liverpool bay ccs

System Development Statement

March 2026

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Contents

Acronyms and Definitions

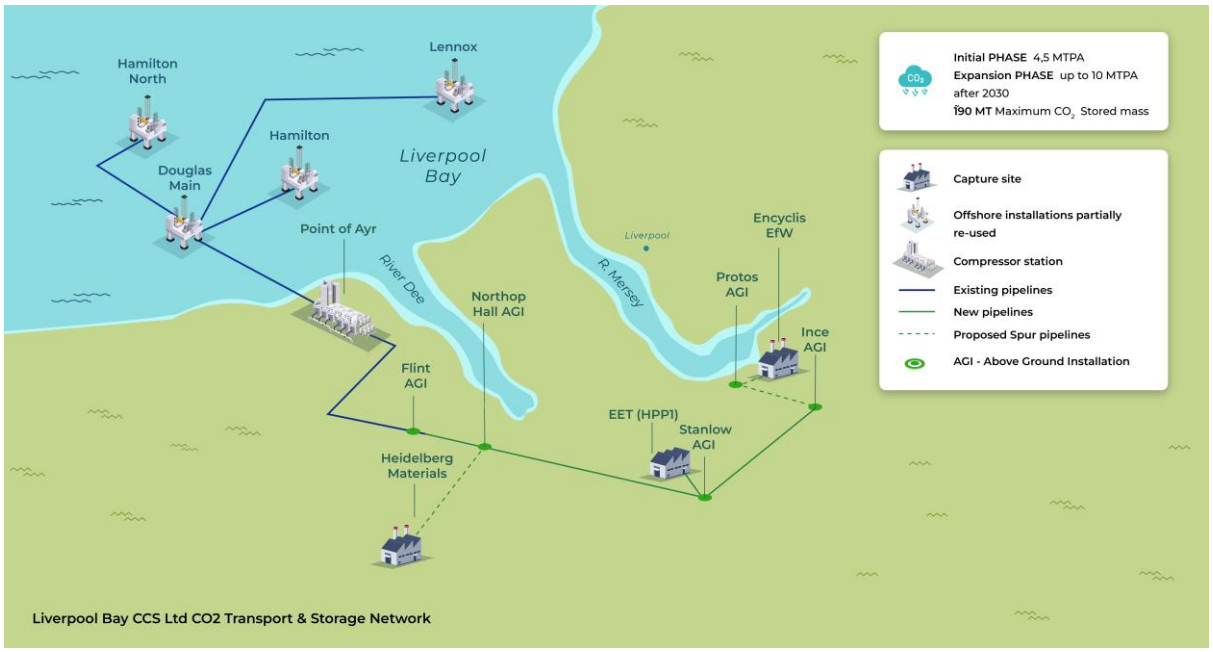
AGI	Above Ground Installation;
APDP	Approved Project Development Plan
BVS	Block Valve Station
CCS	Carbon Capture and Storage
Douglas CCS	The surface facilities providing heating, pressure control and distribution of the full CO_2 flow and utilities support to Hamilton Main, Hamilton North and Lennox
EET HPPI	Hydrogen Production Plant 1 (HPP1), EET Hydrogen- Initial User, on Government Priority List
Evero	Ince Bioenergy with Carbon Capture and Storage (InBECCS), Evero Energy – a Track 1 Expansion User, on Government Priority List
FEED	Front End Engineering and Design
Hamilton Main (HM)	The offshore wellhead platform receiving CO_2 for injection into the Hamilton Carbon Store (of which the jacket is repurposed);
Hamilton North (HN)	The offshore wellhead platform receiving CO_2 for injection into the Hamilton North Carbon store (of which the jacket is repurposed);
Lennox (LD)	The offshore wellhead platform receiving CO_2 for injection into the Lennox Carbon Store (of which the jacket is repurposed);
MTPA	Million Tonnes Per Annum
NESO	National Energy System Operator Limited
NSTA	North Sea Transition Authority
ONC	Obligated Network Capacity, being the network capacity that must be made available to the Users on aggregate
Padeswood	Hanson Padeswood Cement Works Carbon Capture Project, Heidelberg Materials – an Initial User, on Government Priority List
Padeswood Spurline	The new CO_2 pipeline connecting the Padeswood AGI to Northop Hall AGI
PoA Terminal (PoA)	The compression plant that exports the CO_2 offshore to the Douglas CCS Platform distribution hub (of which the gas reception terminal is repurposed)
Protos	Protos Energy Recovery Facility, Encyclis – Initial User, on Government Priority List
Runcorn	Runcorn Carbon Capture Project, Viridor – an Initial User, on Government Standby List
Runcorn Spurline	The new CO_2 pipeline connecting the Runcorn AGI to the Ince AGI
SPEN	Scottish Power Energy Networks
T&S Network	Transportation & Storage Network
TIX	Track 1 Expansion
Uniper	Connah's Quay Low Carbon Power, Uniper – a Track 1 Expansion User, on Government Priority List

