposed design option PS25. Therefore, the text within **Section 18.7** of the 2022 ES **[APP-070]** and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

DESIGN DEVELOPMENT, IMPACT AVOIDANCE, AND EMBEDDED MITIGATION

2.9.12. The design development, impact avoidance and embedded mitigation for the water environment have not changed due to proposed design option PS25. Therefore, the text within **Section 18.8** of the 2022 ES **[APP-070]** and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

ASSESSMENT OF LIKELY IMPACTS AND EFFECTS

2.9.13. There are no changes to the assessment of likely impacts and effects identified as significant during the construction and operation stages presented in **Section 18.9** of the 2022 ES **[APP-070]**. Proposed design option PS25 will include changes to the crossing at Alltami Brook.

2.9.14. The detailed assessment presented in **Appendix 18.2 – Assessment of Effects** of the 2022 ES **[APP-164]** and ES Addendum 1 – Appendix A **[CR1-125]** has been updated to consider proposed design option PS25. The updated **Appendix 18.2** for PS25 can be found in **Appendix B** of this ES Addendum 2.

2.9.15. There is no change to the significant effects presented in **Section 18.9** of the 2022 ES **[APP-070]** as a result of proposed design change PS25, and therefore all text within **Section 18.9** of the 2022 ES **[APP-070]** remains unchanged and valid.

MITIGATION AND ENHANCEMENT MEASURES

2.9.16. The mitigation and enhancement measures for the water environment have been updated due to proposed design option PS25 which introduces an alternative crossing option over Alltami Brook to an embedded pipe bridge.

2.9.17. The following mitigation measures will be proposed and included in the REAC **[REP2-017]** related to the Alltami Brook embedded pipe bridge should proposed design option PS25 be adopted:

- **D-WR-075**: The design of the embedded pipe bridge at Alltami Brook will need to ensure a minimum freeboard of 300mm above the 1 in 100-year fluvial flood level including the allowances for climate change
- **D-WR-076:** A hydraulic model for this section of the Alltami Brook will be undertaken before the detail design stage to confirm the design parameters such as the soffit level, freeboard levels and will also inform the application for a flood risk activity permit for the Alltami Brook embedded pipe bridge crossing option.

RESIDUAL EFFECTS

2.9.18. No additional residual effects have been identified for the water environment due to proposed design option PS25. Therefore **Section 18.11** of the 2022 ES **[APP-070]** remains valid and unchanged.

IN-COMBINATION CLIMATE CHANGE IMPACTS

2.9.19. There are no additional in-combination climate change impacts identified for the water environment assessment from proposed design option PS25.

2.9.20. The Alltami Brook embedded pipe bridge option (PS25) will be designed to accommodate the increased flood risk due to climate change. The design of the embedded pipe bridge will include a minimum freeboard of 300mm above the 100-year plus climate change allowance water level in Alltami Brook.

2.9.21. Therefore, the text within **Section 18.12** of the 2022 ES **[APP-070]** and remains unchanged and valid.

MONITORING

2.9.22. Proposed design option PS25 would not require an update to the monitoring requirements. Geomorphological and ecological monitoring is not necessary for the construction of the Alltami Brook embedded pipe bridge option (PS25). Therefore, the text within **Section 18.13** of the 2022 ES **[APP-070]** remains valid and unchanged.

CONCLUSIONS

2.9.23. Proposed design option PS25 as set out in **Table 1.1** does not result in changes to the likely significant effects as reported in the 2022 ES **[APP-070]** for water resources and flood risk. The 2022 ES conclusions are therefore not materially changed for this topic.

2.10. SUMMARY OF LIKELY SIGNIFICANT EFFECTS

INTRODUCTION

2.10.1. **Chapter 20 – Summary of Likely Significant Effects** of the 2022 ES **[APP-072]** and ES Addendum 1 **[CR1-124]** provides a summary of the likely significant effects reported in the ES.

2.10.2. This ES Addendum 2 chapter updates the summary of significant effects presented within each of the **Technical Chapters 6 to 19** resulting from proposed design option PS25 as outlined in **Table 1.1** of this ES Addendum 2.

