HyNet North West

ENVIRONMENTAL STATEMENT (VOLUME I)

Non-Technical Summary (Clean)

HyNet Carbon Dioxide Pipeline DCO

Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 – Regulations 5(2)(a)

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1. INTRODUCTION

1.1. OVERVIEW

1.1.1. Liverpool Bay CCS Limited (The Applicant) intends to build and operate a new underground carbon dioxide pipeline, including some above-ground features, from Cheshire in England to Flintshire in Wales. This is referred to as the 'proposed development'.

1.1.2. The proposed development will form part of the wider HyNet North West Project (HyNet) which will transport carbon dioxide captured from existing industries in North Wales and the North West England, as well as from new hydrogen production facilities that are proposed as part of HyNet. The captured carbon dioxide will be stored in depleted offshore gas reservoirs. Government considers Carbon Capture and Storage (CCS) technology as key to achieving the Government's 2050 net zero emission targets and the technology is therefore supported in national planning policy.

1.1.3. Due to the characteristics of the proposed development, it qualifies as a Nationally Significant Infrastructure Project (NSIP). The Applicant is therefore applying for a Development Consent Order (DCO) under the Planning Act 2008 from the Secretary of State (SoS) for Business, Energy and Industrial Strategy (BEIS). The DCO will grant powers to build and operate the proposed development.

1.1.4. The Applicant has undertaken an Environmental Impact Assessment (EIA) to understand the likely significant environmental effects of the construction, operation and decommissioning of the proposed development. The findings of the EIA are reported in an Environmental Statement (ES), which will inform the decision on whether the DCO should be granted.

1.1.5. The location of the proposed development is shown in **Figure 1 - Location of the proposed development**. This illustrates the geographical boundary of the DCO Application, known as the 'Order Limits'. This includes the extent of where the proposed development will involve physical works, known as the 'Newbuild Infrastructure Boundary', as well as a stretch of existing pipeline which will be repurposed to transport carbon dioxide.

1.2. PURPOSE OF THIS NON-TECHNICAL SUMMARY

1.2.1. This document is a Non-Technical Summary (NTS) of Volume II of the ES. It provides a summary of how the design has evolved, what likely significant environmental effects are predicted and how these have been mitigated or compensated for.

1.2.2. ~~This~~ Revision B of the ~~Non-Technical Summary~~ NTS replace~~d~~s and supersede~~d~~s NTS (Revision A) ~~and provides updated information~~ in response to

~~the proposed design changes as outlined in Table i.i of Chapter I of the ES Addendum 2023~~ Design Change Request 1. This Revision C replaces and supersedes NTS (Revision B) in response to Design Change Request 2.

2. THE HYNET PROJECT

2.1.1. The proposed development is a key part of the wider HyNet project.

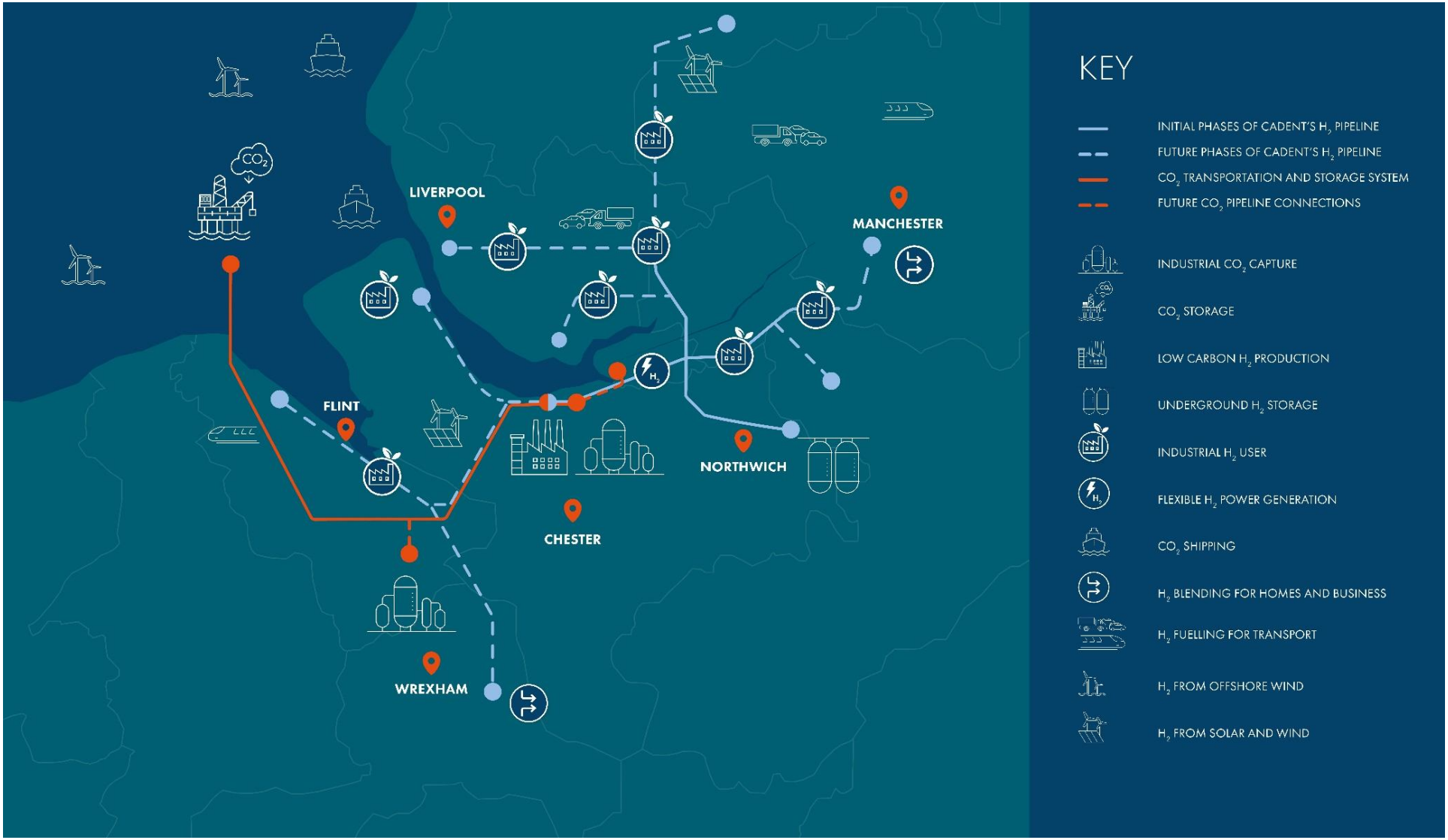
2.1.2. HyNet is made up of several different elements. Together, these will provide the infrastructure to produce, transport and store low carbon hydrogen across the North West and North Wales. There will also be the infrastructure to capture, transport and lock away carbon dioxide emissions.

2.1.3. HyNet aims to reduce carbon dioxide emissions from being released into the atmosphere and stimulate economic growth in the North West of England, North Wales, and further afield.

2.1.4. HyNet involves both upgrading and re-purposing existing infrastructure, as well as developing new infrastructure. This includes underground pipelines, hydrogen production plants and storage facilities. HyNet will be developed in phases with each phase being subject to separate environmental assessments and applications for consent.

2.1.5. A representation of the wider HyNet project, for which the proposed development forms a part of, is shown in **Image 1 - Indicative representation of HyNet** below.

Image 1 - Indicative representation of HyNet



3. THE PROPOSED DEVELOPMENT

3.1. KEY ELEMENTS OF THE PROPOSED DEVELOPMENT

3.1.1. The proposed development comprises the construction and operation of the components described below, and which are illustrated in **Figure 2 – The proposed development**.

New and repurposed underground carbon dioxide pipeline

3.1.2. Approximately 36km of new underground pipeline from Ince in England to Flint in Wales will be constructed. This will transport the carbon dioxide captured as part of the HyNet project. The route passes through the local authority areas of Cheshire West and Chester Council, and Flintshire County Council. It predominantly crosses agricultural fields and rural land. The majority of the new pipeline will be 36-inch in diameter, with some 20-inch and 24-inch sections. A fibre optic telecommunications cable will be installed alongside the new pipeline to connect the above ground infrastructure (see sections below on 'Above Ground Installations' and 'Block Valve Stations'). At Flint, the new pipeline will connect to an existing underground pipeline (shown on **Figure 2 – The proposed development**) which will be repurposed to allow the onward flow of carbon dioxide to the Point of Ayr Terminal. The existing pipeline currently transports natural gas, therefore the DCO Application seeks consent to allow this existing pipeline to be repurposed to transport carbon dioxide.

Above Ground Installations

3.1.3. Four Above Ground Installations (AGIs) are required to connect the carbon dioxide capture facilities in the industrial areas to the new pipeline. The AGIs will each be fenced areas with footprints up to approximately 70m x 80m and will have an access track joining them to the existing road network. Visible equipment above ground will be up to 5m high, with various other equipment above and below ground to serve maintenance and operation functions. The four proposed AGIs are located at:

- Ince - near Elton, England;
- Stanlow – near Thornton-le-Moors, England;
- Northop Hall – near Northop, Wales; and
- Flint – near Oakenholt, Wales.

Block Valve Stations

3.1.4. Six Block Valve Stations (BVS) are required to enable sections of the new pipeline system to be isolated for maintenance purposes or in an emergency. The BVSs will appear broadly similar to the AGIs as fenced areas with visible

equipment up to 5m high, but will have a smaller footprint of up to approximately 35m x 30m. Each BVS will also include a new access track connecting to the existing road network. Of the six BVSs, three will be along the new pipeline with two in England and one in Wales. A further three will be located in Wales along the existing pipeline which will be repurposed, as described above. The locations are as follows:

- Rock Bank – near Backford, England;
- Mollington – near Mollington, England;
- Aston Hill – near Mancot and Pentre, Wales;
- Cornist Lane – near Flint, Wales;
- Pentre Halkyn – near the Pentre Halkyn and Brynford, Wales; and
- Babell – near Babell and Ysceifog, Wales.

Embedded Pipe Bridge option

3.1.5. 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 span of the embedded pipe bridge across the brook 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.

Other above ground features

~~3.1.5.~~3.1.6. Other minor above ground structures will be installed including:

- Features associated with the pipeline's anti-corrosion system, including small test posts located at intervals along the pipeline as well as an approximately 1m high cabinet to the north of the River Dee.
- Pipeline position marker posts along the pipeline route.

3.2. CONSTRUCTION

OVERVIEW

3.2.1. The construction stage is anticipated to commence in 2024 and last approximately 16 months.

3.2.2. To reduce the construction time, works will be programmed to take place concurrently, wherever this is practicable and where it does not exacerbate environmental impacts.

3.2.3. A typical working day will be 08:00-18:00 (excluding bank holidays). However, some works will require periods of 24-hour working to allow the works to be completed safely and promptly. This includes where trenchless crossing construction methods would be used, which is briefly explained later in this NTS.

3.2.4. Temporary construction compounds will be required and will be established at the start of the construction programme. Seven main compounds, known as centralised compounds, will be located at key locations along the route of the proposed development. The centralised compounds will be used for storing plant and materials and providing staff offices and welfare facilities. These centralised compounds will be in place for the duration of the construction stage.

3.2.5. A series of smaller compounds, which are referred to as localised compounds, will be required to support specific works, such as the AGIs/BVSs and some watercourse crossings. In most cases, these localised compounds will be removed following completion of the works they serve, which is expected to be up to three months. However, localised compounds serving AGIs and BVSs will be in place for the duration of the construction stage.

3.2.6. All construction compounds will be fenced, include parking provision and temporary lighting and will be accessed from the existing road network.

