Application for Hazardous Substances Consent

Peterborough Compressor Station

National Gas Transmission plc

January 2026

REDACTED - PUBLIC REGISTER

national gas transmission

Project Environmental Solutions

Application for Hazardous Substances Consent

Application details	
Application	Application for Hazardous Substances Consent
Date	January 2026

Applicant details	
Applicant contact	Terry Hayes
Applicant	National Gas Transmission plc
Applicant address	National Gas Transmission National Grid House Warwick Technology Park Gallows Hill Warwick
Applicant postcode	CV34 6DA
Telephone number	+44 (0) 1926 653 000

Application site details	
Site	Peterborough Compressor Station
Site address	Peterborough Compressor Station 1650 Lincoln Road Peterborough
Site postcode	PE6 7HH
OS gird reference	515152, 304604 (easting, northing)

Contents

Part I: Application form

Application to the relevant hazardous substances authority (planning authority)

The Planning (Hazardous Substances) Act 1990 - Section 7(1)

England - The Planning (Hazardous Substances) Regulations 2015 (Regulation 5)

Wales - The Planning (Hazardous Substances) (Wales) Regulations 2015 (Regulation 5)

Application for Hazardous Substances Consent

1

Applicant	National Gas Transmission plc
Address	National Grid House
	Warwick Technology Park
	Gallows Hill
	Warwick
Post code	CV34 6DA
Telephone number	+44 (0) 1926 653 000

Person in control of the land to which the application relates, if different to above	Terry Hayes Head of Operations, East National Gas Transmission plc
Address	National Gas Transmission plc
	National Grid House
	Warwick Technology Park
	Gallows Hill
	Warwick
Post code	CV34 6DA
Telephone number	+44 (0) 1926 653 000

2

Address or other location details of application site	Peterborough Compressor Station
	National Gas Transmission plc
	1650 Lincoln Road
	Glinton
	Peterborough
Post code	PE6 7HH
OS grid ref	515059, 304580 (easting, northing)

3 Hazardous substance(s) covered by the application

(a) List named substances falling within Part 2 of Schedule 1 to the Regulations first, then list any substances falling within the categories in Part 1 of that Schedule; finally list substances falling within the description in Part 3.

(b) Substances falling within Parts 1 or 3 of Schedule 1 to the Regulations may be listed under the relevant category or description or named specifically. Where a substance falls within Part 1 and 2 list under Part 2 only; where a substance falls within more than one category in Part 1 list under the category which has the lowest controlled quantity. Where a substance falling within Part 1 or 2 also falls within Part 3 list under the Part which has the lowest controlled quantity. The "controlled quantity" means the quantity specified for that substance in column 2 of Parts 1, 2 or 3 of Schedule 1 to the Regulations.

Note: The addition rule as set out in the schedule to the regulations should be applied to determine whether consent is required for substances below the Controlled Quantity. Examples are given in the associated planning guidance. The Planning (Hazardous Substances) (Amendment) Regulations 2017 are relevant to the use of the addition rule in England only. The Planning (Hazardous Substances) (Amendment) Regulations 2015 are relevant to Q* (addition rule) for LPG, and relevant to notes about ammonium nitrate.

Table A

Name, or relevant category or description of substance	*Part number in Schedule 1 to the Regulations, and entry number if Part 2, category if Part 1, identity if Part 3*	*Do you have a current PHS consent* in respect of this substance? (Yes/No)*	*If "yes", state quantity for which consent granted*	*Maximum quantity proposed to be present in tonnes*
Flammable gases (natural gas)	P2, Entry 18	Yes	168[#]	161 tonnes[###] (assuming 75bar station maximum operating pressure (MOP), 0.805 compressibility and 15 degC[##] temp).

*a hazardous substances consent

[#] 'Established quantity' as per consent dated 25.11.1992. For the avoidance of doubt, the applied for sum is not in addition to the original consented quantity

[##] ISO 13443:1996 Standard reference temperature condition for natural gas

[###] Includes 10% contingency which has been added to the overall tonnage estimate for the station

Where in Table A consent is sought for any substance below the relevant Control Quantity, give the reason in the box below including the calculation for each relevant type of hazard (health, physical and/or environmental) with the q/Q fractions that add to greater than or equal to 1.