2.10.3. The majority of the text presented within **Chapter 20** of the 2022 ES **[APP-072]** has not changed due to proposed design option PS25. However, **Table 20.1 – Summary of Likely Significant Environmental Effects** of the ES Addendum 1 **[CR1-124]** requires an update to take account of one change to likely significant effects as follows:

- In Chapter 12 – Landscape and Visual, the effects for visual assessment have been updated to include an additional Viewpoint P2c. The assessment concluded that construction and decommissioning effects for new Viewpoint P2c would be significant. Therefore, a new row should be inserted into the Chapter 12: Landscape and Visual, Visual amenity receptors section of **Table 20.1** of the ES Addendum 1 **[CR1-124]** as per **Table 2.12** below.

2.10.4. The remaining text within **Chapter 20** of the ES **[APP-072]** and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

Table 2.12 - Summary of Likely Significant Environmental Effects

Description of Effect	*Construction / Operation / Decommissioning Stage*	*Significance and Nature of Effects Prior to Mitigation / Enhancement*	*Summary of Mitigation and Enhancement*	*Residual Significant Effects*
Chapter 12: Landscape and Visual				
Visual amenity receptors				
P2c - Recreational users of Public Footpath - PRoW 414/39A	*Construction*	***Moderate adverse** (**significant**)*	*Landscape mitigation proposals to reduce visual effects of the embedded pipeline bridge. Refer to the **Register of Environmental Actions and Commitments [REP2-017]** for further details.*	***Moderate adverse** (**significant**)*
P2c - Recreational users of Public Footpath - PRoW 414/39A	*Decommissioning*	*During decommissioning:* ***Moderate adverse** (**significant**)* *End of Decommissioning:* *Not significant*	*Significant effects are expected to be short term and temporary during the decommissioning of the Alltami Brook embedded pipe bridge option reducing to not significant at the end of the Decommissioning Stage. Decommissioning design and works including further mitigation, will be undertaken in compliance with all necessary legislation, permits and best practice at that time. This will be set out in the end of life Decommissioning Environmental Management Plan (DEMP) which is a Requirement of the Draft DCO.*	*During decommissioning:* ***Moderate adverse** (**significant**)* *End of Decommissioning:* *Not significant*

3. DESIGN CHANGE PS26: CHANGE TO NEWBUILD INFRASTRUCTURE BOUNDARY AT 2 SISTERS FOOD GROUP LIMITED

3.1. BIODIVERSITY

INTRODUCTION

3.1.1. **Chapter 9 [AS-025]** and the ES Addendum 1 **[CR1-124]** reports the outcome of the assessment of likely significant effects of the DCO Proposed Development on Biodiversity.

3.1.2. This ES Addendum 2 chapter considers only the likely significant effects resulting from proposed design change PS26 as outlined **Table 1-1** of this ES Addendum 2.

LEGISLATIVE AND POLICY FRAMEWORK

3.1.3. There are no additional relevant legislation or policies relating to biodiversity due to proposed design change PS26. Since the publication of Chapter 9 **[AS-025]** and ES Addendum 1 **[CR1-124]** there have been no updates to relevant legislation and policy. Therefore, the text within **Section 9.2** of Chapter 9 **[AS-025]** and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

SCOPING OPINION AND CONSULTATION

3.1.4. The scoping opinion has not changed, and no additional consultation has been undertaken regarding proposed design change PS26 in relation to Biodiversity. Consultation has been conducted with Natural England in respect of other matters (primarily BNG), with discussions captured within the **Statement of Common Ground – Natural England [REP1-022].**

3.1.5. No amendments to **Appendix 1.3 – Environmental Statement – Scoping Opinion Responses [APP-076]** are required in relation to Biodiversity due to proposed design change PS26. Therefore, the text within **Section 9.3** of Chapter 9 **[AS-025]** and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

SCOPE OF THE ASSESSMENT

3.1.6. The scope of the assessment for Biodiversity has not changed due to proposed design change PS26. Therefore, the text within **Section 9.4** of Chapter 9 **[AS-025]** remains unchanged and valid.

ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

3.1.7. The assessment methodology and significance criteria for Biodiversity has not changed due to proposed design change PS26. Therefore, the text within **Section 9.5** of Chapter 9 **[AS-025]** remains unchanged and valid.

BASELINE CONDITIONS

3.1.8. The baseline for the Biodiversity assessment has updated due to proposed design change PS26. **Table 9.3** of the ES Addendum 1 **[CR1-124]** should be replaced with **Table 3.1** below where the rows for 'Running Water', 'Poor Semi-Improved Grassland', 'Line of Trees – Broadleaved', 'Intact Hedge Species Poor', and 'Fence' have been updated to reflect the change in Newbuild Infrastructure Boundary associated with PS26.

