



Ebberston Moor - Knapton Gas Pipeline, Ebberston, North Yorkshire

NON-TECHNICAL SUMMARY ADDENDUM

November 2013

**BARTON
WILLMORE**
PLANNING/DESIGN/DELIVERY

Ebberston Moor 'A' Well Site to Knapton Gas Pipeline, North Yorkshire

Environmental Statement Addendum Non-Technical Summary

Issue/Revision	Draft	Final
Date	November 2013	November 2013
Prepared by	Marian Cameron	Marian Cameron
Checked by	Lucy Wood	Lucy Wood
Project Reference	19819/A5/EIA/ES Addendum NTS 2013	

Barton Willmore
St Andrews House
St Andrews Road
Cambridge
CB4 1WB

Tel: 01223 345555
Fax: 01223 345550

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Date: November 2013

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1.0 INTRODUCTION

- 1.1 A full planning application ~~is being~~ **was** submitted on behalf of Viking UK Gas Limited (the "Applicant") in **August 2013** to seek permission for the production of gas from the existing Eberston Moor 'A' Well Site; and construction of a 15.3 km long 8" steel diameter underground pipeline from Eberston Moor 'A' Well Site to Knapton Generating Station (KGS) for the purpose of delivering natural gas and a mixture of liquids occurring naturally with gas from Eberston Moor 'A' Well Site to KGS where it will be used as fuel-gas to generate power. These activities are collectively referred to hereafter as the "Proposed Development" on land partly within the Dalby Forest in the North York Moors National Park¹ and within Ryedale District ("the Assessment Site").
- 1.2 **Figure 1.1** shows the location and extent of the Assessment Site. It falls within the administrative area of North York Moors National Park Authority (NYMNPA) and North Yorkshire County Council (NYCC) who are also the minerals planning authority (the decision maker) for this application.
- 1.3 The Environmental Statement (ES) presents the findings of an Environmental Impact Assessment² (EIA) for the Proposed Development. This document is the Non-Technical Summary of the ES submitted in support of the planning application.

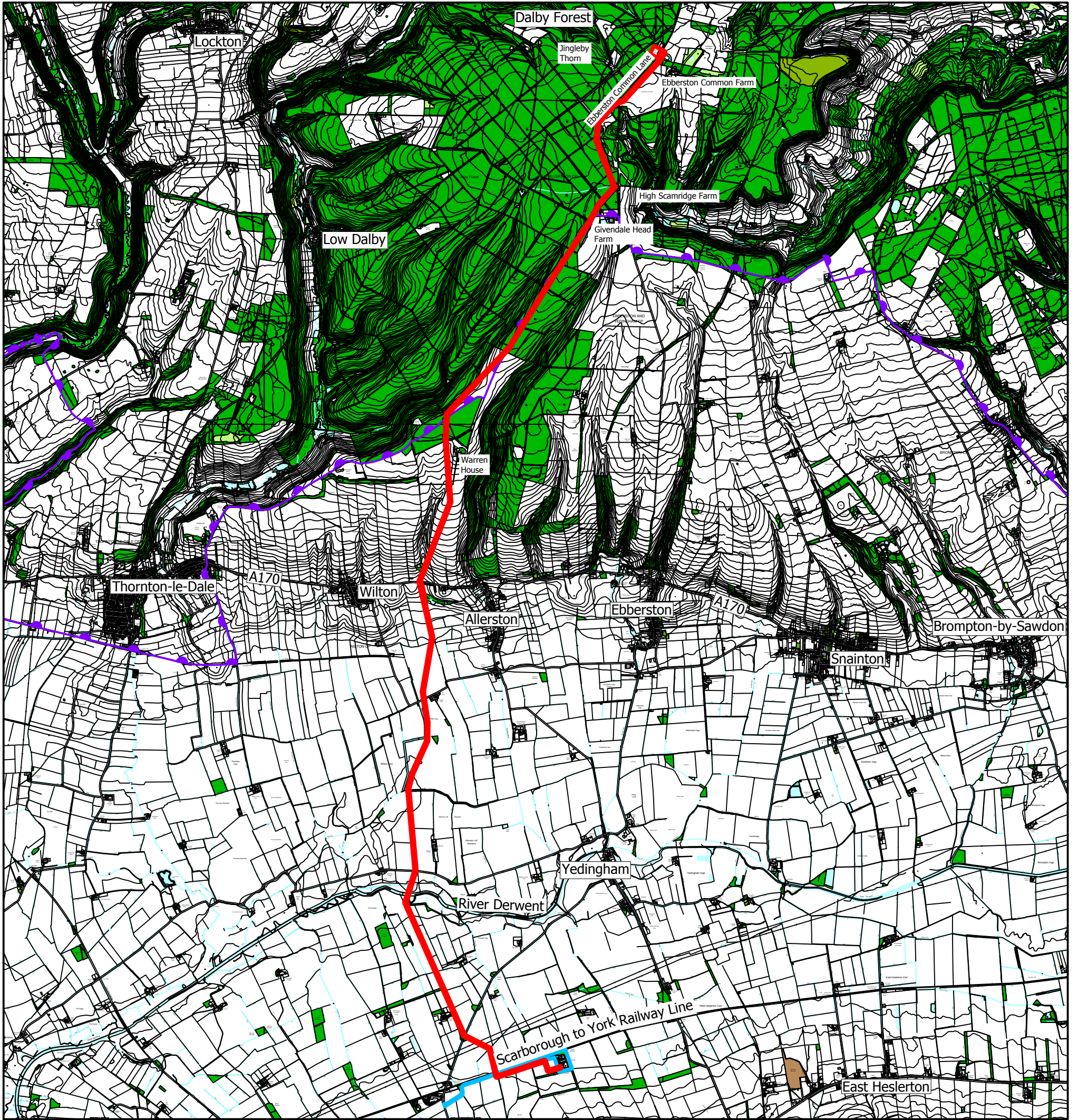
Background to the ES Addendum and NTS Addendum

1.3a At the time of the submission in August 2013, it was made clear in the ES that a separate planning application would be submitted to the NYMNPA and NYCC at a later date for the injection of produced water into the Sherwood Sandstone. Since that time, the Applicant and its advisors have made considerable progress in agreeing the technical process of water injection with the Environment Agency. Consequently, it is now possible to submit additional information about injection of the produced water into the Sherwood Sandstone within this Planning Application instead of it forming the subject of a separate planning application as discussed originally.


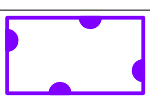
1.3b This document updates the Environmental Statement Non-Technical Summary (NTS) to account for the changes to the Proposed Development and assessment of

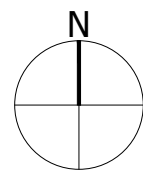
¹ A national park is an area designated for its special qualities and landscape rich in character and distinctiveness, wildlife, history and heritage.

² Prepared in accordance with the Town and Country Planning (Environmental Impact Assessment) Regulations 2011



LEGEND

-  Assessment Site Boundary
-  Other Land in Clients Ownership
-  North York Moors National Park



Project
Eberston Moor 'A' Well Site to Knapton Gas Pipeline
 Drawing Title
Site Location Plan

Date	Scale	Drawn by	Check by
16.08.2013	1:50,000 @A3	ML	MC
Project No	Drawing No	Revision	
19819	E015	A	



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Figure 1.1

likely significant effects on the environment as a result of the inclusion of the disposal of the produced water.

Availability of the ES Addendum and NTS Addendum

1.3c Additional copies of the ES Addendum and the NTS Addendum are available for viewing by the public during normal office hours in the planning department of NYMNPA and NYCC. Comments on ES Addendum and the NTS Addendum should be sent to the addresses below:

North York Moors National Park Authority
The Old Vicarage
Bondgate
Helmsley
York
YO62 5BP

North Yorkshire County Council
County Hall
Northallerton
North Yorkshire
DL7 8AH

1.3d Additional paper copies of the ES Addendum and NTS Addendum can be purchased at a cost of £75. The NTS Addendum can be obtained free of charge. Copies of the ES Addendum and NTS Addendum can be obtained on CD for £20. All documents are available from:

Knapton Pipeline Project
Barton Willmore LLP
Elizabeth House
1 High Street
Chesterton
Cambridge
CB4 1WB.

