Preesall Underground Gas Storage Facility, Lancashire

Design and Access Statement

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SUMMARY

1. This Design and Access Statement has been prepared by the Barton Willmore LLP on behalf of Halite Energy Group Limited (Halite) who are progressing an application to the Infrastructure Planning Commission (IPC) for a Development Consent Order (DCO) to construct and operate an Underground Gas Storage (UGS) Facility and associated infrastructure (the ‘Project’) at Preesall, Lancashire.

2. This Statement describes the built development associated with the Project and sets out the considerations that have led to the siting and design of the above ground infrastructure. In accordance with the advice, this Design and Access Statement has the following function and purpose:-

   a) To provide information on the development in terms of its composition, design, access and movement.
   b) To explain and justify the design and access principles and concepts on which the development proposal are based and to explain how these are reflected in individual aspects of a scheme.
   c) To provide a description of the key issues resulting from the Project assessment and engagement statutory consultees and the local community.
   d) To evaluate how this has informed the design of the proposed form of development.

3. The permanent above ground built development necessary for the construction and operation of the Project comprises:-

   • Security and Support Facility
   • Seawater Pump Station
   • Booster Pump Station
   • Gas Compressor Compound (GCC)
   • 7 Wellhead Compounds
   • Seawall Crossing and Observation Platform
   • Interconnector Metering Station

4. The design of the buildings has been influenced by the context to the Project and the design principles developed by the Project architect. The context is provided by:-

   • The needs of the development;
   • The site context having particular regard to its landscape and surroundings;
   • The planning history of the site and comments by the LPAs on previous designs for a UGS facility at Preesall;
   • The planning policy considerations with particular reference to the requirements of Section 10 of the Planning Act 2008, the sustainable development principles set out in Planning Policy Statement 1 –
Delivering Sustainable Development and the ‘good design’ objectives outlined in the National Policy Statements; and

- The comments made by the consultees and the community through the formal Section 42 and 47 consultation process.

5. Having regard to the context, the Project architect identified the following design principles:-

(i) The proposed development should seek to retain those parts of previous schemes that were deemed acceptable by the LPAs and the Secretary of State including:

   - The route of the brine pipeline;
   - The design of the seawall crossing and the observation platform;
   - The siting and design of the brine diffuser;
   - The general route of the gas interconnector to the NTS;
   - The siting and design of the Metering Station; and
   - The siting and design of the Seawater Pump Station.

(ii) The proposed development should have regard to the matters raised by the LPAs and the Secretary of State in respect of the previous schemes, particularly in respect of the impact of the siting and design of the:

   - Reception and Warehouse Compound
   - Gas Compressor Compound
   - Booster Pump Station

(iii) The proposed development should accommodate the equipment and technical functions of the Project in a safe and secure manner.

(iv) Buildings should be designed individually to reflect the character of their location and surroundings rather than providing a ‘family’ or consistent design across all buildings.

(v) Where possible, preference should be given to siting buildings in urban rather than the rural areas. Buildings should only be sited in the countryside if there are no more appropriate alternative locations.

(vi) Buildings should not be concentrated together as a single complex but provided as single buildings that are more easily assimilated into the landscape.

(vii) Where possible and appropriate, use is made of existing buildings.

(viii) Where possible, the height of buildings or infrastructure should be minimised and/or major buildings ‘sunk’ into the ground in order to minimise visual impact.
(ix) Where possible, no building or structure should be constructed in a nature conservation area.

(x) Where possible and appropriate, all buildings should be located on higher ground to avoid flood risk.

(xi) Where possible and appropriate, earth bunding should be provided at low gradients so that the bund can continue to be used for agricultural purposes.

(xii) Where possible and appropriate, buildings should be provided close or adjacent to existing roads or tracks to avoid the need for the construction of new access roads.

(xiii) The proposed development should seek to achieve economical fabrication and construction.

(xiv) The proposed development should seek to allow for staged construction and to allow the proposed buildings to be constructed in parallel.

(xv) The proposed development should seek to maximise the use of local materials and products in the built form.

6. The major impact on the siting and design of the buildings comprising the Project has arisen from the reduction in the number of gas storage caverns that are proposed in comparison to previous UGS proposals at Preesall. The Project provides up to 19 caverns with a working gas capacity of 600 million cubic metres measured at standard temperature and pressure (STP) – about half that of the previous Canatxx Gas Storage (CGS) proposals. The reduction in the size of the scheme and the proposed location of the caverns in the northern part of the Preesall site has allowed for a reduction in the amount of above ground development that is required and has allowed a more compact scheme to be designed.

7. In progressing the revised design, Halite has sought to incorporate the following changes into the Project in comparison to previous CGS proposals:

- Retain that part of the CGS proposals on the west bank of the Wyre Estuary that were acceptable to the Local Planning Authorities (LPAs) i.e. the design of the Seawall Crossing and the Observation Platform, the route of the brine pipeline, the siting and design of the Seawater Pump Station and the locations of the north and south River Wyre crossings.
- Locate the built form on the east side of the River Wyre to the northern part of the site to provide a more compact development.
- Relocate the Booster Pump Station to the east of the Hackensall STW to reduce its visual impact when viewed from the west.
• Remove the need for a second Booster Pump Station from the Project.
• Remove the Control and Warehousing building from the Project.
• Refurbish and re-use of Higher Lickow Farm.

8. The main design issue relates to the siting of the built development on the east bank of the Wyre Estuary i.e. the wellhead compounds, the GCC and the Booster Pump Station.

9. Minerals can only be worked where they are found and there is limited scope to relocate the wellhead compounds which need to be sited in the Area of Cavern Development as defined by the Geology Summary Report.

10. The LPAs are particularly concerned that the GCC is industrial in nature which is out of character with the rural nature of the Preesall area. Alternative sites on the west bank of the Wyre Estuary have been assessed for the relocation of the GCC but none are acceptable to the Health and Safety Executive (HSE). In order to mitigate the impact of the built development, the structures within the GCC have been designed to be as low as possible and significant earth mounding and landscaping is proposed to mitigate its impact on the surroundings.

11. The Booster Pump Station Compound is much smaller and has been located adjacent to the Hackensall Sewage Treatment Works so that it is not an isolated feature in the countryside. The Pump Station building has also been designed as a barn like structure to reflect the agricultural character of the area.

12. The Security and Support Facility makes use of the vacant farmhouse and barn complex at Higher Lickow Farm. Although the barn is proposed to be redeveloped, it is contained within the footprint of the existing barn.

13. In response to the Section 42 and 47 pre-application consultation process, Halite has redesigned the Seawater Pump Station and the Metering Station so that the designs of both buildings reflect their setting.

14. The primary means of access to the Preesall site is from the A558. A direct access is proposed to avoid the use of existing roads and lanes which do not meet the requirements of the Highway Authority. Within the site and where appropriate, Halite propose the use of existing tracks rather than the construction of new roads.

15. In order to further mitigate the impact of the built development, in consultation with the LPAs and the nature conservation groups, a comprehensive Landscape and Ecological Management Strategy Plan has been prepared.
1.0 INTRODUCTION

1.1 This Design and Access Statement has been prepared by the Barton Willmore LLP on behalf of Halite Energy Group Limited (Halite) who are progressing an application to the Infrastructure Planning Commission (IPC) for a Development Consent Order (DCO) to construct and operate an Underground Gas Storage (UGS) Facility and associated infrastructure (the ‘Project’) at Preesall, Lancashire.

1.2 The Planning Act 2008 places importance on good design and sustainability and this is reflected in the content of the ‘Overarching National Policy Statement for Energy (EN-1). NPS EN-1 advocates ‘good design’ for all energy projects and states that design is not just about visual appearance and aesthetic considerations but includes functionality, fitness for purpose and sustainability. The NPS states that:-

‘Applying “good design” to energy projects should produce sustainable infrastructure sensitive to place, efficient in the use of natural resources and energy used in their construction and operation, matched by an appearance that demonstrates good aesthetic as far as possible’ (para 4.5.1)

1.3 In drafting this Design and Access Statement regard has been given to the content of Circular 01/2006 and the guidance available from the Commission for Architecture and the Built Environment (CABE); the Government’s advisor on architecture, urban design and public space. The Circular makes reference to PPS 1 ‘Delivering Sustainable Development’ (2005) which states:-

‘Good design ensures attractive, usable, durable and adaptable places and is a key element in achieving sustainable development. Good design is indivisible from good planning. Planning authorities should plan positively for the achievement of high quality and inclusive design for all development, including individual buildings, public and private spaces and wider area development schemes. Good design should contribute positively to making places better for people. Design which is inappropriate in its context, or which fails to take the opportunities available for improving the character and quality of an area and the way it functions, should not be accepted’. (para 59)

1.4 The Circular explains that a ‘design and access statement is a short report accompanying and supporting a planning application to illustrate the process that has led to the development proposal, and to explain and justify the proposal in a structured way’ (para 60).
1.5 In accordance with the advice, this Design and Access Statement has the following function and purpose:-

a) To provide information on the development in terms of its composition, design, access and movement;

b) To explain and justify the design and access principles and concepts on which the development proposal are based and to explain how these are reflected in individual aspects of a scheme;

c) to provide a description of the key issues resulting from the Project assessment and engagement with statutory consultees and the local community; and

d) to evaluate how this has informed the design of the proposed form of development.

1.6 This Statement, therefore, first provides details of the composition, design, access and movement associated with the Project. The permanent above ground built development necessary for the construction and operation of the Project comprises:-

- Security and Support Facility
- Seawater Pump Station
- Booster Pump Station
- Gas Compressor Compound
- 7 Wellhead Compounds
- Seawall Crossing and Observation Platform
- Interconnector Metering Station

1.7 Second, this Statement explains and justifies the design and access principles and concepts that on which the development proposal is based, having particular regard to :

- The specific needs of the development;
- The site context having particular regard to its landscape and surroundings;
- The planning history of the site and comments by Secretary of State and the LPAs on previous designs;
- The planning policy considerations with particular reference to the requirements of Section 10 of the Planning Act 2008, the sustainable development principles set out in Planning Policy Statement 1 – Delivering Sustainable Development and the ‘good design’ objectives outlined in the National Policy Statements; and
- The comments made by the LPAs through informal consultation on the Project design.

1.8 Third, this Statement provides a description of the key issues resulting from the engagement with statutory consultees and the local community through the formal Section 42 and 47 consultation processes and the assessment that was made.
1.9 Fourth, it evaluates the Project design against the design principles. Finally, in conclusion, a summary is provided of how the above process has informed the design of the proposed form of development.

1.10 Having regard to the above, this Statement is structured as follows:

- Section 2: Project Design
- Section 3: Design Principles and Context
- Section 4: Consultation
- Section 5: Evaluation
- Section 6: Conclusions
2.0 PROJECT DESIGN

2.1 The aim of this Section is to provide information on the Project in terms of its composition, design, access and movement. It also sets out the role and function of each part of the above ground built development.

Composition and Design

2.2 The proposed Project is to create an Underground Gas Storage Facility with a total capacity equivalent to 900 million cubic metres to provide an operational working capacity of up to 600 million cubic metres of gas measured at standard temperature and pressure (STP). The gas would be stored in up to 19 new underground caverns in the salt body at Preesall and the gas would be supplied from the Gas National Transmission System (NTS) at Nateby.

2.3 The Project is located close to Preesall within the administrative area of Wyre Borough Council (WBC) and Lancashire County Council (LCC). The site is located to the south east of Fleetwood, a seaside town situated on the Fylde Coast, and includes land on either side of the Wyre Estuary. Fleetwood, on the west side of the Estuary, the character is predominantly urban whereas Preesall, on the east side of the Estuary, is predominantly rural in character.

