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SPALDING ENERGY EXPANSION OPEN CYCLE GAS TURBINE UNIT: GAS AND DRAINAGE CONNECTIONS ENVIRONMENTAL REPORT

**SPALDING ENERGY EXPANSION OPEN CYCLE GAS TURBINE UNIT:
GAS AND DRAINAGE CONNECTIONS**
ENVIRONMENTAL REPORT

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LIST OF ABBREVIATIONS

AGI	Above Ground Installation
AONB	Area of Outstanding Natural Beauty
CCGT	Combined Cycle Gas Turbine
CEMP	Construction Environmental Management Plan
DEMP	Decommissioning Environmental Management Plan
eGRF	existing Gas Reception Facility
EIA	Environmental Impact Assessment
FRA	Flood Risk Assessment
ha	hectares
HAZCON	Hazard and Construction
HAZOP	Hazard and Operability
HDD	Horizontal Directional Drill
HRSG	Heat Recovery Steam Generator
HSE	Health and Safety Executive
IGEM	Institute of Gas Engineers and Managers
km	kilometres
MW	megawatt
nGRF	new Gas Reception Facility
NPPF	National Planning Policy Framework
NPPG	National Planning Practice Guidance
OCGT	Open Cycle Gas Turbine
OS	Ordnance Survey
PIG	Pipeline Inspection Gauge
PRoW	Public Rights of Way
SAC	Special Area of Conservation
SEE	Spalding Energy Expansion
SEEL	Spalding Energy Expansion Limited
SHDC	South Holland District Council
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Urban Drainage System

1. INTRODUCTION

1.1 Background to the Spalding Energy Expansion Open Cycle Gas Turbine Unit / Overview of the Proposed Development

- 1.1.1 On 11 November 2010, Consent under Section 36 of the Electricity Act 1989 was granted and a direction that planning permission be deemed to be granted under Section 90 of the Town and Country Planning Act 1990 was made (the Original Consent and the 2010 Deemed Planning Permission) for a generating station to be known as the Spalding Energy Expansion (SEE) at West Marsh Road, Spalding, Lincolnshire.
- 1.1.2 On 30 October 2015, a variation to the Consent under Section 36C of the Electricity Act 1989 was granted and a direction that the Conditions of the 2010 Deemed Planning Permission be varied under Section 90(2ZA) of the Town and Country Planning Act 1990 was made (the Varied Consent and the 2015 Deemed Planning Permission).
- 1.1.3 Condition 2 of the Varied Consent provides that SEE: “*shall be up to 945 [megawatts] MW capacity*” and, at Condition 2(a), comprise either:
- (i) Up to two Combined Cycle Gas Turbine (CCGT) unit(s) (including for each CCGT unit: a gas turbine; a Heat Recovery Steam Generator (HRSG); steam turbine plant; and, associated equipment) with a total rated electrical output of up to 945 MW; or,
 - (ii) One CCGT unit (including: a gas turbine; a HRSG; steam turbine plant; and, associated equipment) with a rated electrical output of up to 645 MW, with Open Cycle Gas Turbine (OCGT) unit(s) (including for each OCGT unit: a gas turbine; and, associated equipment) with a total rated electrical output of less than 300 MW.
- 1.1.4 Condition 4(2) of the Varied Consent and Condition (53) of the 2015 Deemed Planning Permission require that, prior to the commencement of SEE, Spalding Energy Expansion Limited (SEEL) (a wholly owned subsidiary of InterGen) notify the Secretary of State and South Holland District Council (SHDC) which one of the gas turbine technology options in Condition 2(a) has been selected and provide details of the capacity of each gas turbine technology.
- 1.1.5 On 7 June 2017, SEEL notified the Secretary of State and SHDC that the gas turbine technology option selected for SEE comprises that set out at Condition 2(a)(ii). That is, one CCGT unit with a rated electrical output of up to 645 MW with OCGT unit(s) with a total rated electrical output of less than 300 MW. Also on 7 June 2017, the Secretary of State confirmed discharge of Condition 4(2) of the Varied Consent and Condition (53) of the 2015 Deemed Planning Permission.
- 1.1.6 The OCGT unit(s) with a total rated electrical output of less than 300 MW secured a 15 year contract in the 2016 T-4 Capacity Market Auction, and is expected to commence construction in time to meet its commitments under this contract (principally to be in operations by 1 October 2020).
- 1.1.7 As such, SEEL intends to commence SEE in phases, of which the first phase will entail the commencement of the development of the OCGT unit(s) less than 300 MW. Further development will be undertaken in a subsequent phase(s). In order to give effect to the phasing contemplated for SEE, on 22 June 2017 an application was made under Section 96A of the Town and Country Planning Act 1990 to make non-material changes to the Conditions of the 2015 Deemed Planning Permission. The non-material changes sought to allow for details to be submitted prior to commencement of a specified phase of SEE. On 7 August 2017, the non-material amendments to the Conditions of the 2015 Deemed Planning Permission were granted (H16-0605-17).
- 1.1.8 The OCGT unit(s) will burn natural gas only. For the first phase of development, the natural gas will be brought to site via a new connection into the existing underground high-pressure natural gas pipeline that serves the existing Spalding CCGT generating station. This connection will be made from the existing Gas Reception Facility (eGRF) located on the east side of West Marsh Road.

- 1.1.9 The existing underground high-pressure natural gas pipeline has sufficient capacity to serve the existing Spalding CCGT generating station and the OCGT unit(s). However, it would not have sufficient capacity for overall SEE (e.g. one CCGT unit with a rated electrical output up to 645 MW and OCGT unit(s) with a total rated electrical output of less than 300 MW). Therefore, for the subsequent phase(s) (including the commencement of the development of the CCGT unit) the natural gas will be brought to site via a new underground high-pressure natural gas pipeline to be constructed between the SEE site and the existing National Grid National Gas Transmission Network Number 7 Feeder Pipeline via an extension to the existing Above Ground Installation (AGI) at Wragg Marsh. On 8 June 2010, planning permission under the Town and Country Planning Act for this development was granted (Reference: H16-0135-10). On 11 June 2015, a request to extend the time limit on the planning permission for this development was granted (Reference: H16-0293-15).
- 1.1.10 Collected surface water will be discharged from the OCGT unit(s) site. For the first phase of development, it is intended that the collected surface water from the OCGT unit(s) site will be discharged via a new connection into the existing surface water drainage system of the existing Spalding CCGT generating station.
- 1.1.11 Accordingly, the Proposed Development includes:
- The Gas Connection, comprising a new underground high-pressure natural gas pipeline and a new Gas Reception Facility (nGRF) to connect the eGRF to the OCGT unit(s) site located on the west side of West Marsh Road; and,
 - The Drainage Connection, comprising interfaces between the OCGT unit(s) site and the existing Spalding CCGT generating station surface water drainage system.

1.2 Purpose of this Document

- 1.2.1 This Document is an Environmental Report which has been prepared in respect of an application for planning permission under the Town and Country Planning Act 1990 for the Proposed Development.
- 1.2.2 Figure 1 (and Figure 3 based on Google mapping data) provides the location of the application site. The application site covers an area of 0.94 hectares (ha).
- 1.2.3 The application site lies approximately 2 kilometres (km) to the north east of Spalding town centre. Within the immediate surrounding area, the predominant land use is industrial.

1.3 Structure of this Document

- 1.3.1 This Document comprises:
- **Section 1:** This brief **Introduction**.
 - **Section 2:** A brief **Description of the Proposed Development**, including a description of the application site.
 - **Section 3:** An overview and summary of the **Process and Methodology** adopted for this Environmental Report.
 - **Section 4:** A view on the **Requirement for Environmental Impact Assessment** and the **Conclusions** of this Environmental Report.
- 1.3.2 Additional supporting information is provided in the Appendices.

2. DESCRIPTION OF THE PROPOSED DEVELOPMENT

2.1 The Proposed Development

- 2.1.1 SEEL intends to commence SEE in phases, of which the first phase will entail the commencement of the development of the OCGT unit(s) less than 300 MW. Further development will be undertaken in a subsequent phase(s). In order to give effect to the phasing contemplated for SEE, on 22 June 2017 an application was made under Section 96A of the Town and Country Planning Act 1990 to make non-material changes to the Conditions of the 2015 Deemed Planning Permission. The non-material changes sought to allow for details to be submitted prior to commencement of a specified phase of SEE. On 7 August 2017, the non-material amendments to the Conditions of the 2015 Deemed Planning Permission were granted (H16-0605-17).
- 2.1.2 The OCGT unit(s) will burn natural gas only. For the first phase of development, the natural gas will be brought to site via a new connection into the existing underground high-pressure natural gas pipeline that serves the existing Spalding CCGT generating station. This connection will be made from the eGRF located on the east side of West Marsh Road.
- 2.1.3 The existing underground natural gas high-pressure natural gas pipeline has sufficient capacity to serve the existing Spalding CCGT generating station and the OCGT unit(s). However, it would not have sufficient capacity for overall SEE (e.g. one CCGT unit with a rated electrical output up to 645 MW and OCGT unit(s) with a total rated electrical output of less than 300 MW). Therefore, for the subsequent phase(s) (including the commencement of the development of the CCGT unit) the natural gas will be brought to site via a new underground high-pressure natural gas pipeline to be constructed between the SEE site and the existing National Grid National Gas Transmission Network Number 7 Feeder Pipeline via an extension to the existing AGI a Wragg Marsh. On 8 June 2010, planning permission under the Town and Country Planning Act for this development was granted (Reference: H16-0135-10). On 11 June 2015, a request to extend the time limit on the planning permission for this development was granted (Reference: H16-0293-15).
- 2.1.4 Collected surface water will be discharged from the OCGT unit(s) site. For the first phase of development, it is intended that the collected surface water from the OCGT unit(s) site will be discharged via a new connection into the existing surface water drainage system of the existing Spalding CCGT generating station.
- 2.1.5 Accordingly, the Proposed Development includes:
- The Gas Connection, comprising a new underground high-pressure natural gas pipeline and an nGRF to connect the eGRF to the OCGT unit(s) site located on the west side of West Marsh Road; and,
 - The Drainage Connection, comprising interfaces between the OCGT unit(s) site and the existing Spalding CCGT generating station surface water drainage system.
- 2.1.6 Figure 1 (and Figure 3 based on Google mapping data) provides the location of the application site. Figure 2¹ (and Figure 4 based on Google mapping data) provides the overall layout.

The Gas Connection

- 2.1.7 The Ordnance Survey (OS) Grid Reference of the eGRF is 526100, 324844. Figure 5² provides the layout of the eGRF.
- 2.1.8 Figure 6³ provides details of the extension to the eGRF. The extension includes:
- Provision of a 'Hot-Tap' connection to the existing natural gas pipeline;
 - Additional above-ground piping, including mechanical isolation and safety valves;

¹ Based on Murphy Drawing Number 0031-1000 amended for this application.

² Based on Murphy Drawing Number 0031-1000 / 0031-1003 amended for this application.

³ Based on Murphy Drawing Number 0031-1003 amended for this application.

- Space for temporary Pipeline Inspection Gauge (PIG⁴) facilities;
 - Additional roads and security fencing; and,
 - Extension to the existing landscape / visual screening provision.
- 2.1.9 The 'Hot-Tap' connection allows the connection to be made without an interruption to the natural gas supply to the existing Spalding CCGT generating station. The mechanical isolation and safety valves will isolate the natural gas within the existing piping from the new piping.
- 2.1.10 Figure 2 (and Figure 4 based on Google mapping data) shows the route of the new underground high-pressure natural gas pipeline. From the extension to the eGRF, the route:
- Heads west for approximately 50 m under West Marsh Road towards the existing Spalding CCGT generating station; then,
 - Turns and heads south for approximately 125 m parallel with West Marsh Road towards the OCGT unit(s) site.
- 2.1.11 The section of the route under West Marsh Road will most likely be constructed via trenchless techniques (e.g. auger bore / Horizontal Directional Drilling (HDD)), and the section parallel with West Marsh Road will most likely be constructed via a 'cut-and-cover' technique. For the trenchless techniques, the application area includes provision for 'stringing out' of the pipeline sections.
- 2.1.12 Figure 7⁵ provides details of the nGRF. The nGRF includes:
- Above-ground piping, including mechanical isolation and safety valves;
 - Temperature regulations facilities;
 - Pressure reduction / compression facilities;
 - Gas filtering and metering facilities;
 - Control instrumentation and kiosks; and,
 - Roads and security fencing.
- 2.1.13 Landscaping / visual screening provision for the nGRF will be provided by the overall landscaping / visual screening provision for the OCGT unit(s) site⁶.
- 2.1.14 With the exemption of temperature regulation and pressure reduction / compression, additional treatment of the natural gas is not anticipated within the Proposed Development, and no natural gas will be stored within the Proposed Development.
- 2.1.15 In addition to the extension to the eGRF and the nGRF, the only permanent above ground feature of the Proposed Development will be a marker post⁷ (or marker posts) placed on the route to inform of the existence and whereabouts of underground high-pressure natural gas pipeline, and provide contact information for anyone wishing to carry out work in the area. The marker posts would be approximately 0.6 m high.
- 2.1.16 Insert 2.1 presents a photograph of the marker post for the existing gas connection from the eGRF to the Spalding CCGT generating station.

⁴ These facilities will be brought to the Proposed Development site as / when necessary during inspection and maintenance. There are a number of different types of PIGs. A 'cleaning PIG' is used to clean pipelines, where the PIG is driven through the pipeline by water or compressed air. A 'gauging PIG' is used to check the internal diameter of the pipeline, and detect any irregularities. A 'calliper PIG' is used to confirm pipeline geometry.

⁵ Based on Murphy Drawing Number 0031-1001 amended for this application.

⁶ Further information on landscaping / screening provision is provided in: Details Pursuant to Condition 40 of the 2015 Deemed Planning Permission (Scheme of Landscaping and Creative Conservation): Landscape and Creative Conservation Management Plan (The terra firma Consultancy Ltd. Document Ref: 871807-10 (dated June 2017).

⁷ Such posts are an important feature of any underground high-pressure pipeline. Regulation 16 of the Pipelines Safety Regulations 1996 states that: "For the purposes of ensuring that no damage is caused to a pipeline, the operator shall take such steps to inform persons of its existence and whereabouts as are reasonable".

INSERT 2.1: PHOTOGRAPH OF A MARKER POST



The Drainage Connection

- 2.1.17 The drainage connection will comprise an interface between the OCGT unit(s) site and the existing Spalding CCGT generating station surface water drainage system.
- 2.1.18 Surface water from impermeable areas of the OCGT unit(s) site will be collected via drains. These drains will combine and connect into a catch basin located in the south-east corner of the existing Spalding CCGT generating station site. The routing of the associated drainage pipework will likely follow that of an existing drainage ditch. From the catch basin, the surface water will flow towards the existing attenuation pond located in the north-east corner of the existing Spalding CCGT generating station site. As and when necessary, surface water collected in the attenuation pond will be pumped into the River Welland. All surface water discharge into the River Welland will be controlled via the limits set within the Environmental Permits for the respective sites.

Minor Refinements

- 2.1.19 With regards to these facilities, it should be noted that minor refinements may occur. These would be a result of (for example): accuracy of existing pipelines / services / utilities information; and, further ground investigations. Any such minor refinements will be limited and will take place within the application area.

2.2 Design

- 2.2.1 The gas connection will be designed to comply with the requirements of the Institution of Gas Engineers and Managers (IGEM) 'Steel Pipelines and Associated Installations for High Pressure Gas Transmission' (Edition 5) (Pipeline Design Standard: IGEM/TD/1).
- 2.2.2 The drainage connection will be designed to implement the guidance and principles of:
- The (Sustainable Drainage System) SuDS Manual (C753), (Construction Industry Research and Information Association) CIRIA (2015) (replacing the SuDS Manual (C697) CIRIA (2007)); and,
 - Drainage of Development Sites – A Guide (X108), CIRIA (2004).