Tel: 01223 345555

Assessment Site Context

- 1.4 The Assessment Site, shown on **Figure 1.1** is located within the North York Moors National Park and Ryedale District. The existing Eberston Moor 'A' Well Site and northern extent of the gas pipeline corridor is located to the west of Eberston Common on the eastern edge of Dalby Forest before passing through the southern extent of the forest. The pipeline corridor between the Eberston Moor 'A' Well Site and Knapton Generating Station (KGS) is on a general north south alignment which passes between the villages of Allerston and Wilton and west of Yedingham. The pipeline corridor then continues across agricultural land before crossing the River Derwent, the railway between York and Scarborough and terminating at KGS where it connects into the existing facilities. The northern extent of the Assessment Site including the Eberston Moor 'A' Well Site is located within Dalby Forest while the majority of the pipeline corridor is located within agricultural fields within the Vale of Pickering.
- 1.5 Notable features within the vicinity of the Assessment Site include: North York Moors National Park; Dalby Forest; Tabular Hills Walk; various Scheduled Monuments³; isolated dwellings and farmsteads in proximity to the Assessment Site; River Derwent; railway between York and Scarborough; Public Rights of Way (PROW); and roads crossing through the Assessment Site including: A170; Wilton Ings Lane; Marishes Lane; B1258 Malton Road; and nearby unmarked roads.

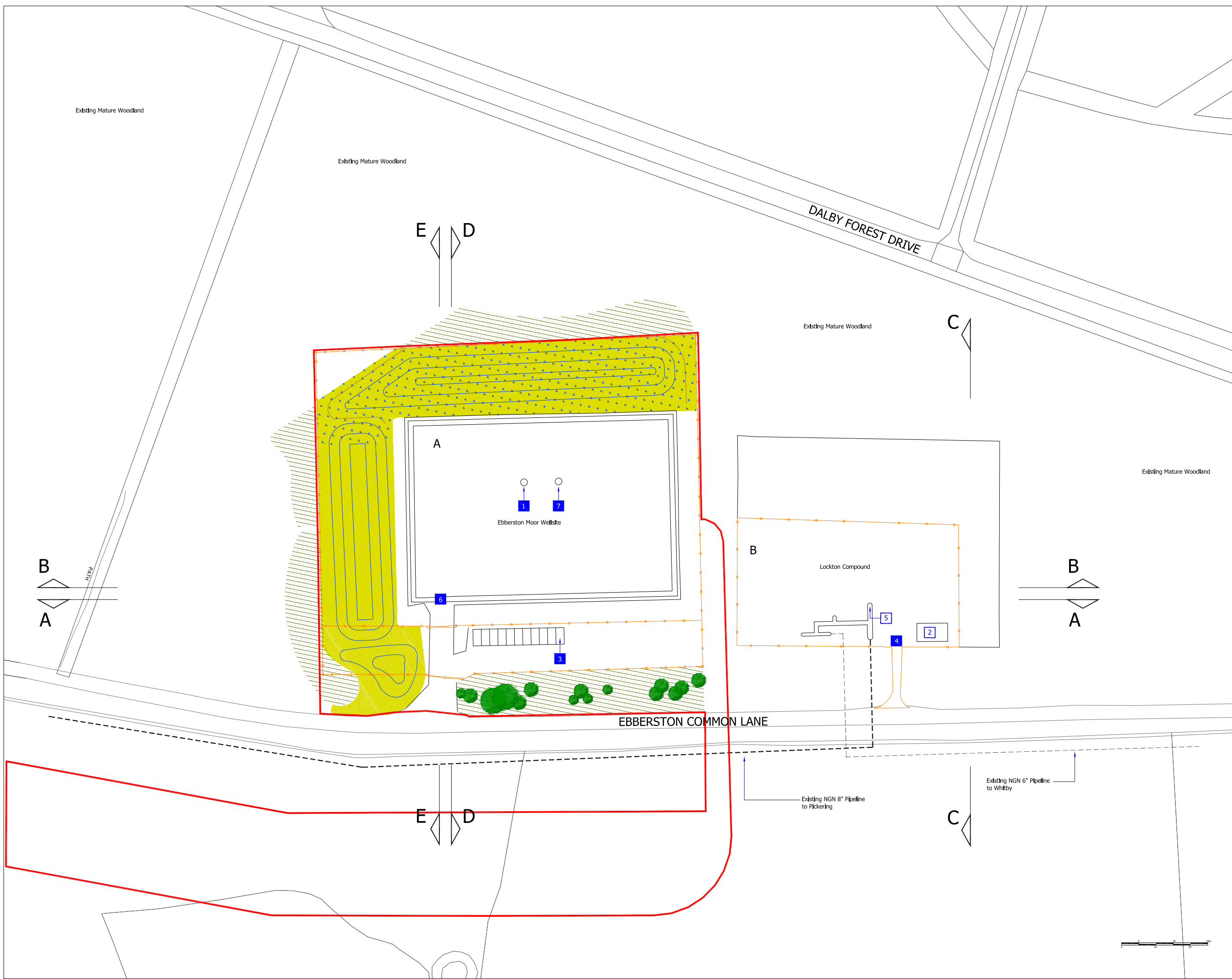
Description of the Assessment Site

- 1.6 The Assessment Site includes two key elements: Eberston Moor 'A' Well Site; and the pipeline corridor between Eberston Moor 'A' Well Site and KGS as shown in **Figure 1.1**.

Eberston Moor 'A' Well Site

- 1.7 The Eberston Moor 'A' Well Site as shown on **Figure 1.2** currently contains, a 0.66 ha area of flat bare ground (drilling platform), an existing borehole with an associated wellhead (Eberston Moor – 1 well) and a well cellar adjacent to the wellhead in the centre of the well site. The well site is covered with crushed hardcore which is placed over an impermeable membrane and connected into a lined perimeter drainage ditch. Soil bunds of between 2m and 4 m in height are located between the drainage ditch and perimeter fence along the western and southern perimeter of the well site. The bunds comprise a mixture of previously

³ A scheduled monument is a 'nationally important' archaeological site or historic building, given protection against unauthorized change



- EXISTING PLANTATION WITH ENRICHMENT PLANTING - REGENERATION PHASE MONITORED OVER 5-10YRS
- EXISTING FENCE
- SUBSOIL BUND (approx. 2300m³) FORMED AT MAXIMUM GRADIENT OF 1:3 TO 3m IN HEIGHT
- TOPSOIL BUND (approx. 1300m³) FORMED AT MAXIMUM GRADIENT OF 1:3 TO 2m IN HEIGHT
- EXISTING TREES
- EXISTING GROUND COVER
- EXISTING HEDGE
- EXISTING STRUCTURAL PLANTING

- Existing Gas Well
- Existing NGN Building
- Existing Car Parking 11 spaces
- Existing NGN Entrance
- Existing LTZ Pipe manifold
- Existing Well site Entrance
- Existing Drilling Cellars

Well Site Area A - 18,798 sqm

Figure 1.2

Project
EBBERSTON MOOR WELLSITE TO KNAPTON PIPELINE
 Drawing Title
EBBERSTON MOOR 'A' WELL SITE EXISTING BASELINE SCENARIO
 Date AUGUST 2013 Scale 1:500@A1 Drawn by YC Check by RP
 Project No 19819 Drawing No P_02 Revision A

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excavated soil and weathered bedrock. The surfaces of the bunds are vegetated with coarse grass and brush. In total the area of the well site including the bunds is 1.2 ha.

- 1.8 If the Eberston Moor EDS (described in Section 4) is granted planning permission and brought forward in 2014 prior to this Proposed Development, the baseline conditions on Eberston Moor 'A' Well Site will be altered from the current situation. During this scenario the well site will contain the facilities as shown on **Figure 1.3**.
- 1.9 The entire well site will be fenced. Between the fence and Eberston Common Lane existing screening will be retained and enhanced where possible. There will be an emergency access gate in the northeast corner of the well site adjacent to the drainage interceptor pit.