2.4 The permanent above ground built development necessary for the construction and operation of the Project comprises:-

- Security and Support Facility
- Seawater Pump Station
- Booster Pump Station
- Gas Compressor Compound
- 7 Wellhead Compounds
- Seawall Crossing and Observation Platform
- Interconnector Metering Station

2.5 The location of these buildings is shown on the Masterplans Drawing Nos A-9000-001 to A-9000-005.

2.6 The Seawater Pump Station, the Seawall crossing and Observation Platform are located on the west side of the Estuary. The Security and Support Facility, the Booster Pump Station, the Gas Compressor Compound (GCC) and the wellhead compounds are all located on the Preesall site on the east side of the Estuary. Figure 1 provides an extract from the Masterplan showing the location of these buildings and structures. Finally, the interconnector Metering Station is located at the eastern end of the interconnector pipeline close to Nateby.
2.7 The **Security and Support Facility** (Work No 5) would be located at Higher Lickow Farm. Drawing Nos A-7000-001 to 003 shows the plans and elevations of the proposed buildings. The existing farmhouse and outbuildings, which are currently vacant, provide an ideal location for this use as they are close to the route of the main access road into the site. The farmhouse would be refurbished to provide administration, training, and health and safety accommodation. The gross floorspace of the two storey building is 112 sq metres.

2.8 Adjacent to the farmhouse are two existing barns both of which are in a poor condition. The larger barn, which has a footprint of 250 sq metres, would be rebuilt on its existing footprint to provide staff facilities and a maintenance workshop in two storeys. The ground floor would comprise 250 sq metres and contain two offices, a locker room, toilets, a workshop and stores. The first floor comprising 100 sq metres would contain 2 meeting rooms and a canteen. The smaller barn which has a footprint of 60 sq metres would be demolished.

2.9 Finally, a single storey security gatehouse with a floorspace of 24 sq metres would be provided to the east of the farmhouse on the main access road. Within the complex, 17 car parking spaces would be provided for employees and visitors.

2.10 It is proposed that the **Seawater Pump Station** Compound (Work No 15) would be situated adjacent to an existing seawater culvert within the Fleetwood Fish Dock, off Herring Arm Road. The Compound would contain the Pump Station itself, a transformer compound, access road and car parking area. Drawing Nos A-5000-001 to 004 shows the plans and elevations of the proposed building.

2.11 The Pump Station building would be single storey (6.5 metres to the top of the ridge) with a floorspace of approximately 430 sq metres gross. The Pump Station would contain the pump hall, electrical drive units, switchgear and control desk. It is designed to abstract seawater from the Fish Dock making use of an existing culvert originally built to supply cooling water to the former Fleetwood Power Station. The seawater would enter a sump underneath the Pump Station building prior to being filtered and pumped in an underground pipeline under the Wyre Estuary to the Booster Pump Station at the Preesall site. Abstraction of water from the Fish Dock would be controlled to ensure a viable water level is always maintained in the dock.

2.12 It is proposed that the external materials comprise brick and tile and the design is similar to that found acceptable by the LPAs in previous planning applications.

2.13 A bunded transformer compound containing 2 transformers would be provided adjacent to the Pump Station building.
FIGURE 1 Masterplan 2011 DCO Application
2.14 Access to the Compound is proposed from Herring Arm Road with 4 car parking spaces provided for staff and visitors. A 2.4 metre perimeter security fence of polyester coated mesh would be provided around the site.

2.15 It is proposed that the **Booster Pump Station** Compound (Work No 4) would be located adjacent to the Hackensall Sewage Treatment Works. Access to the Compound would be provided from the track that extends from Monks Lane. The Compound would contain the Booster Pump Station, De-brining Facility and nitrogen tank compound. Drawing Nos A-6000-001 to 004 shows the plans and elevations of the proposed buildings.

2.16 The Booster Pump Station would have a floorspace of 492 sq metres and would contain the Control Room, 12 high capacity pumps, electrical control equipment, switchgear and standby generator. A transformer compound would be situated adjacent to the building containing 2 transformers. The external materials are brick and tile.

2.17 The De-brining Facility would comprise a pond, hydro-cyclones and brine discharge pumps.

2.18 The Booster Pump Station would receive seawater pumped from the Seawater Pump Station at the Fleetwood Fish Dock. The booster pumps situated within the building would increase water pressure and via a number of underground pipelines deliver it to individual wellheads. Under controlled conditions, the seawater would be injected down the cased and lined boreholes to solution mine the salt. The resulting saturated brine would then be returned via underground pipes to the De-brine Facility within the Compound. Any suspended solids within the retained saturated brine would be removed by passing the brine through the hydrocyclones. The 'filtered' saturated brine would then be pumped back across the Wyre Estuary and the Fleetwood Peninsula to the outfall off Rossall in the Irish Sea.

2.19 The De-brining Facility includes a reservoir tank which is required during the process of de-watering of the caverns. When gas is first introduced into the completed caverns, the residual brine would be driven out and piped to the reservoir to ensure any possibility of dissolved gas is allowed to vent. Following 'venting' of the gas in the reservoir, the brine would be disposed of in the normal manner as summarised above.

2.20 The Compound would be surrounded by a 2.4 metre security fence of polyester coated mesh (dark green). Spoil from the construction of the buildings and the De-brine Facility would be used to raise the land to the west and north of the Compound to mitigate views of the Compound when viewed from the Wyre Way.

2.21 It is proposed that the **Gas Compressor Compound** (Work No 3) would be located 500 metres to the northwest of Higher Lickow Farm. Drawing
Nos A-2000-001 to 006 show the plans and elevations of the proposed buildings and structures. Access to the Compound would be provided from the new access road to the A588. The Compound would contain the following buildings, structures and equipment:-

- Pig Launchers and Receivers;
- Slug Catchers;
- Large diameter above ground high pressure pipelines;
- Glycol Contactors to dry the gas;
- Glycol Regeneration system;
- Compressors;
- Compressor Knock Out Separators;
- Compressor Aftercoolers;
- Gas filters;
- Gas Heaters;
- Various utility systems, plant drainage and power supply;
- Emergency/maintenance vent stack;
- Electrical/instrument and Utilities buildings; and
- Vent Stack provided within the centre of a new pond.

2.22 The principal buildings are the Compressor Station Building and the Electrical Equipment and Utilities Building, which are similar in design and comprise single storey buildings approximately 8.5 metres high, each with a gross floor area of approximately 360 sq metres. The external plant that would be constructed in the GCC include:-

- the glycol heaters and regeneration plant rising to a maximum height of approximately 13 metres;
- the fin fan coolers rising to a maximum of 8 metres in height;
- slug catcher and NTS Filters rising to a height of approximately 9.5 metres; and
- storage tanks of approximately 3.5 metres in height.

2.23 A vent stack would be constructed in the eastern part of the Compound within a 50 metre radius pond. As well as ensuring that there is a sterile area around the vent stack, the pond would also act as an emergency source of fire water.

2.24 Most of the large diameter pipework within the Compound would be buried, with small diameter pipework and equipment outside or, where appropriate, incorporated within buildings.

2.25 The compound would be high security and surrounded by palisade fencing with CCTV cameras.

2.26 Adjacent to the Compound would be an Electrical Substation and switchyard.
2.27 **Wellhead Compounds** (Work No 2). 7 multiple wellhead compounds (incorporating 19 dual wellheads in total) are proposed. These compounds would initially form the drilling platform areas for cavern construction, and thereafter, at the production stage would form the surface headwork to the caverns. Each compound would contain multiple wellheads and valve boxes, emergency hydraulic packs (for operation of valves in emergency situations), manifold valve boxes, instrument enclosures, close circuit television facilities, intruder detectors and compound lighting. Each wellhead compound area would be encircled by grassed mounds; stock proof fencing, security fencing and hard standings would be incorporated. Below ground gas manifold pipelines and brine feeds and returns would be situated beneath the wellhead compound.

2.28 The areas identified for the wellheads would be cleared and graded. The spoil would be used to provide landscaped bunds around the wellhead. The wellhead area would be built up with stone chippings to provide a platform for the drilling rig. Around the outside of each platform a catchment area would be excavated for the storage of drilling muds.

2.29 Once drilling is complete, a 4 metre by 4 metre pit would be excavated to house each wellhead. The pit would be approximately 3 metres deep. A sheet pile coffer dam would be created around the well cap to allow for excavation. The arising from the excavations would be relocated to the landscaped bunds as shown on the application drawings.

2.30 For directionally drilled caverns, a 4 metre by 6 metre by 3 metre deep pit would be formed by sheet piling and a reinforced concrete bunker formed incorporating a thrust block. The bunker will be formed on the drilling axis to the cavern in order to minimise the complexity of the drilling process. The drilling machine is installed in the pit and the operation would start with a tunnelling process at approx. 15 degrees to the horizontal. The drilling sleeves would be left in place at the end of the tunnelling process which penetrates the glacial material. Then drilling would continue arching down into the mudstone to enter the salt vertically. It is intended to drill two wells into every cavern and some of the wellhead compounds would have a mixture of vertical and directionally drilled or S drilled caverns.

2.31 The wellhead compounds would be constructed on a phased basis as the drilling of boreholes across the site progresses. The wellhead compounds would be large enough to accommodate the drilling rig, pipework and ancillary infrastructure. Following the drilling of the boreholes, the water washing infrastructure would be connected to wash the caverns and once these are created the gas manifolds would be connected to allow for the import and export of gas.

2.32 Each wellhead compound would be a high security compound surrounded by palisade fencing with CCTV cameras.

2.33 Once the facility is operational the drilling platform would be removed and the landscaped bunds re-contoured to screen the operational wellhead.
These are low structures whose visual impact can be mitigated by earth screening and planting.

2.34 The works to the **Seawall Crossing** arise through the need for the brine outfall pipeline to cross the seawall to the proposed outfall in the Irish Sea. It is proposed to construct an **Observation Platform** as part of the reinstatement works similar to that already existing at Cleveleys esplanade. This feature would be constructed with design input from WBC’s specification and is intended to replace the existing access ramp.

2.35 The interconnector **Metering Station** (Work No 21) details are shown on Drawing Nos A-3000-010 and 001 and the building would consist of a single brick building of 150 sq metres floorspace in a 0.96 ha Compound. The interconnector pipeline would rise out of the ground within the Compound and re-enter the ground to connect to the NTS feeder. The above ground pipeline would have flow measurement devices, isolation and emergency shutdown valves. The building would house automatic metering and gas analysis instrumentation and is not normally manned. The Compound would be surrounded by a security fence 2.4 metres in height.

2.36 Access to the Compound would be from the existing farmer’s track from Station Lane.

**Access and Movement**

2.37 In order to gain access to the Preesall site to allow for the construction of the Project, a new haul road would be constructed from the A588. The haul road would be constructed to a standard to allow for the movement of large items of equipment such as transformers, interconnector pipes and compressors.

2.38 A new junction would be provided with the A588 Hall Gate Lane. The junction layout and the sight-lines require the demolition and replacement of the existing bus shelter on the A588. The re-location of the bus shelter would be agreed with the Highway Authority through a Section 278 Agreement.

2.39 The road would require a junction with Back Lane (adopted highway, unclassified road), the crossing of Grange Pool (Designated Main River) via a culvert or bridge and the crossing of or modifications to other minor watercourses by piped culverts or realigned ditches. The road would be drained by pipes or ditches to existing watercourses via interceptors where required. The road would be lit at low level (height) to cater for emergency operation and would be fenced to prevent livestock entry. Field access would be provided at appropriate locations. Grass Mounding and landscaping would be incorporated as screening where appropriate (Ivy Cottages) as would replacement or improvements to existing hedges.
2.40 Consideration was given to the use of Cemetery Lane as the main access to the site but the junction with the A558 was considered sub standard and the width of the Lane itself would make access by HGV difficult.

2.41 A number of internal access roads linking the various elements of the built development are required and, where possible, it is proposed to use existing tracks widened as necessary. The main access roads would be as follows:-

- New Access Road extending from the Security and Support Buildings at Higher Lickow Farm (Work No 5) to the GCC Area (Works No 3). The access road would comprise the construction of a metalled private road between the Security Gatehouse and the GCC (Work No 3). The road would be constructed at grade and would be drained by pipes or ditches to existing watercourses via interceptors where required. The road would be lit at low level (height) to cater for emergency operation and would be fenced to prevent livestock entry. Field access would be provided at appropriate locations. Replacement or improvements to existing hedges would be included as appropriate. Crossing of or modifications to minor watercourses would be by the use of piped culverts or realigned ditches as appropriate.

