

# RYEDALE GAS PROJECT



## Design & Access Statement

March 2010

**BARTON  
WILLMORE**  
Planning • Design • Delivery



## **Design & Access Statement**

### **Ryedale Gas Project**

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## 1.0 INTRODUCTION

1.1 This Design and Access Statement (DAS) has been prepared on behalf of Moorland Energy in support of an application for gas production at Ebberston Wellsite, Ebberston; the construction of two 100mm and 300mm pipelines from the Wellsite for a distance of 8.6 km between the Wellsite and the proposed processing facility; the construction of a new access road from the A170; a Gas Processing Facility at Hurrell Lane, Thornton-le-Dale; and a “hot-tap” connection between the processing facility and the existing National Transmission System gas pipeline south of New Ings Lane, Thornton.

1.2 The Town and Country Planning (General Permitted Development) Order 1995 requires the submission of a Design and Access Statement with all applications for planning permission except for engineering or mining operations; development of an existing dwelling house; or a material change in the use of land or buildings. The application involves the production and processing of a mineral (gas) and consequently, a strict interpretation of the Order suggests that a DAS is not required to validate the application. However, officers at North Yorkshire County Council have informally advised that a DAS would be beneficial as it would enable Moorland Energy to demonstrate that an integrated approach has been followed from inception of the proposed development in order to deliver inclusive design and achieve a range of access requirements.

1.3 Guidance provided by CABI on Design and Access Statements states:

**“You should think of the statement as telling the story behind the scheme as it is presented in the planning application. Do not think of it as a chore, the statement is your opportunity to show that decisions you have made are not guesswork but based on an understanding of the real world as it affects the application site. A good design statement will therefore increase support for your proposal.” (CABI, 2006)**

1.4 The Statement is a tool to explain and justify the design and access principles and concepts on which a development proposal is based and on how these are reflected in individual aspects of a scheme.

1.5 This Statement has been prepared having regard to the content of Circular 01/2006 and the guidance produced by CABE in May 2006. Therefore, this Statement has the following function and purpose:-

- a) to provide a description of the key issues and their evaluation that has informed the design and lead to the proposed form of development;
- b) to provide information on the development in terms of composition, urban design, access and movement.

## 2.0 SITE AND SURROUNDINGS

2.1 The Application Site is 56.8ha in total and comprises of five elements:

- Gas production from an existing Wellsite;
- The construction of two underground gas pipelines, 8.6km in length, from the existing Ebberston Well to a new Gas Processing Facility;
- A new access road between the A170 and the proposed Gas Processing Facility;
- A Gas Processing Facility at Hurrell Lane, Thornton-le-Dale; and
- An Above Ground Installation (AGI) connection into the existing National Transmission System (NTS) pipeline to the south of the Gas Processing Facility on land off New Ings Lane.

2.2 The Ebberston Wellsite from where gas production will take place is located at the edge of Wykeham Forest, approximately 4km to the north of the village of Ebberston. It occupies the eastern end of a long, narrow field which forms part of the landholding of Givendale Head Farm. A 5m wide access road approximately 500m in length leads from Ebberston Common Lane to the Wellsite. The Wellsite and the access road lie just within the North York Moors National Park. Planning permission was granted by the North York Moors National Park Authority (NYMNPA) in December 2007 for the Wellsite for exploratory drilling for a temporary period of 3 years. Following the discharge of planning conditions in 2008, the Wellsite was drilled in February 2009.

2.3 The Wellsite and the northern part of the proposed underground pipelines is located in a "forest and pasture" landscape where the gradual south-facing fall of the Tabular Hills is intersected by narrow, steep-sided, predominantly north-south orientated valleys that, for the most part, open out southwards into the Vale of Pickering. Forestry dominates the landscape to the north of the Wellsite and along the northern section of the Pipelines corridor. The southern section of the pipelines corridor is characterised by open pasture and arable land.

2.4 The pipeline corridor south of the A170 Pickering to Scarborough Trunk Road and the proposed Gas Processing Facility at Hurrell Lane, Thornton-le-Dale is within the Vale of Pickering, a landscape which is predominantly arable which slopes from north to south. This part of the Vale is predominantly gently undulating. Although it is totally drained, it contains a network of rivers and watercourses. Field boundaries are primarily defined by trees, hedgerows which in part follow drains and watercourses which runs from north

to south. Consequently, the field pattern comprises thin linear fields which fall away to the south.

2.5 The villages of Allerston and Ebberston are the nearest communities to the Wellsite, whilst the Hurrell Lane site lies between Thornton-le-Dale and Wilton. They are strung along the springline at the foot of the Tabular Hills and share many common characteristics. Isolated farmhouses typify the immediate area between the A170 and the Wellsite.

2.6 The Ebberston Wellsite and access road, the Hurrell Lane site and the proposed above-ground installation into the NTS lie outside the Fringe of the North York Moors Area of High Landscape Value (AHLV), whilst the pipelines corridor and the proposed access road from the A170 to the Hurrell Lane site lie within the AHLV.

### 3.0 PROPOSED DEVELOPMENT

3.1 The Proposed Development is described in Chapter 4 in Volume 1 of the Environmental Statement which accompanies the planning application. In order to understand how the design process has been followed, the Design and Access Statement also includes a description of the principal uses and the amount of development which is being applied for.

3.2 Moorland Energy is proposing to develop a pipeline from the existing Ebberston Wellsite to the proposed Gas Processing Facility at Hurrell Lane, Thornton-le-Dale. Once processed, the gas will then be fed into the National Transmission System (NTS) via an above ground installation (AGI) connection into the existing "Burton Agnes – Pickering No.6 Feeder Pipeline" which lies to the south of New Ings Lane, Thornton-le-Dale. The proposed development will allow Moorland Energy to withdraw gas from the proven gas field at the Ebberston Wellsite for delivery into the NTS.

3.3 The principal elements of the proposed pipeline, Gas Processing Facility and AGI hot tap connection for the Ryedale Gas Project are as follows:

- Gas production from the existing Ebberston Wellsite including;
  - A separator at the existing Ebberston Wellsite to separate any produced liquids from the natural gas;
  - Facilities for storing and injecting small quantities of methanol at the Ebberston Wellsite to prevent hydrate formation;
  - Facilities for storing and injecting small quantities of corrosion inhibitor at the Ebberston Wellsite to prevent corrosion of the pipelines which could be caused by the wet and sour condition of the gas;
- The construction of two underground gas pipelines from the existing Ebberston Wellsite to a new Gas Processing Facility including;
  - Construction of one 300mm and one 100mm pipeline and a fibre optic cable within a 15m-42m construction working width between the existing Ebberston Wellsite and the proposed Gas Processing Facility at Hurrell Lane, Thornton le Dale;
- A new access road between the A170 and the proposed Gas Processing Facility;
- A Gas Processing Facility at Hurrell Lane, Thornton-le-Dale including the following main processes;
  - Inlet separation equipment to ensure any liquids not separated at the Ebberston Wellsite are removed;

- A sweetening plant to remove the Hydrogen Sulphide from the gas stream;
- Compressors to increase the pressure of the gas to that of the NTS;
- A Hydrocarbon and Water Dew Point Control Plant to remove residual water, organic sulphur compounds and heavy hydrocarbons in the gas stream
- Gas analysis and metering facilities to monitor the gas quality prior to export to the NTS and to measure the amount being exported;
- A liquids stabilisation and storage area for produced liquid (condensate and water) stabilisation and storage consisting of a three phase separator, holding vessels, tanks, pumps and heaters;
- Safety facilities such as a High Integrity Pressure Protection System (HIPPS) for primary over-pressure protection, pressure sensing devices and an enclosed ground flare system;
- Fire water storage tanks and pumps;
- An administration building containing the control room, offices, workshop and welfare facilities;
- A switchgear room;
- Parking facilities for staff;
- Construction of a security fence and CCTV facilities around the perimeter of the proposed Hurrell Lane Site;
- Associated infrastructure; and
- Construction of one 300mm export pipeline from Hurrell Lane to the proposed NTS AGI in the field to the south of New Ings Lane, Pickering;
- An Above Ground Installation (AGI) which allows connection into the existing National Transmission System (NTS) pipeline to the south of the Hurrell Lane Gas Processing Facility on land off New Ings Lane.

3.4 The main elements are described in more detail below.

### **The Ebberston Wellsite**

3.5 The Ebberston Wellsite is located at Givendale Head Farm, Ebberston and utilises an existing access route used during the exploration and appraisal of the Wellsite in February 2009. The compound measures some 114.5m x 146m and will accommodate buildings and equipment for the separation and transfer of the natural gas and condensates. Equipment and buildings will be located within the confines of the existing Wellsite compound.



3.6 During construction the following elements are proposed:

- Construction compound;
- Laydown area;
- Fabrication shed;
- Workforce facilities – messing, catering and offices;
- Security cabin;
- 16 parking spaces;
- Potable water tank; and
- Power generator.

3.7 During operation the following is proposed:

- Local equipment room;
- Access gate;
- Emergency gates (2);
- Road tanker bund;
- Liquid and wet gas pig launchers;
- Pipe supports;
- Hydrate inhibitor package;
- Corrosion/scale inhibitor package;
- Wellhead separator;
- Backup nitrate cylinders;
- Instrument air compressor;
- Satellite;
- Interceptor; and
- 2.85m high security fence.

3.8 Gas will flow from the reservoir and through the choke valve which regulates the flow rate of the gas. A horizontal two-phase wellhead separator will separate the gas and liquids, before transfer via the separate pipelines to the Hurrell Lane Gas Processing Facility. The flowing wellhead pressure will provide the driving force for the liquid (and gas) flow.

3.9 Pig launchers will allow the pipelines to be inspected and/maintained but will not be used during normal operation. Methanol is proposed for hydrate inhibition at the Wellsite, requiring a storage tank and injection pumps. Corrosion inhibitor and/or scale inhibitor may also be required for pipe-line protection.

3.10 Electrical distribution, control, shutdown systems, telecommunications, instrument air and wellhead hydraulic panel will be housed within a local equipment room on the Wellsite (normally unmanned). The following utilities/systems will be required at the Wellsite:

- Electrical power will be supplied at 400V by the regional electrical company (REC) via a pole-mounted transformer (to be confirmed during FEED);
- Wellhead hydraulic system/panel;
- Instrument air (for actuated valves and plant utility air);
- Nitrogen cylinders (backup for instrument air); and
- Process area drains/interceptor.

3.11 For clarity, the proposed rate of extraction of the gas from the reservoir is less than 1.1 million standard cubic metres per day (mcm/d) and, therefore, the proposed development does not fall within the remit of the Infrastructure Planning Commission (IPC) which deals with developments with extraction rates in excess of 4.5 million mcm/d.

#### **Gas Pipeline between the Ebberston Wellsite and the Hurrell Lane Gas Processing Facility**

3.12 Two pipelines would be laid in the same easement between the Wellsite and the Gas Processing Facility – one for gas and one for produced liquids. The gas would be conveyed to the Gas Processing Facility via a new 300mm diameter pipeline. The liquids separated at the Wellsite would be conveyed to the Gas Processing Facility via a dedicated liquids pipeline of 100mm in diameter.

3.13 During construction of the pipelines, a 15-42m working width will be required to allow for the laying down of pipe work, the movement of construction vehicles and the use of machinery which is ancillary to the development of the pipelines. The easement would contain the development as it is being constructed and limit environmental and visual impacts. In some locations along the pipeline route, for environmental reasons, it has not been possible to allocate enough land for the 42m easement and a lesser easement is provided.

3.14 Once construction has been completed, the working width and the route of the pipeline would be reinstated for its former use i.e. predominantly agriculture. Moorland Energy

would, however, retain a 7.4m easement during the operational lifetime of the proposed pipeline for maintenance purposes.

- 3.15 Soils removed for the excavation of the pipeline route would be stored on site for re-use as part of the re-instatement works. Surplus soils would be removed from the site.

### **The Hurrell Lane Gas Processing Facility**

- 3.16 The proposed Gas Processing Facility will be located in a field at the junction of Hurrell Lane and New Ings Lane. The Gas Processing Facility will sweeten the sour gas so that it can be utilised in the NTS.

- 3.17 The Gas Processing Facility will require a compound of 322m x 177m which will be landscaped and bounded by a double security fence of 2.85m in height. During the construction phase there will be a number of temporary buildings, compounds and equipment required to complete the construction of the Proposed Development as follows:

- Pipeline Contractor and Laydown/Storage Area;
- Construction compound;
- Storage Area;
- Offices;
- Workforce facilities – changing, drying, toilets, showers and first aid;
- Messing and catering;
- Stores – material container area;
- Laydown area;
- Fabrication area;
- Security cabin;
- Power generator;
- Potable water tank;
- Clocking station; and
- 45 parking spaces.

