

## 6.0 CONSTRUCTION PROGRAMME

- 6.1 See **Appendix 6.1** for a Gantt chart showing the programme for the construction phase of the Ryedale Gas Project.
- 6.2 The entire construction and commissioning phase of the project is expected to last 420 days (from first vehicle on site to first gas) however, there will be periods of inactivity at all sites due to dependency on the completion of preceding tasks. There will be five construction areas:
- Pipelines Route;
  - Ebberston Wellsite;
  - Access Road;
  - Hurrell Lane Gas Processing Facility; and
  - Above Ground Installation.

### Pipeline Route Construction

#### *Introduction*

- 6.3 It is expected that construction of the pipeline between Ebberston Wellsite and the Hurrell Lane Gas Processing Facility will last 164 days and a full report on the proposed pipeline construction is included at **Appendix 6.2** and should be read in conjunction with the accompanying planning application drawings (numbers 53/03/MF/08 – 19).
- 6.4 All construction activities are undertaken within a strip which is referred to as the “working width” and which is normally fenced-off. The working width for the Ryedale Gas Project varies between 15m-42m because of environmental constraints such as the location of Scheduled Ancient Monuments, protected wildlife habitats and ecologically valuable plant species. Access to the working width will be at defined points which will be agreed with local authorities and landowners/occupiers and then carefully controlled and signposted. The techniques described have been developed over many years from experience on previous pipelines in the UK and therefore represent proven methods of construction.

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## Standard Construction Techniques (UK Practice)

### *Site Preparation and Mobilisation*

- 6.5 The first stage of construction involves site preparation and mobilisation before material can be delivered. The site will contain office accommodation for both the Contractor and Moorland Energy, workshop facilities for maintaining the construction equipment (dumpers, bulldozers, excavators, etc) and storage areas for materials which are not delivered directly to the working width area. This stage is estimated to be complete within 34 days. Preparatory earthworks to strip the topsoil are expected to last 7 days.

### *Fencing*

- 6.6 Before any of the principal construction activities begin, temporary fences are erected along the boundaries of the working width previously agreed with the landowners/occupiers. Gates and stiles are incorporated into the fence wherever access by public rights of way, farm tracks, etc. are required.

### *Topsoil Removal*

- 6.7 Generally, topsoil is removed from within the working width and stored to one side to prevent it being mixed with subsoil and to prevent it being compacted, such compaction can lead to permanent loss of the soil's structure.

### *Stringing*

- 6.8 The pipeline is formed of lengths of steel pipe, each about 12.5m long. Lengths of pipe are transported to the working width from the pipe dump and laid on wooden sleepers or cradles along the line parallel to the proposed trench.

### *Welding*

- 6.9 The pipes are welded together to make a continuous pipeline with all the welds being subject to radiographic inspection. Any faults detected are repaired, or cut out and replaced, and then reinspected until the specified standard is reached. The pipes arrive on site with a protective coating already applied except at their ends. After welding and x-raying, the bare metal at the joints are cleaned and a coating is applied to make it continuous along the pipeline. The pipeline coating is then holiday tested along the whole of its length to detect any coating damage or other defects which are then

repaired, and the affected coating retested.

### *Trenching*

- 6.10 A trench is excavated to a depth, which will allow the pipeline to be buried at a minimum cover over the top of the pipe of 1.1m. At crossings the depth of the trench may be increased, the ultimate depth of cover being determined by safety considerations and/or by local site conditions. The subsoil from the trench excavated is placed in a pile and kept apart from the topsoil.
- 6.11 On specialist crossings, for example crossing high pressure pipelines, HV electricity or other third party services, then they should be clearly identified by trial hole excavation before any attempt is made to physically cross them. In the instance of major hazard pipelines and HV cables this should only be undertaken in line with the requirements of the asset owners.

### *Lowering in of the pipe and backfilling*

- 6.12 The pipeline is then lowered into the trench using side boom tractors or equivalent plant. Extreme care is taken to avoid damaging the pipe coating. The trench is then backfilled with the excavated subsoil, which is graded to avoid damage to the pipeline coating. The subsoil is carefully compacted around and over the pipe up to the top of the trench.
- 6.13 The final cover of top soil is crowned over the pipeline to account for future settlement. This is not a major issue in arable land as the top soil is usually ploughed back into the rest of the field. The expected duration for fabrication and installation will be 98 days.

