

# ENVIRONMENTAL STATEMENT (VOLUME II)

## Chapter 3 Description of the Padeswood Spur Pipeline Proposed Development

### Padeswood Carbon Dioxide Spur Pipeline Proposed Development

Town and Country Planning Act 1990

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## 3. DESCRIPTION OF THE PROPOSED SCHEME

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### 3.1. INTRODUCTION

- 3.1.1. This chapter provides a description of the Padeswood Carbon Dioxide Spur Pipeline ('Padeswood Spur Pipeline Proposed Development'), including how it will be constructed, and the assumptions used for the basis of assessment where this information is subject to confirmation. This description aligns with the proposals for which planning consent is sought, together with the supporting plans. This is what the technical assessments undertaken as part of the Environmental Assessment have been based on.
- 3.1.2. Justification for the need to retain reasonable design flexibility at the Preliminary Design stage is also outlined in **Chapter 4 - Consideration of Alternatives (Document Reference PW.3.2.4)**. As such, this ES represents a reasonable worst-case assessment of the potential impacts of the Padeswood Spur Pipeline Proposed Development.
- 3.1.3. The environmental assessment area considered in this ES is defined by the Red Line Boundary as shown in **Figure 3.1 – Red Line Boundary**.

### 3.2. OVERVIEW OF THE PADESWOOD SPUR PIPELINE PROPOSED DEVELOPMENT

- 3.2.1. The key elements of the Padeswood Spur Pipeline Proposed Development are as follows:
- **Padeswood Above Ground Installation (AGI);**
  - **Padeswood Carbon Dioxide Spur Pipeline;** a pipeline approximately 11km in length, connecting Padeswood Carbon Capture and Storage (CCS) Project located in Padeswood, Flintshire to Northop Hall AGI;
  - **Additional Equipment at Northop Hall AGI;**
  - **Other infrastructure,** including telecommunication connections, Cathodic Protection (CP) equipment, leak detection equipment, and pipeline marker posts; and
  - **Temporary works** to facilitate the construction of the Padeswood Spur Pipeline Proposed Development, including Construction Compounds and temporary access tracks.
- 3.2.2. Further details on each element of the Padeswood Spur Pipeline Proposed Development are provided in **Sections 3.4 to 3.6**.
- 3.2.3. Construction of the Padeswood Spur Pipeline Proposed Development is detailed in **Sections 3.7 and 3.8**. This includes information on anticipated construction programme, timing and methodology.

- 3.2.4. Operation and Maintenance of the Padeswood Spur Pipeline Proposed Development is detailed in **Section 3.9**. This includes information on operating and routine maintenance procedures, access during the Operational Stage, lighting and employment.
- 3.2.5. Decommissioning of the Padeswood Spur Pipeline Proposed Development is detailed in **Section 3.10**.
- 3.2.6. The Rochdale Envelope approach to assessment has been applied where there is the need for design flexibility and further refinement in detailed design, ensuring a robust assessment of the likely significant environmental effects of Padeswood Spur Pipeline Proposed Development. This involves assessing the maximum (or where relevant, minimum) design parameters for the elements, where reasonable flexibility needs to be retained at this stage of design development. The Planning Application considers a Red Line Boundary typically 50m in width. Within that 50 m width, an indicative route has been developed, for which a 25 m wide construction corridor is assessed. This width will be used as the maximum parameter for the assessments within this Environmental Statement. However, due to construction and operational requirements, physical constraints and/or environmental considerations, the Red Line Boundary at some locations along the Padeswood Spur Pipeline Proposed Development may vary from the typical 50m pipeline corridor width.

### **3.3. PADESWOOD AGI**

- 3.3.1. The Padeswood AGI will function as an interface between the Padeswood Carbon CCS Project and the underground Padeswood Carbon Dioxide Spur Pipeline. The AGI is specifically designed to receive carbon dioxide from the Padeswood CCS Project and introduce it into the carbon dioxide pipeline network for transportation to the Point of Ayr (PoA) Terminal and onwards for storage offshore. The AGI will be located on the north-west corner of the Padeswood CCS Project, as shown on **Figure 3.2 – Padeswood Spur Pipeline Proposed Development**. An indicative general drawing for the Padeswood AGI is also available (**Document Reference PW.2.2.5**).
- 3.3.2. The Padeswood AGI will comprise an area within the Padeswood CCS Project fence line of approximately 50 m x 28 m in size.
- 3.3.3. Access to the Padeswood AGI will be via a new permanent access track being developed and consented within the Padeswood CCS Project Development of National Significance (DNS) application submitted to and being considered by the Welsh Government in September 2024.
- 3.3.4. The Padeswood AGI will comprise the following facilities:

- Piping connection point to Padeswood CCS Plant;
- Spare connection point;
- Pipework and associated infrastructure, including manifold, valves, venting connections, instrumentation, sensors, supports, etc;
- High-Integrity Pressure Protection Systems (HIPPS), designed to prevent over-pressurisation of the pipeline network;
- Pipeline Inspection Gauge (PIG) launcher facilities for the Padeswood Spur Pipeline, including blast wall;
- Electrical and Instrumentation (E&I) kiosk (maximum 5m high) for distributing power and for control and monitoring of the system;
- Electrical power connection from the Padeswood CCS Plant;
- Additional minor infrastructure including CP cabinet, electrical transformer, analyser house, cable trays, etc;
- Steel walkover platforms;
- Site lighting, constituting perimeter lighting columns up to 5m in height. Refer to **paragraph 3.9.22** for details on lighting;
- Secure chain link boundary fence (up to approximately 3m high) with gates;
- Crushed aggregate ground finish, with an area paved to site the E&I Kiosk, electrical transformer, and parking provision for maintenance vehicles;
- Surface water drainage infrastructure, with a collection point to tie-in to the wider Padeswood CCS Plant drainage system (consented under their application);

### **3.4. PADESWOOD CARBON DIOXIDE SPUR PIPELINE**

- 3.4.1. The Padeswood Carbon Dioxide Spur Pipeline will comprise of a pipeline approximately 11 km in length connecting the Padeswood AGI to the Northop Hall AGI. The pipeline will facilitate the transfer of captured CO<sub>2</sub> from the Padeswood CCS Plant into the HyNet Main Onshore Carbon Dioxide Pipeline network via the Northop Hall AGI.
- 3.4.2. The Padeswood Carbon Dioxide Spur Pipeline will be 16" in diameter and built out of steel. The pipeline will be buried underground along its entire length, except for short sections at the beginning and end where it will connect to the Padeswood AGI and the Northop Hall AGI respectively. The depth from the top/crown of the pipe to the ground surface will vary depending on technical factors such as ground conditions and topography, but will be a minimum of 1.2 m.
- 3.4.3. Open-cut trenching methods will be used to install the Padeswood Carbon Dioxide Spur Pipeline for the majority of the route. This will

involve the excavation of an open trench, lowering of the pipeline into the trench, and backfilling with excavated material. For complex crossings, to avoid disruption to utilities, major highways, watercourses and/or particular environmental sensitivities (e.g. ancient woodland), specialist trenchless installation techniques will be used. In these locations, the pipeline will be located at a greater depth, depending on the nature of the feature being crossed. Further detail on these construction methods is provided in **Section 3.7**.