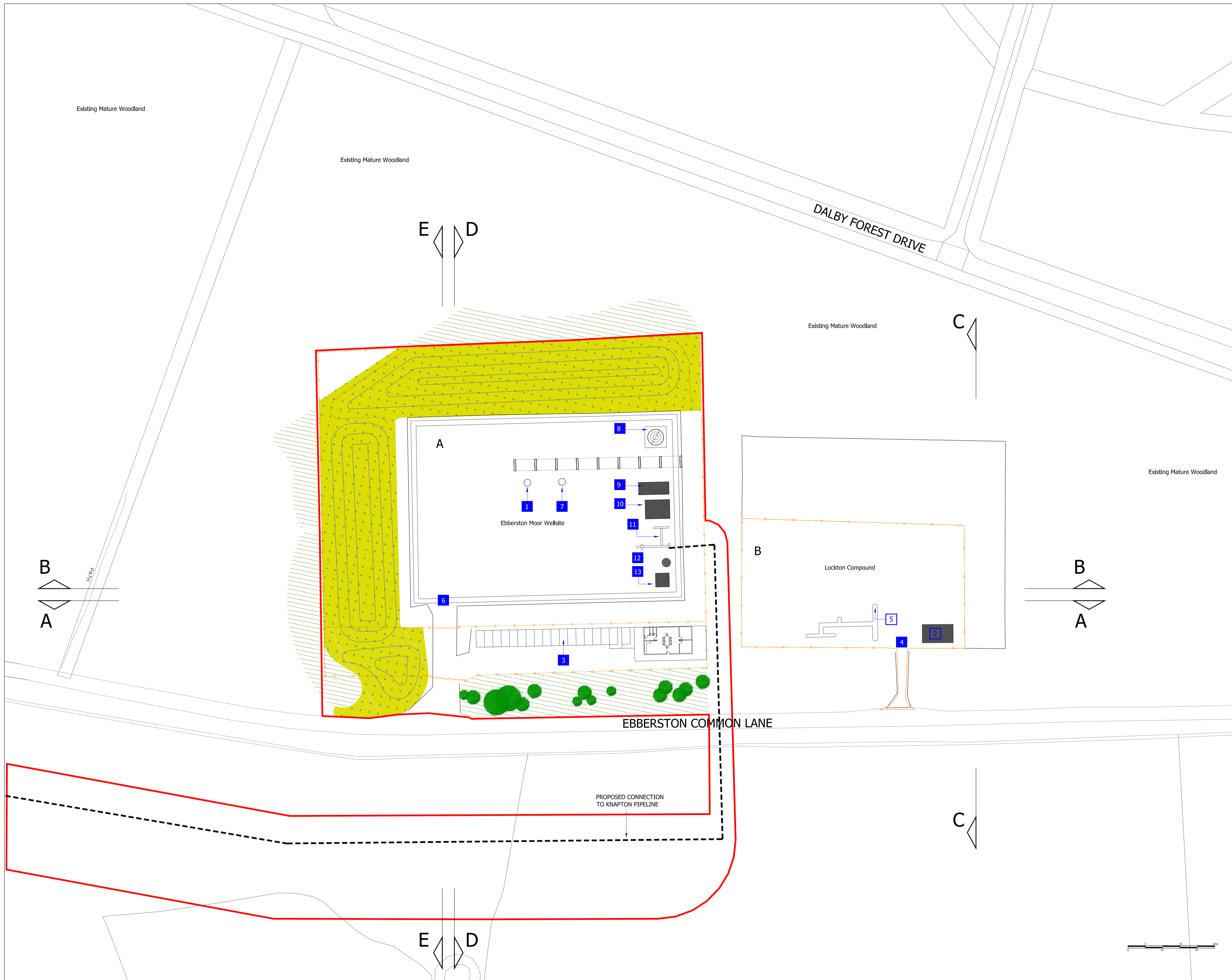
Pipeline corridor from Eberston Moor 'A' Well Site to KGS

- 1.10 The northern extent of the pipeline corridor is located within the elevated plateau of the Dalby Forest. From here it passes down a prominent escarpment, and beyond through a network of woodland, tree belts and hedgerow bounded fields south towards the Vale of Pickering where it crosses flat, large and open fields bordered by ditches and hedgerows until it reaches KGS. Along the route the corridor dissects watercourses including the River Derwent, a railway and roads. The pipeline corridor is 30m wide and 15.3 km long. The total area of the pipeline corridor is 51.11 ha.

2.0 ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY

Assessment Methodology

- 2.1 EIA assesses the pre-development (baseline) conditions and then compares them to the conditions with the Proposed Development in place during the construction, operational and decommissioning and restoration phases. Effects on the environment are defined as beneficial (positive) or adverse (negative) or negligible (no significant or noticeable effect). Adverse and beneficial effects can be minor, moderate or major. Some environmental disciplines use slightly different terms if there is specific guidance that promotes this. The terminology is explained in the ES.
- 2.2 Many factors are considered when determining whether effects would be adverse or beneficial and to what extent including the sensitivity of the environment (how sensitive an element of the environment is to change) and the magnitude of effect (how great the change from the baseline conditions would be).



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- TOPSOIL BUND (approx. 1300m³) FORMED AT MAXIMUM GRADIENT OF 1:3 TO 2m IN HEIGHT
- EXISTING TREES
- EXISTING GROUND COVER
- EXISTING HEDGE
- EXISTING STRUCTURAL PLANTING

- Existing Gas Well
- Existing NGN Building
- Existing Car Parking 18 spaces
- Existing NGN Entrance
- Existing LTZ Pipe manifold
Fire Water Tank: 50 Cubic Meters
Existing Well site Entrance
- Existing Drilling Cellars
- Water Storage Tank
- Gas Fired Heater
- Water Separator Building
- Pipeline Pig Trap Area
- Fire Water Tank: 50 Cubic Meters
- Gas Generator

Well Site Area A - 18,798 sqm

Figure 1.3

Project
EBBERSTON MOOR WELLSITE TO KNAPTON PIPELINE
 Drawing Title
EBBERSTON MOOR 'A' WELL SITE FUTURE BASELINE SCENARIO
 Date: AUGUST 2013 Scale: 1:500@A1 Drawn by: YC Check by: RP
 Project No: 19819 Drawing No: P_05 Revision: A

