Ebberston Moor South Wellsite - Knapton Gas Pipeline
Ebberston, North Yorkshire

Outline Safety Document

August 2014

THIRD ENERGY

MOORLAND

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Contents

1.0 PURPOSE AND SCOPE

1.1 The purpose of this document is to provide an overview of issues relating to the safety of the public, employees and the environment in relation to the Ebberston Moor South Well Site to Knapton Generating Station (KGS) gas pipeline (The Pipeline).

1.2 The outline safety document is in support of a planning application and Environmental Statement (ES) for the development submitted to North Yorkshire County Council (NYCC) and the North York Moors National Park Authority (NYMNPA). This outline safety document applies to both the Pipeline and to the Ebberston Moor South Well Site.

2.0 GLOSSARY OF TERMS

2.1 This section explains the terms used in this document.

- Compound Fluids – the liquids and/or gases carried in a pipeline
- Easement – a corridor of land, centred on the as built position of the pipeline, within which the operator of a pipeline is granted rights by the landowner and the landowner undertakes not to carry out certain activities likely to damage the pipeline.
- IGEM – Institution of Gas Engineers and Managers
- Pipeline Corridor – a corridor of land established at the planning stage within which the pipeline will be constructed. The position of the pipeline trench within the corridor is shown on drawings within the landscape chapter of the Environmental Statement which accompanies the application. However, this may be subject to revision during construction owing to unexpected ground conditions or archaeological remains.
- Working width – a corridor of land up to 30m wide for constructing the pipeline containing stored topsoil, stored subsoil, pipeline trench and roadway.

3.0 THE APPLICANT

3.1 Third Energy UK Gas Limited (formerly Viking UK Gas Ltd) is a subsidiary of Third Energy Holdings Limited, (created from an amalgamation of Third Energy Ltd and RGS Ltd).Moorland Energy hereafter referred to as Moorland Energy, was formed in 2008 to participate in the onshore exploration and production of gas in the UK. Moorland Energy owns an onshore Production Exploration and Development Licence, number 120 (PEDL 120) in the Cleveland Basin. Ebberston Moor South wellsite falls within PEDL 120.

3.2 Both energy companies have a comprehensive approach to the development and production of their existing portfolios of gas reserves in the UK. Third Energy Holdings Limited has several wholly owned subsidiaries including: Third Energy Services Limited. Third Energy Services Limited is the owner of Third Energy UK Gas and Third Energy Trading Limited. Third Energy UK Gas is the 100% license holder of Production, Development and Exploration Licenses ('PLs') in North Yorkshire. Third Energy Trading Limited is the owner of the Knapton Generating Station (KGS) in North Yorkshire. In addition, Third Energy and Moorland are joint license holders of the Ebberston Moor South (Wykeham) Field.

3.3 Third Energy assets in North Yorkshire include licenses and oilfields in the Vale of Pickering that have been producing gas for more than 15 years. The hydrocarbons are transferred through underground pipes to the KGS, which was opened on 22 May 1995. The KGS uses gas from the six Vale of Pickering well sites (all of which are operated by Third Energy) to generate electricity, which is then supplied to local homes and businesses via the National Grid.

4.0 DESCRIPTION OF THE PROPOSED DEVELOPMENT

General

4.1 The proposed development, as the primary phase of the Ebberston Moor gas field, aims to carry out the following activities:

- Gas Production and Water Re-injection from the existing borehole at the Ebberston Moor South Well Site;
- Construction of a Second Borehole for Water Production and Re-injection;
- Construction of a 12" (300mm) diameter steel underground pipeline and associated fibre optic cable from the existing Ebberston Moor South Well Site to deliver gas and condensate to the KGS at East Knapton where the natural gas will be used as a fuel-gas to generate power; and
- Construction of a Gas Reception Module at KGS

4.2 The current project schedule for the Proposed Development anticipates planning and field development approval in 2014, construction commencing in 2015 and transfer of gas via the pipeline between Ebberston Moor South Well Site and KGS commencing in 2016. The gas production associated with the Proposed Development is expected to be up to 15 years duration.