#### THE PADESWOOD CARBON DIOXIDE SPUR PIPELINE ROUTE

- 3.4.4. The Padeswood Carbon Dioxide Spur Pipeline is located in Flintshire (Wales), approximately 15km west of Chester, the nearest city. Other settlements in close proximity to the Padeswood Spur Pipeline Proposed Development include Padeswood, Buckley, Mynydd Isa, Mold and Northop Hall.
- 3.4.5. The route of the Padeswood Carbon Dioxide Spur Pipeline has been informed by various factors including environmental sensitivities. The route has been refined following liaison with stakeholders, including statutory bodies, individuals, communities, landowners and occupiers, and local authorities to understand the impact of the Padeswood Spur Pipeline Proposed Development, as well as working with engineering and environmental experts. Further details on the refinement of the route can be found in **Chapter 4: Consideration of Alternatives (Document Reference PW.3.2.4)**.
- 3.4.6. This section provides a description of the route from south to north, and indicates the locations where Trenchless Installation Techniques are proposed. Each trenchless crossing location is assigned a unique ID. Further information on Trenchless Crossings, including the expected crossing type, construction method, and estimated length, can be found in **Table 3-1**. The type and nature of the trenchless crossings may change at the detailed design stage.
- 3.4.7. The trenchless crossing locations are described in further detail below and can also be seen in **Figure 3.3 - Padeswood Spur Pipeline Proposed Development Temporary Works**. The construction methodology, including trenchless crossing types, is described further in **Section 3.7**.

**Table 3-1 Anticipated Trenchless Crossing List**

Crossing ID	Name	Type	Anticipated Construction Method	Estimated Length (m)
TRX-01	A5118	Road	Auger boring	45
TRX-02	Padeswood Road South	Road	Auger boring	40
TRX-03	Foundry Drain	Watercourse	HDD	280
TRX-04	Wat's Dyke	Woodland / Watercourse	HDD. Note: The 'worst case' method for each chapter will be assessed.	275
TRX-05	Rose Lane	Road	Auger boring	40
TRX-06	A549 – Mold Road	Road	Auger boring	100
TRX-07	Mold Bypass (South Crossing)	Road	Microtunnel	150
TRX-08	Mold Bypass (North Crossing)	Road	Microtunnel	100
TRX-09	Bryn-y-Baal Road	Road	Auger boring	45
TRX-10	A494	Road	Auger boring	30
TRX-11	Alltami Road	Road	Auger boring	45
TRX-12	A55 Expressway	Woodland /Road	HDD. Note: The 'worst case' method for each chapter will be assessed.	370

### Route Description

- 3.4.8. The Padeswood Carbon Dioxide Spur Pipeline begins at the Padeswood AGI, located within the north-western boundary of the Padeswood CCS Plant to the south of the existing Padeswood Cement Works. The pipeline routes northwards out of the AGI, crossing the A5118 (TRX-01), before turning to the west and running adjacent to the A5118.



- 3.4.9. To the south of Buckley, the Padeswood Carbon Dioxide Spur Pipeline then routes in a generally north-west direction towards Mynydd Isa, crossing a number of features including Padeswood Road South (TRX-02), Foundary Drain, (TRX-03), Wat's Dyke (TRX-04) and Rose Lane (TRX-05).
- 3.4.10. Turning north, the Padeswood Carbon Dioxide Spur Pipeline passes between the settlements of Mynydd Isa and Mold, crossing the A549 Mold Road east of Wylfa Roundabout (TRX-06). The route then crosses the A494 Mold Bypass in two locations (TRX-07 and TRX-08), before running adjacent to the A494 Mold Bypass heading North. The route crosses Bryn-y-Baal Road (TRX-09) and Wat's Dyke for a second time.
- 3.4.11. The Padeswood Carbon Dioxide Spur Pipeline then crosses the A494 for a third time to the east of the New Brighton Roundabout (TRX-10), before continuing in a generally northerly direction through agricultural land towards the A55. One further crossing is located north of the A494, at Alltami Road (TRX-11).
- 3.4.12. In the north, the pipeline route crosses an area of Ancient Woodland and the A55 (TRX-12), after which the route terminates at Northop Hall AGI.

### **3.5. ADDITIONAL EQUIPMENT AT NORTHOP HALL AGI**

- 3.5.1. The Padeswood Spur Pipeline Proposed Development will connect to Northop Hall AGI, which is consented under the HyNet Carbon Dioxide Pipeline Development Consent Order (DCO) 2024.
- 3.5.2. Additional equipment will be required to be installed at Northop Hall AGI to facilitate this connection. This will primarily consist of pipework to connect the Padeswood Carbon Dioxide Spur Pipeline to the Main Onshore Pipeline. The footprint and general visual characteristics (including fencing and lighting) of the Northop Hall AGI as consented under the DCO will remain the same. None of the permanent equipment will be taller than 5 m.
- 3.5.3. The additional Northop Hall AGI equipment will comprise the following:
- Pipework and associated infrastructure, including manifold, valves, venting connections, instrumentation, sensors, supports, etc;
  - PIG receiver facilities for the Padeswood Spur Pipeline, including blast wall;
  - Additional minor infrastructure including CP cabinet, cable trays, etc; and
  - Steel walkover platforms.

## **3.6. OTHER INFRASTRUCTURE**

### **PRIMARY FIBRE OPTIC CABLE**

- 3.6.1. A Fibre Optic Cable (FOC) connection will be required to establish a telecommunications link between the Padeswood AGI and the Northop Hall AGI.
- 3.6.2. The FOC will be installed along the length of the Padeswood Carbon Dioxide Spur Pipeline at a depth no higher than the top of the pipeline. For the majority of the pipeline route, the FOC will be installed within the pipeline trench and buried together with the pipeline. At trenchless crossing locations, the cable will either be pulled through with the pipeline, or installed separately adjacent to the pipeline.

### **SECONDARY FIBRE OPTIC CABLE**

- 3.6.3. A separate FOC connection will be required to connect the Padeswood AGI to the Point of Ayr (PoA) Terminal. This connection will be via the local fibre optic network. The connection is likely to be routed through the Padeswood Cement Works.

### **CATHODIC PROTECTION EQUIPMENT**

- 3.6.4. A Cathodic Protection (CP) system will be installed to protect the pipeline against corrosion.
- 3.6.5. Most elements of the CP system, including cabling and ground beds, are buried below ground and will be installed during the construction of the Padeswood Spur Pipeline Proposed Development. Above ground CP transformer rectifier cabinets will be installed within the fenced boundary of the two AGIs.
- 3.6.6. Small, above ground CP test posts will also be required. These will be installed along the pipeline to allow maintenance inspectors to take readings of the CP system. The CP test posts will usually be installed near road and watercourse crossings, directly above the pipeline and positioned within verges to reduce disturbance to land uses. The specific locations of these small test posts will be confirmed at detailed design stage when the precise alignment of the pipeline is confirmed.

### **MARKER POSTS**

- 3.6.7. Pipeline marker posts will be installed at all road and watercourse crossings, changes in pipeline direction, and field boundaries. The exact number, location and design of the marker posts will be confirmed at detailed design stage. However, industry standards will be followed and typically the marker posts will be pre-cast reinforced concrete posts with information plaques on them. The markers will be located in a

position that reduces disturbance to land uses, for example at field boundaries or in verges.

- 3.6.8. Aerial marker posts will also be used to locate the pipeline during aerial surveys. These will be positioned at field boundaries where possible, typically every 1 km and / or at major changes of direction of the pipeline.