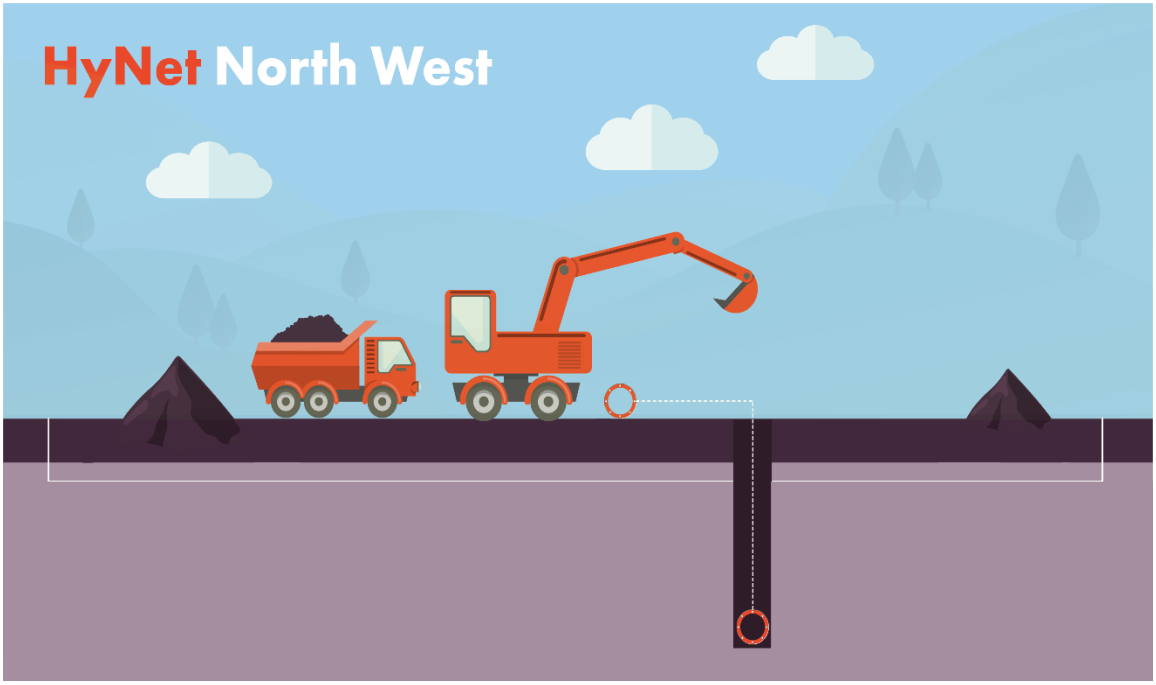
3.2.7. In most cases, temporary access for construction works will use existing access points, such as field gates. However, in some locations new access points will need to be created.

CONSTRUCTION METHODS

Pipeline construction

3.2.8. In most cases, the new pipeline will be constructed via an ‘open-cut trench’ method. This involves excavating a trench into which the pipe is lowered. The trench is then filled using the material that was originally excavated to create the trench. The depth of the trench will vary from approximately 2.5m – 6m. An illustration of the typical arrangement for open-cut trench excavation is shown in **Image 2 - Illustration of a typical arrangement for open-cut trench excavation** below.

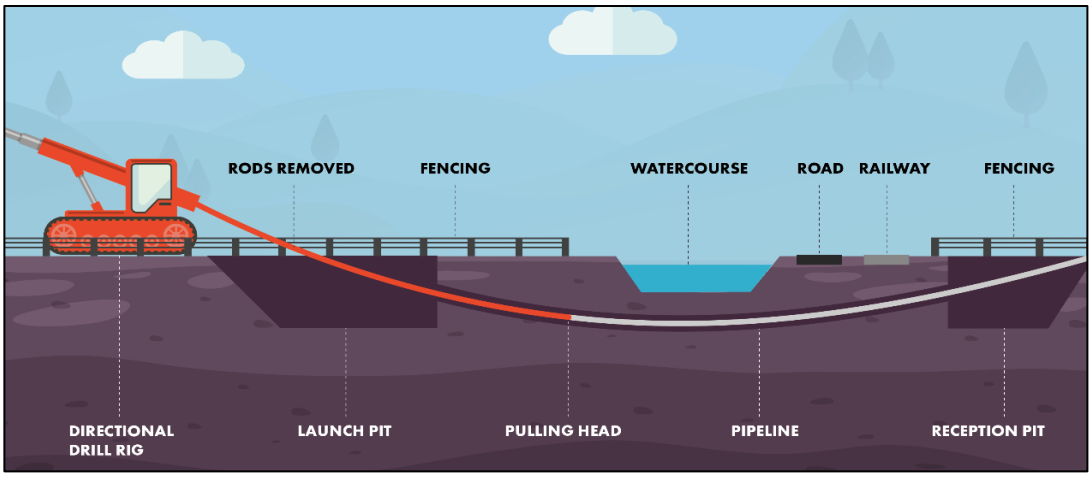
Image 2: Illustration of a typical arrangement for open-cut trench excavation



3.2.9. The open-cut trench construction works will be within a working area, known as the working width which will be up to 32m wide, potentially less where environmental impacts, such as vegetation loss, need to be reduced.

3.2.10. At certain locations where the pipeline needs to cross highly sensitive environmental features or existing infrastructure such as railways or major roads, a construction method known as ‘trenchless crossing’ will be used. This involves tunnelling the pipeline under the feature or infrastructure being crossed to avoid disturbance. There are various methods of trenchless crossings available. All methods involve the same principle of establishing a start and end point and using specialist machinery to tunnel the pipeline below the feature. The specific method selected will be decided upon during the final design stage with consideration of reducing potential environmental impacts as far as reasonably practicable. An illustration of an indicative arrangement of a trenchless crossing method is shown in **Image 3 - Illustration of a typical arrangement for trenchless crossing** below.

Image 3 – Illustration of a typical arrangement for trenchless crossing



3.2.11. The fibre optic cable will typically be installed alongside the pipe in the open trench or trenchless tunnel. However, there may be instances where the cable requires its own dedicated trenchless crossing, which will be constructed near the pipeline's crossing.

3.2.12. Following installation of the pipeline, the ground will be reinstated.

Above Ground Installation and Block Valve Station Construction

3.2.13. The construction method for AGIs and BVSs will be similar and will typically involve:

- construction of the permanent access track;
- erection of secure fencing for construction works;
- installation of utility connections;
- earthworks to establish foundation levels;
- construction of foundation bases and above ground structures;
- construction of pipework and equipment and associated infrastructure; and
- restoration of temporary land use and landscaping works.

3.3. OPERATION AND MAINTENANCE

3.3.1. The proposed development has a design life of up to 40 years.

3.3.2. Once built, restrictions will be placed on the land up to approximately 24m from the pipeline (approximately 12m either side of the pipeline). The restrictions will prevent activities which could damage the pipeline, such as construction works or planting large trees. However, most existing activities will be able to resume, including farming.

3.3.3. The AGIs and BVSs will be operated remotely but will require periodic visits for maintenance and inspection. The new pipeline system will be monitored remotely from an existing central control room at the Point of Ayr terminal.

3.3.4. A leak detection system will be installed to remotely monitor and identify any leaks to the pipeline system. Should any be identified, the operations team would be alerted and the BVSs used to isolate the pipeline and minimise carbon dioxide loss. An anti-corrosion system will also be installed to protect the pipeline system from damage caused by corrosion.

3.3.5. During normal daily operation, there would be no venting of carbon dioxide from the proposed development. However, some highly infrequent controlled maintenance activities will require temporary venting of small amounts of carbon dioxide. This would be performed via controlled activities at the Ince, Stanlow and Flint AGIs and is anticipated to be required approximately every two years and last a few hours across a period of up to two weeks in each instance. The venting of carbon dioxide would be via a temporary stack, which will be removed once the venting activity has taken place.

3.3.6. Only the lighting at Stanlow AGI will be permanently lit through the night due to its industrial setting and operational requirements. Lighting columns at all other AGIs and BVSs will only operate should there be a security or safety reason to do so, such as a maintenance visit.

3.4. DECOMMISSIONING

3.4.1. At the end of the proposed development's operating life, the new pipeline will be safely decommissioned and left in place. The AGIs, BVSs and embedded pipe bridge (if taken forward) will be removed, and the land restored to its former use.~~the end of the proposed development's operating life, the new pipeline will be safely decommissioned and left in place. The AGIs and BVSs will be removed, and the land restored to its former use~~.

3.5. EVOLUTION OF THE PROPOSED DEVELOPMENT

3.5.1. The design of the proposed development has evolved iteratively to take account of new information obtained from consultation with stakeholders, as well as environmental studies and engineering input. This has ensured that the design is optimised to reduce or avoid environmental impacts where possible, as well as to reflect the interests of stakeholders, whilst ensuring the engineering and construction requirements are met.

3.5.2. The evolution of the design process has been guided by the following principles:

- To avoid, minimise and manage impacts on the environment and local amenity.

- To ensure the transportation of the CO_2 is undertaken safely and securely.
- To optimise the potential socio-economic benefits within the region.
- To be technically viable and constructible with minimum disruption.
- To be cost-effective.

3.5.3. Establishing the route of the proposed development was achieved by working through the following three-stage process:

- Stage 1: Development and appraisal of strategic corridors.
- Stage 2: Development and appraisal of route options.
- Stage 3: Refinement of preferred route option.

3.5.4. At each stage, an appraisal was undertaken against the guiding principles to determine which option was considered superior overall in terms of environmental, social and economic outcomes, construction complexity and safety, business case and opportunities for connections to industrial emitters. Consultation with stakeholders and the public was also undertaken during stages 2 and 3. The preferred option of each stage was progressed into the subsequent stage, continually refining the design until reaching the final version of the proposed development.

3.5.5. The proposed development includes a route corridor of approximately 100m within which the new pipeline will be located. The final alignment of the pipeline within this corridor will be refined by the construction contractor and their designers at the next design stage. The pipeline and all its associated infrastructure will be within the geographic boundaries set by the DCO. The findings of the EIA have set commitments which are contained within the Register of Environmental Actions and Commitments, which sits alongside the ES and the DCO Application. These commitments will be followed during the development of the final design and through construction, such as avoiding impacts to ancient woodland and reducing the visual impact of the proposed development.

3.5.6. The location and size of AGIs and BVSs are largely led by technical engineering considerations. However, local conditions such as land use and visual impacts, presence of existing utilities and access were also considered during the design to reduce potential impacts. For example, the locations of certain AGIs and BVSs were refined following feedback from stakeholders and further studies. This includes the position of the Flint AGI, which was modified following feedback from the landowner to reduce disturbance to their land, while a BVS proposed at Coed-Y-Cra was removed to optimise the design following technical studies that established that the other proposed facilities could meet the needs of the development. Further stakeholder and landowner engagement

has also led to the locations of Cornist Lane BVS and Northop Hall AGI being refined.

3.5.7. Construction methods and locations have been refined as part of the iterative evolution of the design. This has included changing the location and/or method of crossings in some locations, such as: moving the crossing of Mollington Railway further south due to studies identifying the presence of a water main; changing from open-cut crossings to trenchless crossings to avoid environmental impacts; and, changing to open cut methods where further information on existing conditions has identified trenchless techniques would not be possible.

3.5.8. Centralised compound locations have been refined to reduce environmental and social impacts whilst still ensuring that a sufficient number and size of compounds are included to deliver the works. Changes include combining two centralised compounds near Stanlow Manufacturing Complex. The location of the compound here has also been refined, to reduce impacts on traffic flows, nearby residents and a cultural heritage asset.

4. ENVIRONMENTAL ASSESSMENT METHODOLOGY

4.1.1. The EIA has been undertaken in accordance with the relevant regulations. It has followed applicable industry guidance and best practice and has been undertaken by a suitably qualified project team.