- Permanent Access Tracks linking Wellhead compounds and the GCC. New stoned tracks or refurbished existing stoned tracks linking the GCC to each of the Wellhead Compounds (Work No's 2A-2G), of a width appropriate to proposed vehicular usage. No positive drainage would be provided, save where necessary. The tracks would be designed to accommodate construction, maintenance and emergency access vehicles. Work areas would be reinstated, landscaping being provided at appropriate locations where hedgerows and fences where removed.

- Temporary access/haul roads would be required on the route of the brine pipeline and the gas interconnector pipeline as shown on the Works Plans. The access roads would be used for the construction of the pipelines and once completed the roads would be removed and the land reinstated.

2.42 The construction of the Project would also require the improvement of existing tracks on the Preesall site to accommodate large vehicles. The construction works, particularly those associated with the brine pipeline and the route of the interconnector, affect and cross a number of bridleways and footpaths as follows:-

- Bridleway No 2 Corcas Lane
- Bridleway No 29
- Footpath 4
- Footpath 13
- Footpath 42
• Footpath 43
• Footpath 45
• Footpath 46
• Footpath 53
• Footpath 61

2.43 Footpaths and bridleways would either be diverted for a temporary period during construction or temporary management measures would be put in place to allow their continued use.

2.44 The emergency access route would make use of an existing track, Clods Car Lane, but no improvement is required to allow such use.

2.45 Details of the construction of the buildings, structures and access roads are set out in the ‘Construction Report’ (Document Ref 9.1.6) and shown on the application drawings.
3.0 DESIGN CONTEXT AND PRINCIPLES

3.1 The aim of this Section is to explain and justify the design and access principles and concepts on which the development proposal is based. First, the context to the design is summarised with particular regard to the operational needs of the Project, the character of the site, its planning history and planning policy considerations. Second, having regard to the context the design considerations identified by the Project architect are set out. Finally, an explanation is provided of how the context and design considerations, having particular regard to the planning history, influenced the Project design which was subject to formal consultation in April and May 2011.

Design Context

3.2 The context to the Project design is provided by:-

• The needs of the development;
• The site context having particular regard to its landscape and surroundings;
• The planning history of the site; and
• Planning policy and sustainability considerations.

3.3 Needs of the Development: The primary function of the proposed buildings is to accommodate the industrial processes required for the construction and operation of the Project. The buildings provide shelter and safety for the operations that take place within them and the design of the buildings is, therefore, driven by the requirement to ensure that the equipment and technical functions of the Project are accommodated in a safe and secure manner.

3.4 In order to construct and operate an UGS facility the following is required:-

• Salt beds where the geology allows for the safe creation of caverns;
• Large amounts of water to facilitate the washing of the salt to create the caverns;
• A good quality electricity supply; and
• A convenient connection to the Gas National Transmission System.

3.5 The following buildings are also normally required:-

• Wellheads
• Pumping Stations
• Gas Compressor Compounds
• Administrative offices and support facilities

The Project design must have regard to all these elements.
3.6 The location of the Project is dependent on the ability of the salt beds to safely accommodate UGS caverns. The Geology Summary Report (Document Ref 9.2.2) summarises the assessment that has been carried out for the Project by the Geology Team whose members comprised Halite personnel; Dr Everett Rutherford (a consultant geologist); Mott MacDonald and Professor Rokahr from the University of Hanover. The Geology Summary Report concludes that caverns can be safely created on the northern part of the Preesall site. Two polygonal areas have been identified within which it is proposed to construct up to 19 underground caverns.

3.7 The location of the caverns determines the siting of the wellheads that are required to construct and operate the Project. Boreholes are drilled from the wellheads to the caverns to construct them and, once operational, the wellheads accommodate the gas infrastructure. Ideally, wellheads are sited directly over the location of the proposed cavern but there is some flexibility and using slant hole drilling techniques it is possible to offset the wellhead and the cavern by 600 metres or so.

3.8 Large amounts of water are required to wash the caverns and in this case, the Irish Sea is an ideal source as it is plentiful and does not affect groundwater sources. A Seawater Pump Station and a Booster Pump Station is required to pump water out of, and to return it, to the sea following the washing of the caverns.

3.9 The Gas Compressor Station is required to move the gas into and out of the caverns. It also treats the gas to ensure that the caverns and the interconnector pipeline can be operated efficiently and safely.

3.10 A good quality electricity supply is also required. The Stanah Switchyard on the west bank of the Wyre Estuary is one of the most robust and reliable connections to the national electricity grid and is an ideal point of connection for the Project.

3.11 Finally, a connection is required from the UGS facility to the Gas National Transmission System to allow for gas to be injected to and exported from the caverns. For operating reasons, a Metering Station is required close to the connection point.

3.12 Although UGS facilities can be operated remotely, Halite has decided to provide administrative and support facilities on site.

3.13 The economics of construction is also an important consideration in the design of the Project buildings. Design needs to have regard to economical fabrication and construction of buildings and the opportunity to construct buildings in parallel. Making use of existing roads to allow access to the buildings can also reduce the costs of building new access roads.
3.14 Having regard to the above, the main design principles arising from the needs of the Project include:

- The need to locate the Project where there are salt beds able to accommodate gas caverns safely, good access to a water supply for cavern washing, good access to an electricity supply and access to the Gas NTS
- The need to accommodate equipment and technical functions in buildings so that it is safe and secure;
- The need to allow for the construction of buildings in parallel; and
- The need to locate buildings close to existing points of access.

3.15 **Site Context:** Halite has taken over ownership of the landholding of the former Canatxx Gas Storage Limited (CGS) at Preesall, which comprises in excess of 500 hectares. The main part of the landholding includes an extensive irregularly shaped area comprising the River Wyre/estuary, open agricultural land with associated hedged field boundaries and salt marsh to the east of the Wyre Estuary, extending 3.2 km north to south and 1.8 km west to east maximum. To the north is Hackensall Sewage Treatment Works, Cote Walls Farm and golf course, beyond which is the settlement of Knott End; to the north east is Preesall; to the east Stalmine; and to the south Staynall with Hambleton beyond. There are a number of scattered farmsteads in the area, which are typical of the rural area comprising old houses and a mixture of traditional and modern agricultural buildings and hard standings. There is one recreational static caravan park at The Heads adjacent to the estuary, and a former caravan site which is within the landholding and the control of Halite.

3.16 The area is accessed by a number of single width roads, agricultural access tracks and a number of public footpaths including the Wyre Way, which runs up the eastern side of the Wyre Estuary on the flood embankment. The land is generally flat but undulating in parts rising to a height of 20m AOD (Above Ordnance Survey Datum) at Burrows Farm in the south.

3.17 There is evidence of former salt workings in the form of brine abstraction well heads throughout the site and extensive evidence of former abstraction activity to the east and north east in the form of water filled depressions some of which are significant, extensive, deep and security fenced. Some of the depressions are formed as a result of catastrophic cavern collapse and some are subsidence areas which may be associated with a former ‘dry’ mine to the east of Cote Walls Farm.

3.18 Land to the east of the estuary is designated as a Countryside Area and part of the landholding falls within an area designated as Defined Open Coastline in the Wyre Local Plan.

3.19 The area of Arm Hill and all the salt marshes fall within Morecambe Bay Special Protection Area (SPA) designated due to its importance in
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supporting bird populations of European importance. This area also falls within the Wyre Estuary Site of Special Scientific Interest (SSSI) and a Ramsar site.

3.20 To the west of the Wyre Estuary is the Fleetwood peninsula. The eastern side of the peninsula is fronted from north to south by Fleetwood Docks, the former power station site (currently being reclaimed for ecological and recreational purposes), Jameson Road landfill/waste water site and land associated with the former ICI works. The salt marshes to the west of the estuary fall within the Morecambe Bay SPA, SSSI and Ramsar site.

3.21 The Fleetwood area is an urban settlement with a population of approximately 27,000. The town was the first planned community of the Victorian era and covers an area of approximately four square miles. The topography is predominately flat with some area at or below sea level. There has been economic decline since the 1970s with the main industries still based around fishing, tourism, port activities and light industry.

3.22 The landscape character of the Fylde Peninsula is predominately flat, compromising a mix of residential, commercial, recreational and industrial uses with views eastwards towards the Wyre Estuary. The Wyre Estuary is designated a Ramsar site and a Site of Special Scientific Interest which also includes the salt marshes on the east shore.

3.23 The Preesall area of the application site is characterised by a mixture of scattered settlements, meandering lanes and open agricultural fields of varying quality, interspersed with blocks of woodland, dense hedgerows and farmsteads. The Wyre Estuary comprises a series of low lying salt marshes. The eastern bank has no industrial development and residential/commercial development is limited to a caravan park. The area consists mainly of isolated rural dwellings and farm buildings. Many of the agricultural buildings are in a poor state of repair.

3.24 The Halite landholding falls within the National Character Area Lancashire and Amounderness Plain, and reflects the key characteristics of:-

'a medium to large-scale landscape field pattern with a high density of field ponds to the east, with remnants of lowland mires and mosses in the west and salt marshes prominent at the heads of estuaries.'

3.25 The wider landscape strategy concept responds to the changes in the countryside by aiming to:-

- Restore localised reed beds and field ponds;
- Restore and enhance lost hedgerows and hedgerow trees;
- Restore woodland, without compromising views, and implement appropriate management schedules; and
- Ensure a significant proportion of the Site is returned to high-quality open farmland
3.26 This strategy will also promote the conservation of existing and restored reed beds, field margins, hedgerows and field ponds in order to increase the biodiversity of the landscape.

3.27 More detailed landscape strategies for the east of the Wyre estuary have been prepared to respond to the key recommendations made by the LCA. In respect of Local Landscape Character Area No. 15d The Fylde, these include:

- Retention and enhancement of hedgerows and hedgerow trees;
- A program of tree planting where trees will help to screen developments;
- Protect and conserve wet and other semi-natural grasslands;
- Encourage the conservation and restoration of arable field margins;
- Create or retain field ponds and promote their conservation as landscape features;
- Develop buffers around field ponds designed to provide terrestrial habitat and visual diversity; and
- Retain existing field boundaries.

3.28 The landscape to the west of the Wyre estuary is closely influenced by the adjacent LLC Area No. 18c Wyre Marshes, which falls within the wider LLC Area No. 18 Open Coastal Marsh. As a result, the landscape strategies for the individual facilities west of the Wyre Estuary represent a transition between these two LLC areas and are designed to meet a number of recommendations including:

- Manage ditches and drainage channels to maximise wildlife benefits;
- Ensure built structures have a minimal visual impact on views;
- Improve interpretation facilities for wildlife, natural and historic features;
- Ensure informal recreation is compatible with wildlife conservation interest; and
- Provide boardwalk trails and circular routes that improve accessibility but reduce erosion.

3.29 Having regard to the above, the main design principles arising from the site context include:

- Buildings should be designed individually to reflect the character of their location and surroundings;
- Buildings should not be dominant features and should be assimilated into the landscape;
- Height of buildings should be limited and/or ‘sunk’ into the ground in order to minimise landscape impact; and
- Earth bunding should be provided at low gradients so that the land can continue to be used for agricultural purposes.
3.30 **Planning History**: The Preesall area has a long planning history of salt extraction. Exploration and extraction of salt began at Preesall in the 1870s and continued over a hundred years into the early 1990s.

3.31 In the 1880s, the Fleetwood Salt Company extracted salt by allowing water into a shaft into the salt deposit and then pumping the brine solution to the surface. Salt extraction was uncontrolled in that no salt was retained between the cavern roof and the mudstones above. This has led to the collapse of some caverns.

3.32 In the 1890s rock salt mining began in the salt body which were approximately 140 metres below the surface. A second mine level at 275 metres was subsequently opened and at its peak produced 140,000 tonnes of rock salt per annum.

3.33 In the 1960s, ICI developed one of the first modern salt solution caverns in the world using gas padding to preserve the salt roof. This was done by injecting sufficient gas into the cavern to form a gas ceiling during the washing so the roof salt does not dissolve. This ensures cavern integrity and stability and prevents surface subsidence. Using this technique, ICI washed many subsequent caverns at Preesall.