#### LEAK DETECTION EQUIPMENT

- 3.6.9. Leakage detection on the pipeline is provided using a vibroacoustic monitoring system. Dedicated sensors will be installed directly on the pipeline.
- 3.6.10. The sensors located within AGIs will be installed above-ground. The sensors located outside of the AGIs will be installed underground, either completely buried or accessible via manholes. They will be connected by cable directly to the nearest AGI via the pipeline corridor.

### 3.7. CONSTRUCTION

#### OUTLINE ENVIRONMENTAL MANAGEMENT PLAN

- 3.7.1. An Outline Environmental Management Plan (OEMP) has been prepared and is included within this Planning Application (**Document Reference PW.4.1**) for approval. The OEMP includes the overarching construction management measures the Construction Contractor will implement to avoid and/or reduce the potential environmental impacts during the Construction Stage. The Construction Contractor will adopt the OEMP and use it to produce a detailed Construction Environmental Management Plan (CEMP(s)) for implementation at the Construction Stage.
- 3.7.2. The CEMP will be a live document and should be maintained by the Construction Contractor and reviewed and updated on a regular basis throughout the Construction Stage as new environmental construction measures are identified and implemented.

#### CONSTRUCTION PROGRAMME AND KEY PROPOSED CONSTRUCTION ACTIVITIES

- 3.7.3. It is anticipated that if planning permission is granted for the Padeswood Spur Pipeline Proposed Development, that construction works will commence in September 2026 and continue until February 2028.
- 3.7.4. Details of key construction activities are provided below.

## PRE-CONSTRUCTION ACTIVITIES

- 3.7.5. Ahead of construction, several pre-construction activities will need to be carried out and will include the following:
- Condition/defect surveys of existing infrastructure and assets where required;
  - Topographical surveys;
  - Geotechnical and ground stability surveys (including sampling of groundwater);
  - Ecological pre-construction surveys and mitigation work;
  - Route setting out in consultation with the landowner/occupier; and
  - Site clearance and preparation.
- 3.7.6. The site clearance and preparation of the Padeswood AGI will be prepared by Heidelberg Materials UK and these site preparation works will be consented as part of the Padeswood CCS Plant. Further information on how this has been assessed in the Environmental Statement is included in **Section 5.8 in Chapter 5 – EIA Methodology (Document Reference PW.3.2.5)**.

## TEMPORARY ACCESS TRACKS

- 3.7.7. Temporary Access tracks will be established to facilitate the construction works. The locations of proposed Temporary Access tracks are shown on **Figure 3.3 - Padeswood Spur Pipeline Proposed Development Temporary Works**.
- 3.7.8. Temporary access tracks for the construction compounds and work-fronts will generally be set up to minimise disruption and local environmental impacts. Access will be established from the existing road network via temporary access tracks and will utilise the following methodology:
- Strip topsoil;
  - Install one of the following options (depending upon local ground conditions and other variables):
    - Bare soil track;
    - Wooden bog mats;
    - Compacted gravel track;
    - Proprietary aluminium trackway; and
    - Asphalt or concrete sealed surfaces.

## TEMPORARY CONSTRUCTION COMPOUNDS

- 3.7.9. Temporary Construction Compounds will be required to facilitate construction activities, commissioning and landscaping works. There will be three types of Construction Compounds serving different types of construction works, namely:
- Centralised Compound;
  - Trenchless Crossing Compounds; and
  - Localised Compounds.
- 3.7.10. All Temporary Construction Compounds will have the following general characteristics:
- Offices and welfare facilities;
  - Parking provision for workers;
  - Material laydown area, yard, container storage and waste storage;
  - Lighting designed to ensure safe delivery of the necessary tasks;
  - Temporary security fencing (Heras style or equivalent) and other security arrangements as necessary;
  - All necessary signage advising of access restrictions and/or Public Right of Way (PRoW) diversions;
  - Temporary drainage solutions.
- 3.7.11. All Temporary Construction Compounds are expected to use self-contained mobile welfare facilities (serviced by a vacuum truck) and generators for power.
- 3.7.12. Further details on the three types of Construction Compound are provided below.
- Centralised Compound
- 3.7.13. A single Centralised Compound will be required. The Centralised Compound is proposed to be located to the east of New Brighton as shown on **Figure 3.3 - Padeswood Spur Pipeline Proposed Development Temporary Works.**
- 3.7.14. The Centralised Compound will be in place for the duration of the construction programme.
- 3.7.15. The Centralised Compound will serve as point for accepting deliveries and storage of equipment, pipe and other material. From the Centralised Compound, pipe sections and equipment will be transported directly to the storage areas within the various other compounds and work fronts by appropriate transport.

- 3.7.16. Further to the general Construction Compound characteristics outlined in **paragraph 3.7.10**, the Centralised Compound will also include the following features:
- Security cabin;
  - Temporary facilities for storage of specific materials.
  - Workshops for the prefabrication of piping, structural steel, piping sandblasting and painting, piping insulation, etc.;
  - Warehouse;

3.7.17. Concrete coverage may be used for entrance / access tracks, warehouses, and bunded refuelling areas, amongst other uses.

3.7.18. Following the completion of the construction programme, the Centralised Compound will be dismantled completely, including removal of all facilities and concrete coverage.

#### Trenchless Crossing Compounds

3.7.19. Each trenchless crossing outlined in **Table 3-1** will require two dedicated Construction Compounds to facilitate the works at either side of the feature that is being crossed. A larger compound will be required on the “entrance” side and a smaller compound will be on the “exit” side.

3.7.20. Approximate locations of each trenchless crossing compound are shown on **Figure 3.3 - Padeswood Spur Pipeline Proposed Development Temporary Works**. The locations, sizes and layouts of the compounds are subject to change depending on the final pipeline alignment, selection of construction methodology with entrance and exit locations, and detailed agreements with the relevant asset owner and/or regulatory authorities, all of which will be determined by the Construction Contractor post-consent.

3.7.21. Estimated Trenchless Crossing Compound sizes to consider are listed below in **Table 3-2** (not including space for pipe stringing or earthworks which will be outside of the compound area but associated with the trenchless crossing construction works).

3.7.22. Trenchless Crossing Compounds will be in place for the duration of that specific crossing, according to the construction programme, and will be dismantled following the cessation of these works. Land will then be reinstated back to its former use.

3.7.23. Further to the general Temporary Construction Compound characteristics outlined in **paragraph 3.7.10**, each Trenchless Crossing Compound will also include the following features:

- Equipment yard, supervisor’s office and laydown area;

- Crane movement area and staging laydown;
- Specialised trenchless crossing equipment; and
- HDD crossings will include provision for drilling rig and associated ancillaries (control cabinet, power packs, water and bentonite tanks, pumps).

#### Localised Compounds

- 3.7.24. Localised Compounds will be required to serve the construction works at AGI locations. The locations of proposed Localised Compounds are shown on **Figure 3.3 - Padeswood Spur Pipeline Proposed Development Temporary Works**.
- 3.7.25. There will be one Localised Compound located within the Padeswood CCS Plant site. This will be the Heidelberg Materials UK Pipeline Connection Point Compound, which also serves the construction of the Padeswood AGI. Any preparatory works, including ground clearance, for the Heidelberg Materials UK Pipeline Connection Point Compound will be completed by Heidelberg Materials UK and therefore is not included as part of this Planning Application.
- 3.7.26. A second localised Compound to serve the construction works at the Northop Hall AGI will be located at the Northop Hall AGI itself.
- 3.7.27. The estimated compound size for Localised Compounds is 35 m x 35 m. They are expected to be in place for the duration of the construction programme for the AGIs.
- 3.7.28. Further to the general Temporary Construction Compound characteristics outlined in **paragraph 3.7.10**, each Localised Compound will also include the following features:
- Equipment yard, supervisor's office and laydown area; and
  - Crane movement area and staging laydown.