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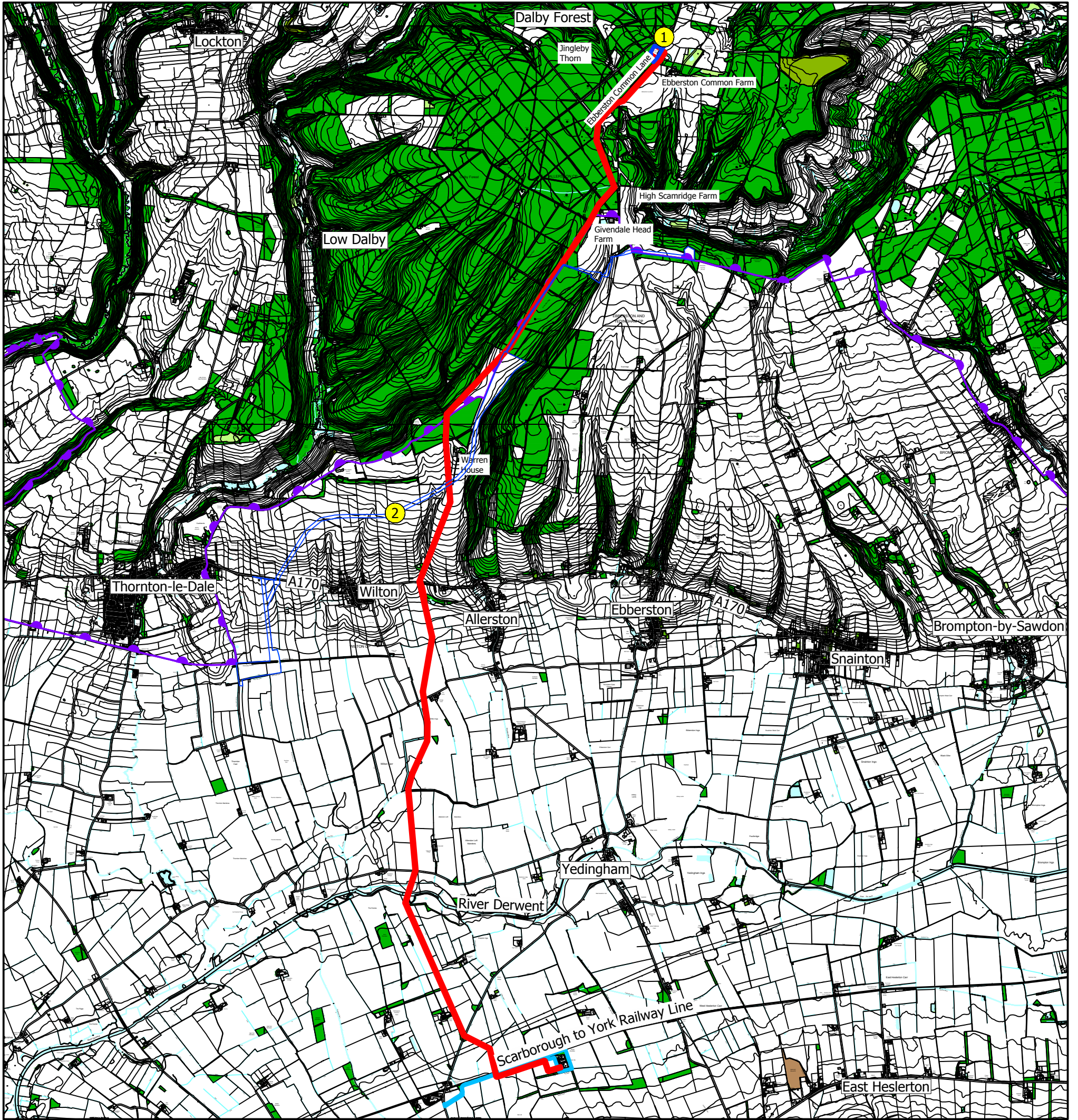
2.3 Some disciplines use numerical or quantitative methods to determine what the effects would be whereas others use descriptive or qualitative methods based on professional judgment and experience.

2.4 EIA is an objective process and describes the likely significant effects of a proposed development. It does not make judgments on whether a development should go ahead or not, but gives the decision making authority the information they need to make that decision.



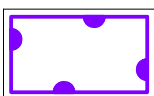
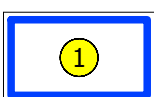
Cumulative Effects

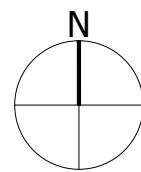
2.5 Within EIA, the cumulative effects of a development in conjunction with other consented but not yet built development in the area are considered. Cumulative effects are generally considered to arise from the combination of effects from the Proposed Development and from other proposed or permitted schemes in the vicinity as described in **Table 2** and shown on **Figure 2.1**.

Scheme	Description
Ryedale Gas Project (NY/2010/0159/ENV)	<p>The Ryedale Gas Project includes five principal elements:</p> <ul style="list-style-type: none"> • Gas production from the existing Eberston South Well Site; • The construction of two underground pipelines from the existing Eberston Well Site 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.
Eberston Moor Early Development Scheme (EDS) (NYM/2013/0477/EIA)	<p>Eberston Moor EDS planning application was submitted in July 2013 and therefore planning permission has not been granted at the time of submitting the planning application for this Proposed Development (i.e. Eberston Moor 'A' Well Site to Knapton Gas Pipeline).</p> <p>The project comprises the exploitation of conventional hydrocarbon resources only, for an operational period of up to five years, including:</p> <ul style="list-style-type: none"> • Gas production from one wellhead at the existing Eberston Moor 'A' Well Site; • Piping the produced gas to the adjoining Lockton Compound where the gas would be conditioned; • Injecting the conditioned gas via an existing Above Ground Installation (AGI) connection to a Northern Gas Network (NGN) pipeline that runs between Pickering and Whitby; and • Creation of two new access points off Eberston Common Lane. <p>If the Eberston Moor EDS is granted planning permission and is operational prior to this Proposed Development (Eberston Moor 'A' Well Site to Knapton Gas Pipeline) then the scheme will be in operation during the construction of the pipeline and will be considered as a cumulative development. Once the pipeline is operational the Eberston Moor EDS facilities on the well site will remain and be connected to the pipeline as part of this Proposed Development while the gas conditioning facilities on the Lockton Compound and the flare will be decommissioned and restored to their existing condition and will be assessed in conjunction with this Proposed Development as cumulative effects.</p>



LEGEND

-  Assessment Site Boundary
-  Other Land in Clients Ownership
-  North York Moors National Park
-  Cumulative Schemes
 - 1. Eberston Moor EDS
 - 2. Ryedale Gas Project



Project
Eberston Moor 'A' Well Site to Knapton Gas Pipeline
 Drawing Title
Cumulative Schemes

Date	Scale	Drawn by	Check by
16.08.2013	1:50,000 @A3	ML	MC
Project No	Drawing No	Revision	
19819	E016	A	



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Figure 2.1

Scheme	Description
	If the Eberston Moor EDS is not granted planning permission or is not operational prior to construction of this Proposed Development, then the Eberston Moor EDS will not be considered as a cumulative development and is not assessed during this scenario

Determining the Content of the ES

2.6 'Scoping' involves focusing the study (and hence the ES) on those issues of potential significance. A request for an EIA Scoping Opinion for the Proposed Development was submitted to North Yorkshire County Council (NYCC) on 6th February 2012 and the NYMNPAs on 21st March 2012. The scoping requests considered that the following environmental issues should be addressed in detail in the ES:

- Ecology;
- Landscape and Views;
- Air Quality;
- Noise and Vibration;
- Transport;
- Flood Risk, Hydrology and Drainage;
- Archaeology and Cultural Heritage;
- Socio Economics; and
- Ground Conditions

2.7 NYCC adopted a Scoping Opinion on 2nd July 2012 and NYMNPAs adopted a Scoping Opinion on 13th April 2012, both of which generally agreed with the scope set out above for the EIA. Since the adoption of the Scoping Opinions there have been design modifications to the Proposed Development which have been addressed within the ES.

Consultation Process

2.8 As part of the evolution of the Proposed Development, consultation has been undertaken with the local community and key stakeholders including: NYMNPAs, North Yorkshire County Council (NYCC), Ryedale District Council (RDC), English Heritage, Environment Agency, Natural England, Yorkshire Wildlife Trust and Yorkshire Water. The Applicant also carried out public exhibitions on 18th July in Allerston Village Hall and 19th July in the Church Room, Rillington. The public exhibitions provided an opportunity to inform local residents and key stakeholders, of progress with the Proposed Development and allow the local residents to feed back their comments on the proposals.

3.0 ALTERNATIVES

3.1 The EIA Regulations⁴ require that an applicant provides an outline of the main alternatives considered. The Applicant considered the following alternatives to the Proposed Development:

- No Development;
- Alternative locations for the well site;
- Alternative methods for treating gas;
- Alternative pipeline routes; and
- Alternative designs.

3.2 Extensive analysis has been undertaken to identify the physical and environmental constraints and opportunities of the Assessment Site and to inform the design of the Proposed Development. Feedback from statutory consultees and the public exhibitions has also informed the design.

3.3 The preferred option for this planning application, as it will form the second phase of the development of Ebberston Moor Gas Field, is to transfer the extracted gas via a pipeline to KGS where the natural gas will be used as fuel-gas for power generation. This option will minimise the long term environmental effects as much of the infrastructure required at both the well site and KGS will already be in place especially if this development follows on from the Ebberston Moor EDS development.

4.0 THE PROPOSED DEVELOPMENT

Background to the Project

4.1 The Ebberston Moor gas field (originally called Lockton) was discovered in 1966 and produced gas between May 1971 and 1974. Since the 1970s, further discoveries of gas have been made in the area. Interpretation of seismic data⁵ acquired by the Applicant for the fields shows that large areas of gas remain un-tapped, while further studies have improved the understanding of the reservoir's behaviour.