2.3 Construction

- 2.3.1 The majority of effects on the environment of underground pipelines and pipework (and their associated infrastructure) occur during construction.
- 2.3.2 Construction of the Proposed Development will take approximately 6 months, and will be undertaken by an experienced Construction Contractor in accordance with the relevant industry requirements (e.g. regulations, codes and standards). During construction of the Proposed Development, the likely standard activities comprise:
- Mobilisation / pre-construction activities;
 - Main Construction activities;
 - Commissioning activities; and,

- Reinstatement activities.

2.3.3 These activities are likely to be required in full or in part and represent proven methods that have been developed over many years from experience on similar projects / developments.

Activities

Mobilisation / Pre-Construction Activities

- 2.3.4 These activities include: the setting up of a Construction Compound(s); surveying and pegging of the final route(s); establishment and 'fencing-off' of the working width(s) / working area(s); vegetation clearance / hedgerow removal; and (where necessary), provision of land drainage schemes.
- 2.3.5 The Construction Compound would be a temporary facility to provide: offices and welfare facilities; car parking; site vehicle parking; equipment, materials and tools storage; and, waste management facilities. The Construction Compound will be located within the application area.
- 2.3.6 The routes for the gas connection and drainage connection will be surveyed to establish the location of existing pipelines / services / utilities. Following these surveys, the routes from the gas connection and drainage connection will be pegged and the location of existing pipelines / services / utilities will be identified.
- 2.3.7 All main construction activities will take place within a predefined working width / working area. After the surveying and pegging, the working width / working area will be established and fenced-off. In most areas, the fencing will comprise strands of plain or barbed wire and / or square mesh netting as considered appropriate. Access to the working width / working area will be from pre-defined points.
- 2.3.8 Prior to the commencement of the main construction activities, any vegetation clearance / hedgerow removal will be undertaken. To comply with ecological requirements, vegetation clearance / hedgerow removal should take place during the winter months. In addition, where necessary, land drainage schemes will be installed to help prevent water logging of the working width / working area.

Main Construction Activities

For Trenchless Techniques

- 2.3.9 A section of the gas connection (under West Marsh Road) will most likely be constructed via trenchless techniques such as auger bore or HDD.
- 2.3.10 Auger boring is a relatively simple trenchless technique that limits surface disturbance, and is used where the disturbance caused by a 'cut-and-cover' technique may be regarded as unacceptable. For auger boring, two drilling pits are dug (one at either end of the section). The sides of the drilling pits are then graded with a gentle slope or, if there is limited space, supported with interlocking sheets and frames. The drilling pits are dug wide enough and long enough to take a set of rails (on which the auger boring equipment will run) and a full length of pipeline. During auger boring, a short length of sacrificial pipeline is normally placed between the drilling head and the live pipeline, such that the pipeline can be thrust through the ground until it reaches the reception pit. After the live pipeline is positioned through the drilled hole, it will be tied into the rest of the pipeline length.
- 2.3.11 HDD is normally used for long crossing (e.g. dual carriageways / wide rivers), or at particularly sensitive crossings where alternative trenchless techniques prove to be unfeasible. During HDD, the drill enters the ground at a shallow angle to bore a small pilot hole. The drill is then steered to follow a pre-determined route to achieve the required clearance from the obstacle. The drill then emerges on the opposite side of the obstacle. The diameter of the drilled hole is then increased incrementally by subsequent pull-throughs of a reamer or hole-opener, until the drilled hole is of a suitable size for the installation of the pipeline. During installation, a fabricated length of pipeline is connected

to the end of the drill (on the opposite side of the obstacle) which is rotated and withdrawn pulling the pipeline into position. The installed pipeline will then be tied into the rest of the pipeline length. During HDD, bentonite (a naturally-occurring fine clay) is normally used as a drilling lubricant.

- 2.3.12 The surveys undertaken will be essential in determining which trenchless technique is the most appropriate.

For 'Cut-and Cover' Techniques

- 2.3.13 A section of the gas connection (parallel with West Marsh Road) and the drainage connection will most likely be constructed a 'cut-and-cover' technique. A 'cut-and-cover' technique includes: topsoil stripping; pipe-stringing; welding / linking and joint coating; and, trenching and laying.
- 2.3.14 Topsoil would be stripped from within the working width / working area and stored in a way that prevents it being mixed with sub-soil or being damaged by over-compaction.
- 2.3.15 The gas connection and drainage connection are likely to be constructed from pre-coated lengths of pipeline / pipework. Therefore, once required the pipe sections would be strung-out along the routes of the gas connection and drainage connection. Bends would be installed for changes in direction.
- 2.3.16 The pipeline / pipework would be welded / linked to form continuous connections. Each weld / link will be tested and inspected, and any faults detected would be repaired / replaced and re-inspected. Joint coating will be applied to ensure the pipeline / pipework is coated along its entire length.
- 2.3.17 Once the pipeline / pipework is ready, a trench will be excavated and the pipeline / pipework will be laid to adhere to the minimum depth of cover requirements. The trench will then be backfilled with the excavated soils.

Commissioning Activities

- 2.3.18 Following construction (but before operation), pre-commissioning and commissioning tests will be undertaken.

Reinstatement Activities

- 2.3.19 Reinstatement will be carried out within the same year as construction, unless prevented by adverse weather.

Construction Working Hours

- 2.3.20 Normal construction working hours will be 07:00 to 19:00 hrs Mondays to Fridays, and 07:00 to 17:00 hrs on Saturdays. No construction work on any Sundays or Bank Holidays is proposed, unless such construction work is associated with an emergency or does not cause existing ambient background noise levels to be exceeded.
- 2.3.21 Should a need arise (due to technical constraints or similar) to undertake construction work outside the above normal construction working hours, prior written approval from SHDC will be sought.

Construction Environmental Management

- 2.3.22 Construction environmental management will be via a Construction Environmental Management Plan (CEMP). A CEMP for the construction of the OCGT unit(s) has been submitted to and approved by SHDC (H16-0791-17). Further information is provided in: Details Pursuant to Condition 14 of the 2015 Deemed Planning Permission: Construction Environmental Management Plan (Document Ref: APC-PSO-HSE-CEMP-004-Rev000, Dated 18/08/2017).
- 2.3.23 The objectives of the CEMP are to:
- Identify legal, environmental and other obligations and requirements appropriate to construction of the Proposed Development;

- Provide a framework to comply with the identified legal, environmental and other obligations and requirements through appropriate mitigation and management measures;
- (Based on the identified mitigation and management measures), provide the basis for setting objectives and targets for construction of the Proposed Development; and,
- Demonstrate a professional approach to environmental management.

2.3.24 Whilst there are separate Construction Contractors for the Proposed Development and the OCGT unit(s), the overarching objectives of the separate CEMPs will be comparable. The approved OCGT unit(s) CEMP will be used as a template for the gas and drainage connections CEMP.

Construction Emissions and Residues

2.3.25 Table 2.2 provides a summary of the likely construction emissions and residues. Table 2.2 also provides a summary of the likely 'embedded' measures to mitigate and manage the construction emissions and residues.

2.3.26 These embedded measures relate to the use of established and proven best practice / standard practice methods. As noted by Table 2.2 the embedded measures related to the inclusion of separate Management Plans within the CEMP.

TABLE 2.2: SUMMARY OF CONSTRUCTION EMISSIONS AND RESIDUES

	<i>Likely Construction Emission / Residue</i>	<i>Embedded Measures</i>
Emissions to Air	Emissions arising from: • Dust-generating activities; • Plant / equipment; • Vehicle movements; and, • Accidental / unplanned emissions / releases / spills.	The potential for emissions will be managed via the CEMP. The CEMP will include: • A 'Pollution Prevention and Emergency Response Plan'; and, • A 'Dust and Emissions-to-Air Management Plan'.
Noise and Vibration	Emissions arising from: • Noise-generating / vibration-generating activities; • Plant / equipment; and, • Vehicle movements.	The potential for emissions will be managed via adherence to the construction working hours and the CEMP. The CEMP will include: • A 'Noise and Vibration Management Plan'.
Lighting	Use of lighting to ensure that construction personnel can move around the Proposed Development site safely during the hours of darkness.	The potential for lighting nuisance will be managed via adherence to the construction working hours and the CEMP.
Emissions to Soil / Sub-Soil	Emissions arising from: • Discharges of pollutants to land; • Accidental / unplanned emissions / releases / spills; and, • Release of unexpected ground-based contaminants across the Proposed Development site.	The potential for emission will be managed via the CEMP. The CEMP will include: • A 'Pollution Prevention and Emergency Response Plan'; and, • An 'Unexpected Contaminated Land Plan'.
Wastes	The types of waste that are expected to be produced include: clearance wastes; non-hazardous construction wastes; and, office wastes.	Wastes will be managed via the CEMP. The CEMP will include: • A 'Site Waste Management Plan'.
Emissions to Water	Emissions arising from: • Discharges of pollutants to water; and, • Accidental / unplanned emissions / releases / spills.	The potential for emission will be managed via the CEMP. The CEMP will include: • A 'Pollution Prevention and Emergency Response Plan'.
Heat	There will be no material emissions of heat.	N / A
Radiation	There will be no material emissions of radiation.	N / A

2.4 Operation

- 2.4.1 The operational lifetime of the Proposed Development will equal that of the OCGT unit(s) (approximately 35 years).

Activities

- 2.4.2 After commissioning, the connections will be operated and maintained in such a manner as to keep them safe and in good condition. No losses (of natural gas or collected surface water) to the surrounding environment are anticipated.

Operational Working Hours

- 2.4.3 The Proposed Development will be capable of continuous operation, and will be unmanned during typical operation. Regular inspection / maintenance visits will be undertaken.

Operational Environmental Management

- 2.4.4 For the gas connection, operational environmental management procedures will be agreed with the Health and Safety Executive (HSE). The gas connection will be equipped with control and protection systems which will continuously and automatically monitor variables from a central off-site host computer.
- 2.4.5 For the drainage connection, operational environmental management procedures will be implemented to ensure compliance with the limits set within the Environmental Permits for the respective sites.

Operational Emissions and Residues

- 2.4.6 Table 2.3 provides a summary of the likely operational emissions and residues. Table 2.3 also provides a summary of the likely 'embedded' measures to mitigate and manage the operational emissions and residues. These embedded measures relate to the use of established and proven best practice / standard practice methods.

TABLE 2.3: SUMMARY OF OPERATIONAL EMISSIONS AND RESIDUES

	<i>Likely Operational Emissions /Residue</i>	<i>Embedded Measures</i>
Emissions to Air	For the gas connection, there will be occasional, controlled emissions of natural gas at the extension to the eGRF and the nGRF. The volumes of any natural gas emitted will be small and will dissipate quickly. For the drainage connection, there will be no material emissions to air.	N / A
Noise and Vibration	There will be no material emissions of noise and vibration.	N / A
Lighting	The Proposed Development includes no additional operational lighting ⁸ .	N / A
Emissions to Soil / Sub-Soil	There will be no material emissions to soil / sub-soil.	N / A
Wastes	The Proposed Development will not produce material amounts of solid waste / trade effluent / foul sewage. In addition, there will be no need for any storage / collection of waste.	N / A
Emissions to Water	For the gas connection, there will be no material emissions to water. For the drainage connection, there surface water from the OCGT unit(s) site will eventually be pumped into the River Welland (via the existing Spalding CCGT generating station surface water drainage system and attenuation pond). All surface water discharge into the River Welland will be controlled via the limits set within the Environmental Permit.	N / A
Heat	There will be no material emissions of heat.	N / A
Radiation	There will be no material emissions of radiation.	N / A

⁸ The eGRF includes existing low-level operational lighting to ensure that operational personnel can move around the site safely during the hours of darkness.

2.5 Decommissioning

- 2.5.1 At the end of the useful life of the OCGT unit(s) (after approximately 35 years), the Proposed Development will be decommissioned. Decommissioning will take account of the environmental legislation in place at the time. Notice will be given to the relevant statutory authorities, including SHDC, and any necessary permission(s) will be acquired.

Activities

- 2.5.2 For the gas connection, based on current best practice, the underground high-pressure natural gas pipeline will be left in place and stabilised (e.g. by filling with an inert gas such as nitrogen) to ensure that the pipeline does not become a hazard.
- 2.5.3 For other aspects of the Proposed Development which are to be removed, the likely working hours / environmental management measures / emissions and residues are expected to be similar to those for construction.

Decommissioning Working Hours

- 2.5.4 Normal decommissioning working hours are likely to be similar to the normal construction working hours.

Decommissioning Environmental Management

- 2.5.5 The Decommissioning Contractor will be required to prepare and implement a Decommissioning Environmental Management Plan (DEMP). Similar to the CEMP, the objectives of the DEMP will be to:
- Identify legal, environmental and other obligations and requirements appropriate to decommissioning of the Proposed Development;
 - Provide a framework to comply with the identified legal, environmental and other obligations and requirements through appropriate mitigation and management measures;
 - (Based on the identified mitigation and management measures), provide the basis for setting objectives and targets for decommissioning of the Proposed Development; and,
 - Demonstrate a professional approach to environmental management.

Decommissioning Emissions and Residues

- 2.5.6 The likely decommissioning emissions and residues are expected to be similar to the construction emissions and residues.

2.6 The Application Site

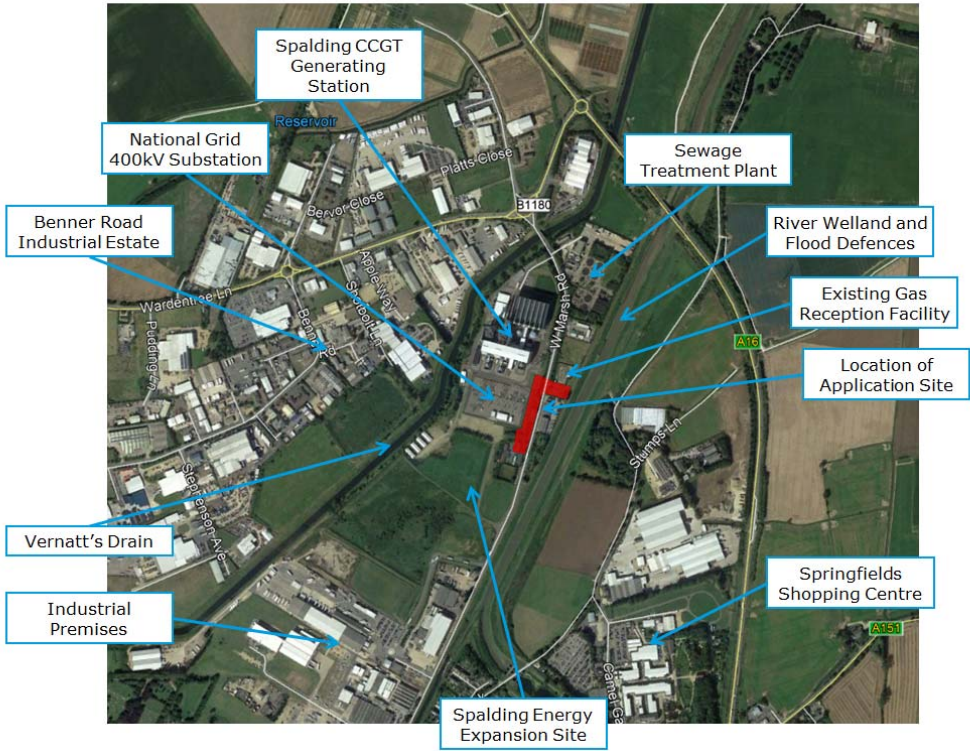
- 2.6.1 Figure 1 (and Figure 3 based on Google mapping data) provides the location of the application site. The application site covers an area of 0.94 ha. Based on this area, the Proposed Development is considered to comprise 'Minor Development' (e.g. has a site area less than 1 ha) for the purposes of an application for planning permission under the Town and Country Planning Act 1990. The application site lies approximately 2 km to the north east of Spalding town centre.
- 2.6.2 The Proposed Development site is located in an area classified by the Environment Agency as a Flood Zone 3.
- 2.6.3 Within the immediate surrounding area, the predominant land use is industrial, with some residential properties located further afield. Insert 2.2 presents the location of the application site within the context of the immediate surrounding area.
- 2.6.4 The wider surrounding area is predominantly rural, with the predominant land uses being agricultural / horticultural or related to industrial food processing.
- 2.6.5 Access to the Proposed Development site will be from:
- The existing access to the Spalding CCGT generating station (Gate A / Gate B);

- The existing access to the eGRF; and / or,
- The existing access to the Spalding Energy Expansion site (Gate C).