5.0 STATUTORY REQUIREMENTS – PIPELINE

5.1 There are a number of requirements set out in law which will apply to the proposed pipeline. The UK has a robust system of regulation, managed by the Health and Safety Executive (HSE) in the case of pipelines. HSE provide guidance to pipeline operators on how to comply with relevant legislation and a robust set of standards and codes of practice exist for the whole lifecycle of a pipeline. The lifecycle includes design, construction, operation, maintenance and decommissioning. As a result, pipelines are considered to be the safest way to transport hazardous materials over distance.

5.2 Pipeline incident rates are demonstrably lower in the UK than in many parts of the world and compliance with the legislation, standards and codes of practice ensures that the pipeline will be designed and built safely, maintained in a safe state and at the end of its useful life it will be decommissioned in a safe and environmentally sound way.

5.3 Third Energy UK Gas Limited and Moorland Energy Limited have a robust safety management system which delivers compliance to the legislation, standards and codes of practice.

5.4 This section discusses the applicable legislation and describes how it will be applied to the proposed pipeline.

Construction (Design and Management) Regulations 2007 (CDM)

5.5 Duties are placed on Clients, Designers, Contractors and workers to ensure that a project is adequately designed. The design must address construction, maintenance and demolition safety issues.

5.6 CDM also requires that the safety, health and welfare of the workforce and others is protected during the construction phase.

5.7 A CDM Coordinator will be appointed by the Applicant to ensure that communication is maintained between design and construction contractors. The CDM Coordinator will drive the process to capture all safety issues in the initial design. In addition to the CDM Coordinator, the Applicant will appoint competent designers and contractors.

5.8 The Applicant will notify HSE under CDM (form F10) which will trigger the construction inspection process.

5.9 In this way both public and employee safety for project lifecycle is considered at the very start and built in with the minimum design revision.

Pipeline Safety Regulations 1996 (PSR)

5.10 PSR sets out the duties of an operator for safe pipeline operations. Some of the main requirements are:

- Regulations 5-8 set out the design requirements for a pipeline, it must be designed to withstand all the forces upon it and the chemical and physical effects of the fluids conveyed in it. The pipeline must have safety systems built in, be maintainable and constructed from suitable materials. The Applicant will employ competent designers who will design the pipeline to IGEM/TD/1 (steel pipelines for high pressure gas transmission) Edition 5, which is the applicable standard for this pipeline. At points where the pipeline passes near houses or public access points extra protection will be provided as determined by risk assessment. Measures usually include using proximity pipe (thicker walled line-pipe) or burying the pipeline deeper. Issues such as induced current corrosion, stress cracking and fatigue will be addressed in the design.
- Regulation 9 sets out the requirement for a pipeline to be constructed and installed so that it is fit for purpose and safe. The Applicant will employ competent specialist pipeline construction contractors to ensure that this requirement is met. In addition a comprehensive quality assurance system will be applied and tests on the pipeline and its systems will be carried out before it is pressured. Where minor watercourses or tracks are crossed by open cut trenching a protections slab and marker tape will be installed above the pipeline so that excavation or drainage work does not result in danger. For more major road or rail crossings trenchless technology will be used (directional drilling or auger boring) so that the pipeline is deep enough to be safe and unaffected by vibration etc.
- Regulation requires maintenance to be carried out such that it does not prejudice the soundness of the pipeline. Regulation 11 requires safe operating limits to be set and ensures that it will not be operated beyond those limits. The Applicant will design the pipeline such that it is intrinsically safe, that is wherever practicable it will not be possible to overpressure the pipeline. If there is sufficient pressure available to cause overpressure then The Applicant will install overpressure protection systems of sufficient reliability to prevent danger. In any

event The Applicant will install systems to maintain pressures at safe levels over the life of the pipeline.