### PIPELINE CONSTRUCTION TECHNIQUES AND SEQUENCING

#### Open Trench Construction

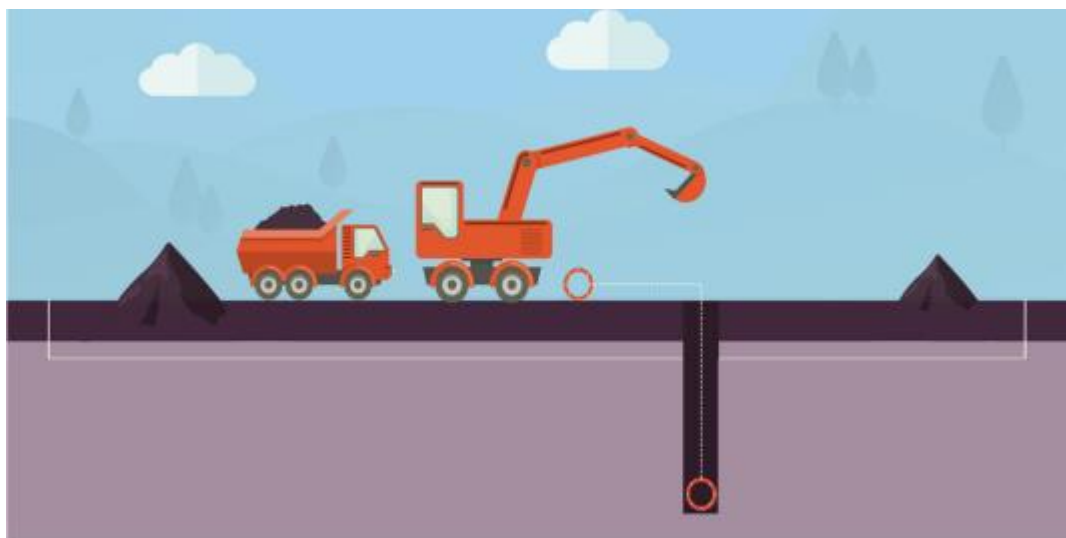
- 3.7.29. The majority of the pipeline route will be installed by open trench construction methods.
- 3.7.30. The sequence of activities for open trench pipeline construction will typically comprise:
- Surveys of pipeline route (see **paragraph 3.7.5**) and establishment of Working Width;
  - Clearing and fencing of the pipeline Working Width;

- Removal of topsoil, which is stored separately to subsoil, on one side of the trench.
- Receiving materials;
- Laying out ('stringing') of pipe sections adjacent to the trench line;
- Welding, inspecting and applying coating to the pipe sections where applicable;
- Excavation of a narrow trench for the pipeline;
- Lifting and lowering of the pipe into the trench;
- Laying of FOC into the trench;
- Backfilling of the trench;
- Pre-commissioning activities;
- Reinstatement of existing drainage features;
- Replacement of topsoil which is levelled and reinstated to the original state;
- Installation of marker posts and CP test posts where required;
- Removal of temporary fencing; and
- Reinstatement to prior land use, planting and other mitigation.

### Establishing the Working Width

3.7.31. Following the completion of the pre-construction activities, open trench construction will commence with the establishment of the working width. A typical pipeline working width is shown in **Insert 3-1**.

#### Insert 3-1 - Typical Pipeline Working Width



3.7.32. The working width will be wide enough to allow construction activities to take place safely and efficiently. A standard construction corridor width of 25 m is proposed. The construction corridor width may vary if



constraints are present, or if there is a particular constructability concern. This will be assessed during detailed design.

- 3.7.33. The working width will be clearly demarcated using temporary fencing. The style of fencing will be selected using local considerations, typically 'post-and-rope' fencing for arable land or appropriate stockproof fencing for grazed land. Urban sections or areas with increased levels of public interaction may use HERAS or similar. All temporary fencing will be removed upon completion of the works.
- 3.7.34. The working width will be cleared, with vegetation loss to be minimised as far as reasonably practicable. Where hedgerow removal is required to facilitate construction, this will be kept to the minimum width practicable. This will typically be 15 m for perpendicular pipeline crossings and up to 17 m for crossings at an angle. Temporary access locations will be kept to a maximum of 6 m in width. Opportunities to reduce the amount of hedgerow removal required at each hedgerow crossing will be explored, with the smallest practicable width of hedgerow removal possible prioritised to facilitate construction of the pipeline.
- 3.7.35. Topsoil or organic surface material will be stripped to one edge of the working width to prevent mixing with subsoils. The stripping of the topsoil will be carried out with great care to provide maximum protection for the soil structure (preventing topsoil and subsoil becoming mixed and avoiding soil contamination). Topsoil will be formed into bunds for temporary stockpiling. Movement on or any kind of compaction of the topsoil will be avoided. As far as practical, topsoil will be stored adjacent to the works and reused locally during post-construction reinstatement.
- 3.7.36. Where appropriate, pre-construction field drainage will be installed within the working width.
- 3.7.37. Reinstatement of the working width will allow previous use to resume where that will not impact on the operation and maintenance of the Padeswood Carbon Dioxide Spur Pipeline and subject to the restrictions imposed to protect the pipeline.

### **Pipeline Stringing and Welding**

- 3.7.38. Pipeline sections will be delivered from the Central Compound to the workfronts by appropriate transport and laid out within the Right of Way, adjacent to the eventual pipeline trench. This activity is termed 'stringing'.
- 3.7.39. Pipe sections will be placed on trestles for end preparation and welding. There will be several welding teams working simultaneously

to complete the welding as outlined in the construction schedule developed for each workfront.

- 3.7.40. On completion of the welding, the pipeline will then undergo Non-Destructive Testing (NDT). This entails a variety of inspection methods designed to ensure the integrity of the fabricated line. Any weld radiography will be carried out within exclusion zones and at times when there is no risk to both public and the work team.
- 3.7.41. Coating will be applied to the pipeline following completion of NDT to protect the welds from corrosion.

#### **Open Cut Trench Excavation**

- 3.7.42. The pipeline trench will be dug using excavators or using specialised trenching machines. The trench will typically be 2 m in depth, however this will increase to up to 6 m depending on local topography and for the crossing of utilities or environmental features. The trench will vary in width depending on local conditions.
- 3.7.43. Estimated progress of trenched installation is expected to be around 75 meters per day, with a maximum of 200 m open at any one time. The trench will typically remain open for a week.
- 3.7.44. In areas of very soft or very wet ground, the trench will require shoring with sheet piling. These will typically be installed using a vibrational hammer. All sheet piles will be removed following installation of the pipeline.

#### **Bedding, Pipe Lower and Laying, and Backfill**

- 3.7.45. The pipeline trench will be lined with bedding material of either imported clean sand or, where suitable, graded subsoils excavated from the trench. All bedding material will be screened prior to use and should not contain any sharp objects, foreign material or vegetation.
- 3.7.46. The pipeline will then be lowered into place using track-mounted side-boom pipelayers or equivalent plant. In areas where the ground is particularly waterlogged and the ground is made up of low density soils (i.e. peat), the pipeline may require ballasting to prevent buoyancy. Two types of concrete ballast may be used: either concrete applied to the pipe offsite; or concrete pre-cast and applied to the pipe in-situ. Alternatively, concrete coating or geotextile sands bags/gravel bags may be used.
- 3.7.47. Once the pipeline section is in place, the pipeline trench will be backfilled such that material is placed around and above the pipeline. As far as practicable, backfill material will constitute graded subsoils previously excavated from the trench. Where this is not possible,

imported clean sand will be used. The backfilled material will then be consolidated by tamping or rolling. Finally, topsoil will be reinstated. The ends of the pipeline section will be left open to allow for final welding and coating (known as 'Tie-Ins') of the pipeline sections.