2.6.6 These accesses are all located on West Marsh Road.

2.6.7 There will be no new vehicle or pedestrian access points, and no alterations will be made to the existing accesses. There will be no new public roads or Public Rights of Way (PRoW). The Proposed Development will not require any diversions / extinguishments of any public roads or PRoW.

INSERT 2.2: LOCATION OF APPLICATION SITE WITHIN THE CONTEXT OF IMMEDIATE SURROUNDING AREA

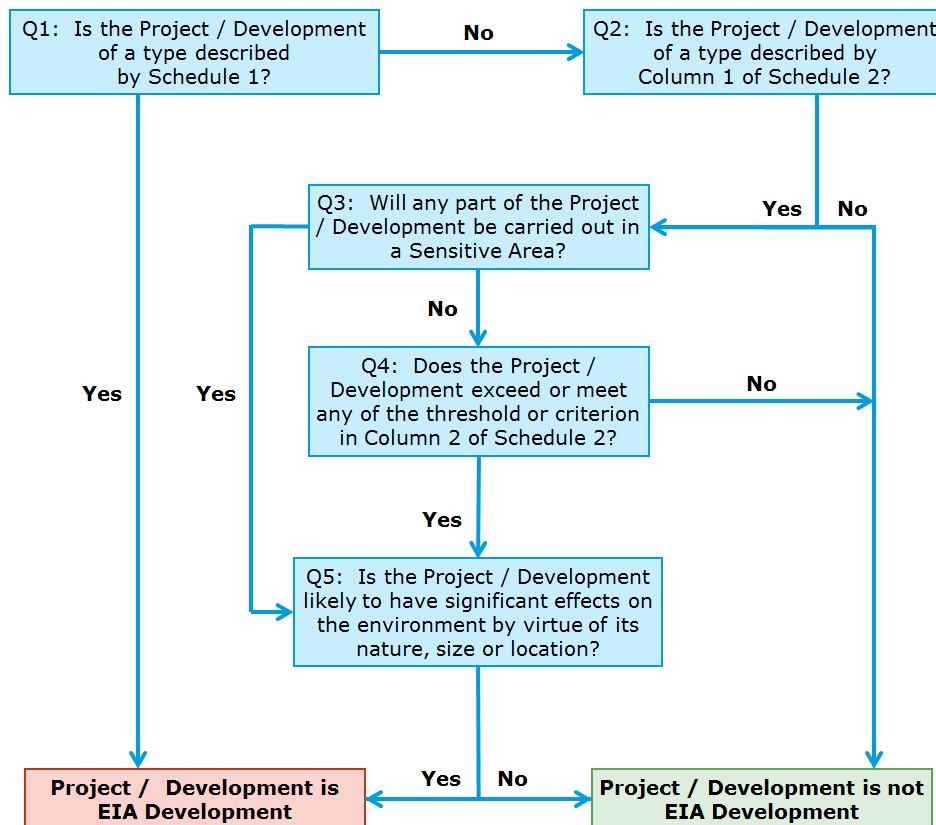


3. PROCESS AND METHODOLOGY

3.1 Overview

- 3.1.1 The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (the Environmental Impact Assessment (EIA) Regulations) apply to applications for planning permission under The Town and Country Planning Act 1990.
- 3.1.2 Regulation 2 of the EIA Regulations defines: “EIA Development” as “development which is either:
- (a) Schedule 1 development⁹; or
 - (b) Schedule 2 development¹⁰ likely to have significant effects on the environment by virtue of factors such as its nature, size or location”.
- 3.1.3 In order to determine whether the Proposed Development comprises EIA Development, Insert 3.1 provides an overview of the process and methodology adopted for this Environmental Report¹¹. The subsequent sub-sections below responds to each of the questions in Insert 3.1.

INSERT 3.1: PROCESS AND METHODOLOGY



3.2 Q1: Is the Project / Development of a Type Described by Schedule 1?

- 3.2.1 The Proposed Development is not of a description mentioned in Schedule 1, and therefore is not considered to be Schedule 1 development.

⁹ Regulation 2 of the EIA Regulations defines Schedule 1 development as: “development, other than exempt development, of a description mentioned in Schedule 1”.

¹⁰ Regulation 2 of the EIA Regulations defines Schedule 2 development as: “development, other than exempt development, of a description mentioned in Column 1 of the table in Schedule 2 where: (a) any part of that development is to be carried out in a sensitive area; or (b) any applicable threshold or criterion in the corresponding part of Column 2 of that table is respectively exceeded or met in relation to that development”.

¹¹ Insert 3.1 has been adapted from the EIA Screening Flowchart provided by the National Planning Practice Guidance (NPPG). Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/574326/eia1_030.pdf

3.3 Q2: Is the Project / Development of a Type Described by Column 1 of Schedule 2?

- 3.3.1 Part of the Proposed Development (the gas connection) is of a description mentioned in Column 1 of Schedule 2. In particular at Part 3 (Energy Industry) (b) the description includes: *"industrial installations for carrying gas, steam and hot water"*.

3.4 Q3: Will any part of the Project / Development be carried out in a Sensitive Area?

- 3.4.1 Regulation 2 of the EIA Regulations defines: *"Sensitive Areas"* as:

- "(a) land notified under section 28(1) (sites of special scientific interest) of the Wildlife and Countryside Act 1981;*
- (b) a National Park within the meaning of the National Parks and Access to the Countryside Act 1949;*
- (c) the Broads;*
- (d) a property appearing on the World Heritage List kept under article 11(2) of the 1972 UNESCO Convention for the Protection of the World Cultural and Natural Heritage;*
- (e) a scheduled monument within the meaning of the Ancient Monuments and Archaeological Areas Act 1979;*
- (f) an area of outstanding natural beauty designated as such by an order made by Natural England under section 82(1) (areas of outstanding natural beauty) of the Countryside and Rights of Way Act 2000;*
- (g) a European site within the meaning of regulation 8 of the Conservation of Habitats and Species Regulations 2010".*

- 3.4.2 Therefore, with regards to the application site:

- In terms of Sites of Special Scientific Interest (SSSI), the closest is Surfleet Lows SSSI, located approximately 3.5 km to the north.
- In terms of National Parks, the closest is The Broads, located over 95 km to the east.
- In terms of The Broads, this is located over 95 km to the east.
- In terms of the World Heritage List, the closest property is Derwent Valley Mills, located over 90 km to the west.
- In terms of Scheduled Monuments, there are three within a 5 km radius. These are:
 - Pinchbeck Engine, located approximately 1 km to the north;
 - Wykeham Chapel (a moated monastic grange and retreat house), located approximately 2.2 km to the north east; and,
 - A churchyard cross in St Mary's Churchyard, located approximately 3.3 km to the east.
- In terms of Areas of Outstanding Natural Beauty (AONB), the closest is the Norfolk Coast AONB, located over 30 km to the east.
- In terms of European sites, the closest are:
 - Baston Fen Special Area of Conservation (SAC) (also a SSSI), located approximately 15 km to the south west; and,
 - The Wash Special Protection Area (SPA) (also a National Nature Reserve (NNR) and Ramsar Site, and co-located with The Wash and North Norfolk SAC), located approximately 15 km to the east.

3.4.3 Therefore, no part of the Proposed Development will be carried out in a Sensitive Area.

3.5 Q4: Does the Project / Development exceed or meet any of the Threshold or Criterion in Column 2 of Schedule 2?

3.5.1 For Part 3 (Energy Industry) (b) developments (*“industrial installations for carrying gas, steam and hot water”*), the associated applicable threshold / criteria is that: *“the area of works exceeds 1 hectare”*.

3.5.2 Whilst the area of the application site (e.g. the area of works) is lower than the threshold / criterion, as a precautionary measure the Proposed Development is considered meet the applicable threshold / criterion.

3.6 Q5: Is the Project / Development likely to have Significant Effect on the Environment by virtue of its Nature, Size or Location?

3.6.1 The process of determining whether or not a project / development is likely to have significant effects on the environment by virtue of factors such as its nature, size or location is known as ‘Screening’.

3.6.2 Based on an understanding of the current environmental baseline conditions¹², the screening provides a series of questions designed to identify whether the Proposed Development is likely to have effects on the environment. Where there is identification of potential effects, the screening is also designed to identify whether these are likely to be significant effects. Where there is identification of possible significant environmental effects, the screening is also designed to determine the nature and scope of any assessment.

3.6.3 Table 3.1 provides the results of the screening exercise.

3.6.4 Based on Table 3.1, the Proposed Development is not likely to have a significant effect on the environment by virtue of its nature, size or location. No material effects are identified.

¹² The current environmental baseline conditions are well understood from the surveys undertaken for the March 2009 Environmental Statement (prepared in support of the application for the Original Consent and the 2010 Deemed Planning Permission) and the April 2015 Environmental Statement Further Information Document (ES FID) (prepared in support of the application for the Varied Consent and the 2015 Deemed Planning Permission). In addition, a Site Visit was undertaken on 12/09/2017.

TABLE 3.1: RESULTS OF THE SCREENING EXERCISE

Question	Y / N (Briefly Describe)		Is this likely to result in a Significant Effect on the Environment? Y / N (Briefly Describe)	
CONSTRUCTION / OPERATION / DECOMMISSIONING				
Will construction / operation / decommissioning of the Proposed Development use natural resources (such as: land; water; materials / energy), especially any natural resources which are non-renewable or in short supply?	Y	Construction / operation / decommissioning will use natural resources.	N	Construction / operation / decommissioning will not use material amounts of natural resources. Furthermore, construction / operation / decommissioning will not use natural resources that are in short-supply. No material effects are identified.
Will construction / operation / decommissioning of the Proposed Development involve the use / storage / transport / handling / production of substances or materials which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health?	Y	Construction / operation / decommissioning will involve the use / storage / transport / handling / production of substances and material which could be harmful to human health or the environment.	N	During construction, possible effects will be managed via the CEMP. During operation of the gas connection, environmental management procedures will be agreed with the HSE. During operation of the drainage connection, environmental management procedures will be implemented to ensure compliance with the limits set within the Environmental Permits. During decommissioning, possible effects will be managed via the DEMP. No material effects are identified.
Will there be any risk of accidents during construction / operation / decommissioning of the Proposed Development which could affect human health or the environment?	Y	During construction / operation / decommissioning, there is a risk of accidents which could affect human health and / or the environment.	N	During construction, possible effects will be managed via the CEMP. During operation of the gas connection, environmental management procedures will be agreed with the HSE. During operation of the drainage connection, environmental management procedures will be implemented to ensure compliance with the limits set within the Environmental Permits. During decommissioning, possible effects will be managed via the DEMP. No material effects are identified.

Question	Y / N (Briefly Describe)		Is this likely to result in a Significant Effect on the Environment? Y / N (Briefly Describe)	
AIR QUALITY				
Will the Proposed Development emit pollutants or any hazardous / toxic / noxious substances to air?	Y	During construction / decommissioning, emissions could arise from: • Dust-generating activities; • Plant / equipment; • Vehicle movements; and, • Accidental / unplanned emissions / releases / spills.	N	During construction, possible effects will be managed via the CEMP. Similarly, during decommissioning, possible effects will be managed via the DEMP. The CEMP / DEMP will include: • A 'Pollution Prevention and Emergency Response Plan' and, • A 'Dust and Emissions-to-Air Management Plan'. No material effects are identified.
	Y	During operation of the gas connection, there will be occasional, controlled emissions of natural gas.	N	The volumes emitted will be small and will dissipate quickly. No material effects are identified.
	N	During operation of the drainage connection, there will be no material emissions to air. No material effects are identified.	-	N / A

Question	Y / N (Briefly Describe)	Is this likely to result in a Significant Effect on the Environment? Y / N (Briefly Describe)
Are there any: • Areas on or around the site which are already subject to pollution / environmental damage (e.g. where existing legal environmental standards are exceeded); and / or, • Land uses on or around the site (e.g. homes / gardens / other private property / industry / commerce / recreation / public open space / community facilities / agriculture / forestry / tourism / mining or quarrying); and / or, • Areas on or around the site which are occupied by sensitive land uses (e.g. hospitals / schools / places of worship / community facilities); and / or, • Areas on or around the site which are densely populated / built-up; which could be affected by the Proposed Development?	N During construction / operation / decommissioning, no material effects are identified.	- N / A
NOISE AND VIBRATION		
Will the Proposed Development emit noise and vibration?	Y During construction / decommissioning, emissions could arise from: • Noise-generating / vibration-generating activities; • Plant / equipment; and, • Vehicle movements.	N During construction, possible effects will be managed via adherence to the construction working hours and the CEMP. Similarly, during decommissioning, possible effects will be managed via adherence to decommissioning working hours and the DEMP. The CEMP / DEMP will include: • A 'Noise and Vibration Management Plan'. No material effects are identified.
	N During operation, there will be no material emissions of noise and vibration.	- N / A

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Question	Y / N (Briefly Describe)	Is this likely to result in a Significant Effect on the Environment? Y / N (Briefly Describe)
Are there any: • Areas on or around the site which are already subject to pollution / environmental damage (e.g. where existing legal environmental standards are exceeded); and / or, • Land uses on or around the site (e.g. homes / gardens / other private property / industry / commerce / recreation / public open space / community facilities / agriculture / forestry / tourism / mining or quarrying); and / or, • Areas on or around the site which are occupied by sensitive land uses (e.g. hospitals / schools / places of worship / community facilities); and / or, • Areas on or around the site which are densely populated / built-up; which could be affected by the Proposed Development?	N During construction / operation / decommissioning, no material effects are identified.	- N / A
LANDSCAPE AND VISUAL		
Will the Proposed Development emit light?	Y During construction / decommissioning, there will be a use of lighting to ensure personnel can moved around the site safely during the hours of darkness	N During construction, the possible effects will be managed via adherence to the construction working hours and the CEMP. Similarly, during decommissioning, possible effects will be managed via adherence to decommissioning working hours and the DEMP. No material effects are identified.
	N During operation, the Proposed Development includes no additional lighting.	- N / A