- Regulation 12 requires the operator to make arrangements for incidents and emergencies. The Applicant will devise a plan, in conjunction with the Local Authority, to protect public safety in the very unlikely event of a pipeline emergency. To put this in context there has never been a pipeline major accident in the UK under the legislation, regulation and standards described. The pipeline industry works hard to maintain this record. The emergency plan will utilise The Applicant's proven reliable emergency management systems and will be regularly exercised.
- Regulation 13 requires the pipeline to be maintained in an efficient state and Regulation 14 covers safe decommissioning. The Applicant will implement a robust system of inspection and maintenance. This system will include periodic internal inspections made by propelling a unit containing sophisticated instrumentation through the pipeline. An impressed current cathodic protection system to prevent external and internal corrosion will be installed and regularly tested. Further protection will be provided by an external pipeline coating system such as fusion bonded epoxy coating and by injecting corrosion inhibitor into the gas stream for internal protection. The pipeline route will be periodically inspected by walking or overflying to detect any signs of leakage or activity likely to endanger pipeline integrity which could put the public at risk.
- Regulation 16 requires the operator to inform persons of the pipeline's existence and whereabouts. In order to protect the public, The Applicant will mark the route of the pipeline using marker posts to prevent excavation activities (road works, new construction etc.) from damaging the pipeline. In addition landowners will be informed of the pipeline location so that drainage works can be safely planned.

5.11 Regulations 18 to 27 specify the requirements for conveying 'dangerous fluids' in a pipeline. A dangerous fluid is defined in Schedule 2 and natural gas at pressures over 8 Bar Absolute is a dangerous fluid. The pipeline, as is to be expected for a high pressure natural gas pipeline, is, therefore, classed as a Major Accident Hazard Pipeline. As a result of this, the following additional requirements apply and the Operator of a pipeline must:

- Notify HSE at least 6 months before construction;
- Notify HSE at least 14 days before use;
- Notify HSE where certain changes occur (e.g. change of operator);

- Prepare a Major Accident Prevention Document (MAPD_;
- Prepare and rehearse emergency procedures;
- Liaise with the local authority to help them create an offsite emergency plan; and
- Pay Local authority charges for the offsite plan.

5.12 The Applicant will comply with the additional requirements. The notifications will trigger different aspects of the inspection regime by HSE. Emergency procedures will trigger the appropriate actions in the event of an incident and will dovetail the existing and well proven Emergency Response Plan with the local authority plan and ensure that all stakeholders are made aware of the plans. The MAPD will set out the aspects of pipeline design, construction, operation and maintenance which are designed to prevent or mitigate a major accident.

5.13 The risks associated to a greater or lesser extent with all pipelines include:

- Outside Interference;
- Internal Corrosion;
- External Corrosion;
- Overpressure; and
- Materials failure.

5.14 As mentioned above The Applicant will carry out a specific risk assessment during detail design which will refine the generic control measures mentioned in 6.10 to 6.12.

Pressure Systems Safety Regulations 2000 (ACOP) (PSSR)

5.15 PSSR regulates safe design, installation, operation and maintenance of pressure systems, dealing with stored energy issues rather than hazards from the contents of the system. The definition of a pressure system includes:

- *A pipeline and its protective devices...which contains or is liable to contain a relevant fluid*.

5.16 “Relevant fluid” includes natural gas.

5.17 It is clear therefore the PSSR applies to pipelines. There are many overlaps with PSR but PSSR has some specific requirements which are discussed below:

- Regulation 8 requires a written scheme of examination, created by a competent person, to be in place. The Applicant will prepare a written scheme which will apply to this pipeline;
- The Applicant will build into the MAPD a requirement for examination in accordance with the written scheme to satisfy Regulation 9; and
- Regulation 14 relates to keeping of records. The Applicant, *as part of their Safety Management System, will ensure that necessary records are made and retained*.

6.0 STATUTORY REQUIREMENTS – WELL SITE AND FACILITIES

6.1 There are a number of requirements set out in law which could apply to the proposed development. This section discusses those requirements and identifies whether they apply to the well and, if so, indicate how they are implemented.

Control of Major Accident Hazards Regulations 1999 (As Amended) (COMAH)

6.2 The measures required by these regulations are designed to prevent major accidents, i.e. large fires, explosions or releases of pollutants.

6.3 There are two tiers of obligations within the regulations, upper and lower, which attract different duties.

6.4 Methanol is listed in Schedule 1 Part 2 of COMAH with a qualifying quantity of 500 Tonnes for lower tier and 5000 Tonnes for upper tier. Up to 1000L of Methanol is stored for hydrate prevention which equals 0.79 Tonnes. COMAH does not apply as a result of the Methanol stored.