- 3.7.48. Marker tape will be installed in the trench and directly above the pipeline to indicate its presence during any subsequent excavations.

### **Trenched Watercourse Crossings**

- 3.7.49. An Isolated trench watercourse crossing methodology will be used for the Padeswood Spur Pipeline Proposed Development. This methodology utilises flumes, dams and pumps. The following sequence is envisaged for such crossings:

- Construction of temporary dams and flume. The main flow path of the stream will be routed around the portion of the stream to be crossed using a flume or pipe bypass. The water flow will be maintained through the bypass during construction.
- Trench excavation. Before trench excavation begins, vegetation and topsoil in the riparian zone will be removed and stockpiled for later use.
- Installation of prefabricated pipe under the watercourse below the bypass pipe/flume

- 3.7.50. When the above work is completed, the stream bed will be re-contoured to its original form. Water will then be pumped into the prepared stream crossing to equalize hydrostatic pressure and the bypass removed from the streambed. The trench on both sides of the stream will be backfilled and reinstated. Erosion and sediment control devices installed downstream of the crossing will be left in place until the temporary equipment access bridge/culvert is removed from the stream.

### **Dewatering**

- 3.7.51. In areas of high groundwater, or following periods of heavy rainfall, temporary dewatering of the pipeline trench or other areas of excavation may be required to stabilise the surrounding soils.
- 3.7.52. Dewatering will be undertaken using portable pumps to remove water from the area of excavation. A Dewatering Management Plan will be developed by the Construction Contractor and implemented alongside the CEMP(s). The Dewatering Management Plan will provide a general framework for assessing the potential risks arising from dewatering, and will include the following:
- Measures to keep the rates and duration of pumping to a minimum;

- A summary of all licences and permits issued by Natural Resources Wales (NRW) to abstract and discharge from dewatering works;
- A detailed description of the main discharge points, abstraction and discharge rates, equipment to be used and construction sequence;
- Any authorisation and details of any pre-treatment required prior to discharge approved by NRW.

3.7.53. The Dewatering Management Plan will also act as a vehicle for more specific and detailed assessment (as necessary).

#### Trenchless Crossing Methods

3.7.54. Trenchless crossing methods will be required at certain locations to minimise disruption and environmental impacts. Such locations will include major roads, major watercourses and other environmental features such as ancient woodland.

3.7.55. Several trenchless crossing methods will be utilised, depending on ground conditions at the crossing location. These methods will include:

- Horizontal Directional Drilling (HDD);
- Guided (GAB) and Unguided Auger Boring (UAG); and
- Micro-Tunnelling.

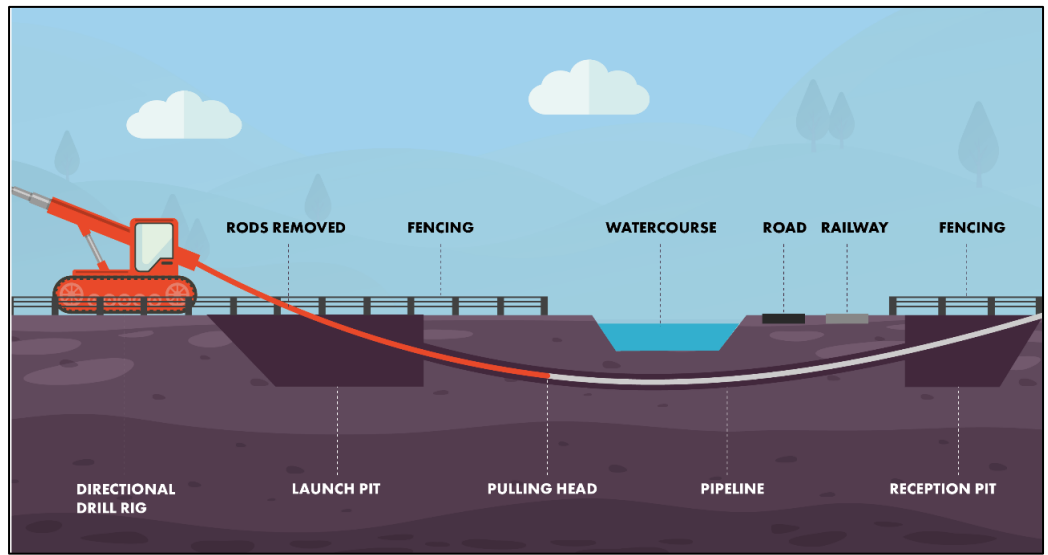
3.7.56. Descriptions of each of these methods is provided in **Table 3-2**, and a visual representation provided in **Inserts 3-2 to 3-4**.

**Table 3-2 Summary of Trenchless Installation Techniques**

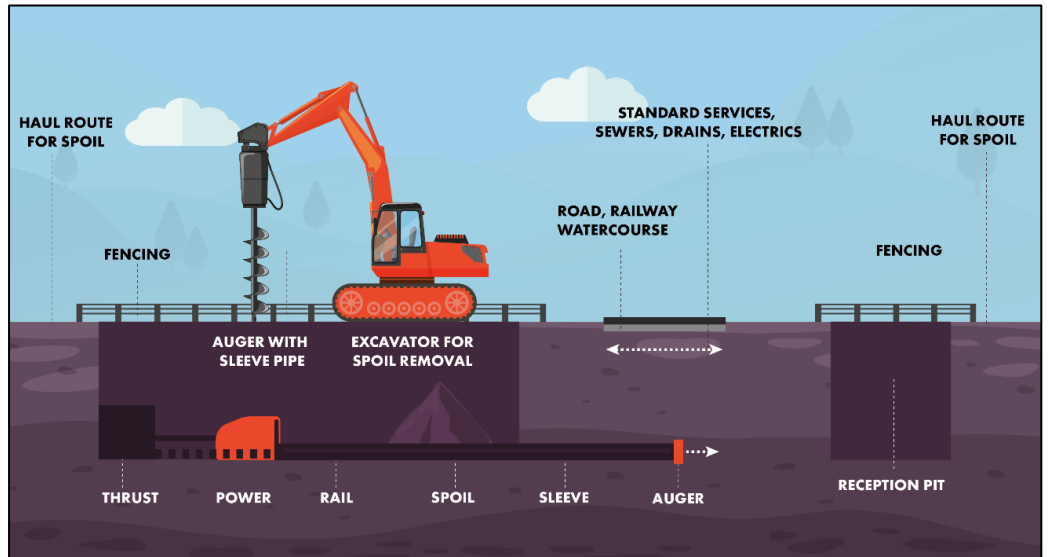
Crossing Method	HDD	Auger Boring (GAB and UAB)	Micro-tunnelling
Typical Use	Where potential for ground settlement is not critical (such as under rivers). Areas with stable ground conditions. Most suitable for small bore crossings. Long distance crossings.	Where short crossings are required underneath an obstacle that is not sensitive to ground settlement (e.g. minor roads or small watercourses). Used over short distances at shallow depths. GAB used in highly congested areas where the line and level of the crossing requires greater accuracy (e.g. crossings underneath existing underground utilities).	Where surface infrastructure is sensitive to settlement (e.g. railways and motorways) as it gives the best guarantee of little or no settlement. Areas with changeable or wet ground conditions not ideally suited to other methods.
Trenchless Compounds Sizes	HDD Drive compound: 50 m x 50 m HDD exit compound 30 m x 30 m Large stringing out area required as the pipe is fabricated to the whole length of the crossing before it is installed. This means the working areas for pipeline stringing are usually as large as the crossing length.	Drive compound: 30 m x 30 m Exit compound: 20 m x 20 m	Drive compound: 30 m x 30 m Exit compound: 20 m x 20 m
Methodology	Pipeline is bored under the crossing to emerge at a target point on the opposite side. A large area of temporary land	Entrance and exit pits are constructed at each end of the tunnel by sheet piling or a concrete sleeve.	Entrance and exit pits/shafts are constructed at each end of the tunnel by trench box,