Question	Y / N (Briefly Describe)	Is this likely to result in a Significant Effect on the Environment? Y / N (Briefly Describe)
Is the Proposed Development located in a previously undeveloped area where there will be a loss of greenfield land?	N The Proposed Development will not be located in a previously undeveloped area where there will be a loss of greenfield land. Accordingly, no material effects are identified.	- N / A
Is the Proposed Development in a location where it is likely to be highly visible to people?	N The Proposed Development is not in a location where it is likely to be highly visible to people. No material effects are identified.	- N / A
Are there any: • Areas on or around the site which are protected under international / national / local legislation for their landscape value; and / or, • Areas or features of high landscape / scenic value on or around the site; which could be affected by the Proposed Development?	N During construction / operation / decommissioning, no material effects are identified.	- N / A
ECOLOGY		
Are there any: • Areas on or around the site which are protected under international / national / local legislation for their ecological value; and / or • Other areas on or around the site which are important / sensitive for reasons of their ecology (e.g. wetlands / watercourses / other water bodies / coastal zone / mountains / forests or woodlands); which could be affected by the Proposed Development?	N There are no: • Areas on or around the site which are protected under international / national / local legislation for their ecological value; and / or • Other areas on or around the site which are important / sensitive for reasons of their ecology (e.g. wetlands / watercourses / other water bodies / coastal zone / mountains / forests or woodlands); which could be affected by the Proposed Development. No material effects are identified.	- N / A

Question	Y / N (Briefly Describe)		Is this likely to result in a Significant Effect on the Environment? Y / N (Briefly Describe)
Are there any areas on or around the site which are used by protected / important / sensitive species of flora or fauna (e.g. for breeding / nesting / foraging / resting / overwintering / migration) which could be affected by the Proposed Development?	Y	During construction (and possibly during decommissioning), there will be vegetation clearance / hedgerow removal. Potential effects could arise from: - Habitat loss, fragmentation, degradation, damage and / or disturbance; and, - Species mortality, injury and / or disturbance. Appendix A provides a summary of the current ecological baseline conditions and the identified ecological constraints. Based on Appendix A, there is no confirmed presence of protected / important / sensitive species of flora or fauna on or around the Proposed Development site. Nevertheless, during construction (and possibly decommissioning) a precautionary method of working is advised and unexpected protected / important / notable species may be encountered.	N During construction, possible effects will be managed via adherence to the construction working hours, a precautionary method of working regarding vegetation clearance / hedgerow removal and the CEMP. Similarly, during decommissioning, possible effects will be managed via adherence to decommissioning working hours, a precautionary method of working regarding vegetation clearance / hedgerow removal and the DEMP. The CEMP / DEMP will include: A procedure for dealing with the presence of unexpected protected / important / notable species. No material effects are identified.
	N	During operation, there are no areas on or around the site which are used by protected / important / sensitive species of fauna or flora which could be affected by the Proposed Development. No material effects are identified.	- N / A
LAND USE / GEOLOGY / LAND CONTAMINATION			
Are there: - Existing land uses; and / or, - Any plans for future land uses; on or around the site which could be affected by the Proposed Development?	N	The Proposed Development will be located on land adjacent to the existing Spalding CCGT generating station site and on land within the proposed Spalding Energy Expansion site. As such the existing and future land uses of the application site mainly comprise those relating to energy / electricity generation. No material effects are identified.	- N / A
Will construction / operation / decommissioning of the Proposed Development involve actions which will cause physical changes in the locality (i.e. land use / topography)?		Construction / operation / decommissioning will not involve actions which will cause material physical changes in the locality. No material effects are identified.	- N / A

Question	Y / N (Briefly Describe)	Is this likely to result in a Significant Effect on the Environment? Y / N (Briefly Describe)
Will the Proposed Development lead to risks of contamination of land from emission of pollutants onto the ground?	Y During construction / decommissioning, emissions could arise from: - Discharges of pollutants to land; - Accidental / unplanned emissions / releases / spills; and, - Release of unexpected ground-based contaminants.	N During construction, possible effects will be managed via the CEMP. Similarly, during decommissioning, possible effects will be managed via the DEMP. The CEMP / DEMP will include: - A 'Pollution Prevention and Emergency Response Plan'; and, - An 'Unexpected Contaminated Land Plan'. The Pollution Prevention and Emergency Response Plan will include procedures to avoid / minimise the potential for discharges / emissions / releases / spills. No material effects are identified.
	N During operation, there will be no material emissions to land (and therefore no risks of contamination of land from emissions of pollutants). No material effects are identified.	- N / A

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Question	Y / N (Briefly Describe)	Is this likely to result in a Significant Effect on the Environment? Y / N (Briefly Describe)	
Are there any: • Areas on or around the site which are already subject to pollution / environmental damage (e.g. where existing legal environmental standards are exceeded); and / or, • Land uses on or around the site (e.g. homes / gardens / other private property / industry / commerce / recreation / public open space / community facilities / agriculture / forestry / tourism / mining or quarrying); and / or, • Areas on or around the site which are occupied by sensitive land uses (e.g. hospitals / schools / places of worship / community facilities); and / or, • Areas on or around the site which are densely populated / built-up; which could be affected by the Proposed Development?	N During construction / operation / decommissioning, no material effects are identified.	-	N / A
Is the site susceptible to earthquakes / subsidence / landslides / or extreme / adverse climatic conditions (e.g. temperature inversions / fogs / severe winds) which could cause the Proposed Development to present environmental problems?	N The site is not susceptible to earthquakes / subsidence / landslides / or extreme / adverse climatic conditions which could cause the Proposed Development to present environmental problems.	-	N / A

Question	Y / N (Briefly Describe)		Is this likely to result in a Significant Effect on the Environment? Y / N (Briefly Describe)	
WASTES				
Will the Proposed Development produce solid wastes during construction / operation / decommissioning?	Y	During construction / decommissioning, the Proposed Development might produce solid wastes.	N	During construction, possible effects will be managed via the CEMP. Similarly, during decommissioning, possible effects will be managed via the DEMP. The CEMP / DEMP will include: • A 'Site Waste Management Plan'. No material effects are identified.
	N	During operation, the Proposed Development will not produce material amounts of solid waste / trade effluent / foul sewage. In addition, there will be no need for any storage / collection of waste. No material effects are identified.	-	N / A
Will the Proposed Development emit heat / electromagnetic radiation?	N	During construction / operation / decommissioning, there will be no material emissions of heat / electromagnetic radiation. No material effects are identified.	-	N / A
WATER QUALITY AND FLOOD RISK				
Will construction / operation / decommissioning of the Proposed Development involve actions which will cause physical changes in the locality (i.e. changes in water bodies)?	N	Construction / operation / decommissioning will not involve actions which will cause material physical changes in the locality. No material effects are identified.	-	N / A
Will the Proposed Development lead to risks of contamination of water from emission of pollutants into surface waters / ground waters / coastal waters / seas?	Y	During construction / decommissioning, emissions could arise from: • Discharges of pollutants to water; and, • Accidental / unplanned emissions / releases / spills.	N	During construction, possible effects will be managed via the CEMP. Similarly, during decommissioning, possible effects will be managed via the DEMP. The CEMP / DEMP will include: • A 'Pollution Prevention and Emergency Response Plan'. The Pollution Prevention and Emergency Response Plan will include procedures to avoid / minimise the potential for discharges / emissions / releases / spills. No material effects are identified.

Question	Y / N (Briefly Describe)	Is this likely to result in a Significant Effect on the Environment? Y / N (Briefly Describe)
	N During operation, there will be no material emissions to water (and therefore no risks of contamination of water from emissions of pollutants). No material effects are identified.	- N / A
Are there any: - Areas on or around the site which are already subject to pollution / environmental damage (e.g. where existing legal environmental standards are exceeded); and / or, - Inland / coastal / marine / underground waters on or around the site; which could be affected by the Proposed Development?	N During construction / operation / decommissioning, no material effects are identified.	- N / A
Is the site susceptible to flooding or extreme or adverse climatic conditions (e.g. temperature inversions / fogs / severe winds) which could cause the Proposed Development to present environmental problems?	Y The Proposed Development site is located in an area classified by the Environment Agency as a Flood Zone 3. As such, the site is susceptible to flooding.	N Appendix B provides the Assessment of Flood Risk. During construction, possible effects will be managed via the CEMP. Similarly, during decommissioning, possible effects will be managed via the DEMP. No material effects are identified. In addition, the Environment Agency has noted that due to the location of the Proposed Development site (within 16 m of a tidal main river), an Environmental Permit (previously Flood Defense Consent) will be required. An application for an Environmental Permit will be made in due course.
TRAFFIC AND TRANSPORT INFRASTRUCTURE		
Are there any transport routes on or around the site which are susceptible to congestion / which could cause environmental problems which could be affected by the Proposed Development?	Y The Proposed Development (the gas connection) will cross West Marsh Road.	N The section of the route crossing West Marsh Road will most likely be constructed via trenchless techniques (e.g. auger bore / HDD). No material effects are identified.

Question	Y / N (Briefly Describe)		Is this likely to result in a Significant Effect on the Environment? Y / N (Briefly Describe)	
	Y	During construction (and possibly during decommissioning), the access to the Proposed Development site will be from West Marsh Road. Therefore, West Marsh Road (and the surrounding roads) could be affected by the Proposed Development.	N	During construction, the possible effects will be managed via adherence to the construction working hours and the CEMP. Similarly, during decommissioning, possible effects will be managed via adherence to decommissioning working hours and the DEMP. The CEMP / DEMP will include: • A 'Transport Management Plan'. No material effects are identified.
	N	During operation, there are no transport routes on or around the site which could be affected by the Proposed Development.	-	N / A
Are there any routes or facilities on or around the site which are used by the public for access to recreation / other facilities which could be affected by the Proposed Development?	N	There are no routes / facilities on or around the site which are used by the public for access to recreation / other facilities which could be affected by the Proposed Development. No material effects are identified.	-	N / A
ARCHAEOLOGY / CULTURAL HERITAGE				
Are there any: • Areas on or around the site which are protected under international / national / local legislation for their cultural heritage value; and / or, • Areas or features of historic / cultural importance on or around the site which could be affected by the Proposed Development?	N	Earlier archaeological / cultural heritage surveys reported that there are no records of findings on both the existing Spalding CCGT generating station site or the proposed Spalding Energy Expansion site, and there are no records of any archaeological / cultural heritage interest. Also, the previous development and subsequent demolition of the British Sugar Factory on both the existing Spalding CCGT generating station site and proposed Spalding Energy Expansion site is likely to have disturbed any in-situ remains. Furthermore, previous archaeological / cultural heritage monitoring during construction of the existing underground high-pressure natural gas pipeline and the eGRF did not reveal any deposits / features. Therefore, the likelihood of surviving archaeology / cultural heritage on the Proposed Development is negligible. No material effects are identified.	-	N / A

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Question	Y / N (Briefly Describe)		Is this likely to result in a Significant Effect on the Environment? Y / N (Briefly Describe)	
SOCIO-ECONOMICS				
Will the Proposed Development result in social changes (i.e. in demography / traditional lifestyles / employment)?	N	The Proposed Development will not result in social changes. No material effects are identified.	-	N / A
CUMULATIVE ENVIRONMENTAL EFFECTS				
Are there any other factors which should be considered which could lead to the potential for cumulative impacts with other existing / planned projects / developments?	Y	The Proposed Development will cross other existing pipelines / services / utilities.	N	Appendix C provides a summary of the methods for crossing third party pipelines / services / utilities. No material effects are identified.

4. REQUIREMENT FOR ENVIRONMENTAL IMPACT ASSESSMENT / CONCLUSIONS

4.1 Requirement for Environmental Impact Assessment

4.1.1 Based on the process and methodology adopted for this Environmental Report:

- The Proposed Development is not of a description mentioned in Schedule 1, and therefore is not considered to be Schedule 1 development;
- Part of the Proposed Development (the gas connection) is of a description mentioned in Column 1 of Schedule 2. However:
 - No part of the Proposed Development will be carried out in a Sensitive Area;
 - The application site (e.g. the area of works) is lower than the associated threshold / criterion; and,
 - The Proposed Development is not likely to have significant effects on the environment by virtue of its nature, size or location (and no material effects are identified).

4.1.2 Therefore, it is considered that the Proposed Development does not comprise EIA Development and there is not a requirement for an EIA.

4.2 Conclusions

4.2.1 It is considered that the Proposed Development does not comprise EIA Development and there is not a requirement for an EIA.

4.2.2 The Proposed Development will be designed to comply with the requirements of / implement the guidance and principles of the relevant industry standards.

4.2.3 Construction of the Proposed Development will take approximately 6 months, and will be undertaken by an experienced Construction Contractor in accordance with the relevant industry requirements (e.g. regulations, codes and standards). The Proposed Development will be constructed using proven methods that have been developed over many years from experience on similar projects / developments. During construction, there will be adherence to the construction working hours. The Construction Contractor will be required to prepare and implement a CEMP to incorporate a number of 'embedded' measures to mitigate and manage emissions and residues. Accordingly, the CEMP will include:

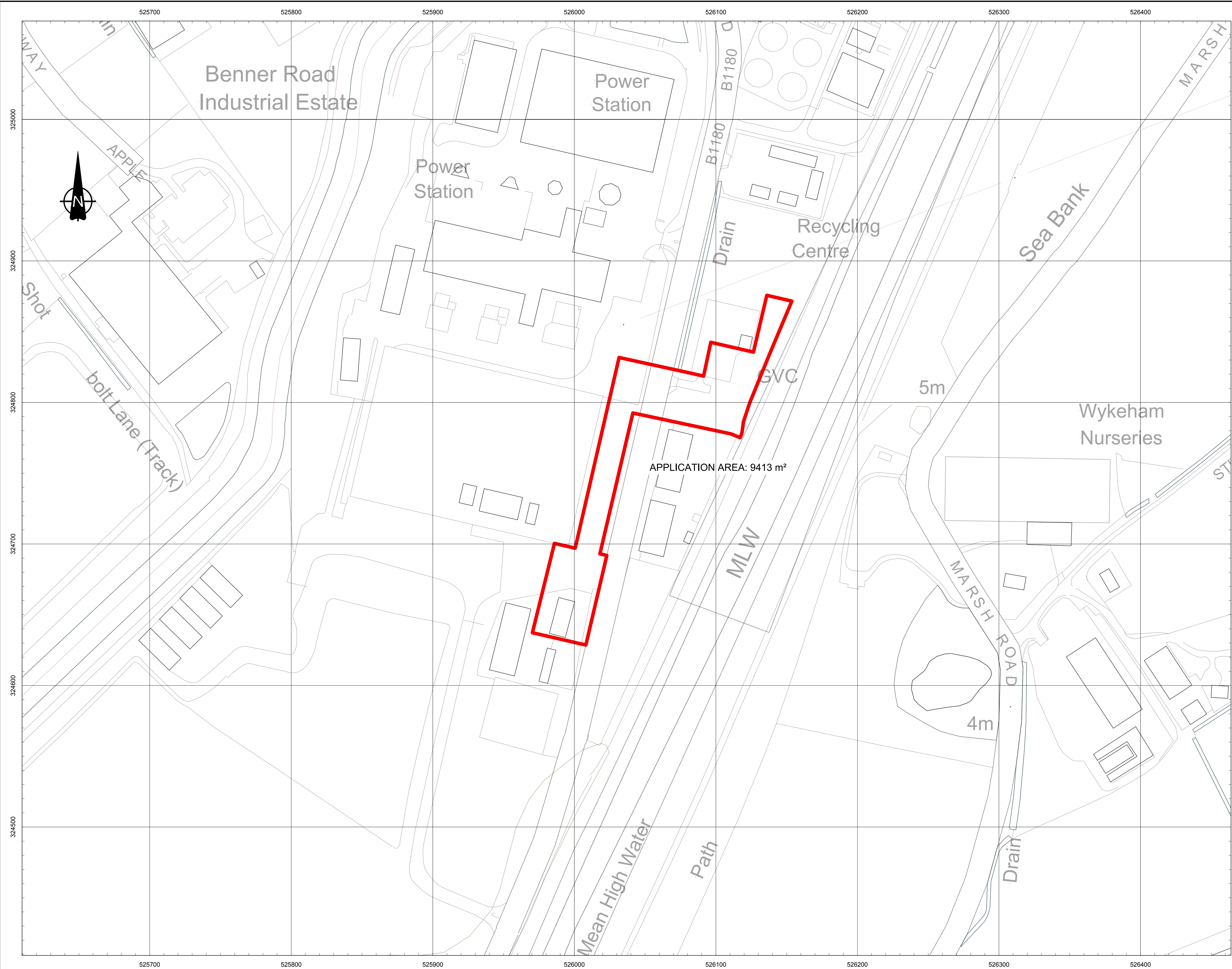
- A Pollution Prevention and Emergency Response Plan;
- A Dust and Emissions-to-Air Management Plan;
- A Noise and Vibration Management Plan;
- A procedure for dealing with the presence of unexpected protected / important / notable species;
- An Unexpected Contaminated Land Plan;
- A Site Waste Management Plan; and,
- A Transport Management Plan.