Table 3.1 – Habitats within the Newbuild Infrastructure Boundary and their Importance

Habitat	HPI / BAP	Area (Ha) or Length (km)	Approximate Area (% of overall Newbuild Infrastructure Boundary)
Broad-leaved semi-natural woodland	✓	3.60ha	0.79
Broad-leaved plantation woodland		3.27ha	0.72
Mixed semi-natural woodland		7.35ha	1.61
Mixed plantation woodland		0.37ha	0.08
Scattered broadleaved and coniferous trees		0.54ha	0.12
Standing water (for example, ponds) and canals	✓	1.18ha	0.26
Running water (for example, ditches, rivers, and streams)	✓	2.19ha	0.48
Ephemeral short perennial		0.01ha	0.00
Arable		155.93ha	34.14
Poor semi-improved grassland		41.46ha	9.08
Improved grassland		177.04ha	38.76

Habitat	HPI / BAP	Area (Ha) or Length (km)	Approximate Area (% of overall Newbuild Infrastructure Boundary)
Neutral unimproved grassland		0.84ha	0.18
Neutral semi-improved grassland		15.93ha	3.49
Marshy grassland		7.89ha	1.73
Dense/continuous scrub		5.16ha	1.13
Scattered scrub		1.90ha	0.42
Continuous bracken		0.002ha	0.00
Tall ruderal		1.94ha	0.42
Introduced shrub		0.007ha	0.00
Amenity grassland		1.89ha	0.41
Buildings		1.49ha	0.33
Bare ground		2.71ha	0.59
Other habitat		2.42ha	0.53
Hardstanding		21.67ha	4.74
Scattered scrub		0.25km	-
Line of trees – broadleaved		3.2km	-
Line of trees – coniferous		0.30km	-
Line of trees – mixed		0.03km	-
Running water (for example, ditches, rivers, and streams)	✓	6.34km	-
Intact hedge species rich	✓	3.68km	-
Intact hedge species poor	✓	17.4km	-

Habitat	HPI / BAP	Area (Ha) or Length (km)	Approximate Area (% of overall Newbuild Infrastructure Boundary)
Defunct hedge species rich	✓	0.54km	-
Defunct hedge species poor	✓	4.57km	-
Hedge with trees species rich	✓	3.03km	-
Hedge with trees species poor	✓	7.57km	-
Fence		8.86km	-
Dry ditch		3.53km	-
Earth bank		0.17km	

3.1.9. No other baseline conditions for Biodiversity included in **Section 9.6** of Chapter 9 **[AS-025]** or ES Addendum 1 **[CR1-124]** are affected by proposed design change PS26 and therefore this section remains unchanged and valid.

SENSITIVE RECEPTORS

3.1.10. The sensitive receptors for the Biodiversity assessment have not changed due to proposed design change PS26. Therefore, the text within **Section 9.7** of Chapter 9 **[AS-025]** remains unchanged and valid.

DESIGN DEVELOPMENT, IMPACT AVOIDANCE, AND EMBEDDED MITIGATION

3.1.11. The design development, impact avoidance and embedded mitigation for Biodiversity have not changed due to proposed design change PS26. Therefore, the text within **Section 9.8** of Chapter 9 **[AS-025]** and ES Addendum 1 **[CR-124]** remains unchanged and valid.

ASSESSMENT OF LIKELY IMPACTS AND EFFECTS

3.1.12. There are no changes to the likely impacts and effects previously identified for Biodiversity due to proposed design change PS26. Therefore, the text within **Section 9.9** of Chapter 9 **[AS025]** and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

MITIGATION AND ENHANCEMENT MEASURES

3.1.13. The mitigation and enhancement measures for Biodiversity have not changed due to proposed design change PS26. Therefore, the text within **Section 9.10** of Chapter 9 **[AS-025]** and of the ES Addendum 1 **[CR1-124]** remains unchanged and valid.

RESIDUAL EFFECTS

3.1.14. No additional residual effects have been identified for Biodiversity due to proposed design change PS26. Therefore, the text within **Section 9.11** of Chapter 9 **[AS-025]** and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

IN-COMBINATION CLIMATE CHANGE IMPACTS

3.1.15. There are no additional in-combination climate change impacts identified for the Biodiversity assessment as a result of proposed design change PS26. Therefore, the text within **Section 9.12** of Chapter 9 **[AS-025]** remains unchanged and valid.