- 3.18 A purpose built access road from the A170 Wilton Road running in a southerly direction to the proposed Gas Processing Facility will be developed to mitigate against any adverse traffic impacts on the local roads.

- 3.19 The principal equipment at the Gas Processing Facility includes:

- (i) Inlet Separation;
- (ii) Gas Sweetening (Hydrogen Sulphide Removal);
- (iii) Compression;
- (iv) Dehydration, Dew Point Control and Sulphur Compound Removal;
- (v) Gas Metering;
- (vi) Export Facilities;
- (vii) Liquids and Condensate Handling;
- (viii) Buildings;
- (ix) Utilities; and
- (x) Safety Related Equipment.

### **Inlet Separation**

- 3.20 A pipeline tie-in double block and bleed arrangement and pig receiver/launcher will be required. A pig launcher for the wet gas pipeline will allow the pipelines to be inspected and/maintained but will not be used during normal operation.
- 3.21 From the pipeline the gas will then pass through an inlet separator, designed to separate liquids from the gas, which will also be designed to handle slugs of liquid from the gas pipeline. A pressure reduction heat exchanger will be used to raise the temperature of the incoming gas prior to pressure reduction. A shell and tube exchanger is proposed utilising hot water/low pressure steam as the heating medium.
- 3.22 Pressure control valves will be used to reduce the pressure of the gas to meet the conditions required at the inlet to the gas sweetening plant (approximately 17 to 40 barg). Two control valves in parallel have initially been allowed for to accommodate the turn down. Following pressure reduction the gas will pass through a coalescer separator to remove all liquids from the gas down to fine mist particle size prior to the gas sweetening plant.

### **Gas Sweetening Plant (Hydrogen Sulphide Removal)**

- 3.23 Gas sweetening involves the removal of hydrogen sulphide (H<sub>2</sub>S) from the gas stream. A liquid redox process has been chosen as the preferred process, based on gas flow rate and hydrogen sulphide concentration, for the gas sweetening plant. The gas will enter the contactor vessel and will react with a catalyst which removes the H<sub>2</sub>S from the gas stream. The sweet gas will exit the package via a separator to remove any liquids from the gas stream.

- 3.24 The rest of the package focuses on regenerating the catalyst and dealing with the by-product. Solid sulphur will be produced as a by-product from the gas sweetening plant, and will be sold for use by others (e.g. in fertiliser). Atmospheric emissions and odours will be minimised; suitable containment or mitigating equipment will be included.

### **Compression**

- 3.25 Compression is required in order to increase the gas pressure from the outlet of the sweetening plant, to overcome downstream pressure drops, and meet the NTS pressure requirements. Based on the process conditions, the initial proposal is for electric driven (variable speed) compressors. The compression ratio required could necessitate two-stage compressors.
- 3.26 The compressors will be housed in a suitable building to provide the noise attenuation required to meet noise emission levels. Air fin type coolers are proposed for the inter-coolers and after-coolers, and knockout (KO) drums will be provided at the compression suction, discharge and inter-stage.

### **Dehydration, Dew Point Control and Sulphur Compound Removal**

- 3.27 The gas is to meet National Grid's stringent export specification. In order to achieve this, the residual water, heavy hydrocarbons and sulphur compounds will be removed from the gas stream. Inlet coalescer filters have been included to remove any free liquids and reduce any unnecessary load downstream.
- 3.28 The gas stream passes through two packed bed towers, operating in series, in order to remove any residual sulphur compounds not removed by the gas sweetening process. The chemical within these towers may need to be replaced about once a year. The gas stream then passes through a further two adsorber towers which utilise a temperature swing adsorption process incorporating fixed beds of silica gel adsorbants which remove water and heavy hydrocarbons from the gas stream. Two adsorption columns/beds have been allowed for; one in operation, and one in standby/regeneration.
- 3.29 Regeneration of the adsorber beds utilises high temperature which is heated via a gas fired regeneration heater. The hot gas may be used to pre-heat the heating gas (if applicable) in a gas-gas exchanger, and is then further cooled using an air fin type cooler. The cooled gas passes through a knock out drum where the desorbed liquids are removed, and from where the gas returns to the adsorber inlet manifold. Liquids from the regenerator KO drum will be transferred to the liquids handling and storage system.

### **Gas Metering**

- 3.30 After the dehydration and dew point control plant the gas passes through backpressure control valves then through the metering package and gas analysers, prior to export. The metering package will need to be suitable for custody transfer/fiscal metering and, in combination with the gas analysers, will need to meet the appropriate National Grid requirements.

### **Export**

- 3.31 After metering, the gas stream will exit the plant via an under ground pipeline and travel to a location close to the main National Grid gas pipeline in the area. A facility known as an Above Ground Installation (AGI) will be installed to allow isolation between the National Grid pipeline and the Ryedale export pipeline.
- 3.32 Most of the equipment (i.e. valves) at this facility will be underground. Two small kiosks for an analyser and electrical/control equipment will be installed in the National Grid compound and a kiosk for electrical/control equipment will be installed in the Moorland Energy compound.

### **Liquids Handling & Storage**

- 3.33 Two-phase separation will be carried out at the Wellsite and gas and liquids transported to the Hurrell Lane Gas Processing Facility via separate gas and liquid pipelines. Produced liquids will be separated into condensate and water streams at the Hurrell Lane Gas Processing Facility in the three-phase separator.
- 3.34 Condensate will be stabilised using a condensate pre-heater and electric condensate flash heater. Condensate will be pumped to, and stored in, a dedicated storage tank. Condensate will be taken off-site via road tanker (by others) and sold as feedstock for further processing in a refinery.
- 3.35 Produced water will be transferred from the three-phase separator to either a dedicated storage tank. Produced water from storage will be taken via road tanker for treatment / disposal off-site (by others).
- 3.36 In order to curtail any continuous gas flows to the ground flare, any gas evolved from the liquids separation, stabilisation and storage plant will be collected in the condensate flash drum, and recycled back to the inlet coalescer, via a flash gas compressor (and

after-cooler). It is expected that the flash gas compressor will need to be a multi-stage machine due to the likely high compression ratio.

### **Buildings**

3.37 A control and admin building will be provided to include, but not limited to:

- Control room;
- Admin/offices;
- Messing facilities;
- Toilets/showers;
- Electrical and instrumentation workshop;
- Mechanical workshop; and
- Control and shutdown systems.

3.38 Other buildings on the site will include the compressor building, boiler house and a separate local equipment room to house the switchgear.

3.39 Smaller buildings (or enclosures) will be provided for the off-gas compressor, sulphur handling system (within the H<sub>2</sub>S removal plant), export gas analyser(s) and the emergency generator.

### **Utilities**

3.40 The remaining equipment on site are utilities required for the operation of the main process equipment. These include:

- Electrical power will be supplied at 11kV by the REC from a local substation to the south west of Thornton-le-Dale. At the Hurrell Lane Gas Processing Facility voltage will be stepped down via transformers to 6.6kV for the compressor supplies (to be confirmed) and to 400V for process equipment and utilities;
- Ground flare (including knock-out drum and knock out drum pumps) for venting and depressurising requirements;
- Fuel gas (side steam taken from gas export manifold/NTS);
- Boiler (to provide low pressure steam/hot water);
- Instrument air (for actuated valves and plant utility air);
- Nitrogen (for compressor seal buffers and purging requirements);
- Diesel (for standby generator and firewater pump);
- Potable water;
- Fire protection systems;

- Cooling water for gas sweetening plant (plus closed loop cooling water/air fin coolers for compression unit services cooling);
- Surface water drains/interceptor;
- Process area drains/interceptor; and
- Foul water drains/septic tank.

### **Safety**

3.41 The plant will conform to the normal health and safety requirements to reflect industry best practice. The plant will include:

- (i) High Integrity Pressure Protection System (HIPPS);
- (ii) Emergency Shut Down (ESD);
- (iii) Safety Shut Down (SSD); and
- (iv) Enclosed Ground Flare.

3.42 In order to assist the assimilation of the Proposed Development into the countryside and assist the screening of view from nearby residential properties, a comprehensive landscaping scheme is proposed for the site. In particular, the scheme utilises the existing dismantled railway embankment and other existing landscaping features as natural screening to mitigate against any adverse visual impacts.

3.43 Lighting of the Hurrell Lane site will be required but this will be restricted to safety lighting as follows:

- Adjacent to roadways, footpaths and vehicle manoeuvring areas for safety reasons.
- 'Comfort' lighting to doorways; and
- Localised lighting on the equipment.

3.44 Floodlighting is not required under normal operations. A full Lighting assessment is included in Chapter 14 of the ES.

### **Above Ground Installation (AGI)**

3.45 The export pipeline from the Gas Processing Facility will be connected to the "Pickering to Burton Agnes No.6 Feeder" which forms part of the NTS. At the point of connection there will be two adjacent compounds belonging to Moorland Energy and National Grid



respectively and these are referred to as the Above Ground Installation's (AGI's). The connection will be made using a 'hot tap' process which is a physical/mechanical process used to connect the gas pipeline from the Gas Processing Facility into a live (process active) pipeline. The connection is made underground and all piping and valves will be underground. Some ancillary infrastructure, e.g. kiosks for control equipment, valve actuators and fencing will be above ground.

3.46 **Moorland Energy AGI:** This compound will contain a buried actuated valve, used by Moorland Energy to isolate the Gas Processing Facility from the NTS. There would also be a 300mm square junction box mounted approximately 1500mm above ground which would link the Gas Processing Facility and the National Grid AGI, acting as an interface between the two. The principal components for the compound include:

- Electrical and instrumentation kiosk, containing all electrical, instrumentation and telecommunications equipment associated with Moorland Energy's equipment at the AGI;
- Actuated isolation valve(s), situated below ground, with operators above ground;
- Bypass valve;
- Pressurisation bridle; and
- Drainage interceptor pit.

3.47 The AGI is sited in a compound surrounded by a 2.8 metre fence.

3.48 **National Grid AGI:** This compound would contain the buried actuated valve used by National Grid to isolate the NTS from the Gas Processing Facility. It would also contain the buried sample points mounted on the NTS pipe line, upstream and down stream of the connection. Within the AGI, National Grid would have a small enclosure (approximately 3mx3m) which would contain the power distribution board, control cable junction box, a shutdown system and the gas analyser which would measure the parameters of the gas within the NTS pipe line to ensure that the gas from Moorland Energy is within the set parameters. If the gas measured does not meet the specification of that required by the National Grid it would signal the Gas Processing Facility control room and close the isolation valve. The principal components for the compound include:

- Electrical and instrumentation kiosk, containing all electrical, instrumentation and telecommunications equipment associated the Moorland Energy equipment at the AGI;

- Analyser kiosk, housing all gas quality analysing equipment;
- Remote operated valve controlled by NG;
- Minimum offtake connection hot top valve, located below ground;
- Gas sample points (2 off connections to be made to existing Pickering to Burton Agnes No. 6 Feeder, below ground) for analysis of gas composition in feeder in vicinity of minimum offtake connection;
- Bypass valve; and
- Pressurisation bridle.

### Hours of Working

3.49 The hours of working for construction are set out in **Table 3.1** and are to be agreed with the Planning Authority. We are proposing that construction work be undertaken between the hours of 7.00 - 19.00 seven days a week to make efficient use of time and the longer, summer daylight hours. By working longer hours over seven days a week, the construction period can be completed over a shorter period therefore reducing disturbance.

**Table 3.1: Hours of Working for Construction**

| Day           | Start time | End time |
|---------------|------------|----------|
| Monday-Friday | 07.00      | 19.00    |
| Saturday      | 07.00      | 19.00    |
| Sunday        | 07.00      | 19.00    |

3.50 Variations to the normal working hours may be required for certain construction activities, such as the delivery of abnormal loads, special lifting operations and other works with conditions to be agreed with the Planning Authority.

3.51 During and following commissioning, the Ryedale Gas Project will operate continuously (i.e. 24 hours per day, seven days a week) except for planned shutdowns. Deliveries and the export of materials during operation will, however, be restricted to daytime with no night time deliveries or deliveries on Sundays and Bank Holidays except in an emergency. **Table 3.2** shows the proposed hours of delivery.

**Table 3.2: Hours of Deliveries**

| <b>Day</b>    | <b>First Delivery</b> | <b>Last Delivery</b> |
|---------------|-----------------------|----------------------|
| Monday-Friday | 07.00                 | 18.00                |
| Saturday      | 07.00                 | 13.30                |
| Sunday        | None                  | None                 |

3.52 Further details of the proposed construction programme are set out in Chapter 6 of the accompanying Environmental Statement.