6.5 Natural Gas is listed in Schedule 1 Part 2 of COMAH with a qualifying quantity of 50 Tonnes for lower tier and 200 Tonnes for upper tier. Up to 10 Tonnes of natural gas will be present in the surface facility. COMAH does not apply as a result of the natural gas present.

6.6 Natural Gas Condensate is a flammable liquid. Schedule 1 Part 3 of COMAH specifies a qualifying quantity of 5000 Tonnes for lower tier and 50000 Tonnes for upper tier. Up to 20000 litres of natural gas condensate would be stored after removal from the gas which weighs up to 15 Tonnes. COMAH does not apply as a result of condensate storage.

6.7 Corrosion inhibitor is not a hazardous substance and there is no requirement to notify the HSE under the requirements of COMAH.

6.8 Under the ‘additive rule’ the substances above equate to (10/50) + (0.79/500) + (15/5000) = 0.20458. As this number is less than 1 then COMAH does not apply under the additive rule.

6.9 It is, therefore, clear that the proposed development does not fall under COMAH.

Planning (Hazardous Substances) Regulations 1992 (As Amended)

6.10 Using the tables contained in the Planning (Hazardous Substances) (Amendment) (England) Regulations 2009 which amend the 1992 Regulations it is possible to assess the substances present on site to decide whether the Regulations apply.

6.11 Natural Gas is specifically named in Part A Column 1 with an 'established quantity' of 15 Tonnes. Up to 10 Tonnes of natural gas would be present. Therefore natural gas does not bring the development into the Planning (Hazardous Substances) Regulations.

6.12 Methanol is specifically named in Part A Column 1 with an 'established quantity' of 500 Tonnes. Up to 0.79 Tonnes of methanol would be present. Therefore methanol does not bring the development into the Planning (Hazardous Substances) Regulations.

6.13 Condensate is not specifically named in the regulations however it is a flammable liquid with an 'established quantity' of 5000 Tonnes. Since the quantity of condensate would be 15 Tonnes condensate does not bring the development into the Planning (Hazardous Substances) Regulations.

6.14 The 'additive rule' under the Planning (Hazardous Substances) Regulations is similar to COMAH, though different values may arise for Q. The calculation in this case is (10/50) + (0.79/500) + (15/5000) = 0.20458. As this value is less than 1 the Planning (Hazardous Substances) Regulations do not apply under the additive rule.

6.15 It is, therefore, clear that the Planning (Hazardous Substances) Regulations do not apply to the Proposed Development.

Environmental Permitting Regulations (England and Wales) 2010

6.16 The production facility will require a permit under the Environmental Permitting Regulations (England and Wales) 2010 (EPR). A permit must be in place before the plant is operated. The process may take up to nine months to prepare, submit, determine and issue the permit and the Applicant will make application if required after consultation with the Environment Agency.

6.17 The measures implemented to secure the permit will ensure that the plant is designed, built and operated to 'best available technique', a combination of technology, operating standards and procedures which ensure that the plant has the minimum environmental

impact in terms of emissions and pollution risk. It will also require effective waste minimisation and control to be implemented.

6.18 Consideration has already been given to many of these issues during initial design, for example gas is used to fuel generators rather than diesel in order to minimise emissions.

6.19 The Applicant address these issues through their safety and environmental management systems in any event, however issue of a permit demonstrates to the public that the Environment Agency are satisfied the Applicant have demonstrated their effective management of these issues.

The Borehole Sites and Operations Regulations 1995

6.20 The Borehole Sites and Operations Regulations 1995 (BSOR) are the primary legislation for ensuring that operations at borehole sites (i.e. well-sites) are controlled and safe. They apply to all boreholes.

6.21 The Applicant has safely operated borehole sites for many years and continues to do so.

6.22 Under the regulations an operation specific safety document will be created as a result of risk assessment. A team of safety professionals and managers will ensure that the operation is carried out in compliance with this document.

6.23 Notifications are made to the Health and Safety Executive under BSOR and a weekly report of progress is made, allowing the Executive to track progress.

The Offshore Installations and Wells (Design and Construction) Regulations 1996

6.24 The Offshore Installations and Wells (Design and Construction) Regulations 1996 (DCR) are the primary legislation for ensuring that wells are designed, constructed, operated and abandoned (decommissioned) safely. The well aspects of DCR also apply onshore.