Crossing Method	HDD	Auger Boring (GAB and UAB)	Micro-tunnelling
	<p>take is required on either side of the proposed crossing to accommodate the equipment, drilling fluid management system and laydown area for the pipe.</p> <p>A track mounted HDD boring machine passes a series of drills and reamers extending into the ground from the entrance pit until it reaches the exit pit.</p> <p>HDD uses bentonite, a clay-based drilling fluid which mixes with drill cuttings arisings to form a slurry. The used slurry is pumped back to the drill launch area where it is filtered and recirculated once again. Once the crossing has been completed, the bentonite will be disposed of appropriately.</p>	<p>GAB equipment is used to push the pipe through the crossing by pushing against the entrance pit walls to apply a thrust and torque reaction to the pit.</p> <p>UAB equipment is similar to GAB but driven from a long thrust entrance pit to the reception.</p> <p>The pipe is pre-welded and pushed through as the boring head progresses.</p>	<p>sheet piling or sacrificial concrete rings.</p> <p>An unmanned Micro-tunnel Boring Machine is used to install a reinforced concrete carrier pipe between the two shafts.</p> <p>Pipeline sections are threaded through the carrier pipe and welded in after tunnelling activities have completed. The tunnel is then fully grouted and the shaft construction removed and backfilled.</p> <p>Micro-tunnelling uses bentonite as a drilling fluid.</p>

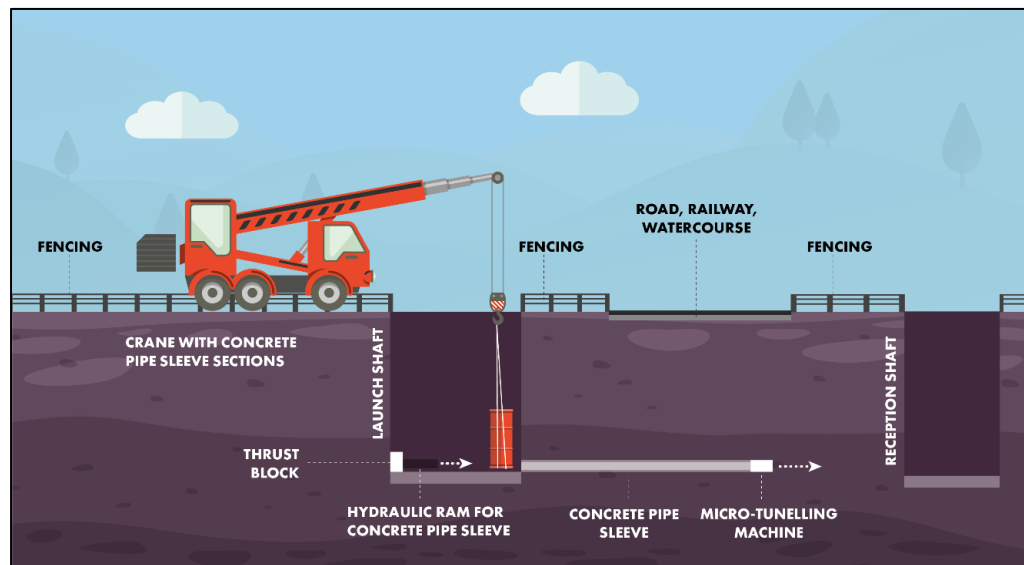
### Insert 3-2 - Illustration of HDD Technique



### Insert 3-3 Illustration of Auger Bore Technique



### Insert 3-4 - Illustration of Micro-tunnelling Technique



#### FOC INSTALLATION

- 3.7.57. The FOC will typically be installed in the same trench as the Padeswood Carbon Dioxide Spur Pipeline. In certain locations, such as where certain trenchless crossing methods are used, installation within the same trench may not be possible. In these circumstances, a separate HDD rig will be used to install the FOC adjacent to the pipeline.

#### REINSTATEMENT

- 3.7.58. Once all infrastructure is installed, the working width will be reinstated back to its former use. Reinstatement works will include, but are not limited to:
- Cleaning up and disposal of all refuse, debris, waste and rubbish such as brush, rock, skids, barrels, drums, cans, etc., resulting from the construction operations;
  - Removal of all equipment, tools and facilities used in the execution of the work;
  - Removal of all surplus and defective materials;
  - Reinstatement of the surrounding ground to a condition equivalent to that prior to the works; and
  - Reinstatement of all natural drainage courses to their original condition or to any condition required.



## EQUIPMENT AND MATERIALS

### Types of Plant and Equipment

3.7.59. A wide variety of vehicle types will be used for the construction of the pipeline. Vehicles will be required to transport people, equipment and materials. For the purposes of the Environment Impact Assessment (EIA) and Transport Assessment (TA), the construction vehicles have been classified as follows, in accordance with the Driver and Vehicle Standards Agency Lorry types and weights guide (DVLA, 2013):

- Light Goods Vehicle (LGV): Vehicle 3.5 tonnes or below in gross weight; and
- Heavy Goods Vehicle (HGV): defined as any vehicle exceeding 3.5 tonnes gross weight.

3.7.60. The list below indicates the anticipated major plant and equipment that will be used in the construction of the Padeswood Spur Pipeline Proposed Development:

- Bulldozers;
- Articulated haul trucks;
- Excavators;
- Vibratory Soil Compactor;
- Rough Terrain Concrete Trucks;
- Concrete Pump Trucks;
- Graders;
- Side Boom Layers;
- Horizontal Direction Drill rigs;
- Boring and tunnelling machines;
- All-terrain cranes; and
- Cable trenching machines.

## OILS, FUELS AND CHEMICALS

- 3.7.61. Any facilities for the storage of oils, fuels or chemicals will be sited on impervious bases and surrounded by impervious bund walls. The volume of the bunded compound will be 110% of the capacity of the tank, all filling points, gauges, vents and sight glasses will be located within the bund. Associated pipework will be located above ground and protected from accidental damage. All filling points and tank overflow pipe outlets will be detailed to discharge downwards into the bund. Refuelling will be supervised at all times, preferably done on an impermeable surface or with suitable ground protection.
- 3.7.62. It is estimated that the peak fuel consumption per day of the plant and equipment required to construct the Padeswood Spur Carbon Dioxide Pipeline will be approximately 4000 L/day. For the AGIs, the daily peak fuel consumption is estimated to be 170 L/day.