## 4.0 DESIGN AND ACCESS PLANNING POLICY CONSIDERATIONS

- 4.1 The Planning, Sustainability and Need Statement which accompanies the Planning Application sets out in detail the relevant National Planning and Energy policy framework and the policies in the Development Plan, which comprises the Yorkshire and Humber Plan, the North Yorkshire Minerals Local Plan, the Ryedale Local Plan and the North York Moors National Park Core Strategy and Development Policies.
- 4.2 The justification for the proposed development in terms of the relevant land use, siting and design policies is set out below.

### National Planning Policies

#### (a) Ministerial Statement, May 2006

- 4.3 The Secretary of State for Trade and Industry published a Statement on 16 May 2006 about the need for additional gas infrastructure. Those parts of the Statement are of particular relevance to justifying the Proposed Development are:
- Securing the reliability of energy supplies is integral to UK energy policy;
  - The Government warmly welcomes all solutions, large and small, which help to meet the need for additional gas infrastructure;
  - A balance must be struck between meeting the concerns of local authorities and those they represent, and national need for infrastructure that will provide us with secure energy supplies;
  - Whilst new energy infrastructure projects may not convey any particular local benefit, they provide crucial national benefits, shared by all localities;
  - They add to the reliability of national energy supplies from which every user of energy benefits;
  - It is all too easy to suggest that need can be met in some other way, or that the project could be located elsewhere. All localities have a part to play in energy policy;
  - Developers are best placed to make a judgement about the technical feasibility and economic viability of individual projects;
  - The role of planning authorities is to ensure that the local environmental effects of new supply infrastructure are minimised and, if appropriate, put forward suggestions for local variations; and

- Due weight needs to be given to the crucial national benefits of such projects, which all localities share, and the importance of ensuring that infrastructure is in place in time to meet demand.

4.4 The Statement is helpfully summarised at the end:

**“We need timely and appropriately sited gas supply infrastructure to be delivered by the market, because:**

- **Great Britain is becoming increasingly dependent on gas imports, and requires new gas supply infrastructure to help ensure security of supply;**
- **new projects enable extra supply options if they proceed without avoidable delays;**
- **new energy infrastructure projects provide national benefits, shared by all localities.”**

**(b) Minerals Planning Statement1: Annex 4 (Planning and Minerals)**

4.5 MPS1, published in November 2006, states that there is some flexibility in the siting of gathering stations required for sustained production which separate, purify and treat the raw material. The Planning Statement states that it is usually possible to conceal them by careful screening, landscaping and design, and by sinking facilities, including security fencing, below the surrounding ground level.

4.6 Pre-application discussions between the MPA and the developer about potential production proposals are essential. Para 3.16 states that operators should address a range of matters where appropriate, in environmental statements, including:

- timing and method of gas flaring;
- access;
- the direction of vehicles leaving the site;
- noise emissions;
- prevention of pollution associated, for example, with possible spillages;
- the means of disposal of unwanted gas; and
- the method by which the end product is to be transported from the Wellsite or gathering station.

4.7 Where pipelines are required to be used for transporting extracted gas, operators will need to obtain consent from the relevant mineral planning authorities for routes, vehicle access, the location of storage areas, and of pipes, pipe-laying equipment and other construction materials. Operators should avoid environmentally-sensitive locations and take account of any potential impacts on nature conservation, such as the movement of animals. Proposals should also take into account the possible implications for agricultural activities, consulting where necessary with associations that represent agricultural interests.

**(c) Planning Policy Statement 1: Delivering Sustainable Development**

4.8 PPS1 was published in January 2005 and sets out the Government's overarching policies on the delivery of sustainable development through the planning system.

4.9 Para 4 of PPS1 refers to the Government's four aims for sustainable development in its 1999 strategy, "A Better Quality of Life – A Strategy for Sustainable Development for the UK" (Cm 4345 May 1999). These are:

- Social progress which recognises the needs of everyone;
- Effective protection of the environment;
- The prudent use of natural resources; and
- The maintenance of high and stable levels of economic growth and employment.

4.10 Para 5 states that Planning should facilitate sustainable development by:

- Making suitable land available for development to improve peoples' 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 design and 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.

4.11 Para 19 states that planning decisions should be based on:

- Up-to-date information on the environmental characteristics of the area;
- The potential impacts, positives as well as negatives, on the environment of development proposals;
- Recognition of the limits of the environment to accept further development without irreversible damage.

4.12 It goes on to say that 'significant adverse impacts on the environment should be avoided and alternative options which might reduce or eliminate those impacts pursued. Where adverse impacts are unavoidable, planning authorities and developers should consider possible mitigation measures. Where adequate mitigation measures are not possible, compensatory measures may be appropriate.'

4.13 Para 21 makes clear the importance that the Government attaches to the prudent use of natural resources. They should be used wisely and efficiently in a way that respects the needs of future generations. Para 22 advises regional planning bodies and LPAs to promote resource and energy efficient buildings, the sustainable use of water resources and the use of sustainable drainage systems in the management of run-off.

4.14 Para 23 of PPS1 sets out ten requirements that planning authorities should adopt in order to bring about sustainable economic development. Those most relevant to this planning application include:

- Recognise that economic development can deliver environmental and social benefits;
- Recognise the wider sub-regional, regional or national benefits of economic development and consider these against alongside any adverse local impacts;
- Ensure that suitable locations are available for industrial and commercial development; and
- Ensure that infrastructure and services are provided to support new economic development and housing.

**(d) PPS1 Supplement: Planning and Climate Change**

4.15 Published in December 2007, Planning and Climate Change sets out how planning can contribute to reducing emissions and stabilising climate change and take into account unavoidable consequences. Tackling climate change is a key Government priority for the planning system. Applicants for planning permission should consider how well their

proposals contribute to a low-carbon economy and how well adapted they are to the expected effects of climate change.

4.16 Para 42 lists those environmental performance considerations that planning authorities should take account of in determining planning applications. Those most relevant to this planning application include:

- Measures to minimise energy consumption through landform, layout, building orientation, massing and landscaping;
- Deliver a high quality local environment;
- Give priority to the use of sustainable drainage systems;
- Provide for sustainable waste management; and
- Create opportunities for sustainable transport, including an appropriate approach to the provision and management of car parking.

**(e) PPS4: Planning for Sustainable Economic Growth**

4.17 Published in December 2009, PPS4 seeks to pull together all the Government's key policies in respect of the economy. The policies in PPS4 apply to development which achieves at least one of the following objectives:

- Provides employment opportunities;
- Generates wealth; or
- Produces or generates an economic output or product.

4.18 The Government's overarching objective is sustainable economic growth, defined as growth which can be sustained and is within environmental limits, but also enhances environmental and social welfare and avoids greater extremes in future economic cycles. In rural areas, the Government's objective is to *"raise the quality of life and the environment in rural areas by promoting thriving, inclusive and locally distinctive rural communities whilst continuing to protect the open countryside for the benefit for all"* (para 10).

4.19 It re-iterates the Government's view that rural areas have an important contribution to make to both the regional and national economy. Subject to the need to ensure robust protection for the countryside, in principle, all types of business and enterprise can be appropriate for rural areas.



4.20 Nine of the policies in the Statement refer to plan-making, including evidence-gathering and monitoring and ten to decision-making. Policy EC10 (Determining Planning Applications for Economic Development) states that local planning authorities should adopt a positive and constructive approach towards planning applications for economic development. All planning applications for economic development should be assessed against five criteria:

- a) whether the proposal has been planned to limit carbon dioxide emissions, and minimise vulnerability and provide resilience to, climate change;
- b) the accessibility of the proposals by a choice of means of transport and the effect on local traffic levels and congestion;
- c) whether the proposal secures a high quality and inclusive design which takes the opportunities available for improving the character and quality of the area and the way it functions;
- d) the impact on economic and physical regeneration in the area; and
- e) the impact on local employment.

4.21 Policy EC12 (Determining Planning Applications for Economic Development in Rural Areas) states that local planning authorities should support development which enhances the vitality and viability of market towns and other rural service centres.

**(f) PPS5: Planning for the Historic Environment**

4.22 PPS5 was published in March 2010 and sets out policies about the conservation of the historic environment. Policy HE8 states that the effect of an application upon the significance of a heritage asset or its setting is a material consideration in determining the application. Policy HE10 states that LPAs should treat favourably applications that preserve those elements of the setting that make a positive contribution to or better reveal the significance of the asset.

**(g) PPS7: Sustainable Development in Rural Areas**

4.23 PPS7 was published in August 2004. It sets out the Government's policies for rural areas including the wider undeveloped countryside. The Government's objectives include the aim to promote sustainable development by focusing most development in or next to existing towns and villages and discouraging the use of 'greenfield' land and, where it must be used, ensuring it is not used wastefully.

- 4.24 Para 1 sets out the key principles. New building in the open countryside should be strictly controlled. All development in the rural areas should be well designed and inclusive, in keeping and scale with its location, and sensitive to the countryside and its local distinctiveness. However, the PPS makes clear that planning authorities should support a wide range of economic activities in rural areas.
- 4.25 The presence of best and most versatile agricultural land (grades 1,2 and 3a) should be taken into account alongside other sustainability considerations when determining planning applications (para 28). Where significant development is unavoidable, local planning authorities should seek to use lower grades (grades 3b, 4 and 5) in preference to a higher quality. Little weight should be given to the loss of grades 3b, 4 and 5.
- 4.26 Development plans should include policies that identify any major areas of agricultural land that are planned for development (para 29).

**(g) PPS9: Biodiversity and Geological Conservation**

- 4.27 PPS9 was published in August 2005 and sets out planning policies for the protection of biodiversity and geological conservation. The key principles which local planning authorities should adhere to are referred to in paragraph 1. The most relevant of these are:
- Planning decisions should be based on the most up-to-date information about the environmental characteristics of the area, including relevant biodiversity;
  - Planning decisions should aim to maintain and enhance, restore or add to biodiversity; and
  - The aim of planning decisions should be to prevent harm to biodiversity and geological conservation interests.
- 4.28 Para 14 states that development proposals provide many examples for building-in biodiversity as part of good design.

**(h) PPG13: Transport**

- 4.29 PPG13 was published in April 2001. It sets out the objectives to integrate planning and transport and seeks to promote more sustainable transport choices for both carrying people and moving freight. Paras 40-44 cover transport in rural areas. It acknowledges that in rural areas, opportunities for using public transport and non-recreational walking

and cycling is more limited. It also states that it is important to provide adequate employment opportunities in rural areas. Para 47 deals with minerals and transport and encourages MPAs to establish voluntary mineral site transport plans in consultation with the local community.

**(i) PPS23: Planning and Pollution Control**

4.30 PPS23 was published in November 2004 and states that any consideration of the quality of land, air or water and potential impacts arising from development, possibly leading to impact on health, is capable of being a material consideration. The planning system has a key role to play in protecting the natural environment, public health and safety. It advises that the planning system should focus on whether the development itself is an acceptable use of land, and the impacts of those uses, rather than the control of processes or emissions themselves.

4.31 **Appendix A** refers to matters which may be material in considering planning applications. One of these is the possibility that development might present a Major Accident Hazard under the COMAH regulations 1999. It also includes the objective perception of unacceptable risk to the health and safety of the public arising from the development.

**(k) PPG24: Planning and Noise**

4.32 PPG24 was published in October 1994 and provides guidance to local authorities on their powers to minimise noise impacts arising from developments.

**(l) PPS25: Development and Flood Risk**

4.33 PPS25 was published in December 2006 and sets out Government policy in respect of flood risk and development. A Practice Guide was published in June 2008.

**Consultation on Proposed Amendments to PPS25: Development and Flood Risk**

4.34 The Government published a consultation in August 2009 which seeks views on proposed changes to how the functional floodplain should be identified and development in flood risk areas involving essential infrastructure. Para 3.30 specifically refers to energy infrastructure. It states that the Government's intention is to clarify that installations which require hazardous substances consent that are associated with

energy infrastructure should be classified as 'essential infrastructure'. These include gas processing facilities which need to be placed in high flood risk areas.

## **Development Plan**

### **(a) The Yorkshire and Humber Plan**

4.35 The Yorkshire and Humber Plan was published in May 2008 and comprises the Regional Spatial Strategy for the region. The application site lies within the Remoter Rural sub area. Policy RR1 of the Plan states that investment decisions for the Sub Area should meet a number of objectives including:

- **Foster economic diversification which does not damage the sub area's built and natural features;**
- **Encourage creative, diverse and low impact enterprises which provide employment opportunities and contribute to meeting local needs;**
- **Protect and enhance the unique character, heritage and biodiversity of the sub area's upland natural environment, including the North York Moors National Parks;**
- **Safeguard the sub area's unique built environment in settlements and upland farming features;**
- **Encourage appropriate planting and management measures to ameliorate downstream flood risk and enhance biodiversity.**

4.36 The Plan goes on to state that forestry plays an important role in the sub area, particularly in Ryedale where tree cover is almost twice the national average. It is important therefore that upland areas hold as much water as possible in line with the Environment Agency's catchment flood management plans.