4.2.4 The operational lifetime of the Proposed Development will equal that of the OCGT units(s) (approximately 35 years). After commissioning, the connections will be operated and maintained in such a manner as to keep them safe and in a good condition. The Proposed Development will be capable of continuous operation. During operation of the gas connection, environmental management procedures will be agreed with the HSE. During operation of the drainage connection, environmental management procedures will be implemented to ensure compliance with the limits sets within the Environmental Permits.

- 4.2.5 At the end of the useful life of the OCGT unit(s) (after approximately 35 years), the Proposed Development will be decommissioned. Decommissioning will take account of the environmental legislation in place at the time. Notice will be given to the relevant statutory authorities, including SHDC, and any necessary permission(s) will be acquired. During decommissioning, possible effects will be managed via the DEMP. During decommissioning, there will be adherence to the decommissioning working hours. The Decommissioning Contractor will be required to prepare and implement a DEMP to incorporate a number of 'embedded' measures to mitigate and manage emissions and residues.

**SPALDING ENERGY EXPANSION OPEN CYCLE GAS TURBINE UNIT:
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ENVIRONMENTAL REPORT**

FIGURES



Notes

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APPLICATION SITE BOUNDARY

P01	FOR INFORMATION	27/09/17	RWS	EA	
Rev	Description	Date	By	App	
			Chk		

INTERGEN/SPALDING
ENERGY EXPANSION
LIMITED

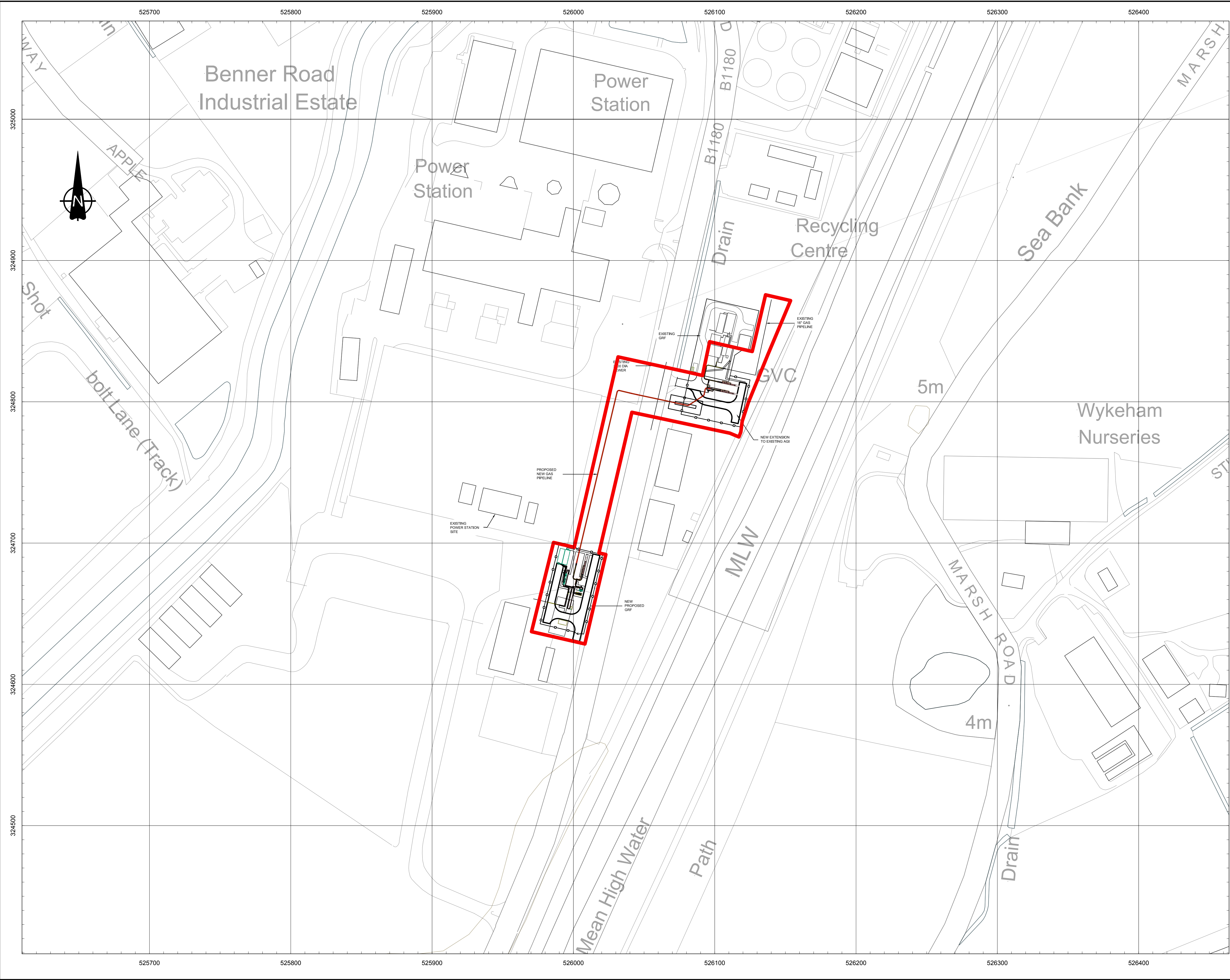
SPALDING
ENERGY EXPANSION

RAMBOLL

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FIGURE 1
GAS AND DRAINAGE
CONNECTIONS
APPLICATION SITE

Scale: 1:1250 / A1	Date: 27/09/2017	Drawn: RWS	Checked: EA
Drawing No.: 1620002349-014 FIGURE 1		Rev: P01	



Notes

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SUBJECT TO FINAL VENDOR SELECTION AND
DETAILS

LEGEND:

- APPLICATION SITE BOUNDARY
- NEW FENCE
- NEW ROAD
- NEW PIPING AND ASSOCIATED EQUIPMENT
- EXISTING

P01	FOR INFORMATION	27/09/17	RWS EA	EA
Rev	Description	Date	By Chk	App

INTERGEN/SPALDING
ENERGY EXPANSION
LIMITED

SPALDING
ENERGY EXPANSION

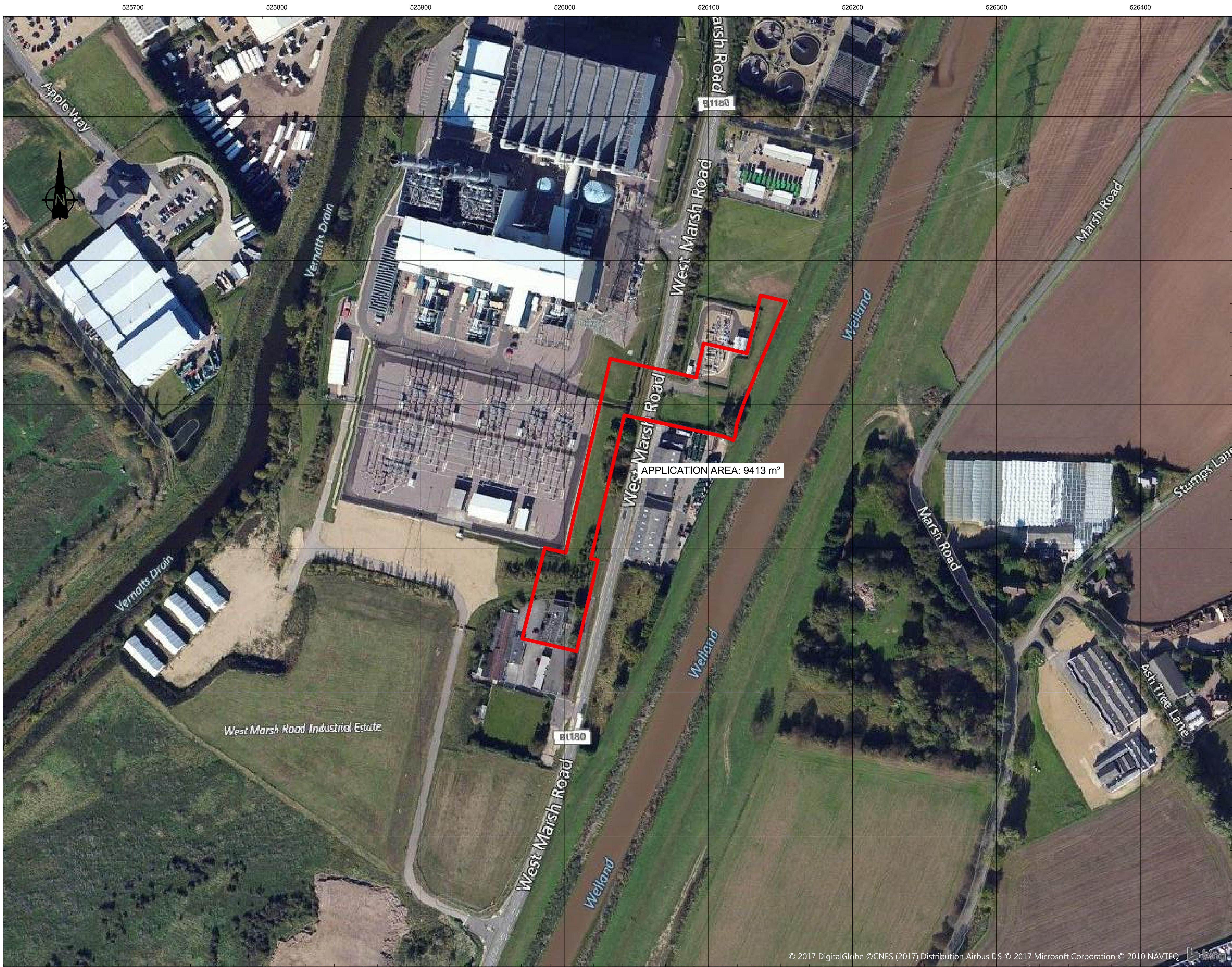
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FIGURE 2
OVERALL SITE LAYOUT

Scale: 1:1250 / A1	Date: 27/09/2017	Drawn: RWS	Checked: EA
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Drawing No.: 1620002349-014 FIGURE 2	Rev: P01
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APPLICATION SITE BOUNDARY

P01	FOR INFORMATION	27/09/17	RWS EA
Rev	Description	Date	By App

INTERGEN/SPALDING
ENERGY EXPANSION
LIMITED

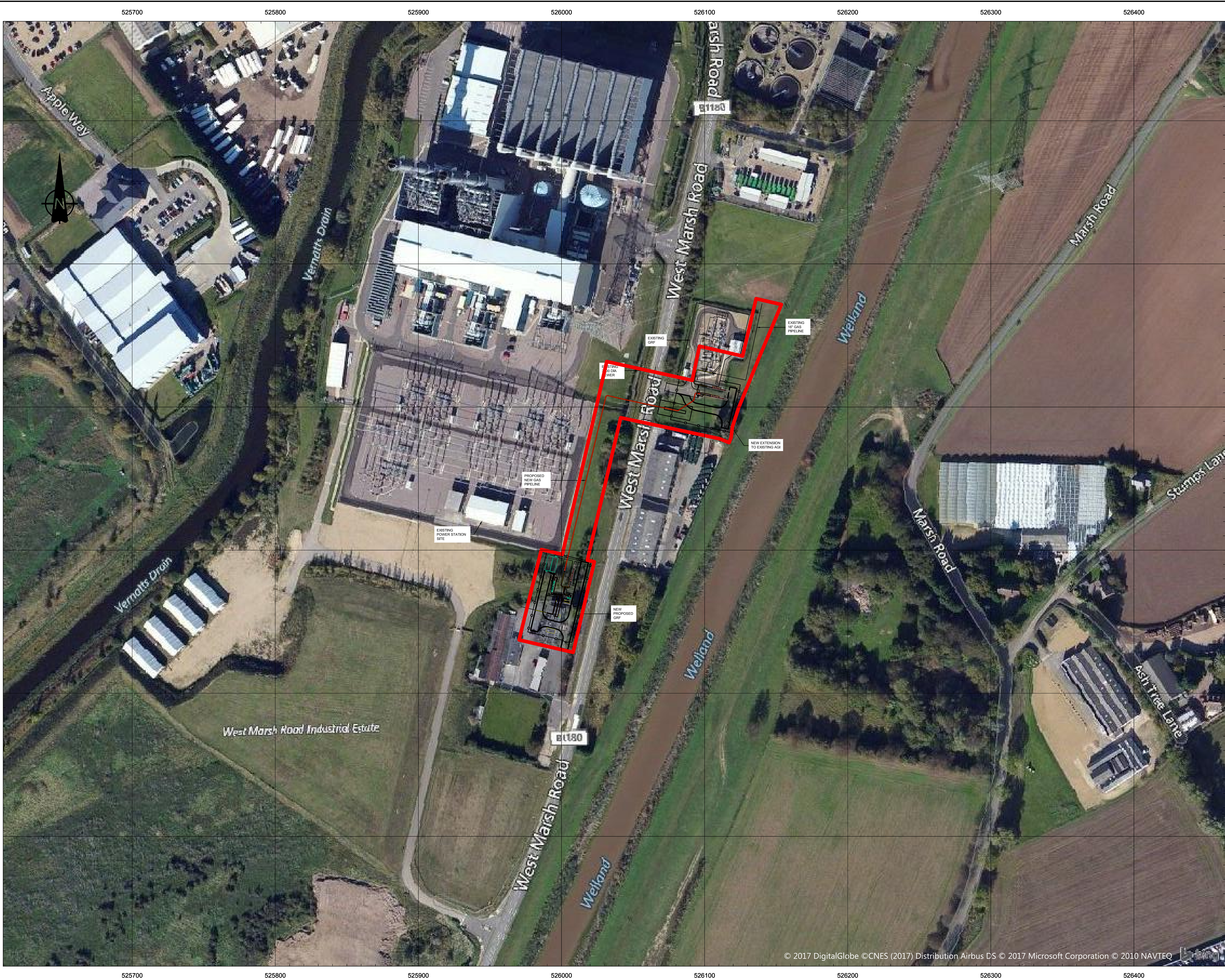
SPALDING
ENERGY EXPANSION

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FIGURE 3
GAS AND DRAINAGE
CONNECTIONS
APPLICATION SITE

Scale: 1:1250 / A1	Date: 27/09/2017	Drawn: RWS	Checked: EA
Drawing No.: 1620002349-014 FIGURE 3			Rev: P01



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SUBJECT TO FINAL VENDOR SELECTION AND
DETAILS

LEGEND:

- APPLICATION SITE BOUNDARY
- NEW FENCE
- NEW ROAD
- NEW PIPING AND ASSOCIATED
EQUIPMENT
- EXISTING

P01	FOR INFORMATION	27/09/17	RWS EA	EA
Rev	Description	Date	By Chk	App

INTERGEN/SPALDING
ENERGY EXPANSION
LIMITED

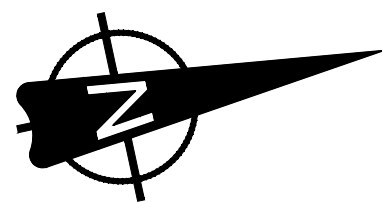
SPALDING
ENERGY EXPANSION

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FIGURE 4
OVERALL SITE LAYOUT

Scale: 1:1250 / A1	Date: 27/09/2017	Drawn: RWS	Checked: EA
Drawing No.: 1620002349-014 FIGURE 4		Rev: P01	



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SUBJECT TO FINAL VENDOR SELECTION AND
DETAILS

LEGEND: EXISTING

P01	FOR INFORMATION	27/09/17	RWS	EA	EA
Rev	Description	Date	By	App	
			Chk		

INTERGEN/SPALDING
ENERGY EXPANSION
LIMITED

SPALDING
ENERGY EXPANSION

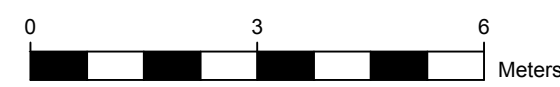
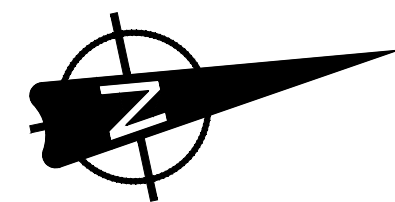
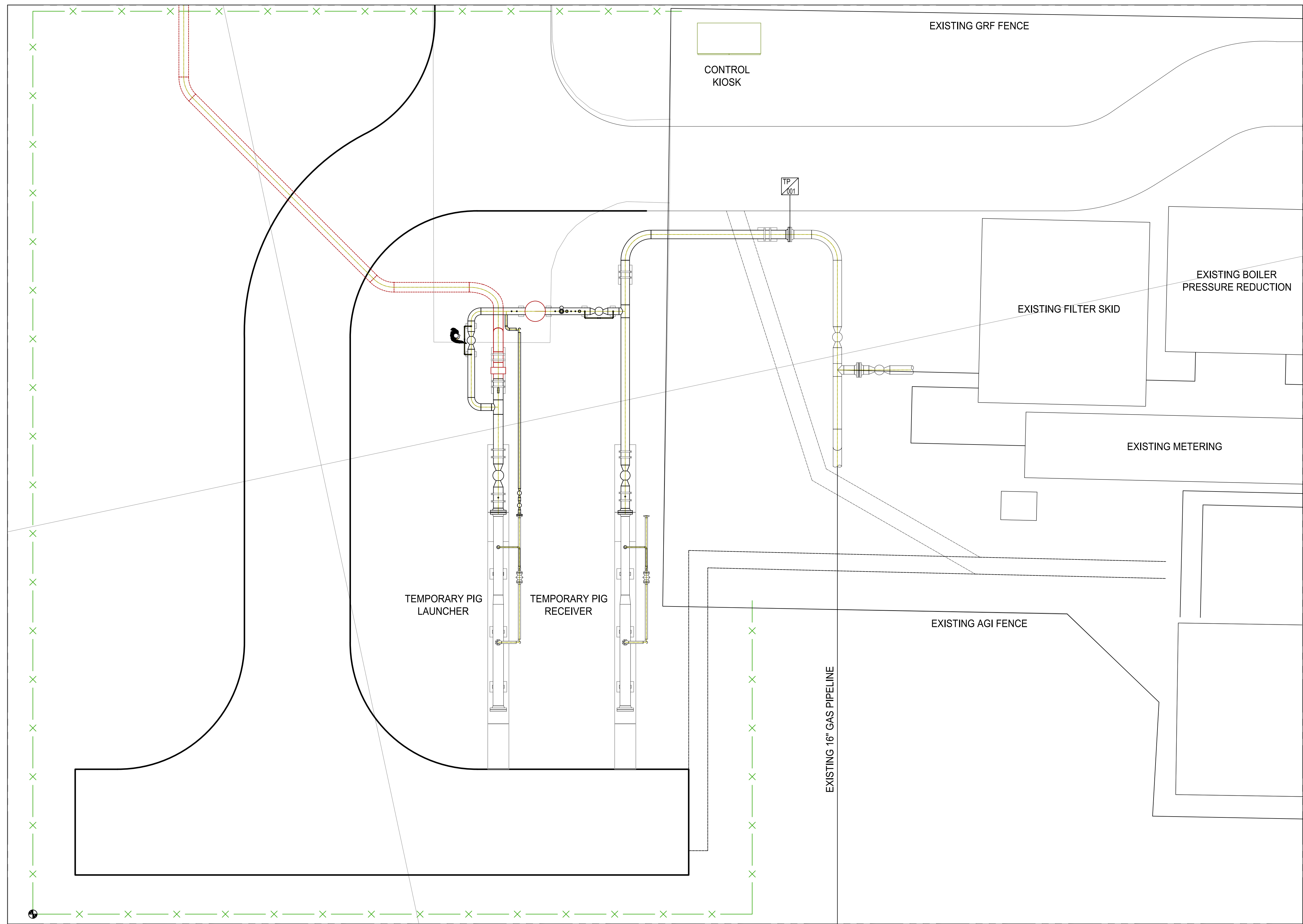
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FIGURE 5
EXISTING GAS
RECEPTION FACILITY

Scale:	Date:	Drawn:	Checked:
1:100 / A1	27/09/2017	RWS	EA

Drawing No.:	Rev:
1620002349-014 FIGURE 5	P01



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SUBJECT TO FINAL VENDOR SELECTION AND
DETAILS

LEGEND:

- NEW FENCE
- NEW ROAD
- NEW PIPING AND ASSOCIATED EQUIPMENT
- NEW BURIED PIPELINE
- TEMPORARY PIPING AND ASSOCIATED EQUIPMENT
- EXISTING

P01	FOR INFORMATION	27/09/17	RWS	EA
Rev	Description	Date	By	App
			Chk	

INTERGEN/SPALDING
ENERGY EXPANSION
LIMITED

SPALDING
ENERGY EXPANSION

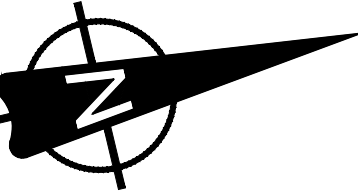
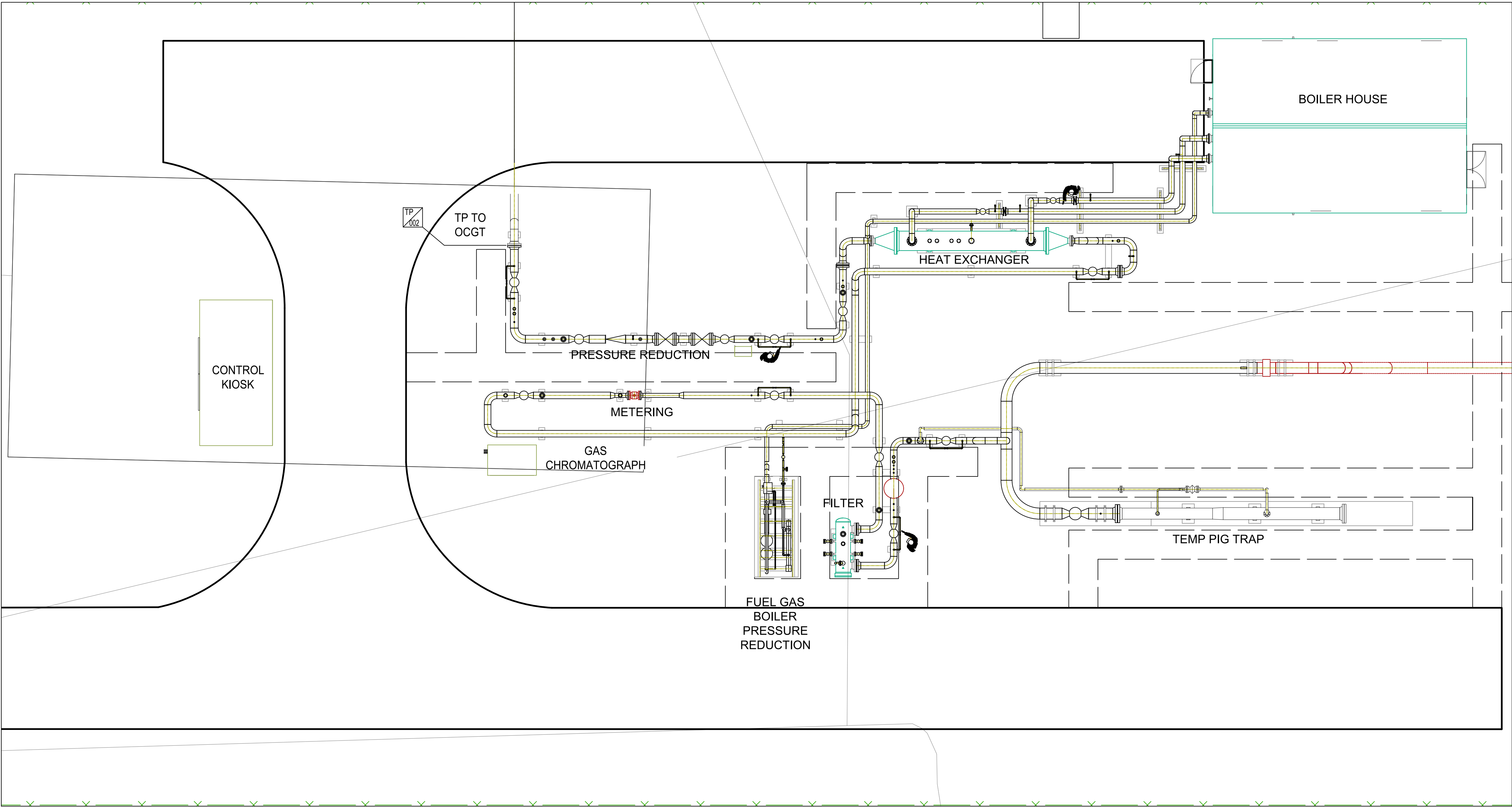
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FIGURE 6
PROPOSED EXTENSION
TO EXISTING GAS
RECEPTION FACILITY

Scale:	Date:	Drawn:	Checked:
1:100 / A1	27/09/2017	RWS	EA

Drawing No.:	Rev:
1620002349-014 FIGURE 6	P01



0 3 6
Meters

Notes

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SUBJECT TO FINAL VENDOR SELECTION AND
DETAILS

LEGEND:

- NEW FENCE
- NEW ROAD
- NEW PIPING AND ASSOCIATED EQUIPMENT
- NEW BURIED PIPELINE
- TEMPORARY PIPING AND ASSOCIATED EQUIPMENT
- EXISTING

P01	FOR INFORMATION	27/09/17	RWS	EA
Rev	Description	Date	By	App
			Chk	

INTERGEN/SPALDING
ENERGY EXPANSION
LIMITED

SPALDING
ENERGY EXPANSION

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FIGURE 7
NEW GAS RECEPTION
FACILITY

Scale:	Date:	Drawn:	Checked:
1:100 / A1	27/09/2017	RWS	EA
Drawing No.:	Rev:		
1620002349-014 FIGURE 7	P01		

APPENDIX A: ECOLOGICAL BASELINE CONDITIONS / ECOLOGICAL CONSTRAINTS

Overview

This Appendix provides a summary of the ecological baseline conditions on / at the site, and the identified ecological constraints.

Ecological Survey Method

On 12 September 2017, a Phase 1 Habitat Survey was undertaken by Emily McVean (ACIEEM, Ramboll Senior Ecologist) assisted by Jo Barker (AEMA, Ramboll Ecologist). The survey followed the Phase 1 Habitat Survey standard method¹³, and was extended to note evidence of, or suitable habitat for, protected / notable species.

Current Ecological Baseline Conditions / Identified Ecological Constraints

It should be recognised that ecology is temporally variable, and the summary below is based on observations made and data available at the time of the Phase 1 Habitat Survey.

Habitats

The Phase 1 Habitat Survey identified the following dominant habitats within the application site (in descending order of size):

- Tall Ruderal;
- Bare Ground;
- Buildings and Hard-Standing;
- Semi-Improved Grassland;
- Broadleaved Woodland Plantation;
- Amenity Grassland;
- Continuous and Scattered Scrub; and,
- Hedgerow.

Insert A.1 presents a sketch map of the Phase 1 Habitat Survey.

¹³ The standard method is provided by the Joint Nature Conservation Committee in the 'Handbook for Phase 1 Habitat Survey: A Technique for Environmental Audit' (2010 Edition).

**SPALDING ENERGY EXPANSION OPEN CYCLE GAS TURBINE UNIT:
GAS AND DRAINAGE CONNECTIONS
ENVIRONMENTAL REPORT**

INSERT A1: SKETCH MAP OF PHASE 1 HABITAT SURVEY¹⁴



¹⁴ Sketch Map based on Drawing Number 0031-1000 showing the route of the new underground high-pressure natural gas pipeline.

Target Notes

On Insert A.1, Target Notes are provided. These are identified in the text and table below (e.g. as 'TN1', 'TN2').

- 1) Location of temporary 'Portakabin' style buildings. These are of metal-clad construction within a hardstanding (crushed stone) compound area. These buildings have 'Negligible' bat roost potential.
- 2) The area comprises Bare Ground denoting the footprint of demolished buildings and hardstanding. Compacted crushed stone and aggregate was noted in places to allow for vehicular access. There was some ephemeral / tall ruderal growth (including: creeping thistle (*Cirsium arvense*); and, bristly oxtongue (*Elminthotheca echinoides*)).
- 3) This area comprises Semi-Improved Grassland. The dominating species recorded within this area included: false oat grass (*Arrhenatherum elatius*); and, Yorkshire fog (*Holcus lanatus*). Other species recorded within this area included: black medick (*Medicago lupulina*); bristly ox tongue; common fleabane (*Conyza Canadensis*); ladies bedstraw (*Galium verum*); and, thistle sp.. The habitats were considered to offer some suitability for reptiles but are poorly connected in the landscape (i.e. fragmented by busy roads and drains).
- 4) Location of rabbit holes, with rabbit (*Oryctolagus cuniculus*) hairs identified. The rabbit holes were noted to be of small diameter.
- 5) Location of a Substation within a wooded area. Ventilation grills were present and a gap was noted at ground level. This had 'Negligible' bat roost potential.
- 6) This area was wooded. Species recorded within this area included: cherry (*Prunus* sp.); cherry laurel (*Prunus laurocerasus*); Cotoneaster sp.; elder (*Sambucus nigra*); privet (*Ligustrum*); and, weeping willow (*Salix babylonica*). Species recorded within the understorey included: common nettle (*Urtica dioica*); and, white dead nettle (*Lamium album*).
- 7) This area (adjacent to the eGRF) comprises Semi-Improved Grassland. Species recorded within this area included: cats-ear (*Hypochaeris radicata*); cocksfoot (*Dactylis glomerata*); creeping cinquefoil (*Potentilla reptans*); false oat grass; goats rue (*Galega officinalis*); honey suckle (*Lonicera* sp.); meadow foxtail (*Alopecurus pratensis*); mugwort (*Artemisia vulgaris*); perennial rye grass (*Lolium perenne*); white clover (*Trifolium repens*); willow herb (*Epilobium* sp.); yarrow (*Achillea millefolium*); and, Yorkshire fog. These habitats were considered to offer some limited suitability for reptiles but are poorly connected in the landscape (i.e. fragmented by busy roads, industrial sites and watercourses). Several mammal tracks were observed along the margins with the woodland and tall ruderal edges. However, no badger setts or resting places (e.g. for otter) were identified.
- 8) Metal-clad single skin building. This is the Boiler House within the eGRF. This had 'Negligible' bat roost potential.
- 9) The area comprises Continuous and Scattered Scrub. The scrub was encroaching into the Semi-Improved Grassland, and was adjacent to tall ruderal and wooded areas. Species recorded within this area included: bramble (*Rubus fruticosus* agg.); buddleia (*Buddleia davidii*); cleavers (*Galium aparine*); common ivy (*Hedera helix*); dog rose (*Rosa canina*); elder; hogweed (*Heracleum sphondylium*); grapevine (*Vitis*); ground ivy (*Glechoma hederacea*); pampas grass (*Cortaderia selloana*); pendulous sedge (*Carex pendula*); and, poplar (*Populus*) saplings. Whilst the denser areas of scrub represent potential bird nesting habitat, no evidence of nesting birds was identified.
- 10) This area comprises a small wooded area with an understorey of scrub and tall ruderal vegetation. The trees within this area did not have any visible features that would be suitable for roosting bats, and no evidence of nesting birds was identified. In addition, no badger setts or otter holts were identified. Species recorded within this area included: elder; horse-chestnut (*Aesculus hippocastanum*); leyland cypress (*Cypressus x leylandii*);

silver birch (*Betula pendula*); and, sycamore (*Acer pseudoplatanus*). The dominating species recorded within the understorey included: common nettle; and, self-seeded tree saplings.