1. Introduction

Liverpool Bay CCS Limited (LBCCS) is the owner and operator of the Liverpool Bay Carbon Dioxide (CO_2) Transportation & Storage (T&S) system which is being developed to serve the HyNet Northwest full-chain CCS industrial decarbonisation and hydrogen project. The LBCCS T&S system offers the opportunity for CO_2 emissions from industrial entities to be captured and permanently stored in three depleted Liverpool Bay geological stores previously used for hydrocarbon production.

The development project has been designed for an initial CO_2 storage capacity of 4.5 Million Tonnes per Annum (MTPA), with an expansion capability of up to 10MTPA.

The project will be delivered in Phases, the first of which commenced execution in April 2025 and aims to reach readiness for commercial operations by 2028.



CO_2 captured and metered by the Users will be transported to the PoA Terminal through an onshore transportation system that includes a main trunkline and spur lines, as necessary, from approved Users.

From the PoA Terminal, the CO2 will be transported offshore through the repurposing of the offshore pipeline infrastructure and distributed, via the Douglas hub platform, to the three stores of Hamilton North, Hamilton Main and Lennox, for injection into the depleted gas reservoirs.

The Department of Energy Security and Net Zero (DESNZ) announced on the 5th of August 2025, the HyNet expansion: project negotiation list - GOV.UK, which now includes Uniper and Evero as Priority Users and Runcorn as Stand-by Users.

As a results, a Change in Scope process has been initiated for the cancellation of Runcorn and for the addition of the two new Priority Users to the Approved T&S Network. These changes would reduce the number of Initial Users from four to three and the addition of two new Track 1 Expansion Users, both located across Cheshire and Northeast Wales. The five Users are anticipated to deliver, in aggregate, a total of 4.33 MTPA.

2. Purpose of this Document

This System Development Statement has been prepared and published in accordance with Standard Condition B2 of the Economic Licence issued to Liverpool Bay CCS Limited on 22 April 2025 (the "Licence"). The Licence grants approval to LBCCS Ltd to develop, maintain and operate the T&S Network in accordance with the Approved Project Development Plan (APDP).

3. System Description

The transportation and storage system will be constructed and commissioned across two phases.

3.1 Phase 1

Phase 1 consists of the following infrastructure and capability.

- Onshore Transportation System:
  - 36" pipeline from Stanlow AGI to Flint AGI
  - 20" pipeline from Ince AGI to Stanlow AGI
  - 20" pipeline from Protos AGI to Ince AGI
  - 24" pipeline from Flint AGI to PoA Terminal (P852 repurposed and extended)
  - fibre optic cable along the 36" and 20" pipelines;
  - five AGIs – at Ince, Stanlow, Northop, Flint and Protos
  - three BVSs - in the pipeline between Stanlow AGI and Northop AGI
  - three BVSs - in the pipeline between Flint AGI and PoA Terminal, and
  - support elements – infrastructure providing support to Encyclis Protos pipelines that connect to LB CCS's AGI.
- Point of Ayr (PoA) Terminal
  - gas filtration, drain drum, metering, three electrically driven two-stage centrifugal gas compressor, a control room and integrated control and safety system, venting system; utilities (including emergency power generation, and compressor instrument air package); and electrical substation and new 33kV connection from SPEN;
- Repurposed offshore pipelines:
  - 20" PoA Terminal to Douglas CCS Platform repurposed with confirmed achievable flow of 4.74 MTPA (and achievable flow of 10.53 MTPA in dense phase operation subject to the appropriate compression at PoA);
  - 20" Douglas CCS Platform to HM (PL1039) repurposed with confirmed achievable flow of 4.25 MTPA; and
  - 14" Douglas CCS Platform to HN (PL1041) repurposed with confirmed achievable flow of 2.00 MTPA;
- New subsea power and communications cables from PoA Terminal to the offshore platforms

- Three offshore platforms
    - Douglas CCS Platform – surface facility with helideck; two heaters; pressure control; power transformers and electrical distribution; and risers;
    - Hamilton Main – repurposed jacket with new topsides (with helideck; two heaters, filtration; metering; power transformers and electrical distribution and riser); four injection wells and one monitoring well;
    - Hamilton North – repurposed jacket with new topsides (with helideck, one heater, filtration, metering, power transformers and electrical distribution, and riser); two injection wells, one monitoring well and one sentinel well; and
- Network-wide leak detection system.