6.25 Well designs are scrutinised by an independent well examiner under an examination scheme.

6.26 DCR requires that a well is designed and constructed to the particular conditions underground at the location, that materials will withstand the conditions encountered and that the well can be kept safe through its entire life cycle. The well will be designed

with effective barriers (steel casing and cement) between any hydrocarbons (oil or gas) and water sources, aquifers and the surface. A programme of works is made which ensures that barriers are verified effectively before they are relied upon and that the well is drilled using fluids which will control down-hole pressure without polluting or adversely affecting the strata through which it passes.

6.27 DCR covers the whole lifecycle of a well.

Dangerous Substances and Explosive Atmospheres Regulations 2002

6.28 The Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) require the Applicant to:

- Find out what dangerous substances are in their workplace and what the fire and explosion risks are;
- Put control measures in place to either remove those risks or, where this is not possible, control them;
- Put controls in place to reduce the effects of any incidents involving dangerous substances;
- Prepare plans and procedures to deal with accidents, incidents and emergencies involving dangerous substances;
- Make sure employees are properly informed about and trained to control or deal with the risks from the dangerous substances; and
- Identify and classify areas of the workplace where explosive atmospheres may occur and avoid ignition sources in those areas.

6.29 The Applicant will assess the risks during the detail design process and prepare a fire and explosion protection document for the facility. This document will contain all the information required by DSEAR and will form the basis for operational risk controls when the plant is operated.

6.30 In this way the risk as a result of presence of flammable or explosive liquids and gases is effectively controlled.

6.31 Other legislation with which the Applicant complies includes but is not limited to:

- Health and Safety at Work Act 1974
- Management of Health and Safety at Work Regulations

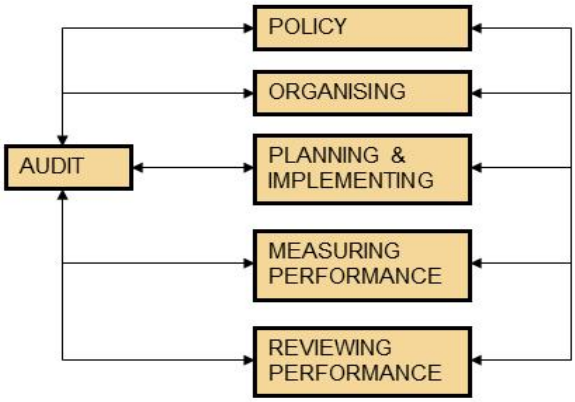
- Control of Substances Hazardous to Health Regulations
- Workplace (Health Safety and Welfare) Regulations
- Regulatory Reform (Fire Safety) Order 2005
- Reporting of Injuries Diseases and Dangerous Occurrences Regulations
- Provision and Use of Work Equipment Regulations
- Lifting Operations and Lifting Equipment Regulations
- Manual Handling Operations Regulations
- Work at Height Regulations
- Confined Spaces Regulations
- First Aid at Work Regulations
- Construction (Design and Management) Regulations
- Health and Safety (Display Screen Equipment) Regulations
- Control of Noise at Work Regulations
- Personal Protective Equipment at Work Regulations
- Environmental Protection Act 1990
- Groundwater Regulations
- Control of Pollution (Oil Storage) (England) Regulations
- EU Emissions Trading Scheme (where applicable)

7.0 HAZARD IDENTIFICATION AND CONTROL

7.1 A hazard is defined as 'something which can cause harm'. Risk is a product of the likelihood of that harm occurring and the severity of the harm should it occur.

7.2 The Applicant has a developed Safety Management System (SMS) which includes procedures for hazard identification and risk assessment. These procedures include techniques such as HAZOP (Hazard and Operability Study) as well as standard risk assessment and tolerability standards. By applying these, the Applicant will ensure that hazards are removed or, if that is not possible, the risk controlled to an acceptable level.

7.3 Acceptable levels are defined by the Health and Safety Executive. The levels were published in a document title 'Reducing Risk, Protecting People' and the Executive developed a model for safety management which, if correctly implemented, will reduce risk to those levels. The model is known as HSG65 and is represented in the diagram below.