3.34 The Project does not propose the use of any of the existing caverns at Preesall for the storage of gas.

3.35 Over the past decade, there has been a number of planning applications to develop a UGS facility at Preesall submitted by Canatxx Gas Storage Limited (CGS). Whilst the Halite Project is different to those proposals previously considered by the LPAs, the determination of the planning applications raised a number of issues that are pertinent to the design of the Project. Full details of the planning history are provided in the ‘**Planning and Sustainability Assessment**’ (Document Ref 9.1.1) but the applications most relevant to the design of the Project were:

- 2004 planning application and subsequent 2007 appeal decision for an UGS Facility at Preesall.
- 2005 planning application for an interconnector pipeline from Preesall to the Gas NTS near Nateby.
- 2009 planning application for a UGS Facility at Preesall.

3.36 **The 2004 planning application** (ref 02/04/1415) and subsequent 2007 appeal proposed the creation of up to twenty-four caverns by solution mining. The proposed scheme comprised the following above ground infrastructure:

- A Seawater Pump Station (a brick-faced 16m x 50m building with a roof height of 9m) at Fleetwood Fish Dock with pipe-line links a) under the estuary to the Booster Pump Station and b) to the seawall crossing at Rossall and thence to an off-shore diffuser.
• A Booster Pump Station (a brick-faced Y-shaped building comprising two arms of 55m length and one arm of 12m length and a roof height of 9m; grouped with other buildings/plant/facilities including an electricity sub-station, car park areas and above-ground settling pipe array) east of the estuary 1km north-east of The Heads.

• A Gas Compressor Compound including an external electrical switchyard, coolers, filters and dryers, vent stack, access road, parking and security fence and a series of linked buildings, including a single storey Main Compressor Hall, built into the side of Burrows Hill; and an ‘L’ shaped ancillary building linked to the Main Compressor Hall by means of a roofed but otherwise open bay. It was proposed that these buildings would be accessed via a new roadway from Brown’s Lane to the north. The largest of these buildings had a ridge height of 16 metres, with the remainder having ridge heights of 8 metres.

• Up to twenty-four wellheads including approximately one hectare of land around each wellhead for the drilling rig, casings and other equipment contained within a screening mound and accessed via a four metre wide service road. A larger area was proposed where 3 wellheads, nos.15-17, were required. On completion of each cavern, the area required in the longer term for the control valves and other surface infrastructure was proposed to be reduced in size.

• Seawall Crossing and Observation Platform.

• New access roads a) from Cemetery Lane westwards to wellheads to the north and south of The Heads; b) a new road south from the lane running past Height O’ Th’ Hill to the Gas Compressor Station and new tracks westwards and southwards to the wellhead locations south of The Heads; and c) a new roadway connecting the Booster Pump Station to Back Lane opposite Park Cottage Farm via a) above.

3.37 The proposal also included:

• Underground brine pipeline and outfall.
• Underground gas distribution pipelines connecting the wellheads to the Gas Compressor Station and Booster Pump Station.
• Under-estuary pipeline providing an electrical power link to the GCC from the electricity supply facilities at Stanah.

3.38 A copy of the 2007 Masterplan showing the site, the proposed buildings, pipelines and other infrastructure is attached at Figure 2.

3.39 The LPAs raised concerns about the extent of the built development proposed for the east bank of the Wyre Estuary with particular regard to the siting and design of the Booster Pump Station, the Compressor Compound and the wellheads. The Booster Pump Station and
Compressor Station were large buildings and the LPAs were concerned about the impact of these buildings on the visual amenity of the area.

3.40 In respect of design issues, in her decision notice following the appeal, the Secretary of State also considered that the proposed Gas Compressor Station and the Booster Pump Station would result in visual harm.

3.41 In respect of highways and access to the site, the Secretary of State considered that the proposals for a mini roundabout at the junction of the A588 and Cemetery Lane/B5377 were unacceptable. However, the Secretary of State considered that some form of link road for the duration of the scheme would be acceptable.

3.42 The Secretary of State did not, however, have any objections to the design and the proposed layout of the Seawater Pump Station and the brine pipeline route on the west bank of the Wyre Estuary. Similarly, there were no issues raised by the routing of the under estuary pipelines.

3.43 **The 2005 planning application** (LPA Ref 05/00369/FULMAJ) was made to Wyre Borough Council (WBC) for an interconnector gas pipeline to link the then proposed UGS Facility to the Gas National Transmission System (NTS). WBC resolved to grant planning permission subject to the provision and consideration of additional highway information and conditions. Although the additional information was provided, the local highway authority raised issues which required further work to be carried out. Although the decision could not be issued, the resolution to grant confirmed that in principle the LPA did not have an objection to the route of the proposed interconnector pipeline.

3.44 **The 2009 planning application** for a UGS facility proposed the creation of up to 36 caverns by solution mining. The proposed scheme comprised:

- A Security and Support Facility in the form of a Reception and Warehouse Compound comprising a control building and lay down area for materials and equipment. The proposed building would be 54m x 14m with the external walls finished in facing bricks and roofs finished in lightweight artificial slates, to a height of 7.3 metres. Access was proposed from the new permanent road extending south to meet the proposed new east-west road running to the north and running parallel with Corcas Lane.

- A Seawater Pump Station (a brick-faced 17m x 46m building with a roof height of 9m) at Fleetwood Fish Dock with pipe-line links a) under the estuary to the Booster Pump Station and b) to the seawall crossing at Rossall and thence to an off-shore diffuser. The location and design of the Seawater Pump Station was similar to
FIGURE 2  Masterplan 2007 Application
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- that previously found acceptable to the Secretary of State and the LPAs.

- Northern Booster Pump Station (a brick faced 54m x 17m building with a roof height of 7.3m) comprising a steel portal frame with a 30 degree pitched roof to be clad in lightweight artificial slates. Within the compound, there was also proposed a switchgear housing and stand-by generator building, (10m x 10m), transformers, a debrine facility, ancillary infrastructure, access roads and car parking areas.

- Southern Booster pump station comprising a steel portal frame with a 30 degree pitched roof to be clad in lightweight artificial slates. The complex would also have accommodates a switchgear and standby generator building; transformers, a De-brine facility, as well as ancillary infrastructure served from a new access road and car parking areas. It would have also included a Nitrogen building of 11 m x 10 m with a pitched roof to a height of 7.3 m.

- Gas Compressor compound comprising two large oblong buildings parallel to each other (69 m x 16 m comprising e a steel portal frame with a 30 degree pitched roof to a height of 13m to be clad in lightweight artificial slates). It was proposed that the site would be accessed from the principal access road from Back Lane running westward north of Corcas Lane.

- Up to 36 wellheads located within 6 drilling compounds located along the eastern frontage to the estuary.

- Seawall Crossing and Observation Platform.

- A new temporary surfaced road taken from the A588 and which would run parallel to Cemetery Lane to Back Lane. Access to the site would continue through a permanent surfaced road near Aggleby’s Road for access to the reception compound.

3.45 The proposal also included:

- Underground brine pipeline and outfall.
- Underground gas distribution pipelines connecting the wellheads to the Gas Compressor Station and Booster Pump Station.
- Under-estuary pipeline providing an electrical power link to the GCC from the electricity supply facilities at Stanah.

3.46 A copy of the Masterplan showing the site, the proposed buildings, pipelines and other infrastructure is attached at Figure 3.

3.47 LCC appointed consultants (Atkins) to assist in the determination of the 2009 application and their assessment of the design considerations and their impact on the landscape provided a useful context for Halite in preparing its Project design for the 2011 DCO application.
3.48 LCC and its consultants had concerns about the impact of the development on the landscape of the eastern part of the Wyre Estuary. It was accepted that the development of the brine pipeline and the Seawater Pump Station on the west side of the Wyre Estuary would not have an adverse visual or landscape impact. Indeed, the viewing platform at the sea wall was seen as having the potential to enhance the coastal environment.

3.49 On the east side of the Wyre Estuary, LCC’s consultants concluded that CGSs proposals would have had generally adverse impacts on the areas of open countryside and this would conflict with the aims of the policies for the rural area; specifically aims related to protecting or enhancing the rural environment. In particular, the consultants considered that the influence of development would have extended over a length of 3.5km (north to south), effectively visually severing the Wyre Estuary from the areas of rural farmland to the east. The introduction of new build elements into the area was seen as fundamentally altering the character of the area from that which is currently rural (with the potential to enjoy undisturbed recreational activities that have only distant views of urban features on the west of the estuary) and fundamentally altering the character of the coastal strip to a more urban character. There was also concern that the introduction of urban elements into the coastal fringe would put pressure on the remaining undeveloped rural land between the estuary and the settlement belt to the east.

3.50 There was concern about the visual impact of the Compressor Station, the Booster Pump Stations and the wellheads. The consultants found that whilst proximity of the proposed UGS facility and the interconnecting pipeline to the national transmission line may deliver operational convenience, it would be preferable for the industrial buildings, plant and equipment elements of the development that are not essential for the solution mining of the salt, such as the compressor complex, to be sited remotely on the western side of the estuary as part of the existing industrial development thereby reducing the visual impact of it in the rural environment on the east side of the estuary.

3.51 The proposed location and size of the Northern Booster Pump Station was of concern as the consultants considered that it would result in substantial adverse impacts on landscape character and visual impacts. Along this section of the Wyre Way, there was concern that the Booster Pump Station would obliterate views to the west and form a totally dominant feature along the final stretch of the route as it passes by the golf course and into Knott End on Sea.

3.52 The buildings were considered substantial in scale and that they would remain visually incongruous in the area being uncharacteristic in design. It was considered that they would have some adverse visual impact in the otherwise predominately rural landscape characterised by low hills, hedgerows and woodland and designated as a Countryside Area in the Wyre Borough Local Plan. They would be visually prominent in the area.
until such time as landscaping could reduce that impact, and given the location of the site and the prevailing winds, the landscaping could take longer to become established to a degree that it would seriously contribute to mitigating the visual impacts of the buildings. It was considered that any change in design would not reduce the overall impact of the buildings in the rural environment and they would remain of significant incongruous scale throughout the long term operational life of the site.

3.53 LCCs Consultants had concerns about the locations of the wellhead compounds which were indicative and were of a 'typical' design. As their precise locations were unknown and consequently the generic design could not take into account the specific locational features or impacts, whatever form they took would, in the Consultants’ view, introduce a significant large scale industrial element to an area which, whilst having some industrial past, was predominantly devoid of such infrastructure and was an open rural agricultural landscape. Even following construction of the caverns when the well head compounds may be reduced in scale, the Consultants considered that they would still be significant in scale, particularly in relation to the rural nature of the area and when viewed from the Wyre Way. It was considered they would remain dominant, particularly throughout the development period, when they would require large supporting secure compounds and would throughout that period and on subsequent completion be surrounded by industrial security fencing. This type of development would adversely affect the visual amenities of the area enjoyed by recreational users particularly throughout the development period but more significantly during the operational life of the site for a substantial period of time.

3.54 Having regard to the planning history, the design principles should seek to retain those parts of the previous CGS proposals that were acceptable to the LPAs including:-

- The siting and design of the Seawater Pump Station;
- The design and the works to the Seawall Crossing including the provision of the Observation Platform;
- The general route of the interconnector pipeline; and
- The siting and design of the Metering Station.

3.55 The reduction in the number of caverns and the amount of gas that can be stored means that, in comparison with previous proposals, it has been possible for Halite to reduce the amount of buildings and infrastructure that would be required to operate the Project. In particular, Halite has:-

- Removed one of the Booster Pump Stations;
- Removed the Control and Warehouse building; and
- Relocated the GCC to make the Project more compact.

3.56 Halite acknowledges that the considerations relating to previous planning applications are not necessarily directly applicable to its Project and just because parts of the previous proposals were acceptable in the past it
does not mean that they would be acceptable now. However, the planning history and the assessments that were carried out did provide Halite with a useful context to the design of the Project.

3.57 **Planning Policy:** A review of the planning policies and a sustainability assessment of the Project is contained within the ‘**Planning and Sustainability Assessment**’ (Document Ref 9.1.1). As set out in the introduction to this Report, the most relevant national policy advice relating to design is set out in ‘Planning Policy Statement 1 – Delivering Sustainable Development’ (Feb 2005) and within the National Policy Statements.