4.2 Knapton Generating Station (KGS) opened in May 1995. It is located in close proximity to the village of East Knapton and approximately 10 km to the east of Malton. KGS processes

⁴ The Town and Country Planning (Environmental Impact Assessment) (England) Regulations

⁵ Seismic data originates from surveys that investigate subterranean rock structures to provide a picture of underground rock structures that may yield petroleum, minerals and ores of economic value.

gas from the local gas fields including the Vale of Pickering and is used to generate electricity that can provide power the equivalent of up to 40,000 homes when run at capacity.

- 4.3 Ebberston Moor 'A' Well Site was first approved in 2006 and reprofiled in 2008. A further permission was granted to retain the existing well site in 2011. Temporary planning permission was then granted by the NYMNPA on 18 June 2013 to enable the Applicant to drill a sidetrack from the existing well within Ebberston Moor 'A' Well Site and the drilling of up to two additional appraisal boreholes.
- 4.4 The initial phase of development or Ebberston Moor EDS (ref: NYM/2013/0477/EIA) for which planning permission is currently being sought involves the exploitation of gas for an operational period of up to five years. E.g. If planning permission is granted in 2013, it is currently assumed that construction of Ebberston Moor EDS will commence in January 2014, with gas production commencing after July 2014.
- 4.5 This planning application seeks planning permission for the second phase of the development which is anticipated to be carried out after the Ebberston Moor EDS (or instead of the Ebberston Moor EDS if planning permission for the Ebberston Moor is not granted) on condition that the amount of gas available to be exploited is assessed to be sufficient to support investment in the future development of Ebberston Moor gas field.
- 4.6 The Proposed Development comprises the following elements:
1. Gas production from the existing Ebberston Moor 'A' Well Site including Ebberston Moor – 1 well; and
 2. Construction of an 8" (200 mm) diameter steel underground pipeline from the existing Ebberston Moor 'A' Well Site to deliver natural gas and a mixture of liquids found naturally with gas to the KGS at East Knapton where the natural gas will be will be used as fuel-gas to generate power.
- 4.7 If, as the Applicant anticipates, the Ebberston Moor EDS is constructed and operational prior to this Proposed Development, the structures and equipment on the Ebberston Moor 'A' Well Site will already be in place (see **Figure 1.3**) and therefore only the pipeline and its connections to the well site and KGS will need to be constructed as part of this Proposed Development. However, if the Ebberston Moor EDS is not constructed and operational prior to this Proposed Development all the structures and equipment required at Ebberston Moor 'A' Well Site as well as the pipeline will need to be constructed as part of this Proposed Development.

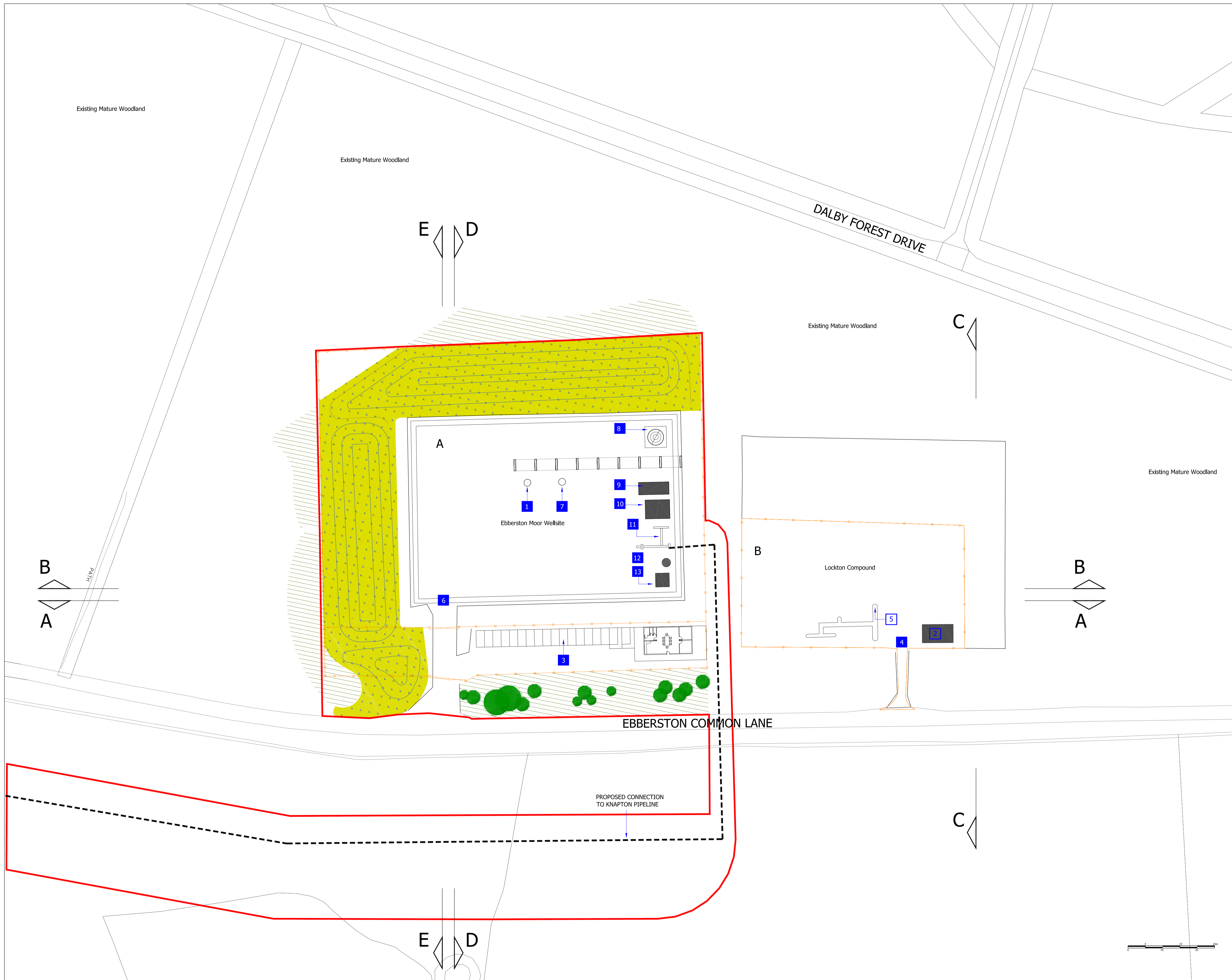
Description of the Proposed Development









Eberston Moor 'A' Well Site














- 4.8 The existing well site will be developed, if not already done so through the development of the Eberston EDS, as shown in **Figure 4.1** to allow for gas production. It is anticipated that the volume of gas to be produced will be at an annual average rate of 15 million standard cubic feet per day (mmscf/d).
- 4.9 The main equipment on the well site will include:
- Gas well;
 - Water disposal well;
 - Water storage tank;
 - Gas fired heater;
 - Water separator building;
 - Pipeline pig trap area;
 - Drainage interceptor pit;
 - Fire water tank (50 cubic metre);
 - 1 MW natural gas fuelled electric generator; and
 - Site office.
- 4.10 All storage tanks, loading and unloading areas will be sited on an impermeable and curbed surface with suitable drains, catchment and hydrocarbon separation equipment. A specially designed interceptor will be provided to clean rain and surface water within the site drains before leaving the Assessment Site through the soakaway.
- 4.11 The Proposed Development will be monitored by a System Control and Data Acquisition (SCADA) system and safety systems will be remotely operated via a telephone or satellite link to Knapton Generating Station (KGS). The operation of the Proposed Development will be carried out by the KGS management. It will be able to be remotely operated with operators available at KGS to respond to alarms and to carry out routine inspection and maintenance.