MONITORING

3.1.16. Proposed design change PS26 does not change the requirements for monitoring measures during construction. Therefore, the text within **Section 9.13** of Chapter 9 **[AS-025]** remains unchanged and valid.

CONCLUSIONS

3.1.17. Proposed design change PS26 as set out in **Table 1.1** does not result in changes to the likely significant effects as reported in Chapter 9 **[AS-025]** or ES Addendum 1 **[CR1-124]** for biodiversity. The 2022 ES conclusions are therefore not materially changed for this topic.

3.2. POPULATION AND HUMAN HEALTH

INTRODUCTION

3.2.1. **Chapter 16: Population and Human Health** of the 2022 ES **[APP-068]** reports the outcome of the assessment of the likely significant effects of the DCO Proposed Development on Population and Human Health.

3.2.2. This ES Addendum 2 chapter considers only the likely significant effects resulting from proposed design change PS26 as outlined in **Table 1-1** of this ES Addendum 2.

LEGISLATIVE AND POLICY FRAMEWORK

3.2.3. There are no additional relevant legislation or policies relating to population and human health due to proposed design change PS26. The text within **Section 16.2** of the 2022 ES **[APP-068]** and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

SCOPING OPINION AND CONSULTATION

3.2.4. The scoping opinion has not changed, and no additional consultation has been undertaken regarding proposed design change PS26 in relation to Population and Human Health.

3.2.5. No amendments to **Appendix 1.3 – Environmental Statement – Scoping Opinion Responses [APP-076]** are required in relation to Population and Human Health due to proposed design change PS26. Therefore, the text within **Section 16.3** of the 2022 ES **[APP-068]** remains unchanged and valid.

SCOPE OF THE ASSESSMENT

3.2.6. The scope of the assessment for Population and Human Health has not changed due to proposed design change PS26. Therefore, the text within **Section 16.4** of the 2022 ES **[APP-068]** remains unchanged and valid.

ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

3.2.7. The assessment methodology and significance criteria for Population and Human Health has not changed due to proposed design change PS26. Therefore, there text within **Section 16.5** of the 2022 ES **[APP-068]** remains unchanged and valid.

BASELINE CONDITIONS

3.2.8. The baseline conditions for Population and Human Health have not changed due to proposed design change PS26. The text within **Section 16.6** of the 2022 ES **[APP-068]** and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

SENSITIVE RECEPTORS

3.2.9. The sensitive receptors for the Population and Human Health assessment have not changed due to proposed design change PS26. Therefore, the text within

Section 16.7 of the 2022 ES **[APP-068]** and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

DESIGN DEVELOPMENT, IMPACT AVOIDANCE, AND EMBEDDED MITIGATION

3.2.10. The design development, impact avoidance and embedded mitigation for Population and Human Health have not changed due to proposed design change PS26. Therefore, the text within **Section 16.8** of the 2022 ES **[APP-068]** remains unchanged and valid.

ASSESSMENT OF LIKELY IMPACTS AND EFFECTS

3.2.11. There are changes to the likely impacts and effects previously identified within the 2022 ES **[APP-068]**.

3.2.12. The change to the Newbuild Infrastructure Boundary at 2 Sisters Food Group (PS26) is proposed to reduce construction impacts on the operations of 2 Sisters Food Group at Glendale Business Park located within Section 4 of the DCO Proposed Development. The change to the Newbuild Infrastructure Boundary would improve through-construction traffic movements and minimise the temporary loss of car parking for 2 Sisters Food Group.

3.2.13. Therefore, the information provided for 2 Sisters Food Group in **Table 16.23** of the 2022 ES **[APP-068]** should be replaced with information provided in **Table 3.2** below:

Table 3.2 – Affected Businesses in Section 4

Business Name/ Location	Effect Details	Sensitivity	Magnitude of Impact
2 Sisters Food Group, Glendale Business Park, Chester Road	Part of the car park will be temporarily required for construction of the DCO Proposed Development.	High	Moderate

3.2.14. **Paragraphs 16.9.97** and **16.9.98** of the 2022 ES **[APP-068]** should be replaced with the following text:

2 Sisters Food Group has a large site located at the Glendale Business Park, of which the car park may experience some through-construction traffic in order to access the construction compound. Although the majority car park will remain in operation throughout construction, there is potential it could result in some disruption and temporarily restrict access to the site for employees and customers. Due to the size of the site, it is of a high sensitivity.