4.1.2. Consultation and engagement have played a critical role in ensuring that the scope of the EIA is agreed upon with all relevant stakeholders. The Applicant set out the proposed scope of the EIA in a Scoping Report which was submitted to the Planning Inspectorate in June 2021. The Planning Inspectorate consulted with organisations, such as the Environment Agency and Natural Resources Wales, and returned their scoping opinion in July 2021 which confirmed the scope of the EIA. The assessment described in the ES reflects that scoping opinion.

4.1.3. The Applicant consulted on a Preliminary Environmental Information Report (PEIR) between February and March 2022. This provided stakeholders and the public an opportunity to comment on the initial findings of the EIA. Ongoing engagement with a wide range of stakeholders has continued throughout the EIA to obtain information, discuss assessment methods and provide early sight of findings for comment.

4.1.4. Data on the existing environment has been collected via a range of methods, including extensive site surveys, desktop research and consultation with various organisations. This allowed an understanding of what aspects of the existing environment may be impacted by the proposed development, known as ‘receptors’. Key environmental receptors are shown in **Figure 3 – Key environmental receptors**.

4.1.5. The assessments considered what likely impacts the proposed development would have on the existing environment by following relevant guidance, industry best practice and professional judgement. Mitigation measures have subsequently been proposed to avoid or otherwise reduce the potential effects. This includes incorporating measures into the design of the proposed development, as well as identifying further measures which will be implemented during later stages, such as construction or operation.

4.1.6. The EIA also considers where multiple impacts may affect the same receptor at the same time, resulting in either combined effects (where they are due to different impacts from the proposed development) or cumulative effects (where they are due to impacts from the proposed development and other developments).

4.1.7. Where the EIA predicts likely environmental effects following the consideration of mitigation, these are known as ‘residual’ effects and have been summarised in later sections of this NTS.

4.1.8. The final design will be developed by the Construction Contractor, following the granting of the DCO. This includes, for example, specifying the exact alignment of the new pipeline within the 100m corridor and the method of trenchless crossings at each location. Therefore, where specific details are not known, the EIA considers reasonable worst-case assumptions to ensure that the EIA is robust and that likely significant effects are identified and accordingly mitigated.

5. SUMMARY OF ENVIRONMENTAL EFFECTS

5.1. AIR QUALITY

APPROACH TO THE ASSESSMENT

5.1.1. The air quality assessment considers potential impacts during the construction stage from dust and construction equipment emissions; the operation stage from the AGI venting for maintenance; and, potential impacts during the end-of-life decommissioning works.

5.1.2. Baseline air quality data was collected via a desktop study.

5.1.3. Sensitive receptors have been identified and include residential areas, schools, and ecological sites designated for nature conservation.

SUMMARY OF THE ASSESSMENT OUTCOMES

5.1.4. Baseline air quality conditions are good, with pollutant concentrations well within nationally set objectives.

5.1.5. Measures to control airborne pollutants during construction will be implemented through good site practice and dust management measures which will be included in a Construction Environmental Management Plan (CEMP).

5.1.6. Measures to control emissions from temporary venting during operation will include ensuring that the maximum rate of venting is controlled through the size of the vent valve.

5.1.7. With mitigation measures in place, no significant adverse effects on air quality are likely to occur during construction, operation, or end-of-life decommissioning.

5.2. CLIMATE RESILIENCE

APPROACH TO THE ASSESSMENT

5.2.1. The climate resilience assessment considers the vulnerability of the proposed development to climate change and its resilience to impacts from climate change, such as storms, droughts, extreme weather events, and sea level rise, among others.

5.2.2. The assessment involved a review of the likely future changes to the climate and associated weather conditions where the proposed development is located, and an assessment of the potential impacts these changes could have on each element of the proposed development.

5.2.3. The construction stage has been scoped out of the climate resilience assessment due to the short time frame and low vulnerability to climate change.

Therefore, the assessment considers the operation and end-of life decommissioning stages only.

5.2.4. Baseline data collection has been collected via desk study, using publicly available data.

SUMMARY OF THE ASSESSMENT OUTCOMES

5.2.5. The assessment's study considers the Met Office's climate data for North West England and Wales, which includes both the coldest place and the wettest place in England. The region is among the more exposed parts of the UK, being relatively close to the Atlantic Ocean and containing large uplands, therefore the region experiences strong winds. The temperature in the proposed development area is depends largely on altitude and distance from the coast, with inland lower lying areas experiencing higher average temperatures.

5.2.6. Mitigation measures include additional surveys of ground conditions will be undertaken before construction to gather additional information on aspects such as ground stability and groundwater to inform the development of the final design. A decommissioning environmental management plan will also be prepared before the end-of-life decommissioning to protect workers from climate change effects.

5.2.7. With mitigation measures in place, no significant adverse effects due to climate change impacts are considered likely to occur during construction, operation, or end-of-life decommissioning.

5.3. CULTURAL HERITAGE

APPROACH TO THE ASSESSMENT

5.3.1. The cultural heritage assessment considers potential impacts on heritage assets such as buried archaeological remains, as well as buildings, structures, monuments, and landscapes of cultural heritage interest.

5.3.2. The assessment considers the potential for impacts to occur during construction and operation, although, the new pipeline itself will have no continued impacts once construction is complete. Assessment of the end-of-life decommissioning stage is scoped out of the assessment as any buried archaeology will already have been impacted at the construction stage and the removal of the AGIs/BVSs will return the area to baseline conditions.

5.3.3. The assessment considers the potential for both direct impacts, such as physical damage to assets and indirect impacts, such as the surroundings in which the asset is experienced, known as the 'setting'.

5.3.4. Information on baseline conditions was collected through desk study, walkover survey and consultation. A geophysical survey, which involves using specialist

radars to collect data on below-ground conditions, was undertaken to better understand the below-ground assets in the area.

SUMMARY OF THE ASSESSMENT OUTCOMES

5.3.5. A total of 183 designated heritage assets have been identified within and near the boundary of the proposed development. This includes scheduled monuments, listed buildings and conservation areas. A further 29 non-designated assets have also been identified. Of these, only the following three designated heritage assets are within the boundary of the proposed development, which the design has sought to avoid direct impacts upon:

- Chester Canal Conservation Area;
- Thornton-le-Moors Conservation Area; and
- Holywell Common and the Halkyn Mountain Registered Historic Landscape.

5.3.6. The area crossed by the proposed development also includes a variety of archaeological evidence ranging from the prehistoric to the modern period, including Roman settlements and dykes. Fourteen previous archaeological investigations have also been undertaken within and nearby the boundary of the proposed development.

Image 4 – Church of St Mary, in Thornton-le-Moors Conservation Area (Grade I Listed Building)

5.3.7. Mitigation will be to preserve the history of the area by recording what is below the ground during construction within the proposed development boundary. This is done measures such as observation, investigation of features and written and drawn records. A programme of targeted archaeological trenching will be

undertaken and will inform the development of the final design, along with identifying any additional mitigation measures should additional features be identified. The scope and method for undertaking each stage of evaluation or mitigation will be detailed in a document known as a Written Scheme of Investigation, which will be prepared in consultation with the archaeological advisors of the relevant local authority. As the pipeline will be buried below ground, potential impacts on the setting of heritage assets during operation will be limited to the AGIs and BVSs and will be mitigated by landscaping around each facility to screen views.

5.3.8. With mitigation measures in place, there may be a significant adverse effect on any Bronze Age funerary remains that may survive during construction. There are no significant operation or end-of-life decommissioning effects.

5.4. BIODIVERSITY

APPROACH TO THE ASSESSMENT

5.4.1. Biodiversity is the variety of flora and fauna in an area. The assessment considers the potential impacts upon protected species and protected or valuable habitats, including nationally and internationally designated sites.

5.4.2. The assessment considers the potential for impacts during the construction, operation and end-of-life decommissioning stages. However, some elements such as reptiles and invasive non-native species are scoped out of the assessment as no likely significant effects are predicted.

5.4.3. A biodiversity net gain assessment has also been undertaken. This involves evaluating the change in biodiversity value of the land before and after the proposed development to ensure that an overall gain in biodiversity is delivered.

5.4.4. Information on the baseline conditions was collected through desk study, consultation and an extensive programme of surveys of various species and animal groups (including Great Crested Newt, bats, badger, otter, water vole, barn owl, breeding birds, wintering birds and fish), as well as habitat surveys.

Image 5 – A Palmate Newt, found during an ecology survey

SUMMARY OF THE ASSESSMENT OUTCOMES

5.4.5. Within and near to the proposed development are nine internationally designated sites (such as Special Areas of Conservation),12 nationally designated sites (such as Sites of Special Scientific Interest) and a further 38 non-statutory designated sites (such as Local Wildlife Sites). The design has sought to avoid these areas.

5.4.6. Mitigation and compensation for habitat loss will involve replacing lost habitat, such as hedgerows, in its original location and as soon as practicable after removal, and generally no more than a year after removal. Where this is not possible because, for example, there are restrictions on planting directly above the pipeline, new areas of planting are proposed. The landscape design at each BVS and AGI will also include habitat creation.

5.4.7. Impacts on protected species will be mitigated by further surveys before construction, to confirm and update baseline conditions where required, good site practice, fencing off sensitive areas, generally seeking to reduce disturbance and habitat loss during works as well as obtaining appropriate licences from the relevant statutory bodies, such as Natural Resource Wales and Natural England. Enhancement opportunities will be sought during construction, for example the erection of bat boxes for the benefit of roosting bats.

5.4.8. With mitigation measures in place, no significant adverse effects on biodiversity are likely to occur during construction, operation or end-of-life decommissioning.

5.5. GREENHOUSE GASES

APPROACH TO THE ASSESSMENT

5.5.1. Greenhouse Gas (GHG) emissions occur constantly and widely because of natural and human activity, including land use and land use change, transport, energy consumption and industrial processes within the region. GHG emissions generated from human activity principally include carbon dioxide, methane, and nitrous oxide.

5.5.2. The GHG assessment considers whether the emissions from the proposed development will result in additional or avoided emissions in comparison to current GHG emissions.

5.5.3. The assessment considers the construction, operation and end-of-life decommissioning stages. However, elements such as maintenance and repair during operation are scoped out of the assessment as emissions are deemed to be negligible.

5.5.4. Where data was available, GHG emissions over the life of the proposed development have been predicted. Relevant industry guidelines, publications or calculations have been used to aid predictions, where required. The GHG predictions have been compared against existing conditions, which assumes that any construction or operational activities associated with the proposed development are not required.

SUMMARY OF THE ASSESSMENT OUTCOMES

5.5.5. Proposed mitigation measures to reduce the GHG emissions produced include design optimisation to avoid or reduce the need to use materials, using locally sourced and sustainably produced materials and local waste disposal facilities. Efficient equipment will be used during operations, such as long-life bulbs for lighting in the AGIs and BVSs. The end-of-life decommissioning stage will maximise the potential for the reuse/repurposing, recycling and/or recovery of materials and components.

5.5.6. The operation of the proposed development is anticipated to contribute by 10 million tonnes every year by 2030 of avoided carbon dioxide emissions from HyNet.

5.5.7. With mitigation measures in place, no significant adverse GHG effects are predicted to occur during construction, operation or end-of-life decommissioning.

5.6. LAND AND SOILS

APPROACH TO THE ASSESSMENT

5.6.1. The land and soils assessment considers the following aspects:

- Soils - including agricultural soil and sensitive and vulnerable soils;
- Geology - including designated areas of geological interest and unstable natural ground;
- Minerals - including the presence of mineral safeguarding areas and mineral allocations and consents; and
- Contaminated land - including the presence of known or suspected contaminated material associated with landfills and other potentially contaminative past activities.

5.6.2. The assessment considers the construction, operation and end-of-life decommissioning stages. However, some elements such as impacts from contaminated land on human health during operation, are scoped out of the assessment as likely significant effects are not predicted.

5.6.3. Baseline information has been collected via desk study, consultation and ground investigation work. In addition, site visits were undertaken to survey targeted areas where potential sources of contamination were anticipated. Agricultural land surveys have also been undertaken and inform the assessment.