Produced Water Disposal

- 4.11a Any water produced during the production of gas will be disposed of via a water disposal well within the well site. Planning permission (NYM/2013/0068/FL) has already been granted for two gas appraisal wells and it is intended that one of the**



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-  Gas Fired Heater
-  Water Separator Building
-  Pipeline Pig Trap Area
-  Fire Water Tank: 50 Cubic Meters
-  Gas Generator

 Well Site Area A - 18,798 sqm

Figure 4.1

Project
EBBERSTON MOOR WELLSITE TO KNAPTON PIPELINE
 Drawing Title
**PROPOSED SITE PLAN
 EBBERSTON MOOR 'A' WELL SITE**
 Date: AUGUST 2013 Scale: 1:500@A1 Drawn by: YC Check by: RP
 Project No: 19819 Drawing No: P_05 Revision: A

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wells will be used for injecting the produced water into the Triassic Sherwood Sandstone rock layer beneath the well site.

Heights

- 4.12 **Table 2** provides the approximate heights of the tallest structures on the Assessment Site as shown on **Figure 4.1** during operation.

Table 2: Approximate Heights of Structures/Buildings during Operation

Structure/Buildings	Height (m)
Inlet separator	1.8m
200kw gas fired heater	1.8m
Water storage tank	4.8m
Site Office (to apex)	3.5m

Pipeline from Eberston Moor 'A' Well Site to KGS

- 4.13 One underground 8" diameter pipeline will be constructed 15.3 km from Eberston Moor 'A' Well Site to KGS to transport gas and mixture of liquids found naturally with gas (see **Figure 4.2**). The pipeline will be accompanied by a fibre optic cable within the 30m construction working width.
- 4.14 Once construction has been completed, a 10m easement will be maintained during the operational lifetime of the proposed pipeline for maintenance purposes.

Knapton Generating Station

- 4.15 The gas and liquids will be separated after arriving at KGS using existing facilities at the KGS. The gas will be used as fuel-gas to generate power while the liquids will be collected and then transported off site by tanker.

Access

- 4.16 Access to Eberston Moor 'A' Well Site is from the A170 via Eberston Lane and Eberston Common Lane. No unauthorised vehicles associated with the Proposed Development will use the Dalby Forest Drive. Eberston Common Lane and Eberston Lane are unclassified roads with passing places. Approximately 100m north of Givendale Head Farm, Eberston Common Lane becomes an unimproved public highway (gravel track). There is already an established access using this route to Eberston Moor 'A' Well Site and the adjacent Lockton Compound.

- 4.17 Access to the pipeline corridor is from the local road network including: A170; B1415 Penniston Lane; Allerston Lane; Marishes Lane and B1258 Malton Road where the pipeline crosses these roads.

Parking

- 4.18 Eighteen car parking spaces are already provided at the Eberston Moor 'A' Well Site and these will be retained and used during the Proposed Development. There will be no car parking spaces available along the pipeline during operation.

Landscaping

- 4.19 The landscape strategy for the Proposed Development has been designed with particular consideration to the topography, landscape and ecological constraints and opportunities identified on the Assessment Site. Landscaping works will involve some ground modelling works associated with careful felling of trees. Elsewhere within the Assessment Site, works will include soil preparation, tree and vegetation planting and seeding once the pipeline has been constructed. The existing screening along the frontage with the Eberston Common Lane will be retained and enhanced where possible.

Sustainable Drainage Measures

- 4.20 Sustainable Drainage Systems (SuDS) will be used to reduce flood risk, improve water quality, assist groundwater recharge whilst also providing amenity and wildlife benefits.
- 4.21 The existing drainage system at Eberston Moor 'A' Well Site will be upgraded to ensure that the well site is capable of safely containing, separating and disposing of both rainwater and any fluid spills from the tanks and piping. A closed drain system will recover and store any liquids drained from the process equipment, which will be disposed of in an approved manner. Surface water site drains will be sent to a receiving separator and then routed to a clean water discharge point.
- 4.22 Along the northern extent of the pipeline route between the well site and the A170 drainage will be reliant on the natural drainage of the land with the majority of surface water infiltrating into the ground. In contrast south of the A170 where the ground is impermeable, existing field drains will be modified to ensure that drainage of the fields remains unaffected by the presence of the pipeline. There will be no modifications to the drainage at KGS.

Utilities

- 4.23 The Proposed Development will connect into the existing telephone network in close proximity to the Assessment Site, with new infrastructure installed beneath roads, and verges wherever possible. Electric power will be generated on the well site by a 1 MW natural gas fuelled engine driven generator. Use of natural gas as fuel instead of diesel for power generation reduces the carbon footprint of the Proposed Development. Natural gas will also be used on the well site to fuel a heater.

Construction Programme

- 4.24 The current project schedule for the Proposed Development presumes that construction commences 2015 and gas production commences during 2016. The construction of the facilities and structures required on the Eberston Moor 'A' Well Site and the construction of the pipeline will occur simultaneously.
- 4.25 If the Eberston Moor EDS proceeds, all the structures and equipment on the Eberston Moor 'A' Well Site will be provided as part of that application and will not be constructed as part of this Proposed Development. However if the Eberston Moor EDS does not gain planning permission, but the Applicant still wishes to go ahead with this Proposed Development all the facilities on the well site will need to be constructed as part of this Proposed Development. The pipeline between the well site and KGS will be constructed as part of both scenarios.
- 4.26 A Construction Environmental Management Plan (CEMP) will be prepared for the Proposed Development that will provide the methods of managing environmental issues for all involved with the construction activities.
- 4.27 It is anticipated that working hours will be 07:00 to 18:00 Monday to Friday and 07:00 to 13:00 on Saturdays. All work outside these hours will be subject to prior agreement, and/or reasonable notice, by NYMNPA and/or NYCC which may impose certain restrictions. Night time working will be restricted to exceptional circumstances.

Decommissioning and Restoration

- 4.28 At the end of the operational life of the Proposed Development, which is expected to be 15 years, all the wells will be abandoned and Eberston Moor 'A' Well Site will be restored unless planning permission for future use of the site is secured. A restoration scheme will be agreed in writing with the Department for Energy and Climate Change (DECC), NYCC and

NYMNPAs and approved by the relevant landowners 12 months prior to the decommissioning and restoration commencing. The general aim of restoration would be to return the well site to forestry in a condition as close as practicable to its original state or to a combination of forestry and amenity uses.

- 4.29 The pipeline between Ebberston Moor 'A' Well Site and KGS will be left in situ with the ends capped to avoid further disturbance of the ground. There will also be no decommissioning or restoration at KGS.

5.0 ECOLOGY

- 5.1 The Assessment Site is not subject to any statutory or non-statutory nature conservation designations. The vegetation and habitats surrounding Ebberston Moor 'A' Well Site and the northern section of the pipeline where it passes through Dalby forest comprise mature commercial forestry plantation with the plant species being common and widespread and the habitats having low species diversity. The habitats in this area of the Assessment Site support breeding birds, bats and reptiles.
- 5.2 Between Warren House and the A170 there are sloping large agricultural fields bound by defunct hedgerows, while south of the A170 the fields are typically large and drained by numerous drainage ditches and the River Derwent, with occasional mature hedgerows retained as field boundaries. The habitats associated with agricultural fields and watercourses support breeding birds, badgers, bats, reptiles, white-clawed crayfish, water voles and otters.
- 5.3 No significant effects on ecological receptors have been identified during the construction, operation, decommissioning and restoration phases of the Proposed Development with mitigation measures put in place through the CEMP which will provide guidance on vegetation clearance timing and constraints in relation to reptile and bat mitigation during construction, decommissioning and restoration when the majority of adverse effects will occur. As all habitats will be reinstated post-construction, there is no potential for significant residual effects on protected species during the operational phase of the Proposed Development.
- 5.4 No significant cumulative effects have been identified between the Ryedale Gas Project, Ebberston Moor EDS and the Proposed Development during construction, operation, decommissioning or restoration.