Phase 1 infrastructure is expected to be delivered by Year End 2028 and commissioned with the CO_2 from one or two of the selected Users, in early 2029, when the project is expected to become operational.

The network has been designed and will be constructed to allow for potential future expansion in the HyNet area. Ince, Stanlow, Flint and Protos AGIs are all equipped with additional expansion capability, including the tie-in of additional spurlines.

3.2 Phase 2

Phase 2 will complete the infrastructure to secure the 4.5 MTPA long term capacity of the system and will be delivered in Tranches, with the following infrastructure and capability.

Phase 2 Tranche A - is related to the addition of the third carbon store, Lennox, and consists of:

- Lennox offshore platform – including new topside (with helideck; two heaters, filtration, metering, power transformers and electrical distribution; and riser); two injection wells, one sentinel well and one monitoring well
- New subsea power and communications cable from Douglas CCS Platform to Lennox;
- Repurposed offshore pipelines:
    - 16" Douglas CCS Platform to Lennox (PL1035); and
    - 12" Douglas CCS Platform to Lennox (PL1036A);

Phase 2 Tranche B - is related to connecting Padeswood / *Heidelberg* User and consists of:

- Onshore 16" pipeline from Padeswood AGI to Northop AGI, including a fibre optic cable along the route;
- Padeswood AGI and ancillary support systems; and upgrades of Northop AGI.

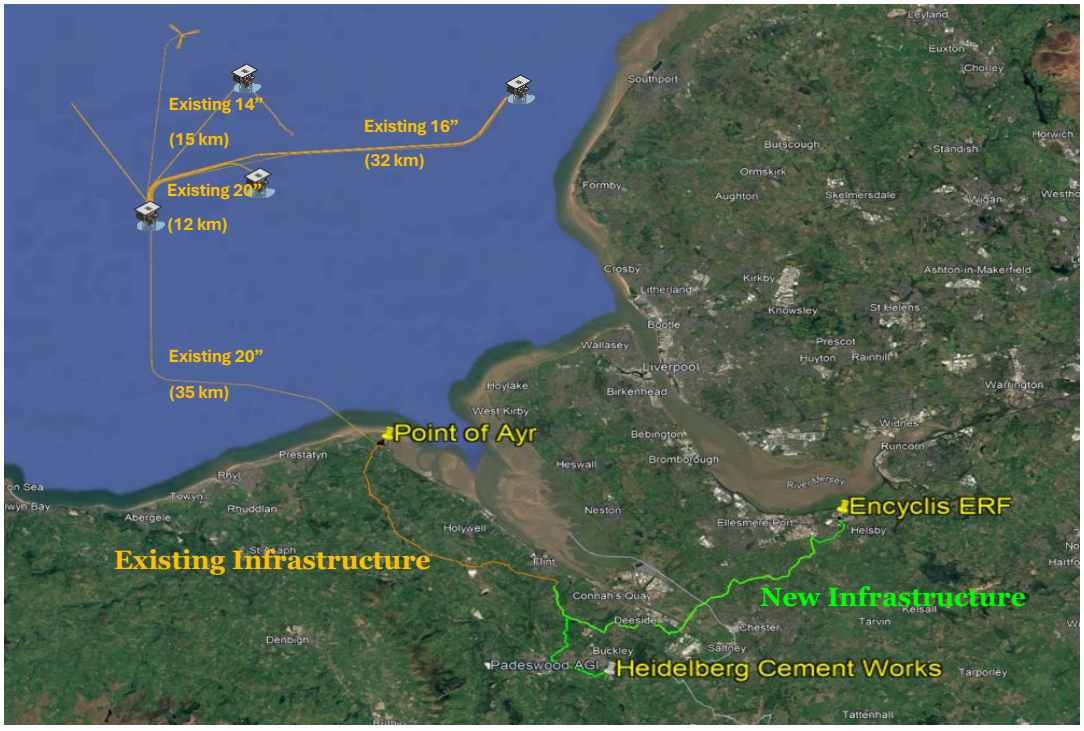
The store development philosophy is premised on an equal re-pressurisation of three stores over the Project operational life. CO_2 will initially flow directly into the reservoirs until intermediary compression at PoA is required. The cumulative quantity of CO_2 injected will later result in an increase of the reservoir pressure up to a point where the offshore transportation system will be upgraded to operate in dense phase conditions. The three stores will always operate within the parameters defined in their respective Storage Permits.