4.37 Section 10 deals with the Environment. The purpose of policy ENV5 (Energy) is to increase energy efficiency through passive design and better use of existing power sources. In particular, it requires investment decisions which provides for new efficient energy generation and transmission infrastructure in keeping with local amenity and areas of demand.

**(b) North Yorkshire Minerals Local Plan**

- 4.38 The North Yorkshire Minerals Local Plan (NYMLP) was adopted in December 1997. The majority of the policies covering oil and gas are Saved policies under a Direction issued by the Secretary of State in September 2007.
- 4.39 Policy 7/6 (Development Scheme) states that planning permission for commercial production will be granted only within the framework of an overall development scheme relating to all proven deposits within the gasfield. Where appropriate, applications should be accompanied by an Environmental Statement and schemes should provide for the full development of the field.
- 4.40 Policy 7/7 (Development of New Reserves) indicates that, unless such development would be technically impracticable or environmentally unacceptable, planning permission for the development of oil or gas reserves as yet undiscovered will only be granted where the development utilises existing available surface infrastructure or pipelines. Policy 7/8 (Gathering Stations) states that, unless such development would be technically impracticable or environmentally unacceptable, planning permission for the development of gathering stations will only be granted where the development is located on land allocated for industrial use and/or where it is associated with rail or waterway transport. The supporting text states that development in the open countryside or served by road only would require particular justification to demonstrate why an environmentally better alternative site was not available.

**(c) Ryedale Local Plan**

- 4.41 The Ryedale Local Plan was adopted in March 2002 and covers the period up to 2006. Policy EMP3 allocates 0.5 ha of land for industrial and business development to the east of Thornton Road Industrial Estate in Pickering. A 4.3 ha site between the existing Thornton Road Industrial Estate and the former natural gas site was granted planning permission for B1, B2 and B8 uses in 1999. This is expected to provide the primary source of industrial and business land in Pickering during the later part of the Plan period.
- 4.42 Policy ENV3 (Development in the Areas of High Landscape Value) resists development which would materially detract from the special scenic quality of the landscape within the Fringe of the Moors Area of High Landscape Value. Large-scale development will only be permitted where it can be clearly demonstrated that the proposal would have significant economic or social benefits, is incapable of being located outside the Area of

High Landscape Value and is designed to do as little damage to the environment as practicable.

**(d) North York Moors National Park Core Strategy and Development Policies**

4.43 The Core Strategy and Development Policies DPD was adopted by NYMNP in December 2007. Core policy E (Minerals) states that all minerals developments other than for building stone will be considered against the major development tests. Para 6.31 states that the extraction of oil and gas should only take place in the National Park in exceptional circumstances and will therefore be subject to rigorous examination. Proposals for oil and gas production will be considered against the policy in Annex 4 if MPS1.

4.44 Development Policy 3 (Design) sets out seven criteria which development is required to achieve in order to maintain and enhance the character of the Park:

1. the siting, orientation, layout and density preserves or enhances views into and out of the site, spaces about and between buildings and other features that contribute to the character and quality of the environment;
2. the scale, height, massing, proportion, form, size, materials and design features of the proposal are compatible with surrounding buildings, and will not have an adverse effect upon the amenities of adjoining occupiers;
3. a high standard of design detailing is used which reflects, or complements that of the local vernacular;
4. provision is made for adequate storage and waste management facilities;
5. good quality sustainable design and construction techniques are incorporated in the development, including measures to minimise energy use and where possible use energy from renewable resources;
6. a satisfactory landscaping scheme forms an integral part of the proposal; and
7. the design takes account of the safety, security and access needs for all potential users of the development and provides car parking provision in line with the standards adopted by the Authority.

**Compliance with Design and Access Planning Policies**

4.45 The proposed development is in accordance with National Planning Guidance which welcomes proposals for new gas infrastructure in order to meet future demand and secure energy supplies. The Ministerial Written Statement of May 2006 states that “a

balance must be struck between meeting the concerns of local authorities and those they represent, and the national need for infrastructure that will provide us with secure energy supplies." MPS1 states that it is usually possible to conceal gathering stations by careful screening, landscaping and design, and by sinking facilities, including security fencing, below the surrounding ground level.

- 4.46 The Ebberston Wellsite lies within the North York Moors National Park where proposals will be considered against Annex 4 PPS1. This makes clear that pre-application discussions between the MPA and the applicant about potential production proposals are essential (para 3.15). Moorland Energy and its representatives met with the NYMNPA in February 2009 to discuss the proposed development and the scope for siting an electricity generating plant on the Wellsite. The NYMNPA confirmed in writing that there have been no recent proposals for gas production within the Park (Appendix 5.1 of the ES). The NYMNPA's preferred option would be to pipe the gas from the Wellsite to a location outside the Park where it can be stored, transported or utilised. Once laid, a pipeline would not have an on-going impact on the special qualities of the National Park. Whilst this is informal officer advice, it indicates that, subject to satisfactory environmental mitigation, in principle, facilities to enable gas production at the Wellsite and the construction of a pipeline from the Wellsite to a location outside the Park would be acceptable.
- 4.47 A follow-up meeting with officers of the NYMNPA took place in February 2010 to provide an update of the project and to informally discuss the layout and elevations of plant proposed for the Wellsite. The outcome of these discussions and feedback has been taken into account in both the final design and the landscaping proposals for the site.
- 4.48 Pre-application discussions have also taken place with planning and highway officers from North Yorkshire County Council (NYCC) in June 2009 and subsequently with planning and archaeological officers in January 2010 about the proposals. Separate meetings and discussions have also been held between Moorland Energy's transport and archaeology consultants and their respective counterparts at NYCC. The outcome of these discussions has been taken into account in the design of the scheme. In addition, a meeting was held with a planning officer at Ryedale District Council (RDC) in June 2009 to discuss the project. Senior officers of RDC also attended the public consultation event at Thornton-le-Dale village hall on March 5 2010.
- 4.49 The identification of the proposed Gas Processing Facility at Hurrell Lane, Thornton and the consideration of alternative locations is described in detail in the Environmental Statement. The project accords with Policy RR1 of the Yorkshire and Humber Plan by

providing employment opportunities and fostering economic diversification away from traditional forms of employment such as farming and tourism whilst protecting the unique character, heritage and biodiversity of the area's natural environment. The mitigation measures proposed will help ensure that any adverse impacts arising from potential loss of landscaping and wildlife habitats, increased flood risk during both construction and the operation of the scheme will be overcome.

- 4.50 The project also accords with Policy 7/6 the NYMLP requires commercial production to only be permitted within the framework relating to all proven deposits within the gasfield. This is to ensure that the duplication of surface infrastructure is minimised. The capacity of the proposed Gas Processing Facility at Hurrell Lane has been designed to enable quantities of gas to be processed from more than one Wellsite. The evidence of past seismic activity and licence history in the area has indicated potentially large reserves of gas. The Lockton gas field was first discovered in 1966, followed by the discovery of the Wykeham and Malton fields. Lockton was developed in 1971 via a pipeline to a Gas Processing Facility at Pickering. The field was subsequently abandoned in the mid 1970s owing to significant volumes of water formation being produced. Despite this, significant quantities of gas remain in the reservoir.
- 4.51 In addition, the adjacent (but separate) Wykeham field has not been developed for gas production. Geological mapping indicates that PEDL 120, operated by Moorland Energy, contains a significant portion of the Wykeham gas reserves. The single Wellsite at Ebberston is expected to produce gas for period of between 5 and 8 years. Moorland Energy is confident that, subject to securing planning permission, additional production wells both at the Ebberston Wellsite and elsewhere will be able to produce gas to sufficient quantities for processing at the Hurrell Lane site.
- 4.52 The proposed development accords with Policy 7/7 of the Plan by utilising an existing high pressure gas pipeline at the "hot-tap" connection immediately to the south of the proposed facility. The only existing available surface infrastructure which could be utilised is the Knapton Generating Station at East Knapton. However, chapter 5 of the ES explains that it would be both technically impracticable and environmentally unacceptable for Knapton to burn the gas to generate electricity. The significant differences in efficiency between generating electricity at a local station such as Knapton and piping the gas via the NTS to a large-scale CCGT station means that there would be greater levels of carbon dioxide emissions if the gas was to be piped to Knapton. This would be contrary to PPS Planning and Climate Change, the supplement to PPS1.



- 4.53 The proposed development also accords with Policy 7/8 which requires gathering stations forming part of a gas development to only be granted planning permission where it can be located on and allocated for industrial use or where it is associated with rail or waterway transport, unless such development would be technically impracticable or environmentally unacceptable. There is currently no land available allocated in the Ryedale Local Plan for industrial use of sufficient size or in the area. That said, even if there was suitable industrial land available, it is questionable whether a Gas Processing Facility would be acceptable to existing neighbouring uses on an industrial estate because of perceived concerns about operational noise, air quality, and safety. The justification for locating a processing facility with rail or waterway transport is more appropriate for an oil development, rather than gas which can only be piped. The Alternative Sites chapter of the ES demonstrates why the proposed facility can only be located in the countryside and that there are no environmentally better alternative sites available.
- 4.54 In summary, therefore, the Proposed Development accords with the relevant design and access policies in MPS1, PPS and PPGs, the Yorkshire and Humber Plan, the North Yorkshire Minerals Local Plan, the Ryedale Local Plan and the North York Moors National Park Core Strategy and Development Policies DPD.

## 5.0 CONCEPT AND USE

### Introduction

5.1 This section describes how the design and access of the five elements of the proposed development evolved over time between initially conception and final design. The design and access has been informed by a number of factors including:

- Location;
- Surrounding uses;
- Operational Needs;
- Existing Landscape Features;
- Landscape, Ecological and Archaeological Designations; and
- Traffic flows and visibility splays.

### Design

#### (a) Ebberston Wellsite

5.2 The design of the Wellsite has been largely determined by the need to ensure that the existing footprint and boundary of the Wellsite is not enlarged, to limit the scale and amount of development on site to the operational minimum required and to mitigate any adverse effects arising during the construction of the equipment and the operation of the Wellsite.

5.3 Prior to the final results of the drill stem testing of the Ebberston exploratory Wellsite, it was proposed to relocate an electricity generation facility at the Wellsite to utilise the gas from the Wellsite. The plant could generate up to 10MW. The facility would require 2 fulltime workers with existing tree cover and the existing earth bund providing screening. The photographs and drawing below show an existing electricity turbine, located at Caythorpe, and a possible location within the Wellsite for the turbine. The subsequent correspondence from the NYMNP, dated 18 March 2009, advised that such a proposal would be contrary to the statutory purposes and adopted policies of the National Park (see Appendix 5.1 of the ES).