3.58 PPS1 ‘Delivering Sustainable Development’ sets out the Government’s approach to the delivery of sustainable development through the planning system. This new integrated approach goes beyond traditional land use planning and introduces a spatial dimension, which combines policies for the control of development with other policies and programmes, which influence the form and function of the built environment.

3.59 The key objectives of PPS1 are a positive planning framework for sustainable economic growth and the promotion of more efficient land use which reduces the need to travel. Other objectives include addressing the causes and impacts of climate change, the management of pollution, and the protection of biodiversity and natural habitats. Accordingly, Paragraph 5 of the introduction to PPS 1 states that:-

‘Planning should facilitate and promote sustainable and inclusive patterns of urban and rural development by:

- making suitable land available for development in line with economic, social and environmental objectives to improve people’s quality of life;
- contributing to sustainable economic development;
- protecting and enhancing the natural and historic environment, the quality and character of the countryside, and existing communities;
- ensuring high quality development through good and inclusive design, and the efficient use of resources; and
- ensuring that development supports existing communities and contributes to the creation of safe, sustainable, liveable and mixed communities with good access to jobs and key services for all members of the community.’
3.60 PPS1 also sets out various criteria that could be applied to ensure that
development plans and decisions taken on planning applications
contribute to the delivery of sustainable development. These include
matters listed under the following headings:

- Social Cohesion and Inclusion
- Protection and Enhancement of the Environment
- Prudent use of Natural Resources
- Sustainable Economic Development
- Integrating Sustainable Development in Development Plans

3.61 ‘Overarching National Policy Statement for Energy (EN-1)’ sets out the
criteria for ‘good design’ for energy infrastructure. It considers ‘good
design’ as a method of meeting many of the policy objectives in terms of
addressing impacts of a development. Promoters are encouraged to
demonstrate how the design of a scheme through siting of and the use of
appropriate technologies has contributed towards the mitigation of various
impacts such as noise and flooding.

3.62 NPS EN-4 states that NPS EN-1 provides the generic conditions to be
given to landscape and visual impacts. NPS EN-1 states that ‘Landscape
effects depend on the existing character of the local landscape, its current
quality, how highly it is valued and its capacity to accommodate change.
All of these factors need to be considered in judging the impact of a
project on landscape. Projects need to be designed carefully, taking
account of the potential impact on the landscape. Having regard to siting,
operational and other relevant constraints the aim should be to minimise
harm to the landscape, providing reasonable mitigation where possible
and appropriate’ (para 5.9.8).

3.63 The Project does not fall within or close to areas comprising nationally
designated landscapes such as a National Park or an Area of Outstanding
Natural Beauty.

3.64 Outside nationally designated areas, NPS EN-1 states that ‘there are local
landscapes that may be highly valued locally and protected by local
designation. Where a local development document in England or a local
development plan in Wales has policies based on landscape character
assessment, these should be paid particular attention. However, local
landscape designations should not be used in themselves to refuse
consent, as this may unduly restrict acceptable development’ (para
5.9.13).

3.65 The Project does not fall within an area of landscape quality as set out in
the local development plan. However, as set out above, the Project does
fall within a landscape character area which is predominantly rural
although there are signs of historic brine working in the Preesall area.

3.66 NPS EN-1 makes the point that ‘virtually all nationally significant energy
infrastructure will have effects on the landscape. The scale of such
projects means that they will often be visible within many miles of the site of the proposed infrastructure. The IPC should judge whether any adverse impact on the landscape would be so damaging that it is not offset by the benefits (including need) of the project’ (para 5.9.15). In reaching a judgement on landscape impact, NPS EN-1 asks the IPC to ‘consider whether any adverse impact is temporary, such as during construction, and/or whether any adverse impact on the landscape will be capable of being reversed in a timescale that the IPC considers reasonable’ (para 5.9.16). ‘The IPC should consider whether the project has been designed carefully, taking account of environmental effects on the landscape and siting, operational and other relevant constraints, to minimise harm to the landscape, including by reasonable mitigation’ (para 5.9.17).

3.67 In respect of visual impact, NPS EN-1 states ‘all proposed energy infrastructure is likely to have visual effects for many receptors around proposed sites. The IPC will have to judge whether the visual effects on sensitive receptors, such as local residents, and other receptors, such as visitors to the local area, outweigh the benefits of the project. Coastal areas are particularly vulnerable to visual intrusion because of the potential high visibility of development on the foreshore, on the skyline and affecting views along stretches of undeveloped coast’ (para 5.9.18).

3.68 Whilst NPS EN-1 sets out the general principles that should be applied in the assessment of landscape and visual impacts, NPS EN-4 sets out additional considerations that apply during the construction of a pipeline. ‘These comprise the effect upon specific landscape elements within and adjacent to the pipeline route, such as grasslands, field boundaries (hedgerows, hedge banks, dry stone walls, fences), trees, woodlands, and watercourses. There will also be temporary visual impacts caused by the need to access the working corridor and to remove flora and soil. The working width of the pipeline will vary depending on the surrounding terrain. Temporary impacts could include large excavations where deep pits are needed for boring beneath rivers, roads and sensitive features’ (para 2.21.1).

3.69 NPS EN-4 acknowledges that the long term impacts upon the landscape for pipelines are likely to be limited, as once operational the main infrastructure is usually buried. ‘They are likely to include:-

- limitations on the ability to replant landscape features such as hedgerows or deep-rooted trees over or adjacent to the pipeline; and
- structures and indication points necessary to identify the pipeline route and provide it with service access’ (para 2.21.2).

3.70 In respect of planning policy and sustainability, the amount of above ground development associated with the Project is relatively limited for a nationally significant infrastructure project. The environmental impact of the Project has been assessed in the ‘Environmental Statement’
(Document Ref 5.1) and a range of mitigation measures relating to design considerations are recommended as follows:-

- siting of built development to avoid flood risk;
- re-use of existing buildings where possible;
- avoidance of land that may be subject to subsidence; and
- landscape and ecology management plan.

3.71 Having regard to the above, the design principles arising from the policy context include:

- siting of development in urban rather than rural areas;
- making use of previously developed land and buildings;
- avoid locating buildings in nature conservation area;
- avoid locating buildings in area of flood risk; and
- making use of local materials.

Design Principles and explanation of the Project Design

3.72 Having regard to the context summarised above, the Project architect identified the following design principles:

(i) The proposed development should seek to retain those parts of previous schemes that were deemed acceptable by the LPAs and the Secretary of State including:

- The route of the brine pipeline;
- The design of the seawall crossing and the observation platform;
- The siting and design of the brine diffuser;
- The general route of the gas interconnector to the NTS;
- The siting and design of the Metering Station; and
- The siting and design of the Seawater Pump Station.

(ii) The proposed development should have regard to the matters raised by the LPAs and the Secretary of State in respect of the previous schemes, particularly in respect of the impact of the siting and design of the:

- Reception and Warehouse Compound
- Gas Compressor Compound
- Booster Pump Station

(iii) The proposed development should accommodate the equipment and technical functions of the Project in a safe and secure manner.

(iv) Buildings should be designed individually to reflect the character of their location and surroundings rather than providing a 'family' or consistent design across all buildings.
(v) Where possible, preference should be given to siting buildings in urban rather than the rural areas. Buildings should only be sited in the countryside if there are no more appropriate alternative locations.

(vi) Buildings should not be concentrated together as a single complex but provided as single buildings that are more easily assimilated into the landscape.

(vii) Where possible and appropriate, use is made of existing buildings.

(viii) Where possible, the height of buildings or infrastructure should be minimised and/or major buildings ‘sunk’ into the ground in order to minimise visual impact.

(ix) Where possible, no building or structure should be constructed in a nature conservation area.

(x) Where possible and appropriate, all buildings should be located on higher ground to avoid flood risk.

(xi) Where possible and appropriate, earth bunding should be provided at low gradients so that the bund can continue to be used for agricultural purposes.

(xii) Where possible and appropriate, buildings should be provided close or adjacent to existing roads or tracks to avoid the need for the construction of new access roads.

(xiii) The proposed development should seek to achieve economical fabrication and construction.

(xiv) The proposed development should seek to allow for staged construction and to allow the proposed buildings to be constructed in parallel.

(xv) The proposed development should seek to maximise the use of local materials and products in the built form.

3.73 We set out below how the context and design principles resulted in the design of the main elements of the above ground built development that were subject to formal consultation in April and May 2011. The design considerations arising from the consultation exercise are set out in Section 4 of this Report.

3.74 As previously stated, for a nationally significant infrastructure project, the buildings associated with the Halite proposals are relatively small and compact. The proposed buildings are simple in design being portal framed buildings with brick walls and pitched roofs.
Security and Support Facility

3.75 The Security and Support Facility previously comprised the Control and Warehouse Compound in the 2009 application. This was located on a greenfield site adjacent to the route of the haul road that was proposed at the time.

3.76 Due to the concerns raised by the LPAs on previous planning applications, Halite investigated the possibility of refurbishing and using Higher Lickow Farm for the support facilities. Although the farmhouse and the adjoining barns are in poor condition they are capable of refurbishment and re-use. The Halite proposals, therefore, include the renovation of the farmhouse and one of the barns. A remaining barn would be demolished and a new gatehouse is proposed adjacent to the new haul road that accesses the facility. By making use of existing buildings and locating the gatehouse as part of the former farm complex reduces the visual and environmental impact of this part of the Project.

Seawater Pump Station

3.77 The infrastructure and the siting of the Seawater Pump Station on the west bank of the Wyre Estuary have been retained at the locations previously found acceptable by the Secretary of State and the LPAs. Figure 4 shows the design of the Seawater Pump Station which formed part of the 2007 appeal and the 2009 planning application. The 2009 planning application did not propose a change in the design of the building from that considered at the 2007 appeal as the Secretary of State and the LPAs had not objected to its location or its design.

Figure 4

Seawater Pump Station: 2007 Public Inquiry & 2009 Planning Application
3.78 It will be noted from Figure 4 that the design of the building is ‘American ranch style’ with substantial roof structures and eaves overhangs. Although the design of the building was previously accepted by the Secretary of State and the LPAs, in preparing its indicative design for consultation on the proposed Project during 2010, Halite sought to amend the design to reflect the changing character of its surroundings. The Fleetwood Thornton Area Action Plan, adopted in 2009, provided a new planning policy context for the area. The site of the Seawater Pump Station at Fleetwood Fish Dock was shown as part of a Mixed Use Development Area that would include housing, industry, business and leisure uses. To reflect this, the external appearance of the Seawater Pump Station was amended from brick and tile to metal cladding as shown in Figure 5.

![Seawater Pump Station: 2010 Indicative Design](image)

**Booster Pump Station**

3.79 Halite has reduced the number and size of the Booster Pump Stations required for the Project. Previous planning applications have included two booster pump stations (a northern and southern booster pump station) but the reduction in the size of the Project in comparison with previous proposals has meant that only one such station is now required.

3.80 **Figure 6 and 7** shows the design of the Booster Pump Station as proposed in the 2007 appeal and the 2009 planning application. The Booster Pump Station at the 2007 appeal was a substantial ‘American ranch style’ building with significant roof structures and roof overhangs.

![Booster Pump Station: 2007 Public Inquiry](image)
3.81 The 2009 layout included two booster pump stations of similar design and located adjacent to one another. Although smaller than the 2007 proposal, the booster pump stations followed the ‘American ranch style’ design with large roof structures and overhangs.

3.82 As part of the indicative design for the Project, the building has been redesigned in 2010 to be more compact and to reflect the design of local buildings within the locality. A study of local farm buildings was undertaken (see Figure 8) and the results informed the design of the building. A building reflecting traditional designs was considered more appropriate than the ‘American ranch style’ and this is shown in Figure 9.

3.83 Following pre-application consultation with the LPAs in 2010, the design of the Pump Station was further amended. The proposal shown in Figure 9 showed the Pump Station building as a long rectangular block orientated
to screen the external equipment and the de-brine facility when viewed from the Wyre Way. The LPAs were concerned that as a long linear building, it would seem incongruous in the landscape and it was, therefore, redesigned to have an L-shaped plan form (see Figure 10).