- 11) This area comprises Hedgerows. Species recorded within this area included: beech (*Fagus sylvatica*); blackthorn (*Prunus spinosa*); common hawthorn (*Crataegus monogyna*); dog wood (*Cornus sanguinea*); and, hazel (*Corylus avellana*). Several mammal tracks were observed within the adjacent amenity grassland entering openings within the hedgerows. However, no badger setts, burrowing or resting places (e.g. for otter) were identified. In addition, no evidence of nesting birds was identified.

Protected Species / Identified Ecological Constraints

Table A.1 provides a summary related to protected species, and identified ecological constraints.

In summary, the key ecological constraints relate to habitats suitable to support nesting birds and to a lesser extent, reptiles.

For nesting birds, it is recommended that vegetation clearance / hedgerow removal in areas suitable for nesting birds is undertaken outside the nesting bird season (March – August inclusive) or, if this cannot be done, under an Ecological Watching Brief.

For reptiles, it is recommended that a precautionary approach to vegetation clearance in areas suitable for reptiles is undertaken when these species are active (April – September).

TABLE A.1: PROTECTED SPECIES / IDENTIFIED ECOLOGICAL CONSTRAINTS

Ecological Interest	2017 Phase 1 Habitat Survey	Additional Survey Recommended? (Y / N)	Ecological Constraint Identified? (Y / N)	Mitigation / Management Measure
Bats	The only buildings / structures identified on the application site were a temporary 'Portakabin' style buildings (TN1), a Substation (TN5) and a metal-clad single skin building (TN8). These had 'Negligible' bat roost potential. No trees on the application site are considered suitable for roosting bats.	No.	No	N / A
Birds	The habitats on the application offered potential for foraging and nesting birds, particularly in the areas of scrub (TN9), woodland (TN10) and hedgerows (TN11). No evidence of nests or nesting bird activity was identified.	No.	Yes.	Vegetation clearance / hedgerow removal should avoid the bird breeding season (March – August inclusive). If this cannot be done, then vegetation clearance / hedgerow removal should be carried out under an Ecological Watching Brief (including pre-commencement checks).
Invasive Plant Species	No evidence of invasive plant species was identified.	No.	No.	N / A
Otter	The habitat on the River Welland is suitable for otters, and their presence has been confirmed in previous surveys. Their continued presence in the wider area should be assumed. However, no evidence of otter using the application site was identified (e.g. no resting places / holts or other field signs (scat / prints)). Otters are not considered to be an ecological constraint at the application site.	No.	No.	N / A

SPALDING ENERGY EXPANSION OPEN CYCLE GAS TURBINE UNIT:
GAS AND DRAINAGE CONNECTIONS
ENVIRONMENTAL REPORT

Ecological Interest	2017 Phase 1 Habitat Survey	Additional Survey Recommended? (Y / N)	Ecological Constraint Identified? (Y / N)	Mitigation / Management Measure
Reptiles	Albeit limited, the application site was considered to offer some suitability for reptiles (TN3 and TN7). However, given the location of the application site within the landscape (i.e. fragmented by busy roads, drains, industrial sites and watercourses) it is considered highly unlikely for any species other than grass snake to be present.	No.	Yes.	A precautionary method of work is recommended with respect to vegetation clearance in areas considered to offer suitability for reptiles. This is considered appropriate due to the highly mobile nature of grass snake. In these areas and under the precautionary method, vegetation clearance should be undertaken when these species are active (April – September).

APPENDIX B: ASSESSMENT OF FLOOD RISK

Introduction

The Proposed Development site is located in an area classified as a Flood Zone 3. As such, (and as required by the National Planning Policy Framework (NPPF)) an Assessment of Flood Risk is required to ensure that the development can be classified as 'appropriate development' (i.e. is suitable) and will not have an adverse impact on other areas.

Context: National Planning Policy Framework

The NPPF sets out guidelines for development in areas that may be susceptible to flood risk. The NPPF notes (at paragraph 100) that:

- In the first instance, inappropriate development in areas of flood risk should be avoided; and,
- In the second instance, where development in areas of flood risk is necessary, it should be appropriate development and be carried out in a way that makes it safe (from flood risk) without increasing flood risk elsewhere.

Summary of Consultation

With regards to the scope of the Assessment of Flood Risk, consultation has been undertaken Lincolnshire County Council (Highways and Flood Risk) and the Environment Agency.

Lincolnshire County Council (Highways and Flood Risk)

Lincolnshire County Council (Highways and Flood Risk) acknowledged that, once constructed, the Proposed Development would be flood resilient and resistant, safe over its operational lifetime (approximately 35 years) and would not increase overall flood risk.

Environment Agency

The Environment Agency advised that:

- Some assessment of flood risk will be required with the application for planning permission;
- Whilst no specific modelling is required, flood risk information should be taken from:
 - SHDC's Strategic Flood Risk Assessment; and,
 - The previous Flood Risk Assessment (FRA) / Supplementary FRA for the Spalding Energy Expansion.
- Details on the Sequential Test and Exception Test should be provided; and,
- Similar to the previous applications for planning permission¹⁵, the assessment of flood risk should cover constructability issues associated with the Proposed Development.

In addition, the Environment Agency noted that due to the location of the Proposed Development site (within 16 m of a tidal main river), an Environmental Permit (previously Flood Defence Consent) will be required. The application for an Environmental Permit will require a Risk Assessment and Management Plan. An application for an Environmental Permit will be made in due course.

Proposed Development

The Proposed Development includes:

- The Gas Connection, comprising a new underground high-pressure natural gas pipeline and an nGRF to connect the eGRF to the OCGT unit(s) site located on the west side of West Marsh Road; and,

¹⁵ For the subsequent phase(s) (including the commencement of the development of the CCGT unit), the natural gas will be brought to site via a new underground high-pressure natural gas pipeline to be constructed between the SEE site and the existing National Grid National Gas Transmission Network Number 7 Feeder Pipeline via an extension to the existing AGI at Wragg Marsh. On 8 June 2010, planning permission under the Town and Country Planning Act for this development was granted (Reference: H16-0135-10). On 11 June 2015, a request to extend the time limit on the planning permission for this development was granted (Reference: H16-0293-15).

- The Drainage Connection, comprising interfaces between the OCGT unit(s) site and the existing Spalding CCGT generating station surface water drainage system.

The operational lifetime of the Proposed Development will equal that of the OCGT unit(s) (approximately 35 years).

Baseline Environmental Conditions

Figure 1 (and Figure 3 based on Google mapping data) provides the location of the application site. The application site covers an area of 0.94 ha. Based on this area, the Proposed Development is considered to comprise 'Minor Development' (e.g. has a site area less than 1 ha) for the purposes of an application for planning permission under the Town and Country Planning Act 1990.

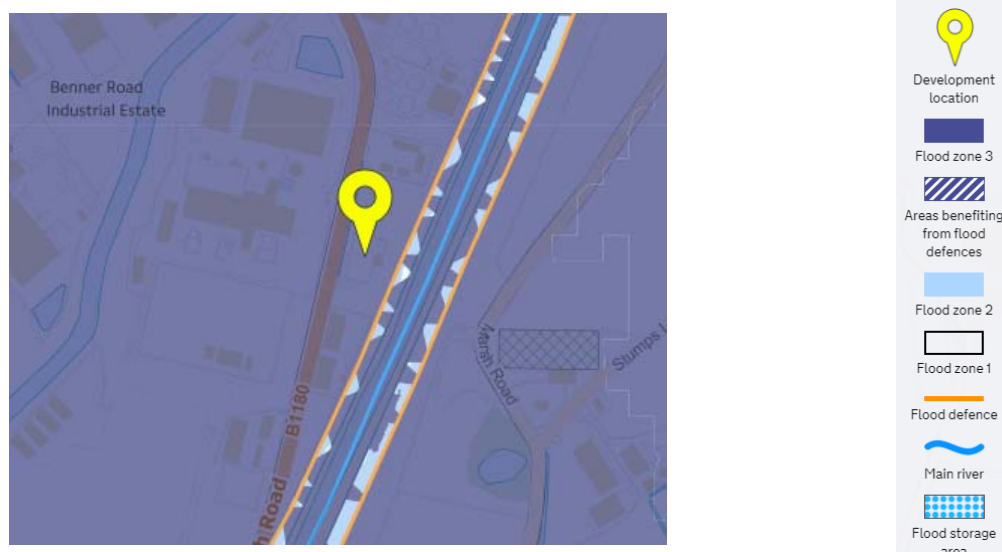
The application site lies approximately 2 km to the north east of Spalding town centre. The OS Grid Reference of the eGRF is 526100, 324844.

The Proposed Development site currently comprises:

- To the east of West Marsh Road: the eGRF and undeveloped land;
- West Marsh Road;
- To the west of West Marsh Road: land between the existing Spalding CCGT generating station site and the proposed SEE site, formerly the British Sugar Factory.

Insert B.1 presents the level of existing flood risk at the Proposed Development site (taken from the Gov.UK Website¹⁶).

INSERT B.1: EXISTING FLOOD RISK



Insert B.1 shows that the Proposed Development site is located in an area classified as a Flood Zone 3. This is defined (by the National Planning Practice Guidance (NPPG) 'Flood Risk and Coastal Change', at paragraph 0.65) as: *"Land having a 1 in 100 or greater annual probability of river flooding; or, Land having a 1 in 200 or greater annual probability of sea flooding"*.

Insert B.1 also indicates the approximate locations of the existing flood defences / flood protection. It is important that the construction process does not compromise the operation of these flood banks / flood barrier banks.

The Sequential Test and the Exception Test

The NPPG 'Flood Risk and Coastal Change' notes (at paragraph 019) that: *"The Sequential Test ensures that a sequential approach is followed to steer new development to areas with the lowest*

¹⁶ Available at: <https://flood-map-for-planning.service.gov.uk/>

probability of flooding. [...] The aim is to steer new development to Flood Zone 1 (areas with a low probability of river or sea flooding). Where there are no reasonably available sites available in Flood Zone 1, local planning authorities should take into account the flood risk vulnerability of land uses and consider reasonably alternative available sites in Flood Zone 2 (areas with a medium probability of river or sea flooding), applying the Exception Test if required. Only where there are no reasonably alternative sites in Flood Zones 1 or 2 should the suitability of sites in Flood Zone 3 (areas with a high probability of river or sea flooding) be considered, taking into account the flood risk vulnerability of land uses and applying the Exception Test if required".

Flood Risk Vulnerability

Based on the NPPG 'Flood Risk and Coastal Change' Table 2 (Flood Risk Vulnerability Classification), the Proposed Development is considered to comprise 'Essential Infrastructure'. This includes: *"Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substation; and water treatment works that need to remain operational in times of flood".*

Flood Risk Vulnerability and Flood Zone Compatibility

Based on the NPPG 'Flood Risk and Coastal Change' Table 3 (Flood Risk Vulnerability and Flood Zone Compatibility), Essential Infrastructure is compatible with Flood Zone 3 on the provision that: *"essential infrastructure should be designed and constructed to remain operational and safe in times of flood".*

Requirement for the Sequential Test and the Exception Test for the Proposed Development

The NPPG 'Flood Risk and Coastal Change' states (at paragraph 067) that: *"The Sequential and Exception Tests do not need to be applied to minor developments and changes of use".*

With regards to 'Minor Development' in relation to flood risk, the NPPG 'Flood Risk and Coastal Change' states (at paragraph 046) that minor development includes: *"minor non-residential extensions: industrial / commercial / leisure etc extensions with a footprint less than 250 square metres".*

The permanent above ground footprint of the Proposed Development (mainly comprising the extension to the eGRF and the nGRF) will be greater than 250 m². Therefore, the Sequential Test and the Exception Test are required for the Proposed Development.

The Sequential Test

With respect to the requirement for a gas connection, there are two reasonable alternatives that are available. These comprise:

- Alternative 1: A new (circa 0.2 km) connection into the existing underground high-pressure natural gas pipeline that serves the existing Spalding CCGT generating station, via an extension to the eGRF located on the east side of West Marsh Road; and,
- Alternative 2: A new (circa 8 km) underground high-pressure natural gas pipeline between the OCGT unit(s) site and the existing National Grid National Gas Transmission Network Number 7 Feeder Pipeline, via an extension to the existing AGI at Wragg Marsh.

With respect to the requirement for a drainage connection, there are two reasonable alternatives that are available. These comprise:

- Alternative 1: A new connection into the existing surface water drainage system of the existing Spalding CCGT generating station; and,
- Alternative 2: A new independent drainage system on the OCGT unit(s) site.

The above reasonable alternatives were evaluated based on a qualitative analysis of their strengths and weaknesses. The evaluation considered a number of factors, including: technical; planning; land ownership; environmental; and, cost.

Table B.1 presents a summary of the qualitative analysis undertaken for the gas connection, and Table B.2 presents a summary of the qualitative analysis undertaken for the drainage connection.