*The magnitude of effect is anticipated to be moderate, resulting in a **moderate adverse (significant)** temporary, short-term effect on 2 Sisters Food Group.*

3.2.15. All other assessment of likely impacts and effects text within **Section 16.9** of the 2022 ES **[APP-068]** and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

MITIGATION AND ENHANCEMENT MEASURES

3.2.16. The mitigation and enhancement measures for Population and Human Health have not changed due to proposed design change PS26. Therefore, the text within **Section 16.10** of the 2022 ES **[APP-068]** remains unchanged and valid.

RESIDUAL EFFECTS

3.2.17. One change to the previous residual effects has been identified for Population and Human Health due to the proposed design change (PS26) at 2 Sisters Food Group at Glendale Business Park.

3.2.18. The pre-mitigation effects on the 2 Sisters Food Group have changed from large to moderate adverse and the residual effect from moderate to minor adverse. Therefore, the information provided for 2 Sisters Food Group in **Table 16.31** in the 2022 ES **(APP-068)** should be replaced with the information provided in **Table 3.3** below.

Table 3.3 – Summary of Construction Residual Effects

Description of the effect	Pre-mitigation significance of effects	Mitigation measure	Residual effect
Section 4			
Temporary loss of land and disruption to access to 2 Sister's Food Group	***Moderate adverse (Significant)***	Engagement with affected users. Development of a mitigation plan with 2 Sister's Food Group.	*Minor adverse (not significant)*

3.2.19. All other residual effects reported within **Section 16.11** of the 2022 ES **[APP-068]** and ES Addendum 1 **[CR1-124]** remain unchanged and valid.

IN-COMBINATION CLIMATE CHANGE IMPACTS

3.2.20. There are no additional in-combination climate change impacts identified for the Population and Human Health assessment from proposed design change

PS26. Therefore, the text within **Section 16.12** of the 2022 ES **[APP-068]** remains unchanged and valid.

MONITORING

3.2.21. Proposed design change PS26 does not change the requirements for monitoring measures during construction. Therefore, the text within **Section 16.13** of the 2022 ES **[APP-068]** remains unchanged and valid.

CONCLUSIONS

3.2.22. Proposed design change PS26 as set out in **Table 1.1** does not result in changes to the likely significant effects as reported in the 2022 ES **[APP-068]** or ES Addendum 1 **[CR1-124]** for Population and Human Health. The 2022 ES conclusions are therefore not materially changed for this topic.

3.3. WATER RESOURCES AND FLOOD RISK

INTRODUCTION

3.3.1. **Chapter 18: Water Resources and Flood Risk** of the 2022 ES **[APP-070]** reports the outcome of the assessment of the likely significant effects of DCO Proposed Development on the Water Environment.

3.3.2. This ES Addendum chapter considers only the likely significant effects resulting from proposed design change PS26 as outlined **Table 1-1** of this ES Addendum 2.

3.3.3. **Appendices 18.2** and **18.3** of the 2022 ES **(APP-164, APP-165)** have also been updated as a result of proposed design change PS26. The updated appendices addenda can be found in **Appendix B** of this ES Addendum 2.

LEGISLATIVE AND POLICY FRAMEWORK

3.3.4. There are no additional relevant legislation or policies relating to the water environment due to proposed design change PS26. Since the publication of the 2022 **ES [APP-070]** and ES Addendum 1 **[CR1-143]**, there have been no updates to relevant legislation and policy. Therefore, the text within **Section 18.2** of the 2022 ES **[APP-070]** and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

SCOPING OPINION AND CONSULTATION

3.3.5. The scoping opinion has not changed, and no additional consultation has been undertaken regarding proposed design change PS26 in relation to the water environment.

3.3.6. No amendments to **Appendix 1.3 – Environmental Statement – Scoping Opinion Responses [APP-076]** are required in relation to the water environment due to proposed design change PS26. Therefore, the text within **Section 18.3** of the 2022 ES **[APP-070]** remains unchanged and valid.

SCOPE OF THE ASSESSMENT

3.3.7. The scope of the assessment for the water environment has not changed due to proposed design change PS26. Therefore, the text within **Section 18.4** of the 2022 ES **[APP-070]** and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

3.3.8. The assessment methodology and significance criteria for the water environment has not changed due to proposed design change PS26. Therefore, the text within **Section 18.5** of the 2022 ES **[APP-070]** remains unchanged and valid.