6.0 LANDSCAPE AND VIEWS

- 6.1 The pipeline route crosses through 15.3 km of the North Yorkshire Moors and Vale of Pickering landscape. The northern section of the pipeline route between the Ebberston Moor 'A' Well Site and the A170 road is considered the most sensitive in landscape terms as it is located within both the National Park (Dalby Forest) and the Wolds and the Fringe of the Moors Area of High Landscape Value⁶. The Area of High Landscape Value adjoins the southern boundary of the National Park and covers the land across the escarpment and further south beyond the A170. The remaining landscape within the Assessment Site between the A170 and the KGS is characterised by agricultural fields delineated by hedgerows and ditches.
- 6.2 Due to the densely wooded character of the area within the National Park which the pipeline route traverses, views are contained and the effects limited to the immediate boundary of the Assessment Site. There are however open views of the pipeline route immediately adjacent to where it follows the alignment of Tabular Hills Walk at the well site.
- 6.3 From the southern edge of the National Park views to the south are curtailed by the escarpment edge at Warren House Farm. As the pipeline traverses down the escarpment, partial views of the Assessment Site are obtained where the orientation of the view, intervening topography and breaks in vegetation allow views. Further south within the open vale landscape, distant views are afforded north towards the escarpment, however these are only obtained through breaks in hedgerows and treebelts along local roads. In the southern end of the wooded copses and mature treebelts limit distant views with the KGS enclosed within woodland.
- 6.4 It is considered that the Proposed Development will not change the character of the existing Ebberston Moor 'A' Well Site as it already functions as a gas well site. The landscape effects resulting from the pipeline are limited to loss of field boundary hedgerows (including two potentially important hedgerows) and any associated trees along its 30m working corridor. However, as the majority of the Proposed Development is associated with the construction of the pipeline which is located underground, the effects are reversible, as on completion the land will be restored to a similar condition to that prior to construction, and all of the landscape features reinstated.
- 6.5 Once operational the Proposed Development comprises the Ebberston Moor 'A' Well Site and a 15.3km pipeline between the well site and the KGS. The only above ground elements of the

⁶ An Area of High Landscape Value is a non-statutory and locally designated area outside the national landscape designations, which is considered by the local planning authority to be of particular landscape value to the local area.

Proposed Development will be contained within the well site which is enclosed by the Dalby Forest and as such screens views from within close proximity.

- 6.6 In summary, it is considered that the Proposed Development will be effectively assimilated within the landscape and visual context, with no long term significant landscape or visual adverse effect.
- 6.7 There will be no likely significant cumulative effects as a result of the Ryedale Gas Project in combination with the Proposed Development. There will however be minor adverse cumulative effects associated with the Eberston Moor EDS and Proposed Development. These will occur during construction of the Proposed Development and operation of the Eberston Moor EDS and also during operation of the Proposed Development and decommissioning and restoration of the Eberston Moor EDS due their close proximity and nature of activities associated with the developments.

7.0 AIR QUALITY

- 7.1 The Assessment Site is located outside of an Air Quality Management Area (AQMA⁷) as all pollutant background concentrations comply with national air quality standards. The closest AQMA is 18 km south west at Malton.
- 7.2 The significance of effects for construction, decommissioning or restoration activities is considered to be negligible due to the distance of the activities from receptors, along with the dust management techniques that will be implemented through the CEMP. The effects associated with traffic are considered to be negligible, due to the small number of vehicles required to construct, operate, decommission and restore the Proposed Development. Operational emissions sources, if not already present through the operation of the Eberston Moor EDS, are also considered to be negligible, due to the small amounts of gas that will be combusted on-site and because of the best available technology that will be utilised on-site to manage emissions.
- 7.3 No likely significant cumulative effects have been identified between the Ryedale Gas Project, Eberston Moor EDS and this Proposed Development during construction, operation, and decommissioning and restoration.

8.0 NOISE

⁷ An Air Quality Management Area is a defined area by virtue of Section 82(3) of the Environment Act 1995, where it appears that the air quality objectives prescribed under the UK Air Quality Strategy will not be achieved.

- 8.1 There are few current sources of noise in the area surrounding the Assessment Site apart from weather, wildlife and farm animal activities, sporadic road vehicle movements, aircraft over-flights and agricultural operations.
- 8.2 Noise resulting from construction, decommissioning and restoration activities may be audible at the nearest noise-sensitive receptors (i.e. residential dwellings) in some circumstances. However, the levels of such noise will be completely acceptable with regard to the usual standards, and recommendations can be implemented to reduce noise levels to a minimum. For instance, working hours may be restricted to ensure that construction noise only occurs during the working day, and never in the evening or at night. No significant effects during construction, decommissioning and restoration are anticipated.
- 8.3 The noise arising from the operation of the Proposed Development at the well site will have no significant effect on the residential amenity at nearby dwellings (i.e. a negligible effect). Noise limits will be set so that the ambient noise levels outside all existing dwellings are not increased by normal operations on the well site. Items of noise-emitting plant will be specified and purchased prior to construction so that the Proposed Development operates within these limits. There is no noise associated with the operation of the pipeline along its route.
- 8.4 No likely significant cumulative effects have been identified between the Ryedale Gas Project, Ebberston Moor EDS and this Proposed Development during construction, operation, decommissioning or restoration.

9.0 TRANSPORT

- 9.1 The area surrounding the Assessment Site is accessed by the A64 to the south of KGS and the A170 which crosses the Assessment Site between Wilton and Allerston. In addition there are a number of B roads in the area including the B1258 and the B1415 as well as minor unclassified roads including Marishes Road and Malton Lane/Wilton Ings Lane.
- 9.2 During construction a number of access points will be required that will utilise the A64(T), A170, and B1258 as primary access routes. The A64(T) and A170 form part of the primary route network in Yorkshire, and the B1258 is recognised as a link road for HGVs between the two main roads. These three roads are considered to be suitable as an HGV access to the Assessment Site.

- 9.3 It is also considered that the established access to the north part of the Assessment Site from the A170 at Ebberston using Ebberston Lane and Ebberston Common Lane is appropriate, especially if subject to traffic restrictions including a speed limit and ensuring that the volume of traffic generated by both the construction and operational phases of this Proposed Development is less than those during the original site construction and drilling operations on Ebberston Moor 'A' Well Site.
- 9.4 The greatest effect of the Proposed Development is anticipated to be during the construction phase, whilst the decommissioning and restoration phases will have effects of minor adverse significance on cyclists, pedestrians and equestrians north of Givendale Head Farm. These effects will occur during the construction phase only.
- 9.5 The effect of the Proposed Development during operation is considered to be negligible. The Proposed Development will generate very few trips (with the majority to the well site) and these can be easily accommodated within the existing road network.
- 9.6 In terms of cumulative effects there will be minor adverse to negligible effects as a result of the Proposed Development in combination with Ebberston Moor EDS and Ryedale Gas Project due to the combined traffic flows associated with these projects.

10.0 FLOOD RISK, HYDROLOGY AND DRAINAGE

- 10.1 The well site and pipeline route north of the A170 are situated on permeable sandstones and is effectively free of the risk of flooding, being located in Flood Zone 1, which has a very low chance of flooding. The permeability of the bedrock combined with the impermeability of the underlying Oxford Clay Formations means that there are no surface watercourses in the vicinity of the Assessment Site and any rainfall soaks into the ground below which is located a shallow aquifer from which groundwater issues as springs to the west and south.
- 10.2 The Assessment Site south of the A170 is located on impermeable rocks of the Kimmeridge Clay Formation and the pipeline route passes through Flood Risk Zone 3 areas where the chances of flooding is higher associated with Friar Dike and River Derwent. Mitigation by using standard construction techniques will reduce any effects to negligible.
- 10.3 The Proposed Development will not significantly affect flood risk, hydrology and drainage during construction, operation or decommissioning and restoration provided the mitigation measures including best practice, the CEMP and minimisation of use of contaminants that could harm people and the environment are implemented.

- 10.4 There will also be negligible cumulative effects resulting from the Ryedale Gas Project, Ebberston Moor EDS and Proposed Development.