SUMMARY OF THE ASSESSMENT OUTCOMES

5.6.4. The area within and near the proposed development is predominantly in agricultural use. Various past and current land uses have been identified such as coal mining, landfill sites, quarrying and military land uses. However, overall, the area is considered to represent a low risk of contaminated land.

5.6.5. Mitigation measures include completing earthworks in accordance with a materials management plan to ensure re-used material does not present a risk to human health or the environment. A surface water drainage strategy will be applied temporarily during construction to limit any contaminated run-off entering surrounding watercourses. Soil and peat management plans will also be prepared and implemented during construction to set out how impacts upon these resources will be reduced.

5.6.6. With mitigation measures in place, the only predicted likely significant effect is predicted during construction due to the loss of approximately one hectare of high-quality agricultural land due to the introduction of the AGIs and BVSs. No significant adverse effects are predicted to occur during operation or end-of-life decommissioning.

5.7. LANDSCAPE AND VISUAL

APPROACH TO THE ASSESSMENT

5.7.1. The landscape and visual assessment considers the physical changes to the landscape and changes to how the landscape is perceived, as well as how the views people experience will change.

5.7.2. The assessment considers the construction, operation and end-of-life decommissioning stages. However, certain minor structures such as the pipeline marker posts are scoped out of all assessment stages as no likely significant effects are predicted. These include the intermittent night-time lighting, the marker posts, and the anti-corrosion system cabinet.

5.7.3. Baseline information was collected via desk study, site surveys and consultation. This included surveys to identify suitable viewpoints to better understand the character of the local landscape. Thirty-six viewpoints were chosen, in agreement with the local authorities' landscape officers, to represent key visual sensitive receptors, including settlements or Public Rights of Way (PRoWs).

SUMMARY OF THE ASSESSMENT OUTCOMES

5.7.4. The character of the landscape can be broadly categorised as open and flat with areas of gentle undulation. It predominantly comprises farmland with small settlements, though larger nearby urban and industrial areas such as Ellesmere Port and Stanlow Manufacturing Complex provide a backdrop to some views.

5.7.5. There is a network of PRoWs throughout the route of the proposed development, including the Wales Coastal Path.

5.7.6. Mitigation will include ensuring that the final design reduces the visual intrusion of construction working areas and loss of prominent vegetation. Areas required only for construction will be restored once construction has ended and plans will be produced which set out the details, such as species and locations, of the landscape features to be replaced.

5.7.7. Visual impacts of the AGIs and BVSs during operation will be mitigated by each facility having a bespoke landscaping plan to screen views from receptors by planting new trees, shrubs and hedgerows. A management plan will be prepared and implemented during the operation stage to ensure that the planting is well managed and maintained.

5.7.8. ~~With~~ With mitigation measures in place, significant effects during construction are predicted on four landscape character areas, located near the River Dee, Flint, and Pentre Halkyn. Significant effects are also predicted upon 29 visual receptors located broadly throughout the route and include residential receptors

of areas such as Mollington, Old Aston Hill and Saughall as well as users of some public footpaths, such as near Flint and the Shropshire Union Canal.

5.7.8. During operation, significant effects are predicted on nine visual receptors during the first year of operation. This includes residents of areas such as Bryn Mawr and Cornist Lane as well as users of some public footpaths, such as the Shropshire Union Canal and North Cheshire Way. Once the landscape planting has matured, no significant effects are likely to occur during operation. During end-of-life decommissioning stage, temporary significant effects are predicted upon some PRoWs, and the same receptors that would be affected by the BVS, AGI and Alltami Brook embedded pipe bridge option construction stage. However, once the decommissioning stage has completed, no significant residual effects are predicted~~mitigation measures in place, significant effects during construction are predicted on four landscape character areas, located near the River Dee, Flint, and Pentre Halkyn. Significant effects are also predicted upon 28 visual receptors located broadly throughout the route and include residential receptors of areas such as Mollington, Old Aston Hill and Saughall as well as users of some public footpaths, such as near Flint and the Shropshire Union Canal.~~

5.7.9. ~~During operation, significant effects are predicted on nine visual receptors during the first year of operation. This includes residents of areas such as Bryn Mawr and Cornist Lane as well as users of some public footpaths, such as the Shropshire Union Canal and North Cheshire Way. Once the landscape planting has matured, no significant effects are likely to occur during operation. During end-of-life decommissioning stage, temporary significant effects are predicted upon some PRoWs, and the same receptors that would be affected by the BVS and AGI construction stage. However, once the decommissioning stage has completed, so significant residual effects are predicted~~.

5.8. MAJOR ACCIDENTS AND DISASTERS

APPROACH TO THE ASSESSMENT

5.8.1. The major accidents and disasters (MAD) assessment considers the potentially significant effects on people and the environment because of the proposed development's vulnerability to, or introduction of, risks of major accidents and/or disasters. A major accident is an unintended event that would impact human health, welfare or the environment and would require additional resources to respond to the event. A disaster is a naturally occurring phenomenon such as an extreme weather event (for example, storm or flood,) or ground-related hazard events (for example, landslide or earthquake) with the potential to cause an event or situation that meets the definition of a major accident.

5.8.2. The assessment covers risks of external hazards (such as accidents associated with existing industrial and urban fires) on the proposed development, as well as what hazards the proposed development could pose (such as causing fire or explosion at fuel storage facilities).

5.8.3. The assessment considers the construction, operation and end-of-life decommissioning stages. However, some receptors such as employees of the Applicant are excluded as the risks are considered to be otherwise managed. Desk study information was used to undertake the assessment.

5.8.4. The assessment identifies risks of potential major accidents and disasters, along with whether these are managed to be 'as low as reasonably practicable' in accordance with professional judgement and relevant guidance, or if they require further mitigation actions beyond those already included in the design.

SUMMARY OF THE ASSESSMENT OUTCOMES

5.8.5. Mitigation will include a programme of studies to ensure that the design is safe and that residual risks are managed, and the implementation of environmental, health and safety management systems.

5.8.6. The chapter concludes that with mitigation measures in place, the risks associated with all major accidents and disaster events will be managed to as low as reasonably practicable levels.

5.9. MATERIALS AND WASTE

APPROACH TO THE ASSESSMENT

5.9.1. The materials and waste assessment considers the predicted type and quantity of materials used and waste generated by the proposed development. This data was considered against regional and national landfill capacity or materials availability.

5.9.2. The assessment considers the construction stage only. Assessment of impacts during operation and end-of-life decommissioning are scoped out as being negligible.

5.9.3. Baseline information was collected via a desktop study.

SUMMARY OF THE ASSESSMENT OUTCOMES

5.9.4. The assessment identified that there are currently no issues regarding the availability and stock of key construction materials. The current land use generates minimal volumes of waste. However, forecasts of remaining landfill capacity in the North West of England and North Wales suggest that in the absence of future provision, landfill capacity at the completion of the construction stage will be very limited. Therefore, construction methods and activities will include measures for reducing waste. This includes, where soil is

excavated to create the trenches, returning the soil once the pipe is laid where it is suitable to do so.

5.9.5. Mitigation during construction will include seeking to use recycled materials, diverting waste from landfill and ensuring that materials and waste are suitability stored and segregated on site. For example, aggregate and concrete waste are anticipated to be recycled and timber may also be reused off-site. Some waste, such as plastic, is assumed to be disposed of to landfill. Opportunities to reuse or recycle construction material will be sought.

5.9.6. The proposed development passes through and close to several mineral safeguarding areas and therefore has the potential to sterilise these mineral sites by preventing future extraction of the resource. A Mineral Resource Assessment has been prepared to support the ES.

5.9.7. With mitigation measures in place, no significant adverse materials and waste effects are predicted to occur during construction, operation or end-of-life decommissioning.

5.10. NOISE AND VIBRATION

APPROACH TO THE ASSESSMENT

5.10.1. The noise and vibration assessment considers the impact that noise and vibration from the proposed development may have on receptors such as dwellings, hospitals, schools, nurseries, elderly homes, and places of worship, which are deemed to be relatively more sensitive to noise impact.

5.10.2. The assessment considers the construction, operation and end-of life decommissioning stages. However, elements such as operational vibration and traffic noise are scoped out of the assessment as likely significant effects are not predicted.

5.10.3. Baseline data has been collected via desktop study and site surveys. The surveys consisted of both long and short-term noise monitoring at 30 locations spread throughout the route of the proposed development. The baseline data was combined with noise levels predicted to be generated during construction and operation.

SUMMARY OF THE ASSESSMENT OUTCOMES

5.10.4. The assessment identified that the majority of sensitive receptors are located near the areas of Sandycroft, Ewloe and Northop Hall although receptors are broadly present throughout the route of the proposed development.

5.10.5. During construction, noise and vibration levels will be kept as low as practicable. A noise mitigation plan will be prepared before the start of

construction works which will detail the specific mitigation measures to be implemented during construction. This will be agreed with the local authorities.

5.10.6. Operational noise generated at the AGIs and BVSs will be limited and unlikely to result in significant effects.

5.10.7. With mitigation measures in place, 42 receptors are predicted to experience temporary significant noise effects during construction in the daytime period. Most receptors are located near Sealand and Sandycroft where the proposed development crosses the River Dee and Chester Road. Sensitive receptors near trenchless crossing activities with difficult ground conditions may also experience significant noise effects during evening and night-time periods. One receptor is predicted to experience significant noise effects during end-of-life decommissioning. No significant effects are predicted during operation.

5.11. POPULATION AND HUMAN HEALTH

APPROACH TO THE ASSESSMENT

5.11.1. The population and human health assessment considers a range of aspects including impacts on land use and accessibility, private property and housing, community land and assets and human health, amongst others.

5.11.2. The assessment considers the construction and operational stage, as no significant effects are predicted during end-of-life decommissioning which is therefore scoped out.

5.11.3. Baseline information was collected via desk study and consultation.

SUMMARY OF THE ASSESSMENT OUTCOMES

5.11.4. Land use within and near the proposed development is predominantly agricultural with several built areas consisting of industrial and residential properties, as well as community facilities. Notable community uses include a network of footpaths and public rights of way, as well as schools, health care facilities, shops, and parks. For the Cheshire West and Chester region, the health of the population is in line with the North West region average, while Flintshire ranks the highest (best) of all 22 Welsh local authorities, and significantly higher than the Welsh average for mental wellbeing.

5.11.5. Mitigation during construction will be implemented to reduce the predicted impacts. This will include measures such as informing residents and community facilities nearby of planned works, locating working areas to reduce impacts on existing accesses, considerate timing of works and temporary route diversions with clear signage, amongst others.

5.11.6. With mitigation measures in place, some significant effects are predicted during construction. These include temporary disruption to users of some PRoWs,

disruption to accesses, users and residents of some facilities. No significant effects are predicted during operation.

5.12. TRAFFIC AND TRANSPORT

APPROACH TO THE ASSESSMENT

5.12.1. The traffic and transport assessment considers the potential for impacts to traffic levels on the local and strategic road network and changes to journey time, highways safety and severance of existing routes.

5.12.2. The assessment considers the construction stage only, as no significant effects are anticipated during operation or end-of life decommissioning.

5.12.3. Baseline information has been collected via desktop study, site visits, consultation and surveys at 98 locations upon the local road network within and surrounding the proposed development area to collect data on the number of vehicles using the roads. The proposed vehicle movements required during construction were then predicted and compared to the existing traffic levels, to understand the potential impacts.

5.12.4. Construction routes have been identified based on their suitability to accommodate heavy and light goods vehicle traffic.

SUMMARY OF THE ASSESSMENT OUTCOMES

5.12.5. The existing local road network includes a variety of routes including the strategic road network, which includes the M56 and M53, as well as several A-roads, as well as the local road network and unclassified rural lanes.