![Figure 10](image)

**FIGURE 10**  
Booster Pump Station: 2011 DCO Application

3.84 The Booster Pump Station was also located to the north of the Preesall site and is sited close to the Hackensall STW. Concerns had been raised by the LPAs in the determination of previous planning applications about the location of the Northern Booster Pump Stations and its visual impact when viewed from the west and by users of the Wyre Way. The new site of the Booster Pump Station to the east of the STW has sought to reduce the visual impact of the building by making it seem part of the STW rather than a disparate element in the landscape.

**Gas Compressor Compound**

3.85 In previous applications made by CGS, the siting and design of the Gas Compressor Compound was of concern to both the Secretary of State and the LPAs in respect of visual harm. The proposed buildings were large and were considered to be an alien feature in the countryside. **Figure 11** shows the ‘American ranch style’ design that was produced at that time.

![Figure 11](image)

**FIGURE 11**  
Gas Compressor Compound: 2007 Public Inquiry

3.86 The LPAs would prefer that the GCC was located on the west bank of the Wyre Estuary where the area was more industrial and urban in character.
As requested by the LPAs, Halite examined alternative sites on the west bank of the Wyre Estuary. Having regard to local planning policies set out in the Fleetwood-Thornton Area Action Plan (AAP) and the availability of land, a number of alternative sites on the west bank of the Estuary were examined for the siting of the GCC. The ‘Surface Infrastructure - Alternative Sites Assessment’ (contained as an Appendix to the Planning and Sustainability Statement Document Ref 9.1.1) provides a review of their planning, environmental and economic potential and three potential sites were identified as acceptable locations. However, the GCC is a potentially hazardous installation and the HSE has safety zones where development around such plant is restricted as being incompatible in land use terms. HSE will define the extent of these zones but Halite has carried out its own calculations for the potential sites and, in all cases, the GCC would have a potential effect on existing and proposed residential properties. As such each of the identified sites on the west bank is unsuitable from a health and safety viewpoint and, therefore, Halite has no alternative but to locate the GCC on the east bank.

3.87 The GCC contains a range of gas processing equipment and, for health and safety reasons, there is limited opportunity to accommodate this equipment in buildings.

3.88 Figures 12 and 13 shows the design of the GCC in 2009 and that proposed by Halite in the DCO application.

3.89 It will be noted that the land required for the Compound is similar in all proposals. The buildings associated with GCC are, however, significantly smaller in the Project when compared with earlier proposals. Part of the reduction in the size and scale of the buildings has been achieved by siting some of the equipment outside of the proposed buildings. Previous proposals had sought to locate as much of the equipment within buildings in order to reduce visual impact. However, Halite’s engineering advice has suggested that gas compressing equipment is best sited external to buildings and this has led to a layout and design which is different in form and content to earlier schemes.
3.90 It will be noted from the application drawings that the GCC appears industrial in character. The different philosophy to the siting of external equipment, the lack of landscaping and the elevation of the photomontage shown in Figure 13 suggests that the design of the GCC for the DCO application has a more significant visual and landscape impact than that of the previous scheme. However, by reference to the comprehensive Landscape and Ecological Management Strategy Plan (LEMSP) and the visual assessment set out in the ‘Environmental Statement’ (Document Ref 5.1), it will be seen that the impact of the GCC is very much reduced. The GCC is proposed to be sited in the lee of a hill and earth mounding and planting are proposed to reduce its visual impact.

**Wellhead Compounds**

3.91 In previous proposals, the LPAs were also concerned about the impact of the wellhead compounds. Compared with previous proposals, the reduction in the number of proposed caverns has allowed Halite to reduce the number of wellheads. To reduce their impact, wellheads have been sited together in 7 wellhead compounds and their locations are shown on Drawing No A-1000-001.

3.92 For operational reasons, it has not been possible to relocate the wellheads to the west bank of the Wyre Estuary. Minerals can only be worked where they are found and directional drilling gives only limited flexibility to the
siting of the wellheads. The drilling report ‘Review of the Proposed Drilling and Completion Programmes for the Preesall Underground Gas Storage Project’ (Document Ref 9.2.5) has advised that the wellheads from which the boreholes are created must be within a horizontal displacement of about 600 metres from the centre of the proposed caverns. Thus, whilst there is some flexibility for the siting of the wellheads it is only limited and on the advice of the Geology Team, Halite has sited the proposed wellheads in the optimum location.

3.93 Visual impact of the wellheads is only short-term. During drilling of the boreholes and the washing of the caverns, the drilling rig would have an adverse visual impact. The drill rigs are tall structures of an industrial character. However, these impacts are temporary and short-term during the construction of the cavern. Once the caverns are formed, the drilling rig would be removed from the wellhead and the manifolds connected. Whilst operational, the wellheads are low structures whose visual impact can be easily mitigated by earth screening and planting.

Seawall Crossing and Observation Platform

3.94 The design of the seawall crossing and the observation platform was retained to that which was previously found acceptable by the Secretary of State and the LPAs. The detailed design of the structure would be agreed by the LPA and a requirement is included in the DCO to this effect.

Interconnector Metering Station

3.95 The design of the Metering Station was also retained to that which was previously found acceptable by WBC in its consideration of the previous interconnector planning application. Figures 14 and 15 show the design of the Metering Station as proposed in the 2005 planning application which WBC resolved to grant and that which was subject to consultation by Halite in April and May 2011. It will be noted that the scale and design of the proposed building is similar in both proposals.
FIGURE 15  Metering Station: 2011 DCO Submission
4.0 CONSULTATION

4.1 The aim of this Section is to provide a description of the key design and access issues arising following the formal consultation and wider engagement process undertaken by Halite. As set out above, formal consultation on the Project was undertaken in April and May 2011 and details of the process and the responses are set out in the ‘Consultation Report’ (Document Ref 3.1).

4.2 As recommended by the NPS, Halite consulted CABE in November 2010 on the design and it responded that it did not have the resources to consider the Project. No response was received to the formal Section 42 consultation carried out in April 2011.

4.3 There were only a limited number of comments relating to the design of the Project. WBC commented as follows:-

‘In general, the developer's approach to the design of the building and the reuse/refurbishment/reconstruction of the existing buildings (e.g. at the security and support facility) is to be commended as a means of reducing the visual impact of the development as far as is possible. The seawater pumping station adjacent Fleetwood Dock is, however, proposed to be located in an area of mixed uses, in close proximity to residential development. Whilst the scale of the building is considered to be acceptable, the developer should reconsider the proposed external materials to be used as the use of silver and grey profiled metal cladding is not considered appropriate in this location. Given that the mixed uses, are likely to include residential, tourism and business uses, a building of an ‘industrial’ appearance is not appropriate.

The design of the building situated within the gas interconnector metering station appears to be the same as that which appears on the current undecided interconnector pipeline application and also follows the design theme used for the main buildings which formed the previous UGS proposal by Canatxx. The design is not appropriate and should be amended to reflect that of the other buildings forming part of the present scheme.’

4.4 WBC also requested clarification that the design of the Project would not adversely affect existing proposals in the area including:-
• Long-term plans for the re-introduction of the Fleetwood to Poulton railway.
• The proposed new footpath link between the United Utilities Facility and Jameson Road; and
• The bridleway to the Fleetwood Marsh Nature Park.

4.5 LCC responded in a similar manner and stated:-

‘Although smaller than the Canatxx proposals the proposal still contains a similar scale of development in similar locations within the Wyre Estuary and Preesall to Nateby Study Area. Whilst it is recognised that the design and scale of some of the above ground infrastructure has changed and some of the proposed designs are more sensitive than previous, on the east side of the Wyre Estuary they would still represent a significant visual intrusion in open countryside. In particular, concern is expressed to the scale of the well heads and what justification there is for the size of such during and on completion of drilling operations; to the proposed compressor station that would introduce a significant alien industrial presence into open countryside notwithstanding the limited mitigation that is proposed; the layout and location of well heads in relation to the residential property, recreational facilities including the private golf course and public rights of way and their relationship to the surrounding topography; the inappropriate design of the proposed metering station as part of the interconnection to the national transmission line; and to the proposed security measures to be employed around the facilities and access roads. The County Council is concerned that the impacts of the above ground development associated with the current proposal are greater than those associated with similar previous proposals on the site and which were found unacceptable to the Secretary of State and the County Council. The proposal must demonstrate that there are no alternatives available which would enable the majority of the above ground development being less visually intrusive and in the event there are no alternatives, ensure that the visual impact of such in terms of the above ground infrastructure including the well heads, interconnecting roadways, pumping station and compressor station is minimised in a way that would reduce the visual impact in the area and particularly when seen from
the Wyre Way. Details of any enhanced mitigation should be provided along with details of means of construction and origin of materials.

With regard to the development proposals on the Fleetwood peninsula, there should be further consideration of the design of the above ground pumping station at Fleetwood dock to reflect and have regard to the emerging residential, marine/leisure environment that is being developed. The need for the land footprint proposed has not been demonstrated; the size of the land footprint should be the minimum required to facilitate the development and be appropriately landscaped.’

4.6 A landowner on the Preesall site requested the relocation of one of the wellheads (Wellhead No 2) further away from his dwelling.

4.7 A second landowner also suggested the re-routing of the electrical connection between the Stanah Switchyard and the GCC. It was suggested that the cables are re-routed to follow the west bank of the Wyre Estuary and to cross the river at the northern crossing point. Although this is a longer route, it would negate the need for the southern river crossing and avoid having to route the cable between existing caverns.

4.8 There were no objections from the community about the design of the buildings. The main concern raised by the community is safety and a number of residents suggested the provision of an emergency access to the site should be provided.

Halite’s Response

4.9 Halite responded to the design issues raised in the formal consultation process in the following manner.

4.10 In response to WBC and LCC’s concerns about the appearance of the Seawater Pump Station and the design of the Metering Station, the Project architect met WBC and its architectural consultant to discuss the design issues. Following these discussions, Halite has prepared revised drawings for the design of these two buildings.

4.11 The Seawater Pump Station was designed in consultation with WBC consultant architect. Given the mixed use character of the area, the Council wished to see a building which had a maritime design theme. A number of conceptual sketches were discussed (see Figure 16) before an agreed scheme was produced as shown in Figure 17.
4.12 The Metering Station was redesigned to reflect the rural character of its surroundings and this has been agreed with WBC.

4.13 Halite acknowledges LCC’s concerns about the siting of the built development on the east side of the Wyre Estuary. The Preesall site falls within the open countryside for which planning permission for industrial development would not normally be granted. However, as Mineral Planning Policy advises minerals can only be worked where they are found. The Geology Summary Report identifies that part of the salt bed where caverns can be safely created and this is located on the east bank of the Wyre Estuary.

4.14 However, as requested by LCC, Halite examined alternative options for the siting of the surface infrastructure, particularly the GCC, on the west bank of the Wyre estuary. A comprehensive assessment of alternative sites was undertaken; details are set out in the ‘Surface Infrastructure : Alternative Sites Assessment’ which is attached at Appendix 1 to the ‘Planning and Sustainability Statement’ (Document Ref 9.1.1). As set out in Section 3 of this Report and following advice from the HSE, the assessment concluded that for health and safety reasons the GCC has to be located on the east bank of the Wyre Estuary.

4.15 For operational reasons, the wellhead compounds cannot be sited on the west bank of the Wyre Estuary as the boreholes to construct and operate the caverns must be sited in the defined ‘Area of cavern construction’. Halite reviewed the scale of the wellhead compounds but their size is determined by the space required to accommodate the wellheads and the
drilling rigs. There is little opportunity to reduce the scale of each wellhead compound without increasing the number of compounds that is required. Following the construction of the caverns, the size and scale of the wellhead compounds would, however, be reduced considerably. Once operational, the wellheads would be low structures provided in a much reduced compound.

4.16 In order to mitigate the impact of the built development on the east side of the Wyre Estuary, Halite has produced a comprehensive Landscape and Ecological Management Strategy Plan. The plan has been prepared in consultation with the LPAs and the nature conservation groups including Natural England, Environment Agency, the RSPB and the Wildlife Trust for the Lancashire, Manchester and North Merseyside.