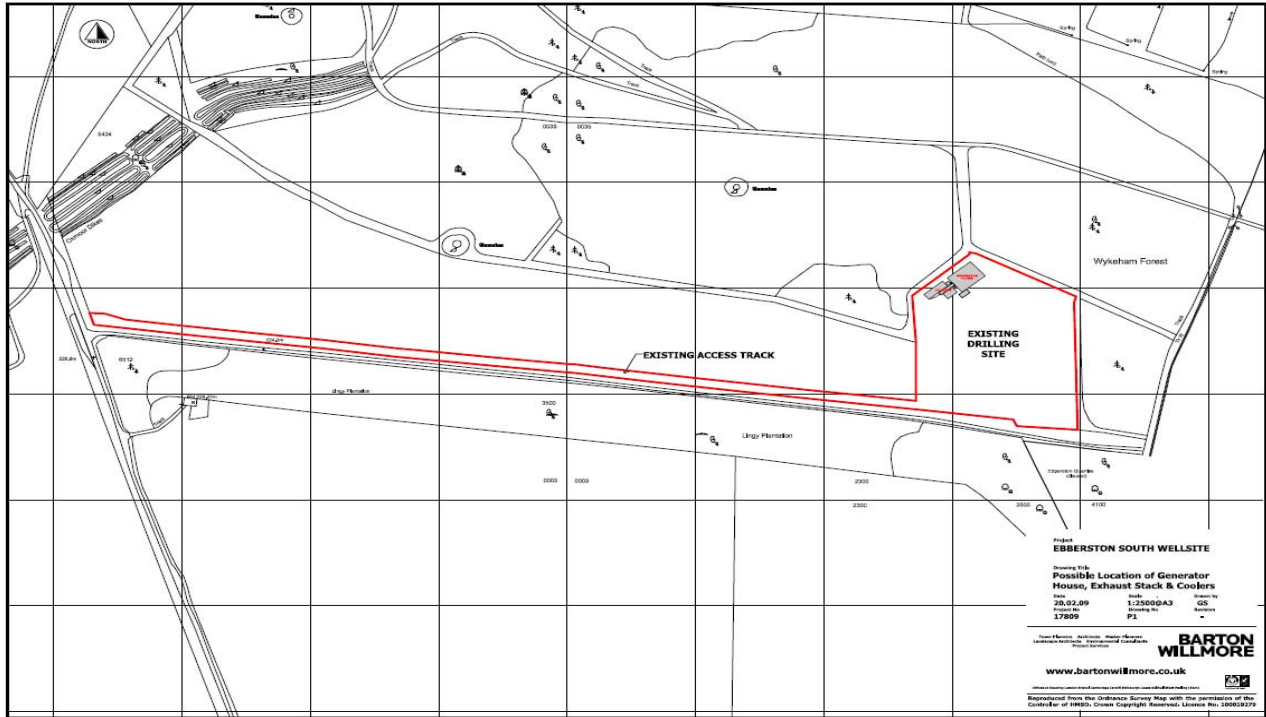


Figure 5.1 - Possible Location of Electricity Turbine, Eberston Wellsite



Figure 5.2 - Existing Electricity Turbine

- 5.4 Following the successful results of the drill stem testing and discussions with NYMNP, a decision was made by Moorland Energy to seek planning permission for gas production only at the Wellsite, with a processing facility located outside the Park boundary. Consequently, a layout was designed which sought to accommodate the necessary facilities on site required for gas production.
- 5.5 Fluids from the reservoir arriving at the well head will include gas, condensate and water.
- 5.6 The produced fluid from the well will be predominantly natural gas, with some water (and possibly other liquids) expected once production has been under way for some time. The exact timing of the onset of the production of associated liquids is not certain, but will probably be within the first year of operation at the latest. Even though liquids are not expected at the beginning of production, provision has to be made to process and handle these liquids.
- 5.7 Flow control at the wellhead will be by means of a choke valve, which is a device to throttle back the production - to prevent free and therefore uncontrollable flow from the well.
- 5.8 A high pressure separator will be installed at the Wellsite. This will separate the well fluids into two streams, namely gas and liquids. The gas will be conveyed to the main process site via a pipeline 300 mm in diameter. The liquids from the separator will be collected in a temporary holding vessel and then pumped to the main process site via a dedicated liquids pipeline, 100 mm in diameter.
- 5.9 Facilities for storing and injecting small quantities of Methanol (or glycol) and corrosion inhibitor at the wellhead will need to be installed at the Wellsite. These are needed to prevent hydrate formation, which could cause the pipelines to block, and corrosion inhibitor to prevent corrosion of the pipelines which could otherwise occur because of the wet and sour condition of the gas. Sour gas means that it contains Hydrogen Sulphide.
- 5.10 In arriving at this layout, two alternative locations for the local equipment room (LER) (see below). The LER would be the primary building located on the Wellsite and is required to be positioned on the southern part of the site at the entrance.

5.11 The Wellsite layout needs to consider several aspects, including engineering design, safety, and practicality, as well as planning, and applies to the construction and operating phases.

5.12 In addition, the design of the site needs to take account of accommodating potential additional wellheads in order to develop the gas reserves.

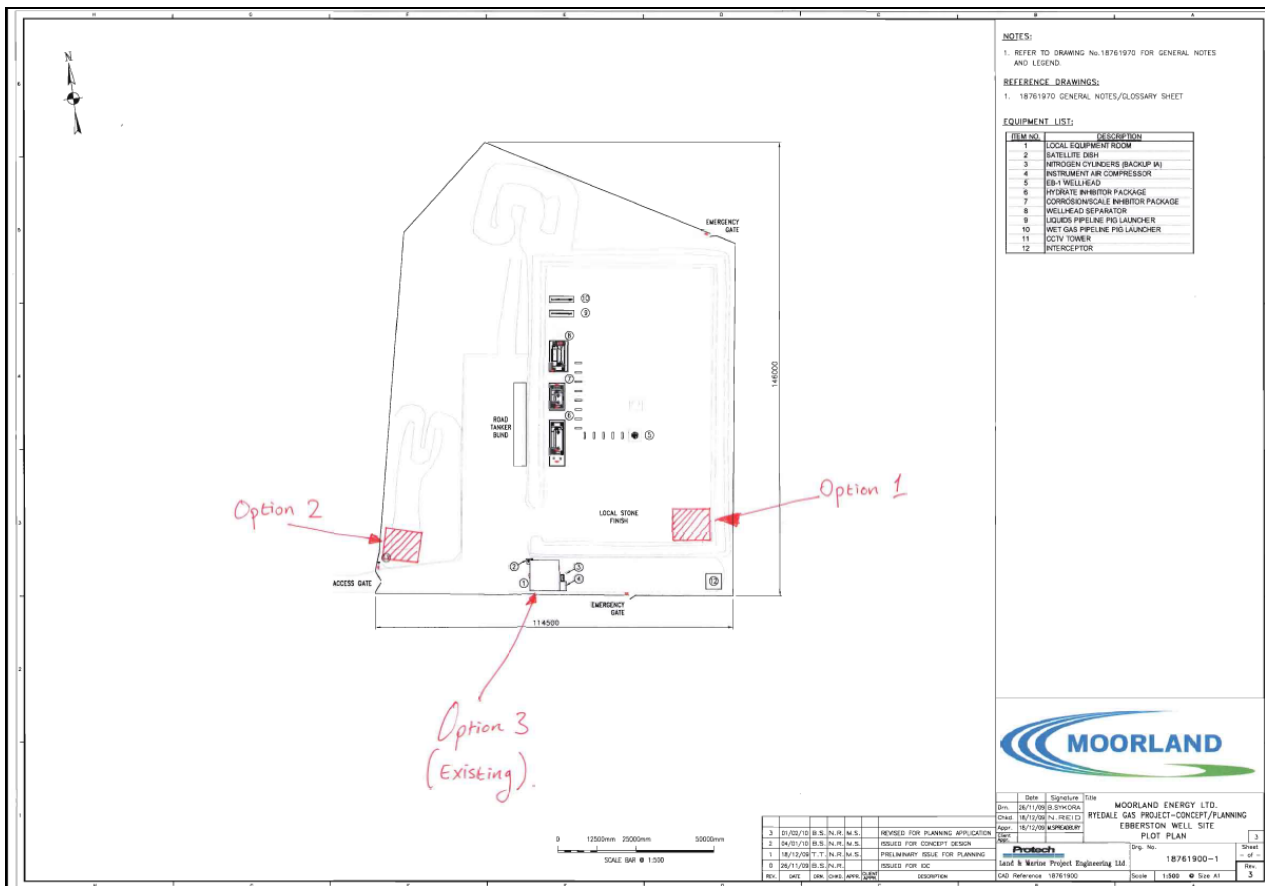


Figure 5.3 – Plan of Options for the Location of the Local Equipment Room, Ebberston Wellsite

**Option 1 – relocate the LER to the south east corner of the existing bounded area**

5.13 The disadvantages with this option are:

1. The LER is slightly closer to the process equipment (wellhead) containing high pressure gas (potential safety concerns);
2. The LER in this position will potentially take up valuable space within the existing bounded area that may be required by the drilling contractor; and

3. The closer the LER is to the access gate the better (- in this option it is further from the access gate).

5.14 It is not preferred engineering practice to have the electrical supply cables to / from and equipment in an LER within a bunded area (although this can be overcome by building design and cable trench design - but at additional cost).

**Option 2 - Move the LER to the south west corner of the site (existing back-up flare pit area)**

5.15 The disadvantages with this option are:

1. The current location is occupied by part of the back-up flare pit;
2. If any future drilling / testing work is to be carried out on site the drilling contractor would need to agree to this location being used for the LER and potentially a new location for the back-up flare pit. Depending on feedback from the drilling contractor it may not be possible to move the flare pit so that this option may not be feasible.

**Option 3 - Existing Location**

5.16 The advantages of this location are:

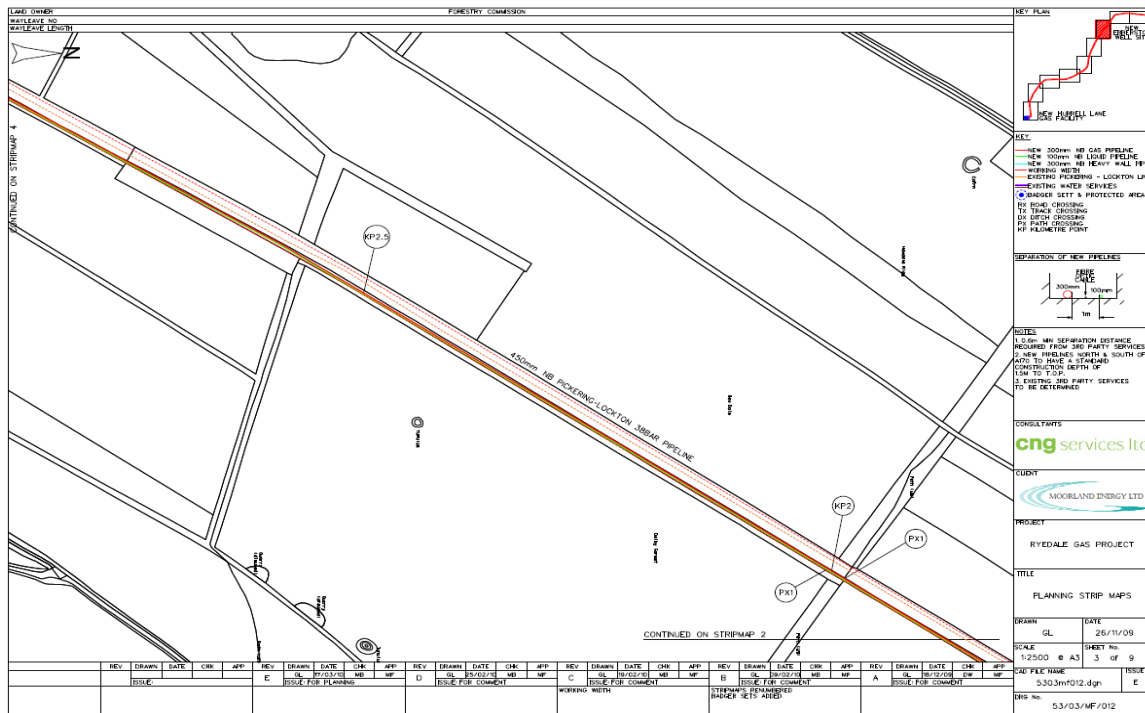
1. The LER is fairly close to both the access gate and process plant (but not too close to either);
2. The LER is outside the bunded area so is potentially better (than option 1) for keeping electrical cables and water apart.

5.17 The Wellsite is fairly well screened by trees on most sides. However, the southern side appears to have less screening / trees than the other 3 sides, although the current LER location appears to be the best location on the southern side with several trees serving to screen the site.

5.18 There is a strip of land outside the fence from the east to south east corner. This area could be used for landscaping / tree planting, if possible, to further screen the LER in its existing location.

5.19 In summary, the current LER location (option 3) is the best location from an engineering design, environmental and safety point of view.





**Figure 5.5 - Reduced Working Width of Pipeline through Givendale Rigg**

- 5.21 The depth of the pipeline was initially designed to be 1.1m below ground which is the standard used in the pipeline industry. Following discussions with local landowners, there was concern expressed by some of the landowners that modern farm machinery could potentially strike a pipeline at this depth. Technological advances in the depth of ploughing suggest that larger machinery now can plough at greater depths than before, with the potential to cause damage to a pipeline. In order to satisfy these concerns, Moorland Energy has agreed to excavate the pipeline trench to a depth of 1.5m south of Warren House where the land is farmed.
  
- 5.22 Initially, it was proposed to construct two temporary pipe-laying down areas, at the junction with the proposed access road and the A170 Pickering to Scarborough Road, and at a location between Givendale Rigg and Stonygate Moor. This would have required a fenced compound with a concrete base and suitable access to enable pipelines to be delivered by HGV, stored and then subsequently taken by vehicle along the pipeline corridor. However, the southern location was discounted because it would have been highly visible beside the A170 in a designated Area of High Landscape Value. It would also have caused difficulty for construction vehicles to manoeuvre within the site because of its location between the A170 and the proposed access road. The second pipe-laying area was discounted because the site is required for topsoil and sub soil storage during the construction of the pipeline trench though Givendale Rigg where the relatively narrow width of the woodland ride prevents soil storage. It also lies in an



Area of High Landscape Value. The site would also have required access via a unclassified road, via Warren House.