Phase 2 Tranche D - is related to the conversion of the offshore transportation and storage system to operate in *dense phase* at 4.74 MTPA design capacity. This conversion, which is not expected to be required until after a number of years of operation, will consist of the following infrastructure:

- PoA Terminal upgrade to dense phase operation, including: third stage compressors; upgrade of utility system; new vent package; and power connection upgrade to 132 kV;
- Offshore pipelines, including:
    - New 16" flowline from Douglas CCS Platform to Hamilton Main specified for dense phase flow with a design capacity of 4.25 MTPA;
    - New 12" flowline from Douglas CCS Platform to Hamilton North specified for dense phase flow with a confirmed capacity of 2.00 MTPA; and
    - Repurposed 12" flowline from Douglas CCS Platform to Lennox (PL1036A) with a design capacity of 1.66 MTPA;
- Offshore platforms upgrades, including riser connections and piping connections required for the new offshore pipelines; upgrade of metering instrumentation for dense phase flow; and downhole fixed orifice chokes (or such other technology as it may be appropriate to use in their place) in each of the wells to provide backpressure to maintain dense phase flow.

Phase 2 Tranche E - is related to connecting one of the two Phase 1 Users that may not be ready to connect at system start-up.

The map of LBCCS T&S Network, the offshore and onshore system with new and existing infrastructure being repurposed, is shown below.



4. System Use and Capacity

4.1 Store and Obligated Network Capacity

Storage Permits have been granted to allow injection of up to a total of 109 million-tonnes (Mt) of CO_2 across the three stores at an average rate of 4.5 million tonnes per annum (MTPA)

Obligated Network Capacity (ONC) is the T&S network capacity that will be made available to the Users on aggregate. The ONC has the following components:

	Obligated Network Capacity
Maximum Flow Rates	**Maximum Instantaneous Flow Rate:** 150.30 kg/s (4.74 MTPA instantaneous)
	Maximum Annual Cumulative Flow: 4.50 $MtCO_2$
Minimum Flow Rate	**Minimum Instantaneous Flow Rate:** 6.34 kg/s (0.20 MTPA instantaneous)
Overall Store Capacity	109 $MtCO_2$

4.2 Users

Following DESNZ announcement, the Hynet cluster includes three Initial Users as outlined in the table below. Two Users will connect to the T&S infrastructure developed in Phase 1, while the other User will connect via the spurline built in Phase 2.

	Planned Initial User	**Connection Location**
1.	Encyclis Protos ERF	Protos AGI
2.	Heidelberg (Hanson Padeswood)	Padeswood AGI
3.	EET HPP1	Stanlow AGI

5. Development and Expansion

Under Track-1 Expansion (T1X) process two additional Users have been designated by the Government as Priority Users. This selection has triggered a Change in Scope process which

would facilitate the start of development activities required to enable the T1X Users connection. The following development activities are envisaged:

- Evero connection design studies
- Uniper connection feasibility studies
- Concept select studies to support identification of a solution to mitigate the Joule-Thomson effect which relates to the cooling effect in the pipeline when the flow reaches 4 MTPA; and
- T&S System integrity studies to assess the combined Planned Initial Users and Track 1 Expansion Users configuration impact on operability and T&S Network integrity.

6. System Modification Plans

There are currently no plans for modification of the system described in Section 3

7. System Remediation Plan

There are currently no plans for remediation of the system described in Section 3

8. System Decommissioning Plan

As required under the Licence, Standard Conditions C2 and D2, 18 months prior to the Commercial Operations Date, LBCCS will submit information relating to decommissioning to the regulator, including:

- Onshore decommissioning plans.
- Estimated decommissioning fund costs for onshore and offshore.
- Proposed structure and investment strategy for the decommissioning fund.

Following approval by the regulator, LBCCS will calculate the Onshore Decommissioning Fund Allowance and Offshore Decommissioning Fund Allowance for each charging year. LBCCS will commence monthly payments into these funds in line with the Decommissioning Fund Allowances after the Commercial Operations Date.