4.17 In response to the clarification required by WBC on the plans for the re-introduction of the Fleetwood to Poulton railway; the footpath link between the United Utilities Facility and Jameson Road; and the bridleway to the Fleetwood Marsh Nature Park, Halite consulted the relevant bodies. The Poulton and Wyre Railway Society were consulted to ensure that the proposals did not prejudice plans for the introduction of the Fleetwood-Poulton railway and the Society confirmed that the proposals are acceptable to them.

4.18 Discussions with WBC have ensured that the temporary construction compound does not adversely affect the proposed new footpath link at the United Utilities Facility and Jameson Road.

4.19 The bridleway to the Fleetwood Marsh Nature Park provide an important off-road link to this facility and it has the potential to link up with the adjacent ABP development. WBC wishes to protect this route and was concerned that the proposed brine pipeline may be too close to the bridleway. Halite had discussed the details of the route with WBC and the Council has since confirmed that the proposals will not adversely affect the bridleway.

4.20 In response to the concern of the landowner about the impact of a wellhead, Halite has moved Wellhead no. 2 a further 50 metres from his property. The Landscape and Ecological Management Strategy Plan also includes additional landscaping to further mitigate the impact.

4.21 In response to the re-routing of the electrical cables as requested by a resident on the west bank of the Wyre Estuary, Halite has examined this option but rejected it for the following reasons. First, the route proposed is longer and more expensive to construct than that proposed by the southern river crossing. Second, Halite do not own the land required for the re-routing and would need to acquire (and compulsory purchase if necessary) additional land that is not in its control. Third, the route would inevitably involve land that is known to be contaminated and which is probably best left undisturbed. Fourth, the chosen route has previously been deemed acceptable to both the Secretary of State and the LPAs.
4.22 Finally, in response to the concerns raised by some members of the community about safety, Halite identified an emergency access route making use of an existing track.

4.23 Thus, in conclusion, the following amendments have been made to the proposed design in response to matters raised by the consultation process:-

- The Metering Station has been redesigned to be more rural in character.
- The Seawater Pump Station has been re-designed to reflect that of the previous CGS application which was found to be acceptable by the Council.
- A comprehensive Landscape and Ecological Management Strategy Plan for the Preesall site has been prepared to include additional landscape mitigation.
- Wellhead No 2 has been moved 50m in response to the landowners concerns.
- An emergency access route has been provided.

4.24 It is clear from discussions with the LPAs that there are continued concerns about the development of buildings and the wellheads on the Preesall site as in planning policy terms it represents development in the countryside. As set out previously, Halite has examined alternative locations for this infrastructure on the west bank of the Wyre Estuary but for operational and safety reasons this has not proved an acceptable option. In consultation with the LPAs, Halite has sought to site and design the buildings to minimise their impact. A comprehensive Landscape and Ecological Management Strategy Plan is also proposed which includes earth mounding and landscaping to minimise landscape and visual impact.
5.0 EVALUATION

5.1 The aim of this Section is to summarise how the above considerations and, in particular, the design principles set out in Section 3 have informed the siting, design, external appearance, means of access and landscaping of the Project.

5.2 The siting of the built development reflects the role and function of the various buildings that comprise the Project. The Project is being progressed at Preesall because the salt beds are suitable for the creation of gas storage caverns. The geological investigations have identified part of salt bed where caverns can be safely created. As such, the salt beds are a major influence on the design of the Project and the siting of the built development.

5.3 The proposed ‘Area of Cavern Development’ is defined by the geology assessment and the conclusions of the ‘Geology Summary Report’ (Document Ref 9.2.2). The area for the creation of the caverns is significantly smaller than that proposed by previous planning applications for UGS facilities at Preesall. The number of caverns to be created is up to 19 as distinct from the 36 caverns proposed in 2009 planning application submitted by CGS. The overall working capacity of the Project at 600 million cubic metres measured at standard temperature and pressure (STP) is about half of that previously proposed.

5.4 The reduction in the number of caverns that are created and their concentration in a more limited area in the northern part of the Preesall site has meant that the surface infrastructure required to construct and operate the Project is more compact. By reference to the Masterplans (see Figure 1-3) in redesigning the scheme, Halite is proposing a more compact development for the surface infrastructure on the east bank of the River Wyre such that the extent of the development extends is 1km rather than the 3.5km of the 2009 application.

5.5 We set out below the 15 design principles identified in Section 3 and explain how the Project design has met those principles.

(i) The proposed development should seek to retain those parts of previous schemes that were deemed acceptable by the LPAs and the Secretary of State including:

- The route of the brine pipeline;
- The design of the seawall crossing and the observation Platform;
- The siting and design of the brine diffuser;
- The general route of the gas interconnector to the NTS;
- The sting and design of the Metering Station; and
- The siting and design of the Seawater Pump Station.
5.6 Halite has retained all of the above elements in its Project design. In accordance with comments raised by the LPAs in their Section 42 responses the external appearance of the Seawater Pump Station and the Metering Station have, however, been amended to reflect the character of their surroundings.

(ii) **The proposed development should have regard to the matters raised by the LPAs and the Secretary of State in respect of the previous schemes, particularly in respect of the impact of the siting and design of the:**

- Reception and Warehouse Compound;
- Gas Compressor Compound; and
- Booster Pump Station

5.7 In comparison to the previous CGS proposals, Halite has removed the Reception and Warehouse Compound from their scheme and replaced it with the Security and Support Facility to be provided at Higher Lickow Farm. The farmhouse and a barn would be renovated and refurbished and this part of the Project has been commended by WBC as a way of reducing visual impact.

5.8 The GCC has been relocated to the northern part of the Preesall site and use has been made of earth mounding and landscaping to reduce its visual impact. The GCC has also been sited in the lee of a hill and ‘sunk’ into the ground to further reduce its impact.

5.9 The Booster Pump Station has been designed to reflect the rural character of its surroundings. The design concept is based on a ‘barn type’ design to reflect its agricultural context. An L-shaped building is proposed with mock barn doors as the main entrance and low roof line. Materials include the use of red brick and tiles to reflect the landscape character context summarised in Section 3. The Booster Pump Station has been sited close to the Hackensall STW so that it does not from a disparate element in the landscape and that the infrastructure associated with the STW helps mitigate the visual impact of the development when viewed from the west. The need for a second Booster Pump Station has also been removed from the Project

(iii) **The proposed development should accommodate the equipment and technical functions of the Project in a safe and secure manner.**

5.10 In order to reduce the visual impact, where possible, equipment associated with the technical functions of the Project has been located within buildings. This has not been possible in all cases as, in some instances, it is necessary to locate equipment externally to buildings for safety and security reasons. For example, it has not been possible to locate all the gas equipment within the GCC in buildings due to the confined spaces and risk of explosion.
(iv) Buildings should be designed individually to reflect the character of their location and surroundings, rather than providing a ‘family’ or consistent design across all buildings.

5.11 All of the buildings comprising the Project are individually designed to reflect their location. For example, the design of the Seawater Pump Station is different to that of the Booster Pump Station as the design of the former reflects the mixed use of its surrounding whilst the design of the latter reflects its rural surroundings.

(v) Where possible and appropriate, preference should be given to siting buildings in urban rather than the rural areas. Buildings should only be sited in the countryside if there are no more appropriate alternative locations.

5.12 The Seawater Pump Station, Seawall Crossing and Observation Platform are located at Fleetwood; an existing urban area.

5.13 The buildings sited in the rural area include the Security and Support Facility at Higher Lickow Farm; the Booster Pump Station adjacent to the Hackensall STW; the GCC; the wellhead compounds and the Metering Station. The Security and Support Facility makes use of an existing building rather than new buildings in the countryside.

5.14 For operational reasons, the Booster Pump Station, GCC and the wellhead compounds need to be located at the Preesall site. The Booster Pump Station needs to be sited on the brine pipeline as it provides and discharges the brine used for cavern washing. Alternative locations for the GCC were examined on the west bank of the Wyre Estuary but for health and safety reasons these were rejected by the HSE. Finally, the wellhead compounds need to be sited close to the area where the caverns are to be created. Deviated drilling techniques means that there is some flexibility for the siting of compounds but this is only limited.

5.15 The Metering Station needs to be located on the connection point of the gas interconnector from the project and the Gas NTS which is in a rural area.

(vi) Buildings should not be concentrated together as a single complex but provided as single buildings that are more easily assimilated into the landscape.

5.16 As set out above, the siting of many of the buildings is determined by the operational requirements of the Project. However, all of the buildings are relatively small for a major infrastructure project and their siting is such that it is easier to assimilate them into the landscape.

(vii) Where possible and appropriate, use is made of existing buildings.
5.17 The Security and Support Facility is being provided at Higher Lickow Farm and use is being made of existing buildings. There are no other existing buildings within the Preesall site that are available or appropriate for re-use. However, the Seawater Pump Station makes use of existing infrastructure (e.g. the water abstraction culvert) at the Fleetwood Fish Dock.

(viii) Where possible and appropriate, the height of buildings or infrastructure should be minimised and/or major buildings ‘sunk’ into the ground in order to minimise visual impact.

5.18 The GCC has the greatest visual impact as it is an ‘industrial’ site located within the countryside. It is proposed that the ground level of the GCC is lowered so that the plant buildings and external equipment are ‘sunk’ into the landscape. A balance needs to be struck, however, to ensure that ground levels are not reduced to the extent that it raises flood risk issues.

(ix) Where possible, no building or structure should be constructed in a nature conservation area.

5.19 None of the buildings or above ground structures is sited on land which is of nature conservation importance.

(x) Where possible, all buildings should be located on higher ground to avoid flood risk.

5.20 Due to its coastal location, flood risk is an issue for the Project. A comprehensive Flood Risk Assessment has been carried out and buildings have been sited to avoid flooding.

(xi) Where possible and appropriate, earth bunding should be provided at low gradients so that the bund can continue to be used for agricultural purposes.

5.21 Earth bunding is provided adjacent to the GCC and the Booster Pump Station to assist the mitigation of visual impact. The profile of the bunds and the gradient of its sides are low to allow continued use for agriculture.

(xii) Where possible and appropriate, buildings should be provided close or adjacent to existing roads or tracks to avoid the need for the construction of new access roads.

5.22 A new haul road is proposed to access the site and its route and design is agreed by the Highway Authority. The haul road would provide an improved access to the Security and Support Facility at Higher Lickow Farm and to the GCC.

5.23 Access to the proposed site of the Seawater Pump Station would be from an existing road at Fleetwood Fish Dock. Access to the Booster Pump
Station and the wellhead compounds would be provided from existing tracks within the Preesall site or from short spurs from the existing tracks.

5.24 Access to the Seawall Crossing and the proposed Observation Platform and the metering Station would make use of existing roads and tracks.

(xiii) The proposed development should seek to achieve economical fabrication and construction.

5.25 To achieve economical fabrication and construction, it is proposed that the buildings would be based on a portal frame with brick facing and tiled roof.

(xiv) The proposed development should seek to allow for staged construction and to allow the proposed buildings to be constructed in parallel.

5.26 Each of the main building required for the construction and operation of the Project can be built and completed in isolation. Construction could commence of the Security and Support Facility, the Seawater Pump Station, the Booster Pump Station, the GCC, the Seawall Crossing and the Metering Station at the same time. The wellhead compounds would, however, need to be constructed in groups as the creation of the caverns progresses across the site.

(xv) The proposed development should seek to maximise the use of local materials and products in the built form.

5.27 In order to ensure that the proposed buildings reflect the character of the area, it is proposed that local materials are used in their construction.
6.0 CONCLUSION

6.1 The design principles and the consultation on the Project has influenced the siting, design, external appearance, means of access and landscaping of the above ground buildings and structures.

Siting

6.2 The revised approach to geology and the reduction in the number of caverns when compared with previous CGS applications, has allowed Halite to reduce the number and extent of above ground infrastructure that is required to construct and operate the Project. A Booster Pump Station and Control and Warehouse building has been removed from the Project.

6.3 The opportunity has also been taken to use Higher Lickow Farm to provide security and support facilities for the Project. The farmhouse and the barns associated with it are in a poor state of repair and their refurbishment would give the property a new lease of life. As part of its Section 42 consultation response, WBC has ‘commended’ Halite for the re-use of this property.