- 5.23 Taking all these constraints into consideration, it was decided to create one temporary pipe-laying down area, immediately adjacent to the proposed processing facility. The site will be screened from the north by the existing embankment of the dismantled railway line. It is sufficiently large enough to accommodate the pipelines for the whole of the route between Hurrell Lane and the Wellsite

**(c) Gas Processing Facility, Hurrell Lane, Thornton**

- 5.24 The principal activities at the Gas Processing Facility will be:

**Operations**

- Inlet Facilities;
- Compression;
- Gas Sweetening;
- Hydrocarbon and Water Dew Point Control;
- Condensate and Glycol Recovery;
- Metering and Quality Measurement; and
- Pressure Control.

**Safety**

- High Integrity Pressure Protection System (HIPPS);
- Emergency Shut Down (ESD); and
- Safety Shut Down (SSD).

**Operations**

*Inlet Facilities*

- 5.25 Gas arriving from the Wellsite will pass through a high pressure separator to make sure that any liquids not separated at the Wellsite are removed and do not cause damage to the plant downstream of this point. Liquids collected will be directed to the liquids handling area of the plant.

*Compression*

- 5.26 Three compressors will be installed, and designed for 33% of the design flow, thus building a degree of duplication into the plant. The compressors will be needed to increase the pressure of the gas from the well to the pressure in the NTS.

*Sweetening Plant (Hydrogen Sulphide Removal)*

- 5.27 The purpose of the sweetening plant is to remove Hydrogen Sulphide which is only permitted at very low levels. The sweetening plant consists of a contractor tower through which a solvent circulates counter current to the gas flow. This solvent absorbs the Hydrogen Sulphide and Sulphur is recovered from the solvent by oxidation. The solvent is then re-circulated and the sulphur handled on site and taken away periodically as the quantity builds up.

*Hydrocarbon and Dew Point Control*

- 5.28 The Hydrocarbon and water dew point control plant removes the higher hydrocarbons in the gas to prevent them condensing as a liquid in the NTS when the gas enters the system. Higher hydrocarbons in this context are those above Hexane i.e. C6 and above. The plant also water dries the gas so that water cannot condense out of the gas and freeze in the pipeline. Some condensate will be produced in the dew point control plant and this has eventually to be taken from site when sufficient quantities build up. The dew point control plant includes the need for a regeneration gas heater, and this is one of two heaters shown on the layout drawing.

*Liquids Handling (Condensate stabilisation and glycol recovery)*

- 5.29 When liquids (condensate and water) are produced from the well they will be conveyed via the liquids pipeline into the liquids handling area.
- 5.30 This consists principally of a three phase separator, and various holding vessels. A heater will also be needed to heat the condensate, stabilisation of which essentially consists of raising the temperature of the condensate to eliminate dissolved gases.
- 5.31 The condensate heater and the regeneration gas heater are shown located together, away from the main part of the plant.

*Metering and Gas Quality*

- 5.32 Prior to export to the grid, fiscal metering is required and an accurate CV measurement required by the regulations and approved by OFGEM.

*Pressure Control*

- 5.33 Some form of pressure control needs to be in place at the outlet to the plant.

**Safety**

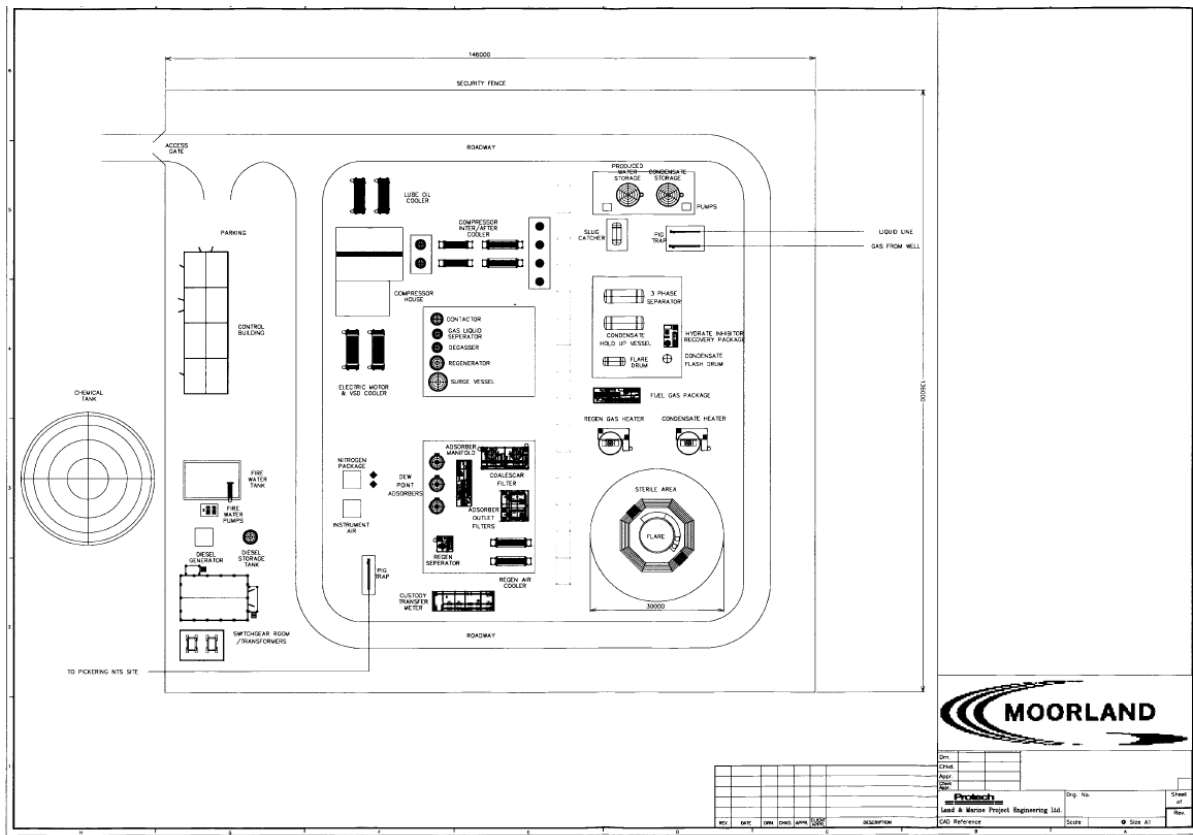
- 5.34 A number of safety systems will be incorporated into the plant. Primary pressure containment protection will be implemented by means of a HIPPS system. Separate ESD valves will be installed at the plant, to (i) protect the whole plant, as well as (ii) plant areas (dew point control etc) and (iii) individual items of equipment.
- 5.35 In general the foregoing are implemented by use of appropriate valve arrangements, pressure sensing and other control devices and do not affect the area of land required for the development.
- 5.36 There are a number of fenced enclosures for dealing with individual or a series of inter-related gas processes. These are enclosed by separate circa 3m high galvanized fencing.
- 5.37 The entire facility is enclosed by a circa 2.8m double layer perimeter security fence. The fence is constructed of galvanized steel supports with a galvanized mesh infill panels.

**Design Considerations**

- 5.38 Owing to the operational functionality of the facility, the architectural composition and material qualities reflect the functional requirements. The majority of the plant incorporates equipment specifically designed to facilitate the various process required to safely, cleanly and economically transform the sour gas produced from the Ebberston Wellsite, into 'sweetened' gas which can be used in a wide range of practical applications, once transferred to the National Grid system.

5.39 Due to the industrial nature of the proposal the opportunity to influence the design with architectural embellishment is very limited. On this basis, the main architectural focus relates to the following:

- Visual impact from surrounding residential areas;
- Location and layout; and
- Materials and colour.

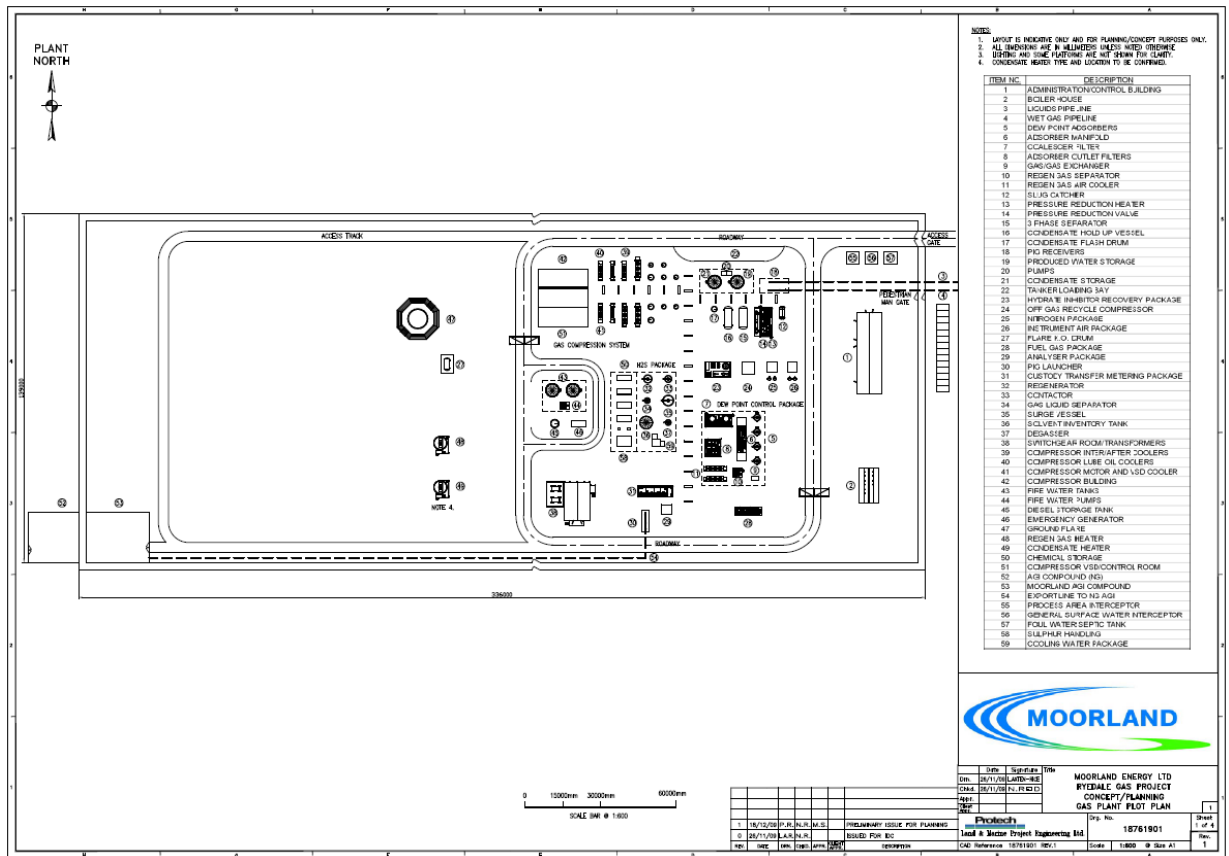


**Initial Layout of Hurrell Lane Gas Processing Facility**

**Evolution of the Layout and Design**

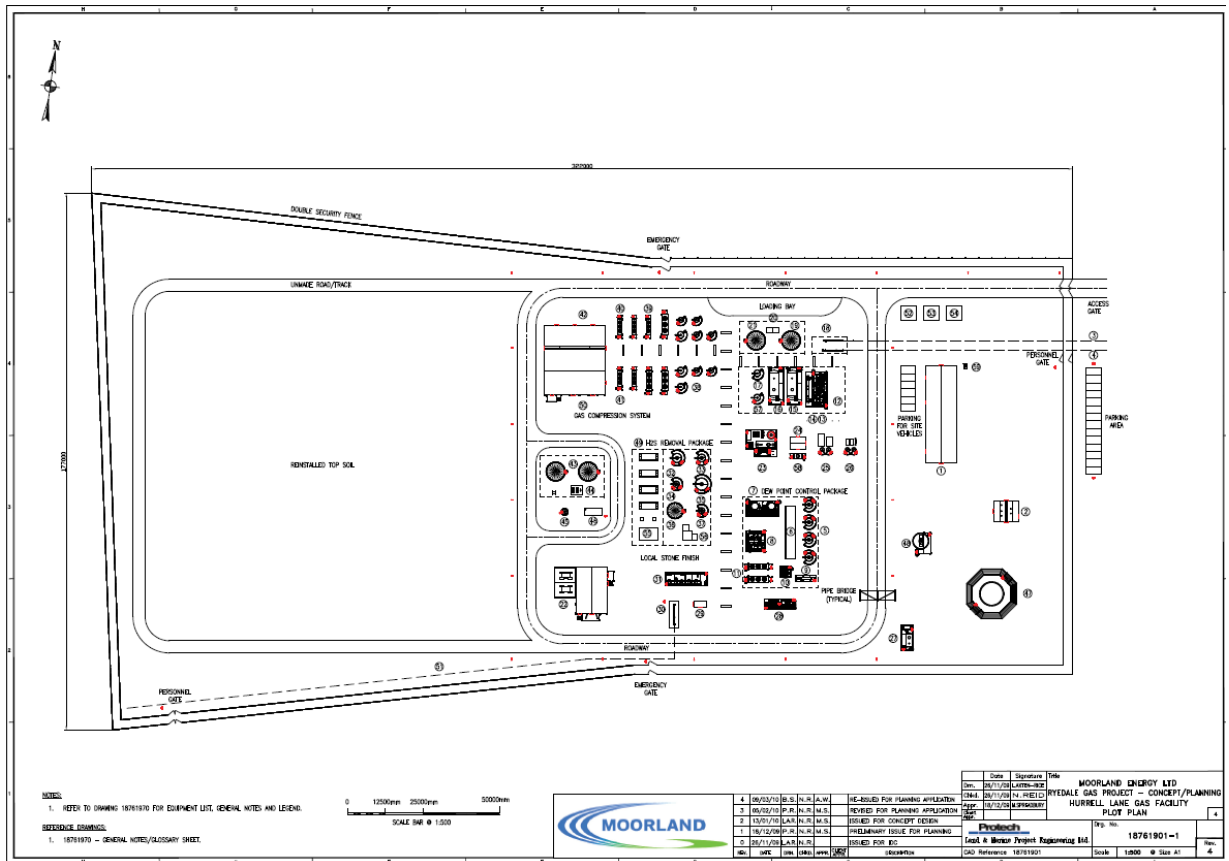
5.40 The initial layout for the Hurrell Lane site presumed a new access from the A170 from the west. The equipment included a large chemical tank to the west and a flare on the south eastern corner.