7.4 The Health and Safety at Work Act 1974 places a duty on employers to discharge their duties "so far as is reasonably practicable". This does not mean 'as far as possible'. It is a very strict definition and is defined in case law. The definition says that, for a measure to be considered 'reasonably practicable', "The quantum of risk on the one hand is balanced against the sacrifice (in time, trouble or money) on the other. If it can be shown that there is a gross disproportion between the two, with the risk insignificant in relation to the sacrifice, then Reasonable Practicability is demonstrated." (Edwards v National Coal Board [1949] All ER 743 (CA)). This is a powerful statement. It implies that an assessment of risk is required and states that an employer must implement measures unless the sacrifice is grossly disproportionate to the risk. The principle is the

same where risk is to be reduced as low as is reasonably practicable (ALARP). The implication that risk assessment is required is made law by the Management of Health and Safety at Work Regulations 1999, (Regulation 3) which requires 'suitable and sufficient' risk assessment.

7.5 The Applicant's SMS fulfils the requirements of HSG65, the Health and Safety at Work Act and the Management of Health and Safety at Work Regulations, as well as encompassing the statutory requirements discussed above.

7.6 The risk assessment process will continue and will become more refined however the major hazards have been identified and factored into the initial design. In particular risk relating to the following hazards which are often raised by the public in similar applications are either designed out or minimised by control measures:

- Fire or explosion;
- Damage to health by harmful substances;
- Release of pressure;
- Well integrity; and
- Pollution of air, land, surface waters, ground-waters (including aquifers).

7.7 The headings below give a brief overview of the control measures for those hazards:

Fire or Explosion

7.8 With natural gas and flammable liquids present a risk of fire exists, if the gas or vapours from liquids are present in the right mixture with air, the result could potentially be an explosion. Controls include:

- Fire and explosion protection document including plans showing where potential for flammable or explosive atmospheres exists;
- Elimination of ignition sources in areas where potential for flammable or explosive atmospheres exists as identified above;
- Design of buildings and safety critical equipment to withstand fire or explosion;
- Liaison with Northern Gas Networks to ensure that fire prevention and fire fighting measures are compatible and effective between the adjacent installations;
- Fire risk assessments for occupied areas;
- An occupied buildings risk assessment;

- Adequate earthing systems;
- Provision of sufficient fire fighting resources, including trained personnel;
- Fire and gas detection systems of sufficient reliability to form part of a safety critical system; and
- Fail safe emergency shut-down systems with sufficient reliability to ensure that the plant will shut in on fire detection.

Damage to Health by Harmful Substances

7.9 Many substances potentially risk damage to the health of employees and others if not eliminated or controlled. The Applicant has robust systems to identify and control this risk. Controls include:

- COSHH Assessments for all substances in use at the site specifying control and protection measures;
- Suitable storage and maintenance of protective equipment;
- Adequate site hygiene facilities;
- Health monitoring to detect ill effects early;
- Storage plans to segregate incompatible substances
- Suitable fire and spill control for all substances on site;
- Adequate containment for all substances;
- Bunded storage areas (110% of largest tank or 25% of total whichever is larger volume) so that spillage is not released to land or waters;
- Flare system to ensure any venting or relieving of harmful substances is rendered harmless;
- Overfill protection systems; and
- Robust and tested emergency response plan (see below).

Release of Pressure

7.10 Stored energy in the form Effective safety of pressure systems spans the whole lifecycle from design through installation and testing, operation, maintenance and decommissioning. Controls include:

- Design and manufacture of pipework and vessels to appropriate British and International Standards;
- Use of appropriately designed and certified pressure equipment;
- Establishment of safe operating limits;

- Testing to ensure that systems can withstand the intended pressure;
- Provision of relief systems to ensure that safe operating limits are not exceeded;
- Designated responsible Engineer to ensure that pressure systems are examined in accordance with a written scheme by an independent body;
- Implementation of robust procedures for operating pressure equipment;
- Implementation of an isolation philosophy to allow safe maintenance or decommissioning;
- Sufficient interlocks and warning devices to prevent inadvertent release of pressure; and
- Suitable and effective maintenance of pressure systems with appropriate records.