6.4 Following concerns raised by the LPAs on previous planning applications, the remaining Booster Pump Station (previously known as the Northern Booster Pump Station) was re-sited close to the Hackensall STW so that it is partly shielded from views from the west and the Wyre Way and did not form a disparate element in the landscape.

6.5 In addition, those aspects of the previous CGS proposals that were acceptable to LCC/WBC have been retained including:

- The siting and design of the Seawall Crossing and the Observation Platform at Fleetwood;
- The siting and design of the Seawater Pump Station at Fleetwood Dock;
- The route of the brine pipeline on the Fleetwood Peninsula and under the Wyre Estuary;
- The general route of the gas interconnector pipeline and the siting of the Metering Station; and
- The use of the Stanah Substation for the electrical connection.

6.6 The caverns are created by the sinking of boreholes and the washing of the salt. Ideally, the caverns would be accessed via boreholes drilled from wellheads sited directly above the caverns. At Preesall, part of the salt body that is suitable for the creation of the caverns is located under the Wyre Estuary and under areas of ecological importance. To avoid working in the Estuary and adversely affecting areas of nature conservation importance, the Project relies on directional drilling for the creation of some of the caverns. The drilling report ‘Review of the Proposed Drilling and Completion Programmes for the Preesall Underground Gas Storage Project’ (Document Ref 9.2.5) has advised that the
wellheads from which the boreholes are created must be within a horizontal displacement of about 600 metres from the centre of the proposed caverns. Thus, whilst there is some flexibility for the siting of the wellheads it is only limited and on the advice of the Geology Team, Halite has sited the proposed wellheads in the optimum location. However, following the consultation on the Project proposals and in response to a request by a landowner during pre-application consultation, Wellhead No 2 has been re-located some 50 metres from the optimal location.

6.7 The washing of the caverns requires a significant amount of water and it is proposed to source seawater from the Fish Dock at Fleetwood for this purpose. The use of seawater is more sustainable and economic than the use of potable water or water abstracted from the Wyre Estuary or from ground sources. The Fish Dock has been selected as use can be made of existing infrastructure and it is within an area which is allocated for mixed use development in planning policy. The Project would make use of the redundant water intake infrastructure that once formed part of a Power Station.

6.8 The pipeline between the Seawater Pump Station and the Preesall site has to cross the Wyre Estuary. This would be achieved under the River Wyre to avoid works to the existing flood defences. Previous proposals for UGS facilities at Preesall have proposed this route and this has been acceptable to the LPAs.

6.9 Due to the ecological importance of the Wyre Estuary, the Project seeks to dispose of the saturated brine that is generated from the cavern washing process in the Irish Sea. The disposal point is some 2.3km from the seashore. This is considered the most sustainable disposal option as the currents and tides associated with the Irish Sea, when coupled with such a large body of water, mean that the brine can be absorbed most readily.

6.10 The Booster Pump Station is located on the east bank of the Wyre Estuary as it is used to pump the saturated brine under the River and out to the Irish Sea.

6.11 The route of the brine pipeline between the Booster Pump Station and the seashore has been carefully considered. Following discussions with WBC the route crosses the Seawall at a point where the Council would support the construction of an observation platform.

6.12 The GCC is the largest part of the built development and is located on the west bank of the Wyre Estuary. The LPAs have both expressed a concern about the location of this part of the development as it represents industrial development in the countryside. In response to a request by LCC, Halite has examined alternative locations for the GCC on the west bank of the Wyre Estuary. Although potential sites were identified, following consultation with the HSE, all of the sites were rejected on the grounds of health and safety.
6.13 The interconnector Metering Station must be sited on the pipeline route and the site selected has been supported by WBC.

6.14 Whilst the function and role of the proposed buildings provide little flexibility for their siting, there are a number of options for the design and external appearance.

Design and external appearance

6.15 Halite has sought to design the buildings to reflect the character of the area in which they are located rather than to provide a consistent or ‘family’ design approach across all buildings. The character area appraisal set out in Section 3 identifies differences in the character of the landscape on the east and west banks of the Wyre Estuary. The east bank is a predominantly rural area whereas the west bank is a more urban area which can accommodate built development more easily.

6.16 The design of the various buildings comprising the current Project has improved on that submitted in previous planning applications. The former designs of the Seawater Pump Station, the Booster Pump Station, the GCC and the Metering Station were ‘American ranch style’ in appearance with low pitched roofs and extended roof overhangs. Although the design of these buildings had some merit they did not reflect the design of buildings in the locality and LCC considered that they would be ‘significant incongruous’ features in the landscape.

6.17 Halite redesigned the buildings so that they are more traditional in character and reflected the designs of other buildings in the vicinity. The design of the Seawater Pump Station has been amended to reflect both its location within a mixed use area and the design of previous proposals that were deemed acceptable to the LPAs.

6.18 The GCC has an industrial appearance which reflects its use. It comprises a number of buildings and external plant. As the plant is dealing with gas, for health and safety reasons, there is little opportunity to provide equipment within buildings. Those buildings that are provided within the Compound are designed to reflect the rural area and comprise brick elevations and tiles for the roof.

6.19 The Seawall Crossing and Observation Platform has been designed with input from WBC and is similar in design to that already provided at the Cleveley Esplanade. The design of the Observation Platform would enhance this part of the coastal environment.

6.20 The interconnector Metering Station is designed to reflect the agricultural character of the surrounding area.

6.21 In their Committee Reports on the section 42 consultation response both LCC/WBC considered that the designs were an improvement on previous proposals. WBC stated that Halite’s approach to the design of the
buildings was to be ‘commended’ and LCC stated that some of the designs were ‘more sensitive than those previously proposed’.

6.22 Following the formal Section 42 and 47 consultation process the following changes were made to the Project Design:-

- Following concerns raised by the LPAs, the external appearance of the Seawater Pump Station was amended to make it less industrial in appearance.
- Following concerns raised by the LPAs, the design and external appearance of the Metering Station was amended to reflect the rural nature of its surroundings.
- An emergency access route to the Preesall site was provided in response to concerns raised by the community.

Means of Access

6.23 The principal access to the Preesall site is from the A558 and a new haul road is proposed. Consideration was given to the use of Cemetery Lane as the main access to the site but the junction with the A558 was considered sub standard and the width of the Lane itself would make access by HGV difficult. A purpose built haul road is, therefore, proposed. A number of different alignments were considered to minimise the impact of the road on Ivy Cottage and Park Cottage Farm.

6.24 A number of internal access roads linking the wellheads and the built development are required and, where possible, it is proposed to use existing tracks widened as necessary.

6.25 Some of the Section 42 and 47 consultation responses sought clarification that the design of the Project would not adversely affect existing proposals in the area including:-

- Long-term plans for the re-introduction of the Fleetwood to Poulton railway.
- The proposed new footpath link between the United Utilities Facility and Jameson Road; and
- The bridleway to the Fleetwood Marsh Nature Park.

6.26 WBC recommended that the Poulton and Wyre Railway Society were consulted to ensure that the proposals did not prejudice plans for the introduction of the Fleetwood-Poulton railway. Halite held discussions with the Society and it confirmed that the proposals are acceptable to them.

6.27 Discussions with WBC have ensured that the temporary construction compound does not adversely affect the proposed new footpath link at the United Utilities Facility and Jameson Road.

6.28 The bridleway to the Fleetwood Marsh Nature Park provide an important off-road link to this facility and it has the potential to link up with the
adjacent ABP development. WBC wishes to protect this route and was concerned that the proposed brine pipeline may be too close to the bridleway. Halite had discussed the details of the route with WBC and the Council has since confirmed that the proposals will not adversely affect the bridleway.

**Landscaping**

6.29 In terms of the impact of the built development, the amount of above ground development associated with the Project is relatively limited for a nationally significant infrastructure project. The Seawater Pump Station is located in the existing urban area of Fleetwood Dock and there have been no objections from the LPA to the siting and design of this part of the development in past planning applications. Similarly, there were no objections to the design of the works to the Seawall and the creation of the observation platform at Fleetwood. Finally, the LPA had no objections to the siting and design of the Metering Station proposed near Nateby.

6.30 The main design issues related to the construction of the Gas Compressor Compound, the Booster Pump Station and the warehouse and control building sited on the east bank of the Wyre Estuary. By its very nature, the UGS Facility is an industrial process which has the potential to have an adverse impact on the countryside. The Booster Pump Station has been sited adjacent to the Hackensall STW to assist its mitigating its impact. The building has also been designed to reflect the agricultural character of the area.

6.31 In order to mitigate the impact of the built development on the countryside, Halite has prepared a comprehensive Landscape and Ecological Management Strategy Plan for the Project. The LEMSP was prepared in consultation with the LPAs, their landscape advisors and the nature conservation groups.

6.32 In conclusion, in comparison to previous CGS proposals, Halite has sought to incorporate the following changes into the Project:

- Retain that part of the CGS proposals on the west bank of the Wyre Estuary that was acceptable to the LPA i.e. the design of the Seawall Crossing and the Observation Platform, the route of the brine pipeline, the siting and design of the Seawater Pump Station and the locations of the north and south River Wyre crossings.
- Locate the built form on the east side of the River Wyre to the northern part of the site to provide a more compact development.
- Relocate the Booster Pump Station to the east of the Hackensall STW to reduce its visual impact when viewed from the west.
- Remove a Booster Pump Station from the Project.
- Remove the Control and warehousing building from the Project.
- Propose the refurbishment and re-use of Higher Lickow Farm.
6.33 The main design issue relates to the siting of the built development on the east bank of the Wyre Estuary i.e. the wellhead compounds, the GCC and the Booster Pump Station. The LPAs are particularly concerned that the GCC, is industrial in nature which is out of character with the rural nature of the Preesall area.

6.34 Minerals, however, can only be worked where they are found and there is limited scope to relocate the wellhead compounds which need to be sited in the Area of Cavern Development as defined by the Geology Summary Report.

6.35 Alternative sites on the west bank of the Wyre Estuary have been assessed for the relocation of the GCC but none are acceptable to the Health and Safety Executive (HSE). In order to mitigate the impact of the built development, the structures within the GCC have been designed to be as low as possible and significant earth mounding and landscaping is proposed to mitigate its impact on the surroundings.

6.36 The Booster Pump Station Compound is much smaller and has been located adjacent to the Hackensall Sewage Treatment Works so that it is not an isolated feature in the countryside. The Pump Station building has also been designed as a barn like structure to reflect the agricultural character of the area.

6.37 The Security and Support Facility makes use of the vacant farmhouse and barn complex at Higher Lickow Farm. Although the barn is proposed to be redeveloped, it is contained within the footprint of the existing barn.

6.38 In response to the Section 42 and 47 consultation process, Halite has redesigned the Seawater Pump Station and the Metering Station so that the designs of both buildings reflect their setting.

6.39 The primary means of access to the Preesall site is from the A558. A direct access is proposed to avoid the use of existing roads and lanes which do not meet the requirements of the Highway Authority. Within the site and where appropriate, Halite propose the use of existing tracks rather than the construction of new roads.

6.40 In order to further mitigate the impact of the built development, in consultation with the LPAs and the nature conservation groups, a comprehensive Landscape and Ecological Management Strategy Plan has been prepared.
# Abbreviations

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<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>CGS</td>
<td>Canatxx Gas Storage Limited</td>
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<td>DCO</td>
<td>Development Consent Order</td>
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<td>EA</td>
<td>Environment Agency</td>
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<td>Environmental Impact Assessment</td>
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<td>Environmental Statement</td>
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<td>GSR</td>
<td>Geology Summary Report</td>
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<td>HSE</td>
<td>Health and Safety Executive</td>
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<td>IPC</td>
<td>Infrastructure Planning Commission</td>
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<tr>
<td>LCC</td>
<td>Lancashire County Council</td>
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<tr>
<td>LEMSP</td>
<td>Landscape and Ecological Management Strategy Plan</td>
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<td>National Transmission System</td>
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<td>Royal Society for the Protection of Birds</td>
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<td>SPA</td>
<td>Special Protection Area</td>
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<td>Site of Special Scientific Interest</td>
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<td>Underground Gas Storage</td>
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