N/A

4 Manner in which substance(s) are to be kept and used

For each substance, category or description of substance, covered by the application, provide the following information, referring to the substance location plan where appropriate.

"Vessel" means any container designed or adapted to contain hazardous substances which is affixed to the land, and includes a container which forms part of plant or machinery which is affixed to the land but does not include a pipeline.

	Substance present	Kept / used	Location
Compressor A, B and C	Natural gas	In transit	See Figure 2
Compressor D, E and F	Natural gas	In transit	See Figure 2
Scrubbers x 2	Natural gas	In transit	See Figure 2
Condensate tank	Natural gas	Blanket gas	See Figure 2
Pipeline Inspection Gauge (PIG) Traps x 4 (A-D)	Natural gas	In transit	See Figure 2

"Buried" or "Mounded" vessel includes a vessel which is only partially buried or partially mounded.

"moveable container" means any container designed or adapted to contain hazardous substances other than a vessel.

(a) Tick one box below to show whether the substance(s) will be present for storage only or will be stored and involved in a manufacturing, treatment or other industrial process:

Table B

Substance including Part no. in Sch. 1 to the Regs, and entry no. if Part 2, category if Part 1, identity if Part 3	*Storage only*	*Stored and involved in an industrial process*
P2 Flammable gases (Entry 18) (natural gas)	None	✓

(b) For each vessel to be used for storing the substance(s) give the following information:

Table C (i)

Vessel No See Figure 2*	*Substance including Part no. in Sch. 1 to the Regs, and entry no. if Part 2, category if Part 1, identity if Part 3*	*Installed above ground† (Yes/No)*	*Buried (Yes/No)*	*Mounded (Yes/No)*	*Maximum capacity (cubic metres)*	*Highest vessel design temperature °C*	*Highest vessel design pressure (bar absolute)*
Compressor A	P2 Flammable gases (Entry 18, natural gas)	Yes	No	No	[redacted]	[redacted]	[redacted]
Compressor B	P2 Flammable gases (Entry 18, natural gas)	Yes	No	No			
Compressor C	P2 Flammable gases (Entry 18, natural gas)	Yes	No	No			
Compressor D	P2 Flammable gases (Entry 18, natural gas)	Yes	No	No			
Compressor E	P2 Flammable gases (Entry 18, natural gas)	Yes	No	No			
Compressor F	P2 Flammable gases (Entry 18, natural gas)	Yes	No	No			
Scrubber 1	P2 Flammable gases (Entry 18, natural gas)	Yes	No	No			
Scrubber 2	P2 Flammable gases (Entry 18, natural gas)	Yes	No	No			
Condensate tank	P2 Flammable gases (Entry 18, natural gas)	Yes	No	No			
Pig trap A	P2 Flammable gases (Entry 18, natural gas)	Yes	No	No			
Pig trap B	P2 Flammable gases (Entry 18, natural gas)	Yes	No	No			
Pig trap C	P2 Flammable gases (Entry 18, natural gas)	Yes	No	No			
Pig trap D	P2 Flammable gases (Entry 18, natural gas)	Yes	No	No			

* identify by reference to substance location plan

** Total volume = pig trap and associated AGI pipework

*** Maximum rated temperature for station pipework. NB - elevated pipe and vessel temps are localised to areas around the compressors and immediate downstream discharge pipework.

† if "Yes", specify whether or not it will be provided with full secondary containment

(c) For each substance, category, or description of substance, state the largest size (capacity in cubic metres) of any moveable container(s) to be used for that substance, category, or description of substances:

Table C (ii)

Substance including Part no. in Sch. 1 to the Regs, and entry no. if Part 2, category if Part 1, identity if Part 3	*Storage area on site**	*Maximum capacity (cubic metres) of individual moveable containers*
N/A	N/A	N/A

* identify by reference to substance location plan

(d) Where a substance, category or description of substance is to be used in a manufacturing, treatment or other industrial process(es), give a general description of the process(es), describe the major items of plant which will contain the substance(s); and state the maximum quantity (in tonnes) which is liable to be present in the major items of the plant, and the maximum temperature (°C) and pressure (bar absolute) at which the substance, category or description of substance is liable to be present:

Table D

Substance including Part no. in Schedule 1 to the Regs, and entry no. if Part 2, category if Part 1, identity if Part 3	*Description of process(es)*	*Major items of plant**	*Max. quantity (tonnes)*	*Max. temp. (°C)*	*Max. pressure (bar absolute)*
Station overview					
P2 Flammable gases (Entry 18, natural gas)	Natural gas from the National Transmission System (NTS) enters the station via feeders (large bore pipes). Within the station there is a network of buried and above ground pipework and valves at a range of sizes from small to large bore. Gas flows are redirected using values or compressed as required. Prior to compression gas passes through one of two scrubbers (separators) which remove any liquid hydrocarbon condensate, and other contaminants present in the gas stream, e.g. pipe scale dust and traces of lube oil. Material entrained in the scrubbers is transferred to the condensate tank prior to removal from the site as waste. Following scrubbing, natural gas is compressed in one of six process compressors. Following which it is redirected to the NTS via valves. PIG traps are used to launch and recover inspection and cleaning gauges used periodically on the system.	Pipework, PIG traps, compressors, scrubbers, condensate tank. Refer also to Figure 2.	161 tonnes[#] (assuming 75bar station MOP ([redacted] for condensate tank), 0.805 compressibility and 15 degC temp). The above station overview value includes the 10% contingency uplift over the individual system values stated below.	[redacted] – maximum rated temperature for station pipework. NB - elevated pipe and vessel temps are localised to areas around the compressors and immediate downstream discharge pipework.	75bar (station MOP)

Substance including Part no. in Schedule 1 to the Regs, and entry no. if Part 2, category if Part 1, identity if Part 3	*Description of process(es)*	*Major items of plant**	*Max. quantity (tonnes)*	*Max. temp. (°C)*	*Max. pressure (bar absolute)*
Individual systems overview					
P2 Flammable gases (Entry 18, natural gas)	*System 1 – Compressor A (K1101A)* Compressor machinery train unit A and associated pipework, comprising suction flange to suction isolation valve, discharge flange to discharge isolation valve, compressor casing, recycle line to isolation valve, unit fuel gas line.	Pipework Valves Recycle line Compressor A	[redacted]	[redacted]	[redacted]
P2 Flammable gases (Entry 18, natural gas)	*System 2 – Compressor B (K1101B)* Compressor machinery train unit B and associated pipework, comprising suction flange to suction isolation valve, discharge flange to discharge isolation valve, compressor casing, recycle line to isolation valve, unit fuel gas line.	Pipework Valves Recycle line Compressor B			
P2 Flammable gases (Entry 18, natural gas)	*System 3 – Compressor C (K1101C)* Compressor machinery train unit C and associated pipework, comprising suction flange to suction isolation valve, discharge flange to discharge isolation valve, compressor casing, recycle line to isolation valve, unit fuel gas line.	Pipework Valves Recycle line Compressor C			

Substance including Part no. in Schedule 1 to the Regs, and entry no. if Part 2, category if Part 1, identity if Part 3	*Description of process(es)*	*Major items of plant**	*Max. quantity (tonnes)*	*Max. temp. (°C)*	*Max. pressure (bar absolute)*
P2 Flammable gases (Entry 18, natural gas)	*System 4 – Total pipe volume for compressors D & E and scrubbers* Comprising pipework associated with scrubbers and compressor units D & E (excluding compressor and scrubber volumes which are listed in systems 5 & 8, respectively).	Pipework Valves	[redacted]	[redacted]	[redacted]
P2 Flammable gases (Entry 18, natural gas)	*System 5 – Compressors D & E (casing, seal & fuel gas skids)* Comprising compressor casing for units D & E and associated unit fuel gas and seal gas conditioning skids.	Compressor casing Seal gas skid Fuel gas skid			
P2 Flammable gases (Entry 18, natural gas)	*System 6 – Compressor F (compressor F incl. pipework, seal & fuel gas skids)* Comprising pipework and compressor casing associated with unit F, including unit fuel gas and seal gas conditioning skid.	Pipework Valves Seal gas skid Fuel gas skid Compressor F			
P2 