## WASTE AND MATERIAL MANAGEMENT PLANNING

- 3.7.63. Any waste materials generated during the Padeswood Spur Pipeline Proposed Development will be disposed of satisfactorily and in accordance with Section 34 of the Environment Act 2021 (HM Government, 2021) and NRW relevant guidance on waste management. The Construction Contractor will be responsible for obtaining all required environmental permits, licences and consents from the relevant authorities where required.
- 3.7.64. In dealing with waste, the waste management hierarchy shall be adopted. This hierarchy is frequently expressed in terms of reduction, reuse, recycling and finally residue treatment and disposal.
- 3.7.65. In case of on-site waste reuse, recycling or disposal, the requirements related to the necessary authorisation by local competent authorities to carry out such activities shall be investigated, and, if applicable, a permit application shall be submitted prior to the beginning of the activities.
- 3.7.66. Uncontrolled disposal or discharge of waste will be strictly forbidden, and compliance of all activities related to the management of waste with all existing local laws and regulations shall be assessed and assured by the subsidiary.
- 3.7.67. Carriers transporting waste from the site will be registered waste carriers and the movement of any Hazardous Waste from the site must be accompanied by Hazardous Waste consignment notes.

## TRAFFIC AND TRANSPORT MANAGEMENT

- 3.7.68. An **Outline Construction Traffic Management Plan (OCTMP)** (**Document Reference: PW.4.2**) has been produced as part of the planning application for the Padeswood Spur Pipeline Proposed Development. The OCTMP outlines measures to ensure any movement of plant or equipment is conducted in a safe and efficient manner, whilst minimising disruption to local communities. The OCTMP will be continually monitored, reviewed and improved throughout the Construction Stage to ensure measures are being adhered to and that they remain appropriate throughout the Construction Stage.
- 3.7.69. To ensure that any impacts on major highways and trunk roads during construction will be limited, the major equipment and materials required during construction will be transported outside of peak periods. Further detail on these measures is provided within **Chapter 16 - Traffic and Transport (Document Reference: PW.3.2.16)**.
- 3.7.70. Where open trenching is utilised across minor roads and tracks, these routes will either be managed by road closures and temporary diversions or traffic management. Road closures in these areas are not likely to exceed 2 weeks in duration.
- 3.7.71. All designated Public Rights of Way (PRoW) have been identified, and any potential temporary closures applied for are set out in the Planning Application. All designated PRoW crossing the working area will be managed, with access closed and wherever possible diverted. Further information on these measures is provided within **Chapter 16 - Traffic and Transport (Document Reference: PW.3.2.16)**.

## CONSTRUCTION PROGRAMME AND WORKING HOURS

- 3.7.72. The construction of the Padeswood Spur Pipeline Proposed Development is anticipated to commence in 2026. From the commencement of the pre-construction activities to completion of commissioning, the construction programme is expected to last approximately 18 months. This is shown in the preliminary construction schedule provided in [Table 3-3](#).

**Table 3-3 Indicative Construction Programme**

Activity	Start	Finish
Mobilisation & Enabling Works	Sept 2026	Dec 2026

UG Pipeline Installation – Open Cut	May 2027	Nov 2027
Trenchless Crossings	Jan 2027	Jan 2028
Padeswood AGI & Northop Hall AGI Construction	Oct 2027	Jan 2028
Pre-Commissioning	Jan 2028	Feb 2028

- 3.7.73. To ensure that the construction programme is minimised, works will be programmed as a series of concurrent work packages via multiple teams working simultaneously along the Padeswood Spur Pipeline Proposed Development. A work package may focus on a specific area or location where a group of construction workers will carry out a particular aspect of the main pipeline construction activities, including topsoil stripping, trench excavation, pipe installation and backfilling of trenches.
- 3.7.74. The Construction Contractor will be committed to promoting the use of local workforce and suppliers, wherever practicable. Core working hours are proposed to be from 08.00 to 18.00 on weekdays (excluding bank holidays) and from 08.00 to 13.00 on Saturdays.
- 3.7.75. Exceptions will be required for extended hours or working outside core hours (including where necessary working on a weekend or Bank Holiday) for activities such as:
- The continuous drilling/tunnelling and pulling phases for trenchless crossings;
  - Where daytime working will be excessively disruptive to normal traffic operation;
  - Cleaning/testing of the pipeline; and;
  - Overnight traffic management measures.
- 3.7.76. Except in the case of an emergency, any work required to be undertaken outside core hours (not including non-intrusive surveys, repairs or maintenance) will be agreed in advance with Flintshire County Council.
- 3.7.77. To maximise productivity within core working hours, the Construction Contractor will require a period of up to one hour before and up to one hour after core working hours for the start-up and close-down of activities. This will include, but not be limited to, deliveries, movement to place of work, unloading, maintenance

and general preparation works. It will not include the operation of any plant or machinery likely to cause disturbance to residents or businesses. These periods will not be considered an extension of core working hours.

- 3.7.78. During the Construction Stage, there will be a peak workforce of approximately 240 in September 2027. The total anticipated construction works hours is approximately 300,000.

### **3.8. PRE-COMISSIONING**

- 3.8.1. Throughout the installation of the pipeline, pre-commissioning activities will be required to determine the structural integrity of the pipeline. Pre-commissioning activities will be undertaken in sections along the pipeline length.
- 3.8.2. The pipeline will first be cleaned and gauged to remove construction debris and ensure the pipeline section is free from deformations or obstructions. Hydrostatic testing will then be undertaken to both identify leaks and manufacturing flaws and to validate factors of safety required by design standards to mitigate failure in service.
- 3.8.3. Hydrostatic testing involves filling the pipeline section with water, before pressurising the water to the pipeline's design pressure. To check for leaks, pipeline pressure is then monitored, and a visual inspection of the pipeline may be undertaken.
- 3.8.4. The water used for hydrostatic testing will be taken from one of the following supply options:
- Water Utility;
  - Padeswood CCS;
  - Water tanker, which will be filled at a central location and driven to the pipeline section being tested;
  - New Water Abstraction. In certain circumstances, it may be prudent to abstract water directly from adjacent watercourses. This water will be treated on site to remove particulates and other impurities. In any instance where this is required, a new abstraction licence from the relevant water authority shall be obtained prior to commencement; or
  - Water Re-use. Where practicable, water will be reused across multiple pipeline sections.
- 3.8.5. Following hydrostatic testing, water quality will be tested before being discharged either to a designated watercourse, public sewer, or water tanker.

- 3.8.6. The viability of each discharge option will be assessed at various locations along the pipeline route and, where required, relevant discharge licences obtained.
- 3.8.7. Following testing, the pipeline will then be dried and filled with nitrogen until commissioning.

### **3.9. OPERATION AND MAINTENANCE**

- 3.9.1. The AGIs will not be permanently manned as they will be operated remotely and controlled from the Point of Ayr Terminal in Flintshire.
- 3.9.2. There will be no on-site power generating equipment at the AGIs and the only active source of noise is expected to be the E&I Kiosks, which will be mounted with air conditioning units.
- 3.9.3. Should there be a need to isolate the Padeswood Spur Pipeline Proposed Development for operational reasons, this will be performed at the AGIs via remote operation. However, the AGIs will also allow for in-person operation, should this be needed. Emergency shut down valves will be located at the AGIs.
- 3.9.4. Pipeline leak detection technology will be installed and is designed for the early warning and remote identification of major leakages. CO<sub>2</sub> point gas detectors will also be installed externally at the Padeswood AGI. Temporary venting is discussed in **paragraph 3.9.13** below.