11.0 ARCHAEOLOGY AND CULTURAL HERITAGE

- 11.1 A number of cultural heritage resources have been identified along the route of the Proposed Development. Several prehistoric monuments, most of them nationally-important Scheduled Monuments⁸, are located in close proximity to the well site and pipeline route. The Proposed Development would pass below one of the Scheduled Monuments although the effects will be minimised by using auger boring, directional drilling or suitable alternative installation techniques to install the pipeline at a sufficient depth beneath the monument.
- 11.2 The remaining Scheduled Monuments within the Study Area are not located on the pipeline route. However, during the construction phase, the Proposed Development may have minor adverse effects on the setting and visual integrity of the nearby Scheduled Monuments. These include barrows close to the northern terminus of the pipeline route, and another barrow near Warren House.
- 11.3 Other, non-designated, archaeological remains have been identified on the pipeline route. These include: the site of a post-medieval farmhouse towards the northern end of the route; north of the A170 road, prehistoric ditches near Warren House and Givendale Head Farm; Roman pottery scatters south of the River Derwent; and Iron Age-Roman and medieval ditches at the southern end of the pipeline route. The construction phase of the Proposed Development will have a minor adverse effect on these remains. The operational and decommissioning and restoration phases will have no effect.
- 11.4 Further non-designated archaeological remains have been identified within the Study Area, in close proximity to the pipeline route. The construction phase of the Proposed Development will have a negligible-minor adverse effect on these remains. The operational and decommissioning and restoration phases will have no effect.
- 11.5 It is proposed that programmes of archaeological work are undertaken in specified areas where the construction activities will potentially disturb undeveloped ground that may contain archaeological features and finds. This will involve trial trench evaluation prior to construction, and archaeological monitoring during construction groundwork which will result in the recording of previously unknown cultural heritage remains.

⁸ Schedule Monuments have statutory protection under the Ancient Monuments, and Archaeological Area Act 1979.

- 11.6 The cumulative effects of the Proposed Development, in conjunction with the Ryedale Gas Project and Ebberston Moor EDS, will be negligible or minor beneficial. This is because archaeological recording will accompany the developments (in those areas not already impacted by ground reduction) and will provide information on the presence or absence of cultural heritage resources at the sites of the development schemes.

12.0 SOCIO-ECONOMICS

- 12.1 The Proposed Development is anticipated to generate short-term, temporary employment for up to approximately 50 workers during construction and up to approximately 10 workers during decommissioning and restoration and long-term employment for three workers (already employed by the Applicant), in trades likely to have a readily available, local labour force. In addition, indirect economic effects will be felt within the North York Moors National Park and North Yorkshire through local procurement of supplies and services.
- 12.2 Once operational, the Proposed Development will help deliver secure supplies of energy through the production of gas. The gas supply infrastructure will add to the reliability of national energy supply from which every user of the system benefits creating long-term major beneficial effects.
- 12.3 In terms of cumulative effects, during construction of the Proposed Development there will be in the region of 200 short-term, temporary jobs during construction and restoration and decommissioning and 32 long-term jobs during operational phases while the Ebberston Moor EDS is being decommissioned and restored reducing to 22 during the remainder of the operational phase of the Proposed Development. It is, therefore, considered that there will be a minor beneficial effect on employment.
- 12.4 Increased gas production during operation of the development schemes when combined will cause a major beneficial effect on national energy supply. At no time will both the Ebberston Moor EDS and the Proposed Development be operational providing gas to both the existing NGN pipeline and KGS.

13.0 GROUND CONDITIONS AND CONTAMINATION

- 13.1 The Assessment Site overlies a mixture of alluvium, glacial till, clay, calcareous sandstone, mudstone and shelly limestone. The gas to be extracted through the Proposed Development is located deep below ground in the Permian Kirkham Abbey Formation (KAF) reservoir.

13.2 No significant soil and geology impacts are expected to occur throughout the construction, operational and decommissioning and restoration phases, provided that standard mitigation measures are implemented. Mitigation measures include:

- installation of drip trays beneath oil tanks/engines/gearboxes/hydraulics where appropriate;
- handling of oil, fuel and other chemicals including process waste in securely bunded areas; and
- the production of an emergency spillage action plan.

13.3 There will also be negligible cumulative effects resulting from the Ryedale Gas Project, Eberston Moor EDS and Proposed Development.

13A.0 PRODUCED WATER DISPOSAL

13A.1 The water to be produced during the production of gas is from the gas reservoir within the Permian Kirkham Abby Formation (KAF). The produced water is highly saline with salt concentrations greater than would be found in seawater. The produced water will be injected into Sherwood Sandstone which is located below the KAF. The produced water originating from the KAF will typically have twice the salinity than the Sherwood Sandstone formation water. In addition both waters show significant naturally occurring hydrocarbons related to the presence of natural gas. The water found in the KAF and Sherwood Sandstone beneath the well site is not used for drinking water or any other uses and is separated from drinking water and other usable water supplies vertically and horizontally by impermeable rock.

13A.2 During construction there is potential for contamination of water supplies relating to the inadequate construction of the borehole. Measures will be put in place through use of best available technology and best practice to minimise potential for contamination of water supplies. After implementation of the mitigation measures, the residual effect during construction would be negligible.

13A.3 During operation, the injection of produced water into the water already present in the Sherwood Sandstone will result in the localised displacement of the existing water. This displacement will occur more than 40 km from groundwater and therefore will not affect groundwater used for drinking water or other uses.

Therefore there will be negligible effect as a result of injecting produced water into the Sherwood Sandstone.

13A.4 There will be negligible effects during decommissioning and restoration once gas production has ceased with appropriate sealing of the injection well and removal of potential contaminants from the Assessment Site.

13A.5 There will also be negligible cumulative effects resulting from the Ryedale Gas Project and Proposed Development due to the distance between the two schemes and only the Proposed Development is proposing to inject produced water into the Sherwood Sandstone.

14.0 RESIDUAL EFFECTS AND CONCLUSIONS

14.1 The Proposed Development will result in the following beneficial effects:

- The recording of previously unknown cultural heritage remains where found during construction of the Proposed Development;
- Supplying a significant area of North Yorkshire with locally produced energy;
- The creation of up to 50 construction, and 10 demolition and restoration jobs, for people with skills that are readily available in the local labour market;
- Introduction of indirect economic vitality to the local area through local procurement of supplies and services during construction;
- Securing the present employment of the Applicant's employees who will be in charge of operating the facility;
- Providing additional and new business to local businesses engaged in transport, engineering, maintenance and supply; and
- Improvement of the UK's ability to manage fluctuations (daily, weekly and seasonally) which occur in gas supply and demand and thus enabling indirect reductions in costs for householders and commercial and industrial companies.

14.2 The ES has also identified a number of adverse effects which will mainly occur during construction and demolition and restoration phases which include the following:

- Loss of breeding bird habitat;
- Changes to a limited number of views associated with construction activities from residential properties, roads and public rights of way;
- Local changes to landscape features, character and the National Park as a result of

construction activities;

- Temporary disruption to users of the surrounding road network;
- Potential for mobilisation of contaminants resulting in the deterioration of surface and ground water quality;
- Potential for dust emissions resulting from the clearance of on-site structures and groundworks; and
- Potential for noise and vibration disturbance to the nearby residents.

14.3 However, the implementation of the mitigation measures outlined within the CEMP during construction such as the use of site hoarding, dust and noise suppression measures and temporary drainage will result in many adverse effects being minimised or avoided.

14.4 There will also be adverse residual effects during operation of the Proposed Development resulting from the following:

- Changes to a limited number of views from residential properties, roads and public rights of way;
- Local changes to the National Park;
- Visual and landscape effects on Eberston Low Moor Round Barrow and Givendale Head Pit alignment Scheduled Monuments and their setting; and
- Increased traffic movement affecting the setting of Eberston Low Moor Round Barrow Scheduled Monument.

14.5 Once decommissioning and restoration has been completed after up to 15 years of operational activities in scenario 1 (future planning permission is secured for the well site) many of the effects on the environment will generally be neutral or slightly beneficial. There will be more beneficial effects in scenario 2 (no future planning permission is secured for the well site) as the well site will be decommissioned and restored to its original state of forestry. The pipeline between Eberston Moor 'A' Well Site and KGS will be left in situ with the ends capped to avoid further disturbance of the ground. There will also be no decommissioning or restoration at KGS.