Well Integrity

7.11 Inadequate well integrity presents a risk of groundwater pollution and of pressure release at surface if not adequately controlled. Controls include:

- Adequate knowledge of underground conditions and strata;
- Competent engineering life-cycle design to internal, industry, national and international standards;
- Competent programme of works to ensure adequate construction and testing of safety critical elements;
- Independent examination of the programme and system for managing programme changes;
- Checks and controls to ensure that the well design is implemented correctly;
- Procurement of adequate materials and components with sufficient safety factors to withstand down-hole conditions;
- Verification of pressure barriers to protect vulnerable strata by logging and/or pressure testing;
- Provision of sufficient surface and sub-surface safety valves;
- Formulation and implementation of a well integrity policy to govern isolation, valve configurations, pressure annulus monitoring and maintenance of pressure containing envelope; and
- Recording of information on well flows, pressures, temperatures, well fluids composition and corrosion monitoring to allow engineering appraisal of well integrity.

Traffic and Transport Risk

7.12 Workplace transport tops the causes of workplace (employee) fatalities in HSE statistics. In addition road traffic collisions result in large numbers of injuries and fatalities. The Applicant will therefore rigorously assess the risk associated with both onsite and offsite traffic. Controls will be implemented as a result of this assessment.

Pollution Risk

7.13 In the event of failure of pipeline materials or systems a risk of pollution could arise. A robust environmental risk assessment identifying source, pathways and receptors with implementation of controls is therefore required. Much of the risk is controlled by the measures described above but there are some specific requirements:

- A suitable waste management plan to include classification, segregation and control of waste during construction, commissioning, operation and maintenance;
- Identification and protection of vulnerable land and watercourses where extra protection may be required;
- Thorough assessment of environmental risk as part of the EPR permit;
- Robust and tested spill response with sufficient resources and identified damming points to contain spillage if systems fail (both construction and operational phases).

7.14 In the event of failure of equipment or systems on the wellsite and facilities a risk of pollution could arise. Controls include:

- Environmental risk assessment identifying source, pathways and receptors with implementation of controls;
- Well integrity measures described above;
- A suitable waste management plan to include classification, segregation and control of waste;
- Suitable spill prevention for all substances on site (drip trays, drains vessels, surge drums etc.);
- Adequate containment for all substances;
- Interceptors (separators) to prevent hydrocarbon release with rain water;
- SuDS to ensure any contaminants are neutralised;
- Bunded storage areas (110% of largest tank or 25% of total whichever is larger volume) so that spillage is not released to land or waters;