#### **PERMANENT RIGHTS CORRIDOR**

- 3.9.5. The Padeswood Spur Pipeline Proposed Development will be protected by restrictions placed on the land over and immediately around it, in a corridor along the pipeline alignment with a maximum width of 24.4 m. These will either be included in the lease for the pipeline or imposed as restrictive covenants for the benefit of the subsoil land interest within which the pipeline is situated. These restrictions will include preventing activities which could damage the pipeline such as constructing over it or planting trees over it.
- 3.9.6. Rights to take access and carry out works of inspection and maintenance of the Padeswood Spur Pipeline Proposed Development will also be taken over the same corridor. These rights will be in the form of an easement or acquisition of rights and will not extend over private dwellings or gardens.

## CATHODIC PROTECTION

- 3.9.7. A CP system will be used to protect the pipeline against corrosion. Further details on the CP system are provided in **Section 3.6**.
- 3.9.8. Readings of the CP test posts will be taken by operational staff via hand-held equipment.

## OPERATIONAL ANNUAL FLOW

- 3.9.9. The annual flow of CO<sub>2</sub> to be transported by the Padeswood Spur Pipeline Proposed Development is expected to be up to 0.6 MtCO<sub>2</sub>/yr. Actual flow levels will depend on the volume of CO<sub>2</sub> captured by the Padeswood CCS Project.

## INSPECTION

- 3.9.10. Once the Padeswood Spur Pipeline Proposed Development is operational, it will not require permanent staffing or personnel presence. The AGIs are designed to be unmanned. Routine maintenance of the AGIs is expected to be minor and consist of lubrication, replacement of seals and calibration of instruments.
- 3.9.11. A routine programme of inspection and maintenance will be undertaken in accordance with best practice and regulatory requirements. **Table 3-4** sets out the anticipated maintenance and inspection activities and their frequencies.

**Table 3-4 Routine maintenance Activities and Frequency**

Infrastructure	Maintenance / Inspection Activity	Indicative Frequency
Pipeline	Vantage point survey including pipeline easement.	Weekly
	Aerial survey.	Fortnightly
	Electrical equipment, safety and protection devices and status checks.	Every six months
	Complete line walk.	Annually
	Coating defect survey.	Every four years
	Pressure test	Every five years
	Pipeline in-line inspection (using PIG).	An initial baseline survey upon commissioning and then every

Infrastructure	Maintenance / Inspection Activity	Indicative Frequency
		<del>one to two</del> 1-2 years.
CP system	Check the operation and condition of the transformer rectifier units.	Monthly
	Measure drain-point potential, the current of drainage stations and AC levels from the highest select points along the pipeline system.	Monthly
	Measure the: <ul style="list-style-type: none"> <li>• Electrical continuity from the bonding devices and grounding systems</li> <li>• Settings and function from the safety and protection devices; and</li> <li>• Instant-off potentials at all test posts.</li> </ul>	Twice annually
	Close interval potential survey and DC voltage gradient survey	Every four years
AGIs	Security visit	Weekly
	Maintenance visit (including drainage system)	Quarterly
	Visual survey of valve surface works, instruments, and electrical equipment	Every three months
	Stroke testing and lubrication of valves	Annually
	HIPPS testing	Annually
	Calibration and cleaning of instruments	Annually
	Drainage filter medium replacement	Every 10 years
	PIG launcher/receiver inspections	External – 12 months Internal – 24 months



- 3.9.12. The finalised inspection and maintenance frequency for the Padeswood Spur Pipeline Proposed Development will be dependent upon further design work.

#### TEMPORARY VENTING

- 3.9.13. During normal operation, any emission of CO<sub>2</sub> will be limited to planned maintenance activities. Provision for planned temporary venting of CO<sub>2</sub> will be present at Padeswood AGI and Northop Hall AGI.
- 3.9.14. Temporary CO<sub>2</sub> venting will take place via the installation of an up to 10 m tall temporary vent stack at the AGIs. This will be removed once the temporary venting activity has been completed.
- 3.9.15. A summary of the venting activities is provided below. Further information is contained within **Chapter 6 - Air Quality (Document Reference PW.3.2.6)**, and quantities of CO<sub>2</sub> emissions are provided in **Chapter 10 – Greenhouse Gas (Document Reference PW.3.2.10)**.
- 3.9.16. There are two separate maintenance activities that will require venting at the Padeswood AGI: PIG trap venting and manifold venting.

##### PIG Trap Venting

- 3.9.17. During the pipeline in-line inspections, where a PIG is launched/received at the Padeswood AGI, there will be a need to vent the PIG trap once it is isolated from the pipeline. This will empty the contents of the trap so that the PIG equipment can be safely entered into/retrieved from the trap.
- 3.9.18. This will not be part of the regular, frequent inspection procedure as it is anticipated to be required every one to two years following commissioning of the Padeswood Spur Pipeline Proposed Development, as described in **Table 3-4**.

##### Manifold Venting

- 3.9.19. Manifold venting will take place when extraordinary or repair work is required at the Padeswood AGI. This will allow contents of the pipework within the Padeswood AGI to be cleared, prior to works taking place. The frequency of manifold venting is likely to be less than once every five years.

#### FUGITIVE EMISSIONS

- 3.9.20. Potential fugitive emissions from the Padeswood Spur Pipeline Proposed Development are expected to be minimal because of the limited number of fugitive emission sources. Monitoring and

maintenance will be performed on the CO<sub>2</sub> transport facilities to limit fugitive emissions.

3.9.21. Operating procedures will draw upon industry standard guidance to reduce fugitive emissions. This will include:

- Identification of the plant components (valves, vents, flanges etc.) that may cause fugitive emissions;
- Periodic monitoring to check the status of the identified components by using leak detectors;
- Implementation of a leak detection and repair programme to minimise fugitive emissions, for each component for which leakages have been identified; and
- Reporting results of monitoring and repairing activities.

### LIGHTING

3.9.22. Lighting columns 5m in height will be installed at the perimeter of the Padeswood AGI. The AGI will not be permanently lit; lighting will only operate should there be a security or safety reason (for example, an unexpected need for a maintenance visit during low light conditions).

3.9.23. The perimeter lighting columns will be directed only into the facility area and will incorporate measures such as louvres and/or barn-doors, to minimise light-spill on the occasions that the lighting is required.

3.9.24. No permanent lighting will be installed along the rest of the pipeline length as part of the Padeswood Spur Pipeline Proposed Development.

3.9.25. No additional permanent lighting will be installed at the Northop Hall AGI as part of the Padeswood Spur Pipeline Proposed Development.

## **3.10. DECOMMISSIONING**

3.10.1. The Padeswood Spur Pipeline Proposed Development infrastructure is designed to a life span of 25 years. When the Padeswood Spur Pipeline Proposed Development ceases to be operational and reaches the end of its useful life, the pipeline will be decommissioned safely, filled with nitrogen and left in-situ. Nitrogen is an inert gas which prevents corrosion of the pipeline.

3.10.2. Above ground features associated with the AGIs will be dismantled, cleared and the ground conditions restored. 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.

- 3.10.3. Due to the nature of the Padeswood Spur Pipeline Proposed Development, although steps will be taken to clean, vent and drain the pipeline and equipment, there may be contamination by residual chemicals present. The presence of chemicals will be considered in selecting the decommissioning and disposal method.
- 3.10.4. The CP monitoring system may be kept in place to allow monitoring and ongoing protection against corrosion.
- 3.10.5. Decommissioning design and works 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 will be produced by the Decommissioning Contractor and based on the measures included in the **OEMP (Document Reference: PW.4.1)**.