PIPELINE SAFETY MEASURES

liverpool bay ccs

INTRODUCTION

Liverpool Bay CCS Limited (LBCCS) is leading the development of the HyNet Carbon Dioxide Pipeline (Main Onshore Pipeline), as part of the Liverpool Bay Carbon Dioxide (CO_2) Transportation and Storage (T&S) Project to serve the HyNet Industrial Decarbonisation Cluster.

HyNet is the UK's leading industrial decarbonisation project which aims to unlock a low carbon future in the north west of England and north Wales by tackling CO_2 emissions from industry and supporting economic growth in the region. This factsheet explains the health and safety measures in place for the Main Onshore Pipeline (the Pipeline).

PROJECT OVERVIEW

The Pipeline previously referred to as the HyNet Carbon Dioxide Pipeline, is a Nationally Significant Infrastructure Project which was granted a Development Consent Order (DCO) by the Secretary of State for Energy Security and Net Zero in March 2024.

The DCO allows for the construction, operation and maintenance of the Pipeline as part of the HyNet Carbon Capture and Storage (CCS) cluster, where LBCCS is the Transport and Storage operator.

PIPELINE SAFETY & INTEGRITY MANAGEMENT

LBCCS and its contractors have extensive and industry leading experience in designing, constructing and operating high pressure gas pipelines and Above Ground Installations (AGIs). This expertise will be used to develop and operate the Pipeline to established industry standards and best practices, ensuring risks are managed to levels which are acceptable and As Low as Reasonably Practicable (ALARP) throughout its lifetime.

The Pipeline and AGIs will be monitored, operated and controlled from the dedicated Control Room located at the Point of Ayr Terminal in Flintshire (24/7). Operators will regularly undertake maintenance and inspection activities along the route of the Pipeline and the AGIs.

Pipeline Integrity and Safety Management Systems have been developed and implemented for the full lifecycle of the project covering:

Design and route selection

Design

The Pipeline will be buried, with AGIs provided with physical security measures.

The design of the Pipeline has been undertaken in compliance with all relevant Pipeline Design Codes and Standards which have been developed over many decades to ensure the integrity and safety of high pressure gas pipelines. Its design has been verified as part of the route selection process informed by ground investigations and surveys.

The Pipeline's steel walls are thicker than standard natural gas pipelines and it will be operated at a lower pressure. The design of the Pipeline, controls implemented throughout construction, commissioning and operation ensure the Pipeline is compliant with stringent UK regulatory requirements.

The Pipeline's safety measures include a sophisticated leak detection system, ensuring it can be quickly and safely shut down and managed in the unlikely event of a leak.

Route selection

As part of the route selection process, ground water and flood zoning was considered to ensure durability.

The Pipeline has been designed to withstand environmental exposures and operate safely over its full operational life. Drainage and flood protection measures are designed to accommodate 1-in-100-year flood events as well as climate change.

Testing and Commissioning

Integrity testing will be carried out at every stage of the Pipeline's construction. This includes hydrostatic testing which involves filling the Pipeline with water and testing it at controlled pressures to ensure there are no leaks or weak points.

Hydrostatic testing will be carried out at a pressure approximately 1.5 times higher than the Pipeline's normal operating pressure.

Operational Safety & Integrity

Comprehensive pipeline operation and integrity management systems will be implemented, including regular monitoring, inspection and maintenance to ensure its safety and integrity.

As part of the planning and design process, a comprehensive range of potential operating conditions were assessed and documented within the Environmental Statement. These were carried out in line with applicable pipeline codes and standards for design, engineering and operation of pipelines. The Pipeline will be managed to the same requirements as existing gas pipelines already in place across the Country.

These assessments are set out in the Major Accidents and Disasters Assessment (Document Reference Number: D.6.2.13), which is available on the Planning Inspectorate website.

The Pipeline Integrity and Safety Management Systems will include regular inspection and maintenance in line with regulatory requirements and industry standards. The Pipeline's design incorporates multiple layers of protection to allow sections to be safely isolated if required.

Emergency response

Local emergency fire and rescue, police, and ambulance services were consulted as Statutory Consultees throughout the 2023 DCO Examination under the Planning Act 2008. This ensured all emergency services had the opportunity to review and comment on the proposed emergency response measures during the examination phase.

During the construction phase, the Pipeline's Construction Environmental Management Plan (CEMP) outlines measures to follow in case of an emergency on-site, including emergency response contacts and protocols.

Operational Emergency Response Plans will be developed in coordination with Local Resilience Forums, Local Authorities and Emergency Services and will be in place before the Pipeline becomes operational.

These plans will detail clear communication arrangements and response procedures, aligned with established local emergency planning arrangements. These include coordination with local emergency services, joint familiarisation activities where appropriate, and clearly defined roles and responsibilities. This approach is consistent with arrangements previously in place for the Point of Ayr to Connah's Quay gas pipeline and is well established with the local emergency services and local authority emergency planning officers.

REGULATION

The UK has a long-established and internationally respected safety regulatory framework for major infrastructure and energy projects.

The UK Government regulates all CCS projects, infrastructure and operation. The safety of the Pipeline, it's design, operation and maintenance will be regulated by the Health and Safety Executive (HSE) under the requirements of the Pipeline Safety Regulations (PSR96) and in line with well-established pipeline Codes, Standards and best practice.

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