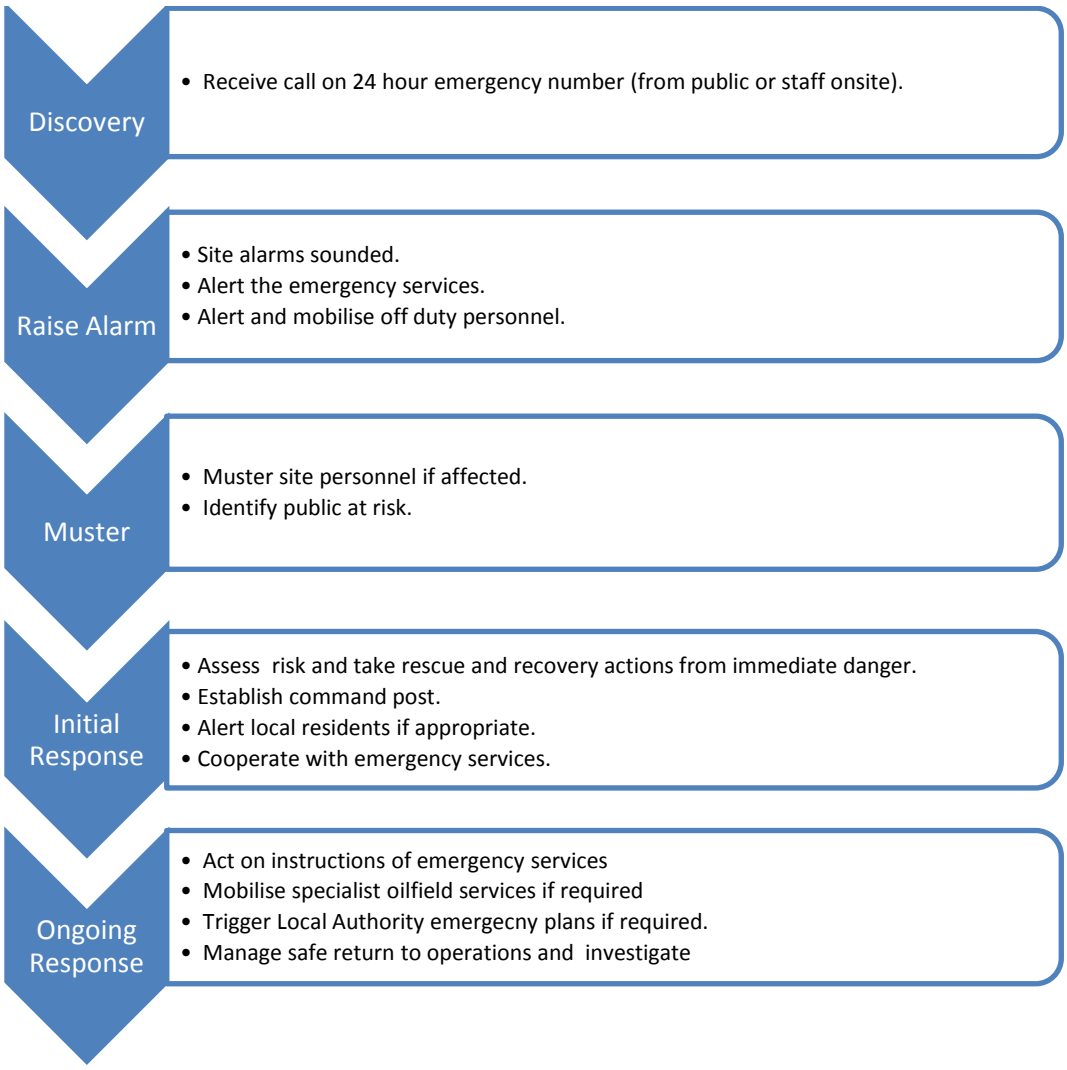
- Overfill protection systems;
- Modelling of dispersion of airborne pollutants or combustion products to ensure they are not at harmful levels; and
- Robust and tested spill response with sufficient resources and identified damming points to contain spillage if systems fail.

8.0 EMERGENCY RESPONSE

8.1 The Applicant has an established Emergency Response System (ERP). This relies upon a Lead Operator manning the Control Room at the Knapton Generating Station (KGS) and a Site Operator carrying out checks on producing sites.

8.2 This system extends to pipelines with emergency contact information for the Lead Operator displayed on pipeline marker posts.

8.3 The ERP overview for pipeline emergencies is shown below:



8.4 The ERP overview for wellsite emergencies is shown below:


Discovery
• Warn people in the area (verbal or alarm system).
• Tell the Supervisor.
• Call 24 hour emergency number (public or staff offsite).
Raise Alarm
• Site alarms sounded.
• Alert the emergency services.
• Alert and mobilise off duty personnel.
Muster
• Muster site personnel.
• Call the roll.
• Rescue missing persons.
Initial Response
• Assess risk and take rescue and recovery actions.
• Establish command post.
• Alert local residents if appropriate.
• Cooperate with emergency services.
Ongoing Response
• Act on instructions of emergency services
• Mobilise specialist oilfield services if required
• Trigger Local Authority emergecny plans if required.
• Manage safe return to operations and investigate

9.0 CONCLUSION

9.1 While hazards are always present when industrial activity is carried out, the Applicant has a robust SMS which follows Health and Safety Executive Guidance. Such a system is proven to be capable of controlling the risk associated with those hazards such that it is at acceptable levels both for employees and the public.

9.2 The Applicant has the expertise and has committed the resources to ensure that the plant is designed, built, commissioned, operated, maintained and decommissioned safely and efficiently with minimum adverse effect on the environment.

9.3 It is concluded that the development will meet all applicable safety and environmental protection standards and will not pose unacceptable risk to the public or employees.

BARTON
WILLMORE