BASELINE CONDITIONS

3.3.9. The baseline for the water environment assessment has not changed due to proposed design change PS26. Therefore, the text within **Section 18.6** of the 2022 ES **[APP-070]** and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

SENSITIVE RECEPTORS

3.3.10. The sensitive receptors for the water environment assessment have not changed for proposed design change PS26. Therefore, the text within **Section 18.7** of the 2022 ES **[APP-070]** and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

DESIGN DEVELOPMENT, IMPACT AVOIDANCE, AND EMBEDDED MITIGATION

3.3.11. The design development, impact avoidance and embedded mitigation for the water environment have not changed due to proposed design change PS26. Therefore, the text within **Section 18.8** of the 2022 ES **[APP-070]** and ES Addendum 1 **[CR1-124]** remains unchanged and valid.

ASSESSMENT OF LIKELY IMPACTS AND EFFECTS

3.3.12. The detailed assessment presented in **Appendix 18.2 – Assessment of Effects** of the 2022 ES **[APP-164]** and ES Addendum 1 – Appendix A **[CR1-125]** has been updated to consider proposed design change PS26. The updated **Appendix 18.2** for PS26 and can be found in **Appendix B** of this ES Addendum 2.

3.3.13. As the update to **Appendix 18.2** of the 2022 ES **[APP-164]** and ES Addendum 1 – Appendix A **[CR1-125]** does not conclude any significant likely effects the text in **Section 18.9** of the 2022 ES **[APP-070]** remains valid and unchanged.

MITIGATION AND ENHANCEMENT MEASURES

3.3.14. The mitigation and enhancement measures for the water environment have not changed due to proposed design change PS26. Therefore, the text within **Section 18.12** of the 2022 ES **[APP-070]** remains unchanged and valid.

RESIDUAL EFFECTS

3.3.15. No additional residual effects have been identified for the water environment due to proposed design change PS26. Therefore, the text within **Section 18.11** of the 2022 ES **[APP-070]** remains unchanged and valid.

IN-COMBINATION CLIMATE CHANGE IMPACTS

3.3.16. There are no additional in-combination climate change impacts identified for the water environment assessment from proposed design change PS26. Therefore, the text within **Section 18.12** of the 2022 ES **[APP-070]** remains unchanged and valid.

MONITORING

3.3.17. Proposed design change PS26 does not change the requirements for monitoring measures during construction. Therefore, the text within **Section 18.13** of the 2022 ES **[APP-070]** remains unchanged and valid.

CONCLUSIONS

3.3.18. Proposed design change PS26 as set out in **Table 1.1** does not result in changes to the likely significant effects as reported in the 2022 ES **[APP-070]** for water resources and flood risk. The 2022 ES conclusions are therefore not materially changed for this topic.

3.4. SUMMARY OF LIKELY SIGNIFICANT EFFECTS

INTRODUCTION

3.4.1. **Chapter 20 – Summary of Likely Significant Effects** of the 2022 ES **[APP-072]** and ES Addendum 1 **[CR1-124]** provides a summary of the likely significant effects reported in the ES.

3.4.2. This ES Addendum chapter updates the summary of significant effects presented within each of the **Technical Chapters 6 to 19** resulting from proposed design change PS26 as outlined in **Table 1.1** of this ES Addendum.

3.4.3. The majority of the text presented within **Chapter 20** of the 2022 ES **[APP-072]** and ES Addendum 1 **[CR1-124]** has not changed due to proposed design change PS26. However, **Table 20.1 – Summary of Likely Significant Environmental Effects** of the ES Addendum 1 **[CR1-124]** requires an update to take account of one change to likely significant effects as follows:

- In Chapter 16 – Population and Human Health, the effect of temporary loss of land and disruption to access to 2 Sister's Food Group during the construction phase has reduced in significance for pre-mitigation from large adverse (significant) to moderate adverse (significant) and the residual effect from moderate adverse (significant) to minor adverse (not significant). Therefore, the 'Temporary loss of land and disruption to access to 2 Sister's Food Group' effect should be removed from **Table 20.1** of ES Addendum 1 **[CR1-124]**.

3.4.4. The remaining text within **Chapter 20** of the ES **[APP-072]** and ES Addendum 1 **[CR1-124]** remains unchanged and valid.