TABLE B.1: QUALITATIVE ANALYSIS OF REASONABLE GAS CONNECTION ALTERNATIVES

Factor	Alternative 1	Alternative 2
Technical	The existing underground high-pressure natural gas pipeline has sufficient capacity serve the existing Spalding CCGT generating station and the OCGT unit(s). In addition, the route of the gas connection for Alternative 1 is shorter, and requires a significantly lower number of special crossings. Therefore, Alternative 1 is preferred.	
Planning	Planning permission under the Town and Country Planning Act 1990 is required for alternatives.	
Land Ownership	Significantly lower land owners along the route of the gas connection for Alternative 1. Therefore, Alternative 1 is preferred.	
Environmental	Whilst both alternatives would likely give rise to similar environmental impacts, overall it is likely that environmental impacts would be experienced over a significantly smaller area for Alternative 1. Therefore, Alternative 1 is preferred. It is noted here that both alternatives would be located in areas classified as Flood Zone 3, and there are no other suitable alternative sites in either a Flood Zone 1 or Flood Zone 2.	
Cost	Alternative 1 is preferred.	
Summary	Preferred	Not Preferred

TABLE B.2: QUALITATIVE ANALYSIS OF REASONABLE DRAINAGE CONNECTION ALTERNATIVES

Factor	Alternative 1	Alternative 2
Technical	Both alternatives would be designed to meet the overall objective. However, the majority of the infrastructure required for Alternative 1 exists and is able to operate successfully. Therefore, Alternative 1 is preferred.	
Planning	Planning permission under the Town and Country Planning Act 1990 is required for alternatives.	
Land Ownership	Significantly lower land owners although the route of the gas connection for Alternative 1. Therefore, Alternative 1 is preferred.	
Environmental	Whilst both alternatives would likely give rise to similar environmental impacts, overall it is likely that environmental impacts would be experienced over a significantly smaller area for Alternative 1. Therefore, Alternative 1 is preferred.	
Cost	Alternative 1 is preferred.	
Summary	Preferred	Not Preferred

Based on the above, whilst there is the potential for alternative locations for gas and drainage connections, the Proposed Development and the Proposed Development location (comprising Alternative 1 for the gas connection, and Alternative 1 for the drainage connection) are the

preferable alternative taking into account technical, planning, land ownership, environmental (including flooding) and cost factors.

Based on this conclusion, the Exception Test is also applied.

[The Exception Test](#)

The NPPG 'Flood Risk and Coastal Change' notes (at paragraph 023) that the two parts to the Exception Test are:

1. To show that the Proposed Development will provide wider sustainability benefits to the community that out-weigh flood risk; and,
2. To show that the Proposed Development will be safe for its lifetime without increasing flood risk elsewhere.

With regards to Part 1 of the Exception Test, the rationale for the development of the Proposed Development is tied to that of the OCGT unit(s). Further information can be found in Section 2 (Rationale for Development) of the Spalding Energy Expansion Environmental Statement Further Information Document. This concludes that: *"It is clear that fossil-fuelled power plants will play a key role in providing reliable and flexible capacity to provide back-up and maintain the safety margin. The development of SEE is therefore an appropriate candidate to contribute the need for new energy infrastructure"*.

With regards to Part 2 of the Exception Test, the following section on 'Site-Specific Flood Risk' demonstrates that the Proposed Development will be safe for its lifetime without increasing flood risk elsewhere.

[Site-Specific Flood Risk](#)

Potential flood risks are:

- Flooding from the River Welland;
- Flooding due to overland flow from adjacent sites; and,
- Flooding from the Proposed Development site due to altered surface water flow where the existing baseline is modified by construction activities.

With regards to mitigation and management of flood risk:

- During construction, if there is a risk that the Proposed Development site may be flooded, measures will be implemented to ensure effective preparation and efficient evacuation (during construction, the measures will be implemented via the CEMP; and, during decommissioning, the measures will be implemented via the DEMP);
- Following construction, the Proposed Development site will be reinstated with similar cover to the baseline conditions, such that there is no impedance to water flows and no increased risk of flooding elsewhere; and,
- During operation:
 - There will be no requirement for a permanent operational personnel presence at the Proposed Development site;
 - If there is a risk that the Proposed Development site will be flooded, the Proposed Development will not be serviced / Proposed Development site will not be visited;
 - The extension to the eGRF (comprising: 'Hot-Tap' connection; above-ground piping; PIG facilities; roads and security fencing; and, landscaping / visual screening) will remain safe and operational in times of flooding through its inherent nature and design;
 - The underground high-pressure natural gas pipeline will be designed to maintain 'negative buoyancy'¹⁷, and will comprise a welded steel pipe which will be buried

¹⁷ For underground high-pressure natural gas pipelines, there is a risk that (during a flood event) the 'negative buoyancy' of the pipe is disrupted causing the pipe to move, or in the worst case, rise and break through the ground. However, the design of the new underground high-pressure

such that there is no impedance to water flows and no increased risk of flooding elsewhere; and,

- The nGRF will be located on the SEE site which will be raised to 6.5 m Above Ordnance Datum (AOD) in accordance with Condition (44) of the 2015 Deemed Planning Permission. In this regard, site levels at the SEE site have been carefully developed to mitigate flood risk and ensure accessibility standards are met. These design site levels take account of climate change and freeboard.

Mitigation and Management Measures

Flood Warnings

Flood warnings are an important mitigation and management measure to minimise flood risks, and can be used to ensure effective preparation and efficient evacuation.

The Environment Agency operates a flood warning service in areas of (river and coastal / tidal) flood risk, using a set of four easily recognisable codes which indicate the level of danger associated with a flood warning¹⁸. These can be issued in any order, which means that a Flood Alert¹⁹ could be followed by a Severe Flood Warning. The codes comprise:

Flood Warning	Symbol	Meaning	General Advice
Flood Alert		Flooding is possible. Be prepared.	• Be prepared to act upon your flood plan. • Prepare a flood kit of essential items. • Monitor local water levels and the flood forecast on the Environment Agency website.
Flood Warning		Flooding is expected. Immediate action required.	• Move family, pets and valuables to a safe place. • Turn off gas, electricity and water supplies if safe to do so. • Put flood protection equipment in place.
Severe Flood Warning		Severe flooding is expected. Danger to life.	• Stay in a safe place with a means of escape. • Be ready should you need to evacuate. • Co-operate with the emergency services. • Call 999 if you are in immediate danger.
Warnings No Longer in Force	• No further flooding is currently expected in this area. • Be careful. Flood water may still be around for several days. • If you've been flooded, ring your insurance company as soon as possible.		

Flood alerts and flood warnings are issued to specific areas of flood risk. As the Proposed Development is located in a Flood Zone 3, the Proposed Development site would be able to benefit from both flood alerts and flood warnings.

The Environment Agency releases flood alerts whenever flooding is possible. Flood alerts cover larger areas than flood warnings and are generally issued more frequently. Similarly, the Environment Agency releases flood warnings whenever flooding is expected.

natural gas pipeline will be in accordance with the requirements of IGEM/TD/1 which states (at Section 7.20.3.1) that: "consideration should be given to the application of a weight coating to maintain negative buoyancy [...] during construction and in service", and (at Section 8.10.2.8) that: "fabrications which are to be concrete-coated, for negative buoyancy, should be tested prior to the application of the concrete, in order to prevent fracture of spalling of the concrete".

¹⁸ It is noted that the absence of these warnings does not mean that there is no threat of flooding from other sources, such as flash flooding.

¹⁹ It is noted that the Environment Agency aims to issue Flood Alerts a minimum of 2 hours prior to a river flood event, and 12 hours prior to a coastal / tidal flood event.

General Measures

The following Table sets out a number of general measures / actions, and the associated timing.

Measure / Action to be Taken	Timing
A safe and accessible place of refuge from flood water should be defined.	Prior to commencement of construction works.
Construction works should not be scheduled / undertaken during periods of predicted high rainfall. In particular, excavation works should be postponed to avoid ponding of water.	Prior to commencement of construction works.

Actions on Receiving a Flood Alert / Flood Warning

The following Table sets out the actions to be taken on receiving a flood alert / flood warning, and the associated timing.

Measure / Action to be Taken	Timing
Flood Alert / Flood Warning should be communicated to the site personnel.	On receipt of Flood Alert / Flood Warning
No construction activities should be undertaken.	On receipt of Flood Alert / Flood Warning
Wherever possible and safe to do so, construction plant / equipment should be re-located onto higher ground.	On receipt of Flood Alert / Flood Warning
Wherever possible and safe to do so, excess materials should be removed or re-located onto higher ground.	On receipt of Flood Alert / Flood Warning
Wherever possible and safe to do so, objects that are likely to float and cause damage should be secured.	On receipt of Flood Alert / Flood Warning
Wherever possible and safe to do so, potential pollution sources (i.e. fuels / oils, miscellaneous chemicals, wastes) should be re-located well above potential flood level.	On receipt of Flood Alert / Flood Warning
Wherever possible and safe to do so, wastes should be removed.	On receipt of Flood Alert / Flood Warning
Wherever possible and safe to do so, temporary diversions / pumps for water flow should be prepared.	On receipt of Flood Alert / Flood Warning

Actions following a Flood Alert / Flood Warning

Following receipt of a Flood Alert / Flood Warning, monitoring should commence regarding potential flooding. In addition, inspection should commence to ensure that the Proposed Development site can be secured quickly if flooding becomes imminent. The following Table sets general measures / actions regarding monitoring and inspection, and the associated timing.

Measure / Action to be Taken	Timing
Monitoring should be undertaken regarding potential flood.	Following implementation of measures regarding Flood Alerts / Flood Warnings.
Inspection should be undertaken to ensure that the Proposed Development site can be secured quickly if flooding becomes imminent.	Following implementation of measures regarding Flood Alerts / Flood Warnings.

Based on the monitoring, any evacuation of the Proposed Development site should be undertaken prior to flood waters cutting off the identified egress routes.

Flood Evacuation

Assuming all measures / actions to be taken on receiving a Flood Alert / Flood Warning have been implemented, the following Table sets out the actions to be taken on Flood Evacuation, and the associated timing and responsibilities.

Measure / Action to be Taken	Timing
All construction activities should stop.	Before Evacuation
All construction plant / equipment should be switched off, and any mains electricity should be switched off.	Before Evacuation
Implement any temporary diversions / pumps for water flow.	Before Evacuation

The Proposed Development site should be secured.	Before Evacuation
The Proposed Development site should be declared closed.	Before Evacuation
Egress routes to the identified place of refuge to be used before flood waters start to rise.	On Evacuation

Re-Occupation after Flood Evacuation

Following confirmation from the Environment Agency (or other competent authority), the following Table sets out the actions to be taken on re-occupation of the Proposed Development site after a Flood Evacuation.

Measure / Action to be Taken	Timing
Access routes should be declared usable after flood waters have receded.	Before Re-Occupation
The Proposed Development site should be declared re-opened.	Before Re-Occupation
The Proposed Development site should be inspected for damage, and reported.	On Re-Occupation

APPENDIX C: METHODS FOR CROSSING OTHER EXISTING PIPELINES / SERVICES / UTILITIES

Third party crossings will comply with the requirements / guidance of:

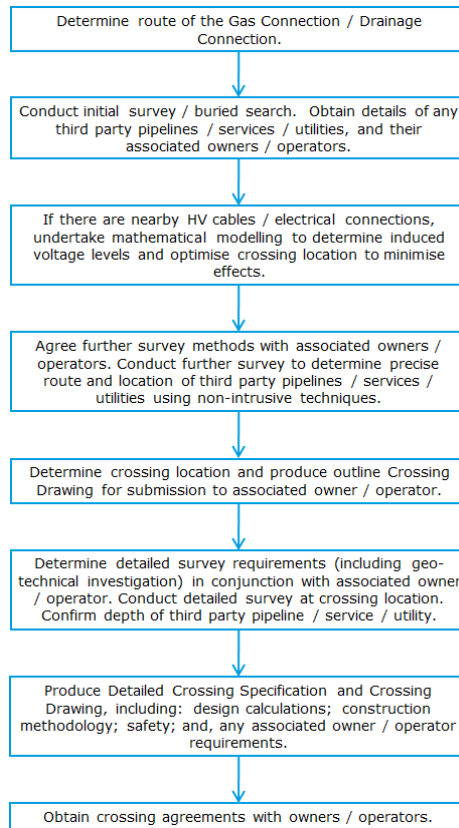
- HSE GS6: 'Avoidance of Danger from Overhead Powerlines';
- HSG 47: 'Avoiding Danger from Underground Services'; and,
- National Grid Standard T/SP/SSW/22: 'Safe Working in the Vicinity of National Grid High Pressure Gas Pipelines – Requirements for Third Parties'.

Additionally, where trenchless construction techniques are to be used, reference will be made to the requirements / guidance of the Institution of Gas Engineers and Managers (IGEM) 'Trenchless Techniques' (Edition 2) (IGEM/SR/28 Edition 2).

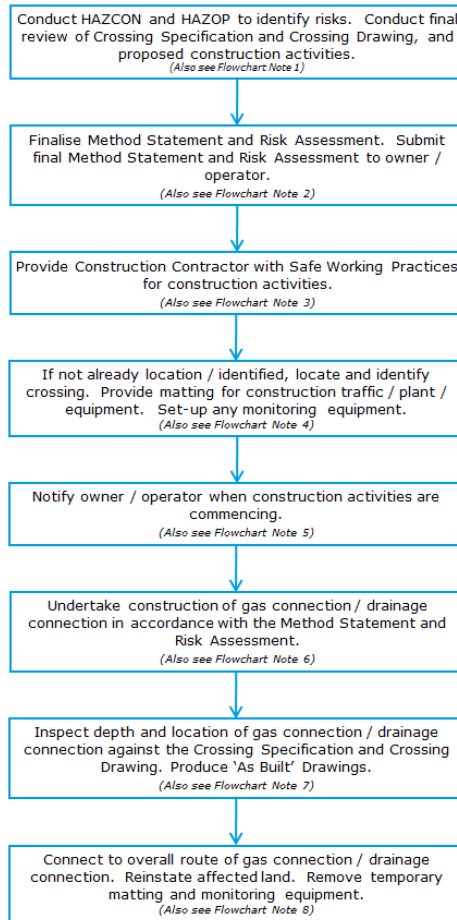
Flowchart C.1 provides details of the design of crossings.

Flowchart C.2 provides details of the construction of crossings.

FLOWCHART C.1: DESIGN OF CROSSINGS



FLOWCHART C.2: CONSTRUCTION OF CROSSINGS



ACCOMPANYING NOTES TO FLOWCHART C.2

Flowchart Note 1: Prior to any construction activities, final Hazard Constructability (HAZCON) and Hazard and Operability (HAZOP) studies will be conducted to identify risks. The Crossing Specification and Crossing Drawing, and any proposed construction activities, will be reviewed. It is essential that open conversation between the Construction Contractor and the third party owner / operator is undertaken at this stage to determine the specific requirements for the proposed crossing. Therefore, the third party owner / operator will be invited to attend the review.

Flowchart Note 2: The Construction Contractor will finalise their Method Statements and Risk Assessments for completing the crossing. The Method Statements and Risk Assessments will be based upon the Crossing Specification and Crossing Drawing, and any proposed construction activities. The Method Statements and Risk Assessments will be issued for review and comment. Comments will be incorporated in to the Method Statements and Risk Assessments and the documents will be formally issued.

Flowchart Note 3: The Construction Contractor will meet with the third party owner / operator to: agree any specific safe working requirements; agree any third party supervision / surveillance requirements; and be provided with a copy of the Safe Working Practices that the third party owner / operator will require for the crossing.

Flowchart Note 4: If no location / identification exists, third party pipelines / services / utilities will be marked / identified. Protective matting will be installed to ensure that construction traffic (comprising plant and equipment) only crosses at an agreed / defined location. In addition, where third party owners / operators have specific requirements for vibration or other monitoring, the specified monitoring equipment will be installed. No construction activities will commence until the monitoring equipment is installed.

Flowchart Note 5: The third party owner / operator will be notified prior to the commencement of any construction activities so that they can arrange for any supervision / surveillance. The third party owner / operator will be allowed access at their crossing points.

Flowchart Note 6: The construction of the section of the gas connection / drainage connecting will be undertaken in accordance with the agreed Method Statement and Risk Assessment.

Flowchart Note 7: Once the third party crossing has been completed, inspection will be undertaken to ensure the section of the gas connection / drainage connection is at the required depth and location. 'As Built' Drawings will be produced.

Flowchart Note 8: At the crossing location, the section will be tied into the overall route of the gas connection / drainage connection. The affected land will be reinstated. Once it is clear that no further construction traffic will cross, the protective matting and monitoring equipment will be removed.