5.12.6. An Outline Construction Traffic Management Plan has been prepared and accompanies the ES. This document provides the framework of mitigation that will be refined and developed further by the contractor delivering the construction work. An Interim Worker Travel Plan also accompanies the ES, which sets out a plan for how the construction workers' travel will be managed to reduce impacts on the road network.

5.12.7. With mitigation measures in place, no significant traffic and transport effects are predicted to occur during construction, operation or end-of-life decommissioning.

5.13. WATER ENVIRONMENT AND FLOOD RISK

APPROACH TO THE ASSESSMENT

5.13.1. The water environment and flood risk assessment considered the potential impacts on the quality of the water environment (including surface watercourses and groundwater) and potential changes to flood risk.

5.13.2. The assessment considers the construction, operation and end-of-life decommissioning stages. However, some elements such as public drainage and supply assets and mine waters, amongst others, have been scoped out of all stages of the assessment as no likely significant effects are predicted.

5.13.3. Baseline information has been collected via desktop study, consultation and site surveys.

SUMMARY OF THE ASSESSMENT OUTCOMES

5.13.4. The proposed development crosses or is near 19 main rivers, and 54 other watercourses. Notable watercourse crossings include the Shropshire Union Canal and the River Dee.

Image 6 – The River Dee

5.13.5. Groundwater levels vary across the area crossed by the proposed development, ranging from shallow near Ince to deeper near Thornton Le Moors. Groundwater quality varies from good to poor overall status. The River Dee has been identified as potentially supporting groundwater dependent terrestrial ecosystems.

5.13.6. Flood risk varies across the area crossed by the proposed development. A small number of areas have been identified as being in the highest category of river or tidal flood risk including near Ince and Stanlow, near the River Gowy, north of Moston near Backford Brook and south of Saughall. Some further areas have also been identified as being at risk of surface or groundwater flood risk.

5.13.7. Fourteen surface water and four groundwater water bodies have been identified. Most have ‘moderate’ or ‘poor’ current overall quality status, although some have ‘good’ status.

5.13.8. Construction mitigation will include the use of trenchless crossings at some watercourses, such as the River Dee and the Shropshire Union Canal, which will avoid direct impacts. Where watercourses are to be crossed via open-cut trench method, mitigation will also be implemented to reduce impacts, such as keeping the construction works area as small as practicable and pumping the water across the trench to maintain flows. Sheet-piles will be used in areas of shallow groundwater where open trench methods will be used, to avoid water entering the excavations. A Dewatering Management Plan will be developed to mitigate construction impacts. Impacts from flooding during construction will be minimised by, wherever practicable, avoiding working and storing materials and equipment in areas of flood risk, as well as the construction contractors signing up to flood alerts from the Environment Agency and Natural Resources Wales. A further assessment will also be undertaken on Alltami Brook to inform the design of the crossing works so as to reduce impacts upon the bedrock and natural form of the watercourse.

5.13.9. Impacts during operation will be mitigated by the design of each AGI and BVS incorporating a surface water management system. This will ensure that any surface water collected on the site is suitably controlled and discharged.

5.13.10. With mitigation measures in place, significant effects are only predicted at Alltami Brook, near Northop Hall during the construction stage. This is because this watercourse will be crossed via an open cut trench method which will permanently impact the bedrock and the natural form of the watercourse. No other likely significant effects are predicted to occur during operation or end-of-life decommissioning.

5.14. COMBINED AND CUMULATIVE EFFECTS

APPROACH TO THE ASSESSMENT

5.14.1. The assessment considers where more than one effect is predicted to occur on the same receptor, and therefore may result in an overall greater effect. Two types of cumulative effects are considered in the EIA:

Inter-project effects

5.14.2. Inter-project effects are instances where the proposed development and another separate development are predicted to affect the same receptor, either at the same time or over a prolonged period. This also includes other relevant parts of the HyNet project. For example, if construction traffic effects from the proposed development and a nearby housing development are predicted to impact the same road network, or might result in works taking place over a longer period.

5.14.3. Using desktop data, the assessment firstly established the area whereby inter-project effects may occur. Following this, relevant other developments were identified and then evaluated to ensure that there was sufficient confidence that the other identified developments will be progressed, for example by a valid submitted planning application. Following this, available information on the developments was gathered.

Intra-project effects

5.14.4. Intra-project effects are instances where more than one effect from the proposed development are predicted on the same receptor, at the same time. For example, if construction of a BVS is predicted to result in visual and noise effects on the same residents.

SUMMARY OF THE ASSESSMENT OUTCOMES

Inter-project effects

5.14.5. No significant inter-project effects are predicted to occur during construction, operation and end-of-life decommissioning.

Intra-project effects

5.14.6. No significant intra-project effects are predicted to occur during construction, operation or end-of-life decommissioning.

5.15. SUMMARY OF ENVIRONMENTAL EFFECTS

5.15.1. The ES includes a chapter which sets out the reported residual significant effects. This is summarised below.

Construction stage

- Cultural Heritage – Adverse effect upon any Bronze Age funerary remains that may survive during construction
- Land and soils – Adverse effect due to the loss of one hectare of high-quality agricultural land
- Landscape and visual – Adverse effects on several landscape character areas and visual receptors due to the presence of, and impact from, construction works
- Noise and vibration – Adverse effects upon some receptors due to the noise generated from construction works. This may be reduced to be not significant for some receptors, subject to the detail of the noise mitigation plan which would be produced prior to construction
- Population and human health – Adverse effect on two public rights of way due to temporary disruption. Also, adverse effects on access to several receptors including businesses and temporary loss of land

- Water environment and flood risk – Adverse effect on Alltami Brook due to construction method changing the form and quality of the watercourse and its embankment

Operation stage

- Greenhouse Gases – Beneficial effects due to the avoided emissions captured as part of the HyNet project that feed into the DCO Proposed Development
- Landscape and visual – Adverse effects upon several residential receptors and users of footpaths and PRoW due to the introduction of the AGIs and BVSs. Once the proposed landscape mitigation planting has matured, the effects will not be significant.

End-of-life decommissioning stage

- Landscape and visual – Adverse effects upon several residential receptors and users of footpaths and PRoW during decommissioning works. Once the decommissioning works are completed, the effects will not be significant.
- Noise and vibration – Adverse effects upon one receptor due to noise generated during the decommissioning works

6. NEXT STEPS

6.1.1. The Applicant has submitted the ES as part of the DCO Application to the Planning Inspectorate, who will appoint a panel of inspectors, known as the Examining Authority to examine the application on behalf of the SoS. Should the DCO be granted, this will allow the Applicant to construct and operate the proposed development.

6.1.2. Following submission of the DCO Application, the Planning Inspectorate will accept the application for examination.

6.1.3. The next stage is the 'pre-examination period'. The Applicant has published a public notice saying where the DCO Application documents can be viewed. During this stage, stakeholders and members of the public can also register as interested parties. This will allow relevant comments to be made to the Examining Authority at the following stage. Information on the registration process can be found on the Planning Inspectorate's website:

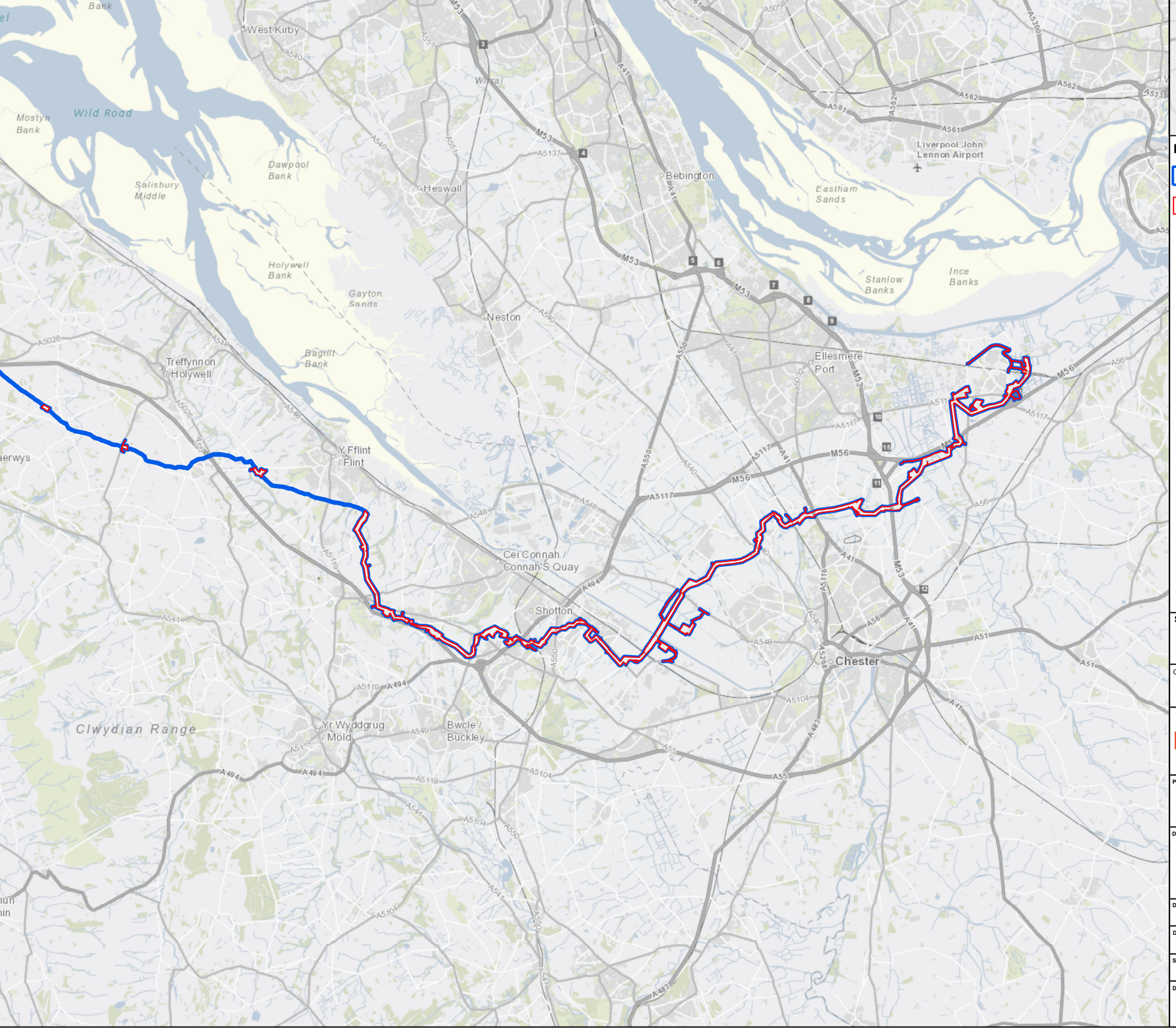
https://infrastructure.planninginspectorate.gov.uk/application-process/participating-in-the-process/

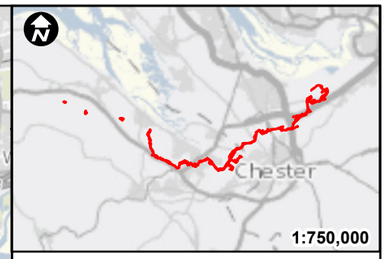
6.1.4. The next stage is the 'examination period'. A preliminary meeting will be held and all interested parties will be invited to attend. At this meeting, the Examining Authority will decide on the key issues which will be taken into account during the examination period. Registered interested parties can send written representations to the Examining Authority during this period and can request to speak at public hearings. The examination period lasts six months.

6.1.5. After the examination period, the Examining Authority has three months to consider the comments from the examination period. The Examining Authority will then provide the SoS with a report including a recommendation on whether the application should be granted.

6.1.6. The SoS then has a further three months to decide whether or not to grant the DCO. Once the decision is made and published, there is a High Court challenge period.