5.41 Subsequently, following discussions with the Highways Authority, the position of the access road was amended to enable access from the A170 to the east of the site. The configuration of the site was amended to reflect this and to relocate the ground flare and to a sterile location on the west side of the site.



**Revised Layout of Hurrell Lane Gas Processing Facility**

5.42 Following a landscape visual assessment of this revised layout, the landscape consultant identified a natural break in the existing embankment immediately to the north of the ground flare which would have enabled views of the flare to have been seen from the A170. The revised position of the flare meant that it was the nearest piece of plant to the boundary of the National Park. For these reasons, Moorland Energy and its advisers agreed to relocate the ground flare and the two heaters to the south east corner of the site, which is shown in the final drawing below.



### Final Layout and Design of Hurrell Lane Gas Processing Facility

#### Visual impact from surrounding residential areas

- 5.43 The scale and operational functionality of the facility mean that there will always be some degree of visual impact imposed by the development. Our first aim has been to allow for the minimal amount of plant necessary with which to undertake the required gas processing in a safe, clean and economical manner.
- 5.44 By initially reducing the amount of proposed plant, this instantly reduces the scale of the proposed facility and reduces its potential visual impact. Again, due to the industrial nature of the equipment, there are a number of relatively large scale items that will to be addressed in order to reduce their visual impact further.
- 5.45 In order to understand the potential visual impact of the facility from surrounding residential areas, we commissioned a number of verified views to be prepared. We felt it was important that the locations the views were taken from should be the closest residential areas to the proposed site. The locations agreed with the Local Authority are listed as follows:

- View 1 - From the junction of Hurrell Lane and Longford Lane, located circa 0.6miles (1km) north west of the site;
- View 2 - From Wilton Farm, Wilton. Located circa 0.9miles (1.44km) north East of the site;
- View 3 - From Charity Farm, off Hurrell Lane. Located circa 0.6miles (1km) south of the site.

5.46 Although the facility is visible from these locations, the verified views demonstrate that the visual impact is relatively small, especially considered against the scale, although minimal, of the facility.





### Orientation and Layout

- 5.47 The proposed site has been carefully chosen, not only to allow satisfactory functional proximity to the Ebberston Wellsite and Pickering sites, but also to minimise the potential visual impact of the facility.
- 5.48 The site is located directly south of an existing embankment, which is all that remains of a dismantled railway line. The embankment is circa 5m in height, and therefore provides a natural visual barrier. In addition, the embankment is generously planted with mature trees and bushes, which further increase the effectiveness of the embankment to act as a visual barrier, helping to reduce the visual impact of the proposed facility.
- 5.49 In addition to the exiting embankment, Moorland Energy proposes to plant new areas of landscaping around the entire facility. Initially, the potential of this landscaping to act as a visual barrier will be limited, but within 5-7 years these areas will have become established and reached half there full grown size, and will therefore help to provide a visual buffer for the facility. Within 10-15 years, these planting areas will be fully grown and the ability to reduce the visual impact of the site will be maximised.
- 5.50 Although there are no local villages or towns located south of the site, there are a number of detached properties from which the site will be overlooked. One of which is Charity Farm. Although there are number of well established trees and hedgerows between these properties and the site, the potential of these to reduce the visual impact of the facility is limited. Therefore the proposed areas of planting located along the southern boundary of the site are especially important.



- 5.51 For further detail relating to the proposed landscaping scheme please refer to separate information prepared by the specialist landscape architect consultant.

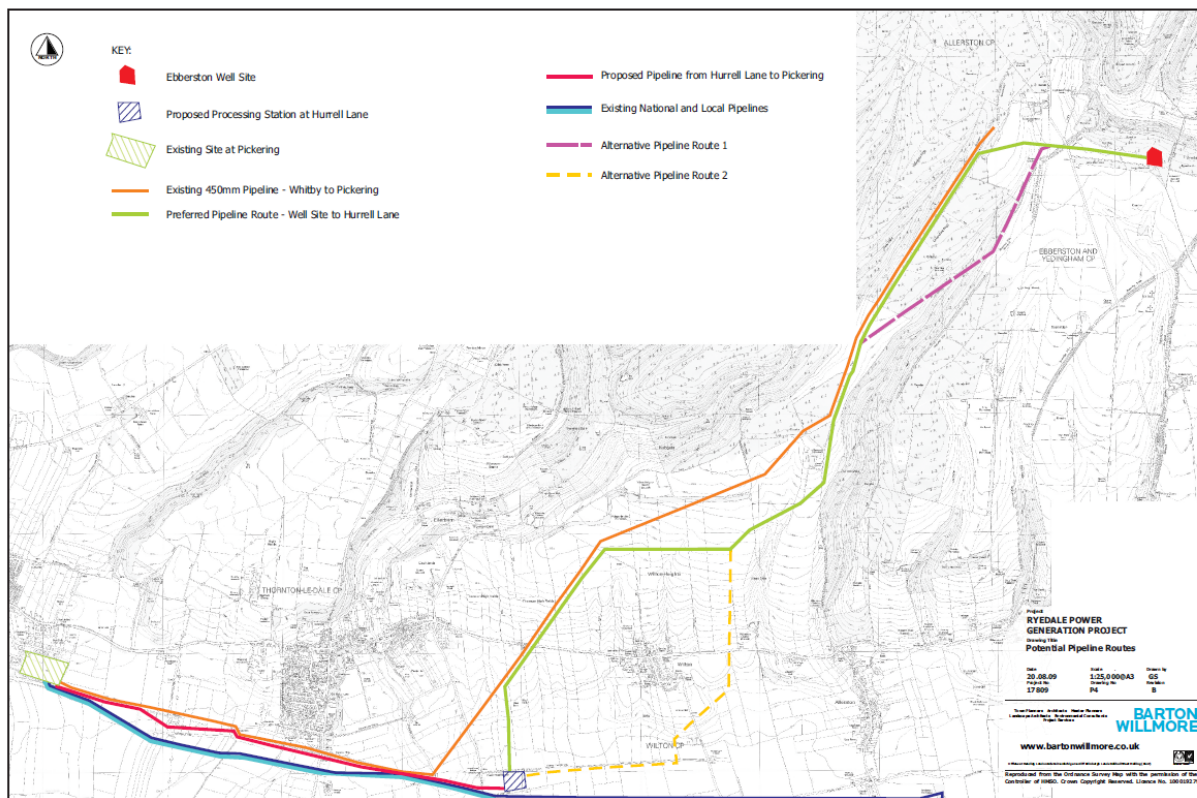
### **Appearance - Materials and Colour**

- 5.52 Again, owing to the industrial nature of the site the materials and colour palette for the facility is rather limited.
- 5.53 The majority of the facility will comprise gas processing equipment and pipe work. All of this equipment is fabricated from mild steel and therefore will not be highly reflective. In order to weather protect these elements and reduce their visual impact, the intention is to paint them in a neutral mid grey matt finish. When viewed from close range through the dense planting, the mid grey matt finish will allow these elements to blend into the shadows of the surrounding foliage.
- 5.54 From mid to long range views, although some of these elements may be visible, because they are painted matt grey helps them to blend into the background as much as possible.
- 5.55 For the taller elements, such as the ground flare, there is potential break up the profile of these elements using varying bands of grey. The bands would be in the region of 1m deep, and range from light greys at the highest parts of these elements, with the tone becoming darker towards the mid and lower levels. The lower parts of these elements would be painted/clad to match the finish of the rest of the facility.
- 5.56 The verified images which accompany the application demonstrate how the colouring of the equipment helps to reduce the facilities visual impact in terms of long range views.
- 5.57 Moorland Energy and its advisers are also investigating the idea of including other colours within the banding for the taller buildings/elements, i.e. ranging from light blues at high level (sky), through to greens at lower levels (trees/bushes). The introduction of this approach needs further development following input from the client, Local Authority and wider project team.
- 5.58 There are several buildings (compressor building and switchgear room) which will be clad in proprietary profiled vertical cladding. The colour of this cladding will be similar to the grey noted above, but will have a satin (semi gloss) finish, rather than matt.

5.59 The intention is to clad the administration/control building with locally sourced brickwork, with the roof constructed of a proprietary standing seam system. Cladding this building with in a distinctive finish is a deliberate attempt to reflect the human interactions that take place within this building, compared to the majority of the facility which are pieces of industrial gas processing kit.

**(d) AGI Connection to the NTS**

5.60 Initially, Moorland Energy intended to pipe the processed gas via a pipeline from the Hurrell Lane site to the Pickering NTS at Outgang Road, Pickering. The Plan below shows the indicative route of the pipelines, including alternative routes. This is described in more detail in Chapter 5 of the ES.

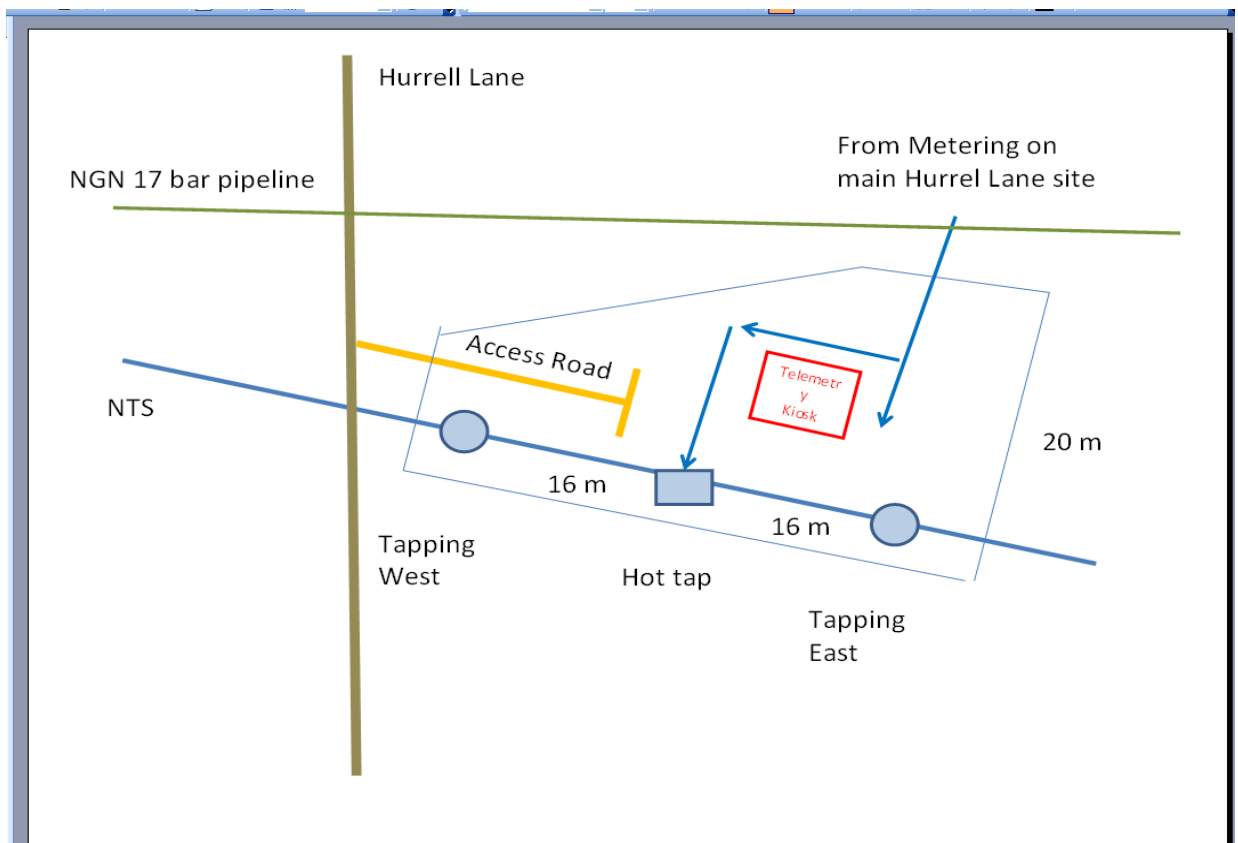


**Indicative Pipeline Routes between Eberston Wellsite and Pickering NTS Entry Point on OS Base**

5.61 The proposed pipeline between the Hurrell Lane site and the Pickering NTS entry point would have broadly followed the existing pipeline corridor of three existing gas pipelines which connect at Pickering. However, a desk-top study, followed by walkover survey work identified problems with laying a new pipeline within a number of existing