### *Cleaning, Gauging, Testing and Commissioning*

- 6.14 The pipeline is then cleaned internally using a "pig" driven through the pipe by compressed air and/or water. A gauging pig is then driven through to check the "internal" diameter of the pipeline and enable any deformity to be detected. The pipeline is then hydrostatically tested by closing off the ends, filling it with water and then increasing the water pressure. On completion of the pressure testing the pipeline will be dried by swabbing pigs, and by vacuum drying, dry air or similar technique. Hydrostatic testing and commissioning of the pipeline is expected to last 6 days.

*Land Drainage Works*

- 6.15 Great emphasis is placed on ensuring that the drainage of the land crossed by the pipeline is preserved. During construction, all drains severed by the trench digging operation are identified and recorded and the most appropriate method of reinstatement discussed and agreed with the land occupier or his agent. If necessary, new lateral and header drains will be laid to outfalls to replace drains rendered inoperative by the pipeline.

*Permanent Reinstatement*

- 6.16 Reinstatement of the surface of the land is normally carried out within the same season as construction. Walls and fences are reinstated and hedges replanted between protective fences. Permanent pipeline markers and cathodic protection test posts are installed at agreed locations. Finally, the fencing along the working width is removed unless the occupier prefers it to be left. In conservation areas, reinstatement may be modified to suit special conditions found there.

*Auger Boring*

- 6.17 At crossings such as drains or roads, a method which limits surface disturbance called auger boring is used. It is a relatively simply process in which a length of pipe is moved through the ground beneath the obstacle by an auger tool in the pipe which removes the spoil from the face of the pipe. Once the pipe has reached the end of the crossing, it forms part of the permanent pipeline. An additional coating is put on the pipes that are to be used in the auger boring process. Auger boring will be used for the construction of the Ryedale Gas Project rather than open cut techniques because they cause less surface disturbance.

**Ebberston Wellsite Construction**

- 6.18 It is expected that construction and pre-commissioning activities at the Ebberston Wellsite will be completed in 205 days. However large periods of minimal activity are expected because the completion of the well site is dependent on other longer tasks.
- 6.19 Site preparation will be minimal because the site is already established. Welfare facilities, offices, power, security, potable water, etc. should be established within 5 days.

- 6.20 Civil construction duration including earthworks, drainage, plinth and foundation installation is expected to be 20 days.
- 6.21 Installation of equipment, building and piping (mechanical completion) will take up to 110 days.

### **Access Road**

- 6.22 Before any site preparation at the Hurrell Lane site can commence, an access road from the A170 to the site will be constructed. Construction will commence at the A170 and construction facilities will be located in the vicinity. The expected construction duration is 10 weeks.

### **Hurrell Lane Gas Facility Construction**

- 6.23 It is expected that construction and pre-commissioning activities at the Hurrell Lane Gas Processing Facility will be completed in 205 days.
- 6.24 Once the access road is complete, site establishment and preparation can commence. The civil site preparation will take approximately 10 days to complete. This will include the stripping of topsoil (to be used for banking and bunding), installation of security fencing, creation of temporary access roads and the levelling of lay-down areas for construction facilities.
- 6.25 This will allow welfare facilities, offices, power, security, potable water, etc. to be installed over an estimated period of 5 days.
- 6.26 The remaining civil construction duration including earthworks, drainage, plinth and foundation installation is expected to be 60 days (75 days total duration).
- 6.27 Installation of the main equipment, buildings and piping (mechanical completion) will take up to 110 days.

### **Above Ground Installation**

- 6.28 The construction of the AGI is also included in the timeframe above for Hurrell Lane. The AGI and Hurrell Lane construction facilities will be shared as the two sites will be linked.

- 6.29 The export pipeline between the Hurrell Lane Gas Processing Facility and the AGI is expected to be a relatively short length (275m) and construction will occur concurrently with the AGI. It is expected that the export pipeline will be completed and pre-commissioned before the rest of the construction so it will be filled with low pressure nitrogen until required.
- 6.30 The final "hot tap" connection into the "Burton Agnes – Pickering No.6 Feeder Pipeline" is expected to take 5 days.

### **Commissioning**

- 6.31 Pre-commissioning of the Ebberston Wellsite and Hurrell Lane Gas Processing Facility (using gas from the NTS) will commence once construction is finished and will take 20 days. Pre-commissioning of the AGI is expected to take 2 days.
- 6.32 Commissioning of the entire Ryedale Gas development, using gas from the Ebberston well, will occur once the pipeline is completed and will take a further 20 days.
- 6.33 Commissioning with Ebberston gas will only occur once it is certain that all equipment has been commissioned correctly and is in proper working order.
- 6.34 Gas processing and export will commence when this is completed.