6.1.7. Once the DCO is issued, the decision is final.





Key:

- Order Limits
- Newbuild Infrastructure Boundary

SCALE: 1:120,000

0 1 2 4 Kilometres

HyNet North West

PROJECT TITLE

HyNet Carbon Dioxide Pipeline DCO

DRAWING TITLE

Figure 1 - DCO Proposed Development Boundaries

DRAWING STATUS

FOR DESIGN CHANGE REQUEST 1

DRAWN	CHECKED	APPROVED	AUTHORISED
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1:120,000	26/03/2023	B

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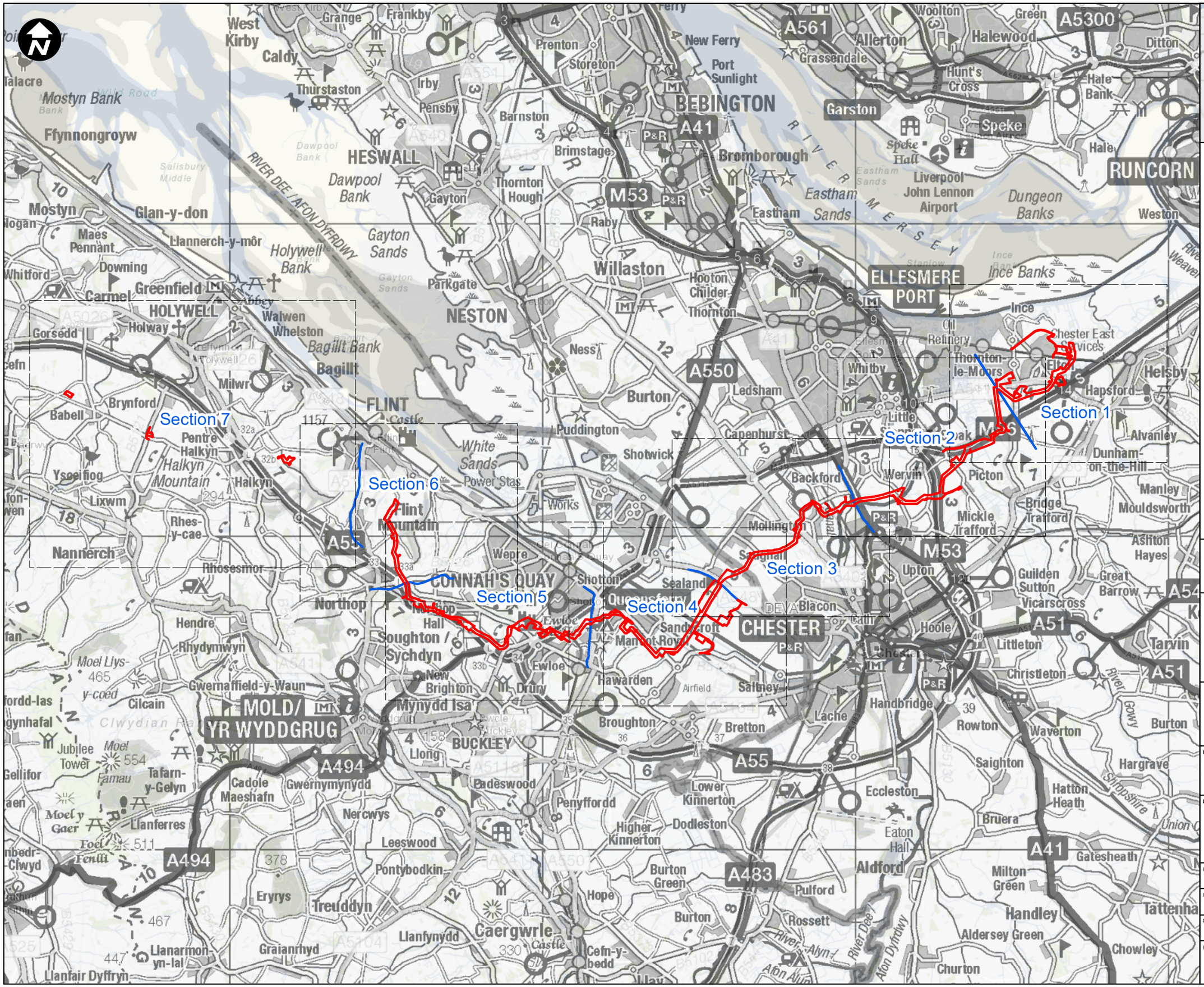
EN070007-APP-ES-Figure 1



Key:

- Newbuild Infrastructure Boundary
- Section Dividing Line

SCALE:1:110,000

0 1 2 4 Kilometres

HyNet North West

PROJECT TITLE

HyNet Carbon Dioxide Pipeline DCO

DRAWING TITLE

Figure 2 - The Proposed Development Overview

DRAWING STATUS

FOR DESIGN CHANGE REQUEST 2

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DRAWING NUMBER

EN070007-APP-ES-3.2-Overview

Indicative location of Stanlow AGI

TRS-05 A5117 Chester Road

TRS-06 A5117 Chester Road (east of Thornton Le Moors)

Indicative location of Ince AGI

TRS-01 Hapsford railway line

TRS-02 A5117 Chester Road

TRS-03 Existing Utility

TRS-04 Existing Utility

TRS-07 Existing Utility

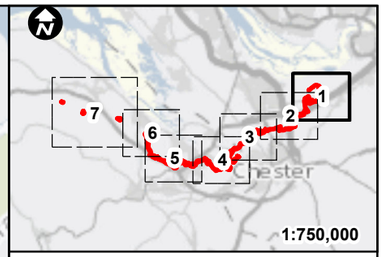
TRS-08 M56

TRS-09 River Gowy

Section 1

Section 2

Manchester Ship Canal
Holme Farm
Marsh La
Kinsey's La
Ince
Rake La
Lordship La
Hill View Farm
Oil Sites Rd
Stanlow and Thornton
Bare Brick House
Ince and Elton
Elton La
Orchard Park
Elton
Dove Cl
Ash Rd
School La
Elton Green
New Dairy Farm
The Bungalow
A5117
Poole La
Thornton-le-Moors
Park Rd
Thornton Green La
River Gowy
Temerlohe House
Manor Lodge
Cross House Farm
M56
Hoblane Farm
Moss House Farm
Dunham-on-the-Hill
Cash La
Hapsford
A56
Hapsford La
Rake La
Talbot Rd
Peck Mill Farm
Towers La
Abbot's Clough Farm
Primrose La
Alvanley
Manley
Robin Hood La
Sandy La
The Rock
Back La
Helsby Rd
Alvanley Rd
Helsby Hill
Harmers Lake Farm
Steppingstones
Old Chester Rd
Bridge La
Smithy La
Lower Rake La
Spring Farm
Kings Dr
Hill Rd North
Bates La



Key:

- Newbuild Infrastructure Boundary
- 1km Buffer
- Permanent acquisition of subsurface
- Section Dividing Line
- Indicative alignment of the Ince AGI to Stanlow AGI Pipeline
- Indicative alignment of the Stanlow AGI to Flint AGI Pipeline
- Above Ground Installation (AGI)
- Trenchless Crossing Compound
- Centralised Compound
- Localised Compound
- Open-cut trench Crossings

SCALE: 1:20,000

0 250 500 Metres

HyNet North West

PROJECT TITLE

HyNet Carbon Dioxide Pipeline DCO

DRAWING TITLE

Figure 2 - The Proposed Development
Sheet 1 of 7

DRAWING STATUS: FOR DESIGN CHANGE REQUEST 2

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DRAWING NUMBER

EN070007-APP-ES-3.2-Sheet 1

TRS-13 Existing Utility

TRS-15 Wervin Road

TRS-07 Existing Utility

TRS-08 M56

TRS-09 River Gowy

TRS-10 Existing Utility

TRS-11 Picton Lane

TRS-12 Existing Utility

TRS-14 M53

TRS-16 Existing Utility

Indicative location of Rock Bank BVS

TRS-17 Shropshire Union Canal

TRS-18 A41 Liverpool Road

TRS-19 Existing Utility

TRS-20 Mollington Railway

Section 1

Section 2

Section 2

Section 3

1:750,000

Key:

- Newbuild Infrastructure Boundary
- 1km Buffer
- Permanent acquisition of subsurface
- Section Dividing Line
- Indicative alignment of the Ince AGI to Stanlow AGI Pipeline
- Indicative alignment of the Stanlow AGI to Flint AGI Pipeline
- Above Ground Installation (AGI)
- Block Valve Station (BVS)
- Trenchless Crossing Compound
- Centralised Compound
- Localised Compound
- Open-cut trench Crossings

SCALE: 1:20,000

0 250 500 Metres

HyNet North West

PROJECT TITLE

HyNet Carbon Dioxide Pipeline DCO

DRAWING TITLE

Figure 2 - The Proposed Development
Sheet 2 of 7

DRAWING STATUS			
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DRAWING NUMBER

EN070007-APP-ES-3.2-Sheet 2

TRS-19 Existing Utility

TRS-21 Station Road

TRS-22 Townfield Lane

TRS-23 Overwood Lane

TRS-18 A41 Liverpool Road

TRS-20 Mollington Railway

TRS-26 Chester Millennium Greenway

Indicative location of Mollington BVS

TRS-24 A540

TRS-27 A548 Sealand Road

TRS-25 Hermitage Road

Section 2

Section 3

Section 3

Section 4

English-Welsh Border

1:750,000

Key:

- Newbuild Infrastructure Boundary
- 1km Buffer
- Permanent acquisition of subsurface
- English Welsh Border
- Section Dividing Line
- Indicative alignment of the Stanlow AGI to Flint AGI Pipeline
- Block Valve Station (BVS)
- Trenchless Crossing Compound
- Centralised Compound
- Localised Compound
- Open-cut trench Crossings