easements. A pinchpoint immediately west of Longlands Lane would have required the proposed pipeline to cross two existing gas pipelines and follow a more southerly route. The nature of the soils and the high water table would be likely to cause operational difficulties in the laying of the pipeline. In addition, initial discussions with landowners identified opposition to laying of further pipelines in the area, owing to concerns about the back filling of material and subsequent drainage issues arising from the laying of the existing pipelines.

- 5.62 Consequently, it was decided to identify a location for a connection to the existing NTS immediately to the south west of the Hurrell lane site.



**Diagrammatic Drawing of the Connection between the Hurrell Lane Site and the NTS**

- 5.63 A number of alternative technical options were considered, in conjunction with Moorland Energy's advisers and National Grid. The final layout incorporates the operational requirements of National Grid for a connection, an access road from the highway to enable staff to access the site for occasional maintenance needs, and additional landscaping in addition to the existing hedgerows along Hurrell Lane and New Ings Lane to screen the site from the north, east and south.

**(e) Landscaping**

- 5.64 The Application Site, including the proposed pipeline, the existing Ebberston Wellsite and the Hurrell Lane Gas Processing Facility, is generally well screened. Limited views are obtained from publicly accessible locations in immediate proximity to the Application Site (the existing Ebberston Wellsite, the proposed pipeline route, and proposed Hurrell Lane Gas Processing Facility), and from publicly accessible locations (generally PRsOW) from open locations to the north west on the elevated forest plateau, or from more distant locations to the south on the valley floor of the Vale of Pickering.
- 5.65 For the assessment of the majority of developments, the permanent effects of the development are usually more significant than the temporary effects during construction. However, in the case of the underground pipeline, the main visual and landscape affect will be during construction, as following development restoration to existing landscape conditions (as far as possible), will mitigate the impact. Conversely, the landscape and visual impact of the Gas Processing Facility will be permanent and long-term.
- 5.66 The landscape objectives for mitigating the effects of the proposed development are as follows:
- To retain landscape features such as woodlands, tree belts and hedgerows on the Application Site, and to ensure the long term management of these features;
  - To restore the agricultural landscape through which the proposed pipeline route passes to agricultural land of equivalent quality to that prior to construction, at the earliest opportunity following construction;
  - To reinstate and enhance the landscape features within the Application Site, to restore the landscape character to that existing prior to construction;
  - To provide a landscape setting to the proposed Gas Processing Facility, AGI and the access road, through the provision of a robust landscape infrastructure that reflects the existing landscape framework and assimilates the proposals within the wider landscape;
  - To provide ecological and amenity enhancement through the introduction and appropriate management of new grassland, woodland, tree belt, hedgerow and

individual tree planting, linked to existing landscape features wherever possible;  
and

- To establish a recessive colour / material pallet for permanent built elements or structures as part of the proposals.

5.67 The existing structure of woodlands on the boundaries of the Application Site would be retained providing a landscape framework encompassing the Proposed Development. The reinforcement of the existing pattern of vegetation with new planting, which respects local landscape character, and the appropriate management of existing landscape features, would ensure that the positive landscape structure would be retained and enhanced. As a result, the pattern or “grain” of the landscape would be retained and reflected within the mitigation proposals for the Application Site, and this would serve to reinforce local distinctiveness and landscape character.

5.68 The mitigation measures proposed would also “soften” the edge of the permanent development, and assist in assimilating it into its landscape setting, and increase tree cover over the wider area encompassing the Application Site. Accordingly the residual effect of the Proposed Development on landscape character is assessed as having a medium / low magnitude of change on an area of high / medium sensitivity. Once established the overall landscape improvements proposed are assessed as having minor beneficial significance.

5.69 On maturity of the planting across the proposed pipeline route and around the proposed Gas Processing Facility, the existing landscape character would be reinstated so that there would be no significant change in view. The landscape buffers would provide an effective screen in views towards the permanent development, during both the summer and in winter months and remove significant adverse visual effects.

### **Access**

5.70 To allow the necessary level of access to the proposed Gas Processing Facility, the intention is to construct a new dedicated access road to connect the plant with the A170 approximately a kilometre to the north.

5.71 The new access road will also provide the added benefit of negating any requirement to use Hurrell Lane as vehicular access to the proposed plant, ensuring that vehicular access for existing users of Hurrell Lane is not disrupted.

- 5.72 Due to the lack of an existing pavement in this location, no pavement crossover is proposed.
- 5.73 The new access road will connect to the A170 at the location of an existing lay-by/field access point, approximately 750m east of the existing junction with Hurrell Lane. The new junction will be formed using suitable materials and set out to the regulatory standards. The new junction has been designed to ensure 215m visibility splays at 4.5m and 9m set backs to ensure the required level of visibility is achieved.
- 5.74 The new road junction will be formed perpendicular to the existing A170. As the new access road continues south towards the Hurrell Lane gas facility, it bends east toward the adjacent field boundary fence and hugs this fence line. The road continues to hug the line of the boundary fence until it crosses the path of the existing dismantled railway embankment. At this location the embankment has previously been flattened to allow access to the field network. After crossing the line of the dismantled railway the access road turns west to meet the perimeter access road of the proposed gas facility site.

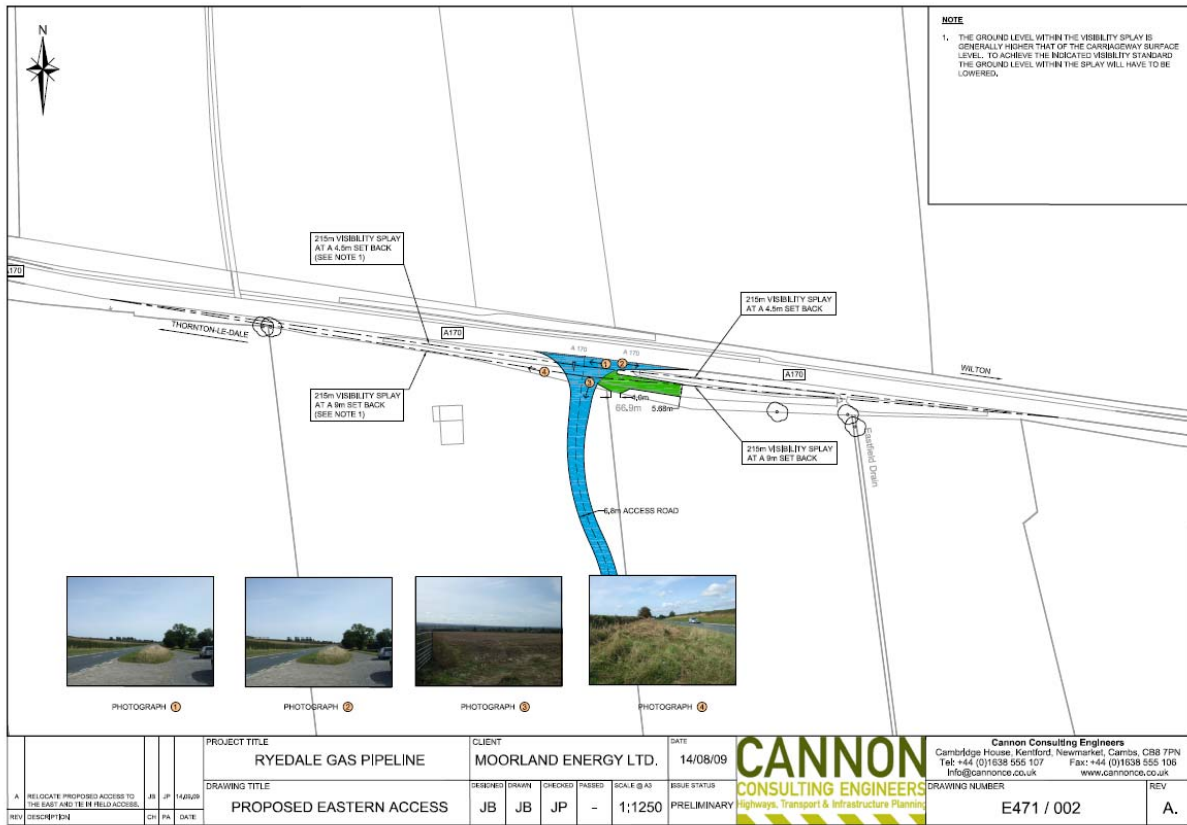
#### **Evaluation of Alternatives of Proposed New Access to A170**

- 5.75 Initially, two options were considered by Moorland Energy's highway consultants – a western and an eastern access. These were prepared and formally discussed with a senior highways officer at NYCC. The eastern most access is clearly preferably in terms of highway safety. Visibility from the western most access is obscured slightly to the east due to the vertical alignment of the road. There is also a significant level difference between the carriageway and the road at this location. There are a number of mature trees which would need to be removed.



**Discounted Western Access**

5.76 By contrast, the eastern most access has good visibility in either direction and already provides access into the farmland in question and to a lay-by which follows the route of the old A170 alignment. This location is therefore preferable.



**Preferred Eastern Access**

*Construction Vehicles*

- 5.77 During the construction phase vehicle movements would be concentrated at the proposed access from the A170 to the Gas Processing Facility. Temporary traffic management and signing on the A170 on the approach to the access road would be used to warn approach drivers of the possibility of construction traffic entering and exiting this access.
  
- 5.78 Access would be required to either side of the A170 where the pipeline route crosses the road in order to run the pipeline under the carriageway. It is proposed to use the existing lay-by on the southern side of the A170 to gain access to the works area on this side of the road. It is propose to formalise the existing farm access on the northern side of the A170 to allow access to the works access at this location.
  
- 5.79 It is anticipated that some vehicles would need to cross from the southern side of the A170 (where materials will be stored in the lay down area adjacent to the Gas Processing Facility) to the northern side of the A170 (to the pipeline crossing and



onwards the pipeline route). It is proposed to provide a vehicle crossing point between the northern and southern side of the A170. This would be controlled with temporary traffic management.

## 6.0 SUMMARY AND CONCLUSIONS

- 6.1 The Design and Access Statement describes the components which have directly influenced the design and access of the proposed development. It sets out the landscape character of that part of the North York Moors National Park where the Wellsite is located, and the area between the Wellsite and the proposed Gas Processing Facility at Hurrell Lane, Thornton-le-Dale. It describes the proposed elements of the planning application, including the amount of development proposed, the use and the scale of equipment proposed to be located at both the Wellsite and the processing facility.
- 6.2 The relevant design and access policies contained within both national planning policy guidance and statements and in the Development Plan are set out in Chapter 4. The Proposed Development is assessed against these policies to determine the compatibility of the proposal.
- 6.3 Chapter 5 describes the evolution of the layout of each of the principal components of the scheme, namely the website, the working width and depth of the pipeline corridor, the Hurrell Lane Gas Processing Facility and the AGI connection to the NTS. The function and design of the landscaping proposals which will mitigate the effects of the proposed development upon the landscape are described. Finally, the access arrangements for Hurrell Lane are also described, taking account of relevant national and local policies and discussions with the County Highways Authority.
- 6.4 The Design and Access Statement should be read in conjunction with the Planning, Sustainability and Need Statement, the Environmental Statement, the Statement of Community Involvement and the Safety Report.