SCALE: 1:20,000

0 250 500 Metres

HyNet North West

PROJECT TITLE

HyNet Carbon Dioxide Pipeline DCO

DRAWING TITLE

Figure 2 - The Proposed Development
Sheet 3 of 7

DRAWING STATUS

FOR DESIGN CHANGE REQUEST 2

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SCALE @ A3 SIZE	DATE	REVISION
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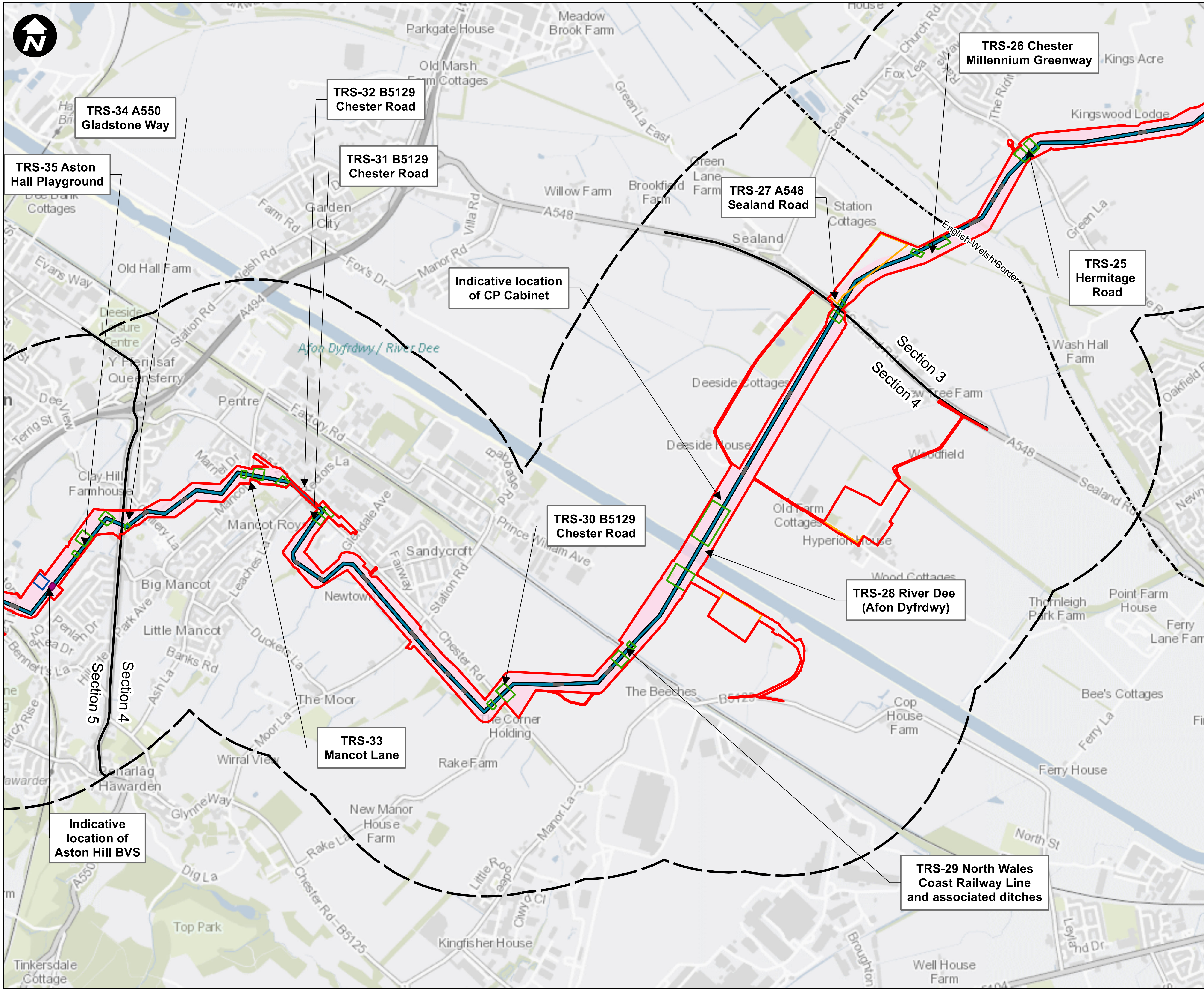
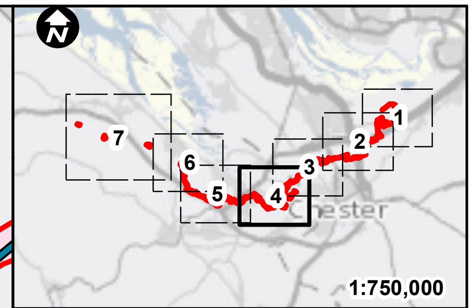
EN070007-APP-ES-3.2-Sheet 3





Key:

- Newbuild Infrastructure Boundary
- 1km Buffer
- Permanent acquisition of subsurface
- English Welsh Border
- Section Dividing Line
- Indicative alignment of the Stanlow AGI to Flint AGI Pipeline
- Block Valve Station (BVS)
- Trenchless Crossing Compound
- Centralised Compound
- Localised Compound
- Open-cut trench Crossings

SCALE: 1:20,000

0 250 500 Metres

HyNet North West

PROJECT TITLE

HyNet Carbon Dioxide Pipeline DCO

DRAWING TITLE

Figure 2 - The Proposed Development Sheet 4 of 7

DRAWING STATUS

FOR DESIGN CHANGE REQUEST 2

DRAWN	CHECKED	APPROVED	AUTHORISED
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SCALE @ A3 SIZE	DATE	REVISION
1:20,000	17/05/2023	C

DRAWING NUMBER

EN070007-APP-ES-3.2-Sheet 4

TRS-43 Northop Brook

TRS-42 Connah's Quay Road

Section 6

Section 5

Alltami Brook: Embedded Pipe Bridge (Design Option)

TRS-37 A494 Aston Expressway

TRS-34 A550 Gladstone Way

TRS-35 Aston Hall Playground

Indicative location of Northop Hall AGI

TRS-41 Northop Hall Ancient Woodland

TRS-40 Green Lane

TRS-38 Church Lane

TRS-39 B5125 Holywell Road

TRS-36 Wrexham to Bidston (Borderlands) railway line

Indicative location of Aston Hill BVS

Section 5

Section 4

1:750,000

Key:

- Newbuild Infrastructure Boundary
- 1km Buffer
- Permanent acquisition of subsurface
- Section Dividing Line
- Indicative alignment of the Stanlow AGI to Flint AGI Pipeline
- Indicative alignment of the Stanlow AGI to Flint AGI Pipeline Option PS02b
- Above Ground Installation (AGI)
- Block Valve Station (BVS)
- Trenchless Crossing Compound
- Centralised Compound
- Localised Compound
- Open-cut trench Crossings

SCALE: 1:20,000

0 250 500 Metres

HyNet North West

PROJECT TITLE

HyNet Carbon Dioxide Pipeline DCO

DRAWING TITLE

Figure 2 - The Proposed Development
Sheet 5 of 7

DRAWING STATUS

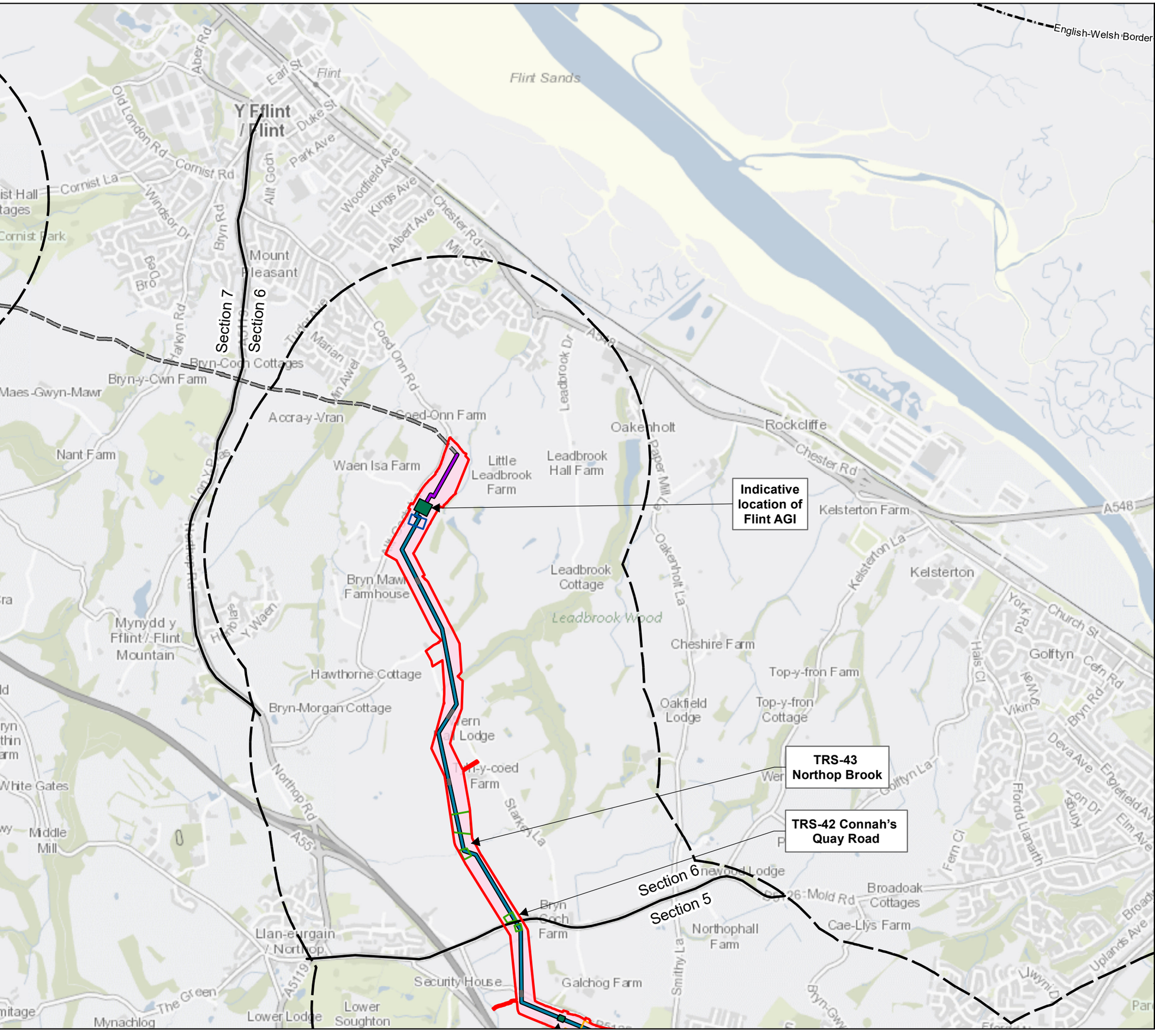
FOR DESIGN CHANGE REQUEST 2

DRAWN	CHECKED	APPROVED	AUTHORISED
JH	NC	RC	MT

SCALE @ A3 SIZE	DATE	REVISION
1:20,000	22/05/2023	C

DRAWING NUMBER

EN070007-APP-ES-3.2-Sheet 5



Key:

- Newbuild Infrastructure Boundary
- 1km Buffer
- Permanent acquisition of subsurface
- English Welsh Border
- Section Dividing Line
- Indicative alignment of the Flint AGI to Flint Connection Pipeline
- Indicative alignment of the Stanlow AGI to Flint AGI Pipeline
- Existing pipeline
- Above Ground Installation (AGI)
- Trenchless Crossing Compound
- Centralised Compound
- Localised Compound
- Open-cut trench Crossings

SCALE: 1:20,000

0 250 500 Metres

HyNet North West

PROJECT TITLE

HyNet Carbon Dioxide Pipeline DCO

DRAWING TITLE

Figure 2 - The Proposed Development
Sheet 6 of 7

DRAWING STATUS

FOR DESIGN CHANGE REQUEST 2

DRAWN	CHECKED	APPROVED	AUTHORISED
JH	NC	RC	MT

SCALE @ A3 SIZE	DATE	REVISION
1:20,000	17/05/2023	C

DRAWING NUMBER

EN070007-APP-ES-3.2-Sheet 6

Indicative location of Babell BVS

Indicative location of Pentre Halkyn BVS

Indicative location of Cornist Lane BVS

1:750,000

Key:

- Newbuild Infrastructure Boundary
- 1km Buffer
- Permanent acquisition of subsurface
- Section Dividing Line
- Existing pipeline
- Block Valve Station (BVS)
- Localised Compound

SCALE: 1:30,000

0 250 500 1,000 Metres

HyNet North West

PROJECT TITLE

HyNet Carbon Dioxide Pipeline DCO

DRAWING TITLE

Figure 2 - The Proposed Development
Sheet 7 of 7

DRAWING STATUS

FOR DESIGN CHANGE REQUEST 2

DRAWN	CHECKED	APPROVED	AUTHORISED
JH	NC	RC	MT

SCALE @ A3 SIZE	DATE	REVISION
1:30,000	17/05/2023	C

DRAWING NUMBER

EN070007-APP-ES-3.2-Sheet 7

Mersey Estuary SSSI / Ramsar / SPA

'Moated Site, fishpond and connecting channel, Elton' Scheduled Monument

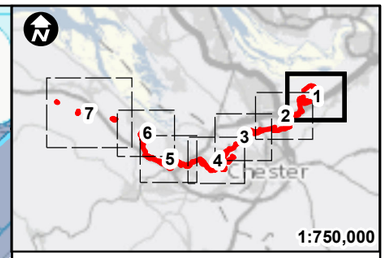
Indicative location of Ince AGI

Peckmill Brook, Hoolpool Gutter at Ince Marshes

Indicative location of Stanlow AGI

Section 1

Section 2



Key:

- Newbuild Infrastructure Boundary
- 1km Buffer
- Section Dividing Line
- Indicative alignment of the Stanlow AGI to Flint AGI Pipeline
- Indicative alignment of the Ince AGI to Stanlow AGI Pipeline
- Above Ground Installation (AGI)
- Grade I Listed Building
- Grade II Listed Building
- Grade II* Listed Building
- Bridleway
- Footpath
- Restricted Byway
- WFD Water Body
- Historic Landfill Site
- Scheduled Monuments
- Site of Special Scientific Interest
- Special Protection Area
- RAMSAR
- Flood Zone 3
- Conservation Areas
- Noise Action Planning Important Areas (IA)
- Local Nature Reserve

SCALE: 1:20,000

0 255 510 Metres

HyNet North West

PROJECT TITLE

HyNet Carbon Dioxide Pipeline DCO

DRAWING TITLE

Figure 3 - Environmental Features
Sheet 1 of 7

DRAWING STATUS

FOR DESIGN CHANGE REQUEST 1

DRAWN	CHECKED	APPROVED	AUTHORISED
KD	JH	RC	MT

SCALE @ A3 SIZE	DATE	REVISION
1:20,000	21/03/2023	B

DRAWING NUMBER

EN070007-APP-ES-Figure 3-Sheet 1

Gowy (Milton Brook to Mersey)

Thornton-le-Moors Conservation Area

Shropshire Union Canal

Indicative location of Rock Bank BVS

Stanney Mill Brook

'Roman camp on Fox Covert Lane 650m north west of Picton Gorse' Scheduled Monument

Chester Zoo

Section 1

Section 2

Section 3

1:750,000

Key:

- Newbuild Infrastructure Boundary
- 1km Buffer
- Section Dividing Line
- Indicative alignment of the Stanlow AGI to Flint AGI Pipeline
- Indicative alignment of the Ince AGI to Stanlow AGI Pipeline
- Above Ground Installation (AGI)
- Block Valve Station (BVS)
- Grade I Listed Building
- Grade II Listed Building
- Grade II* Listed Building
- Bridleway
- Footpath
- WFD Water Body
- Historic Landfill Site
- Scheduled Monuments
- Flood Zone 3
- Conservation Areas
- Noise Action Planning Important Areas (IA)
- Local Nature Reserve

SCALE: 1:20,000

0 255 510 Metres

HyNet North West

PROJECT TITLE

HyNet Carbon Dioxide Pipeline DCO

DRAWING TITLE

Figure 3 - Environmental Features
Sheet 2 of 7

DRAWING STATUS

FOR DESIGN CHANGE REQUEST 1

DRAWN	CHECKED	APPROVED	AUTHORISED
KD	JH	RC	MT

SCALE @ A3 SIZE	DATE	REVISION
1:20,000	21/03/2023	B

DRAWING NUMBER

EN070007-APP-ES-Figure 3-Sheet 2

Saughall Conservation Area

Indicative location of Mollington BVS

Chester Zoo

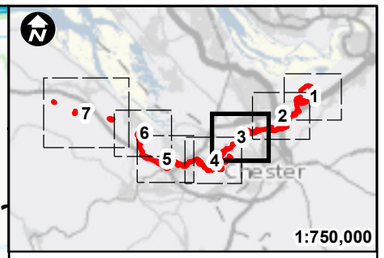
Chester Canal Conservation Area (West)

Finchetts Gutter

Section 2

Section 3

Section 4



Key:

- Newbuild Infrastructure Boundary
- 1km Buffer
- Section Dividing Line
- Indicative alignment of the Stanlow AGI to Flint AGI Pipeline
- Block Valve Station (BVS)
- Grade II Listed Building
- Grade II* Listed Building
- Byway Open to All Traffic (BOAT)
- Footpath
- WFD Water Body
- Historic Landfill Site
- Ancient Woodland
- Special Area of Conservation
- Site of Special Scientific Interest
- Flood Zone 3
- Conservation Areas
- Noise Action Planning Important Areas (IA)
- Noise Action Planning Priority Areas (NAPPA)

SCALE: 1:20,000

0 255 510 Metres

HyNet North West

PROJECT TITLE

HyNet Carbon Dioxide Pipeline DCO

DRAWING TITLE

Figure 3 - Environmental Features
Sheet 3 of 7

DRAWING STATUS

FOR DESIGN CHANGE REQUEST 1

DRAWN	CHECKED	APPROVED	AUTHORISED
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SCALE @ A3 SIZE	DATE	REVISION
1:20,000	21/03/2023	B

DRAWING NUMBER

EN070007-APP-ES-Figure 3-Sheet 3

Garden City Drain

Finchetts Gutter

River Dee

Hawarden Conservation Area

River Dee SAC / SSSI and Main River

Sandycroft Drain

Section 3

Section 4

Section 4

Section 5

1:750,000

Key:

- Newbuild Infrastructure Boundary
- 1km Buffer
- Section Dividing Line
- Indicative alignment of the Stanlow AGI to Flint AGI Pipeline
- Grade I Listed Building
- Grade II Listed Building
- Grade II* Listed Building
- Byway Open to All Traffic (BOAT)
- Footpath
- WFD Water Body
- Historic Landfill Site
- Scheduled Monuments
- Ancient Woodland
- Special Area of Conservation
- Site of Special Scientific Interest
- Special Protection Area
- RAMSAR
- Flood Zone 3
- Conservation Areas
- Noise Action Planning Important Areas (IA)
- Noise Action Planning Priority Areas (NAPPA)

SCALE: 1:20,000

0 255 510 Metres

HyNet North West

PROJECT TITLE

HyNet Carbon Dioxide Pipeline DCO

DRAWING TITLE

Figure 3 - Environmental Features
Sheet 4 of 7

DRAWING STATUS

FOR DESIGN CHANGE REQUEST 1

DRAWN	CHECKED	APPROVED	AUTHORISED
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DRAWING NUMBER

EN070007-APP-ES-Figure 3-Sheet 4

Northop Hall Conservation Area

River Dee

Gathering Grounds Woods and Llwyni Pond LNR

Deeside and Buckley Newt sites SAC / Connah's Quay Ponds and Woodland SSSI

Section 6

Section 5

Wepre Brook

Indicative location of Northhop Hall AGI

Ewloe Castle Scheduled Monument

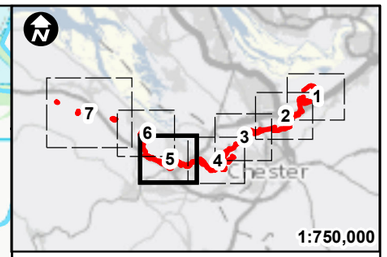
Deeside and Buckley Newt sites SAC / Maes y Grug SSSI

Deeside and Buckley Newt sites SAC / Buckley Claypits and Commons SSSI

Indicative location of Aston Hill BVS

Section 5

Section 4



Key:

- Newbuild Infrastructure Boundary
- 1km Buffer
- Section Dividing Line
- Indicative alignment of the Stanlow AGI to Flint AGI Pipeline
- Indicative alignment of the Stanlow AGI to Flint AGI Pipeline Option PS02b
- Above Ground Installation (AGI)
- Block Valve Station (BVS)
- Grade I Listed Building
- Grade II Listed Building
- Grade II* Listed Building
- WFD Water Body
- Historic Landfill Site
- Scheduled Monuments
- Ancient Woodland
- Special Area of Conservation
- Site of Special Scientific Interest
- Special Protection Area
- RAMSAR
- Conservation Areas
- Noise Action Planning Priority Areas (NAPPA)
- Local Nature Reserve

SCALE: 1:20,000

0 255 510 Metres

HyNet North West

PROJECT TITLE

HyNet Carbon Dioxide Pipeline DCO

DRAWING TITLE

Figure 3 - Environmental Features
Sheet 5 of 7

DRAWING STATUS

FOR DESIGN CHANGE REQUEST 1

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DRAWING NUMBER

EN070007-APP-ES-Figure 3-Sheet 5

'Pentre Bridge Roman Site' Scheduled Monument

Swinchiard Brook

The Dee Estuary SAC/SSSI/SPA/Ramsar

English-Welsh Border

'Croes Atti Roman Site' Scheduled Monument

Flint Mountain SSSI

Indicative location of Flint AGI

Northop Hall Conservation Area

River Dee

Gathering Grounds Woods and Llwyni Pond LNR

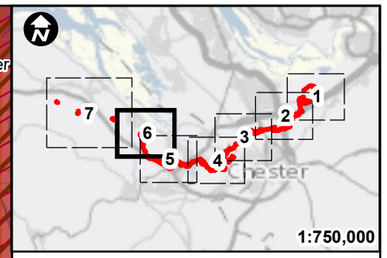
Northop Conservation Area

Section 7

Section 6

Section 6

Section 5



Key:

- Newbuild Infrastructure Boundary
- 1km Buffer
- Section Dividing Line
- Indicative alignment of the Stanlow AGI to Flint AGI Pipeline
- Indicative alignment of the Flint AGI to Flint Connection Pipeline
- Existing pipeline
- Above Ground Installation (AGI)
- Grade I Listed Building
- Grade II Listed Building
- Grade II* Listed Building
- WFD Water Body
- Historic Landfill Site
- Scheduled Monuments
- Ancient Woodland
- Special Area of Conservation
- Site of Special Scientific Interest
- Special Protection Area
- RAMSAR
- Flood Zone 3
- Conservation Areas
- Noise Action Planning Priority Areas (NAPPA)
- Local Nature Reserve

SCALE: 1:20,000

0 255 510 Metres

HyNet North West

PROJECT TITLE

HyNet Carbon Dioxide Pipeline DCO

DRAWING TITLE

Figure 3 - Environmental Features
Sheet 6 of 7

DRAWING STATUS

FOR DESIGN CHANGE REQUEST 1

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DRAWING NUMBER

EN070007-APP-ES-Figure 3-Sheet 6

'Bwrdd y Rhyfel Camp' Scheduled Monument

'Offa's Dyke: Section N&S of the Circle on Holywell Racecourse, and Circle and Round Barrow' Scheduled Monument

'Llyn Du Round Barrow' Scheduled Monument

Indicative location of Babell BVS

'Enclosure, Field System and Hollow-ways North of Pant' Scheduled Monument

Pant-gwyn (Wheeler)

'Hen Caerwys Deserted Village Site' Scheduled Monument

Indicative location of Pentre Halkyn BVS

'Round Barrow 225m SE of Plas Newydd' Scheduled Monument

Halkyn Mountain SAC / Halkyn Common and Holywell Grasslands SSSI

Wheeler - Upper

The Dee Estuary SAC/SSSI/SPA/Ramsar

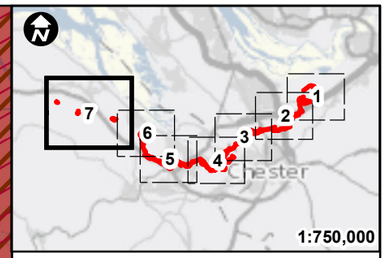
'Hen Blas Castle Site' Scheduled Monument

Indicative location of Cornist Lane BVS

'Hafod Wood Moated Site' Scheduled Monument

Flint Mountain SSSI

Indicative location of Flint AGI



Key:

- Newbuild Infrastructure Boundary
- 1km Buffer
- Section Dividing Line
- Existing pipeline
- Block Valve Station (BVS)
- Grade II Listed Building
- Grade II* Listed Building
- WFD Water Body
- Scheduled Monuments
- Ancient Woodland
- Special Area of Conservation
- Site of Special Scientific Interest
- Special Protection Area
- RAMSAR
- Noise Action Planning Priority Areas (NAPPA)

SCALE: 1:30,000

0 500 1,000 Metres

HyNet North West

PROJECT TITLE

HyNet Carbon Dioxide Pipeline DCO

DRAWING TITLE

Figure 3 – Environmental receptors
Sheet 7 of 7

DRAWING STATUS

FOR DESIGN CHANGE REQUEST 1

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DRAWING NUMBER

EN070007-APP-ES-Figure 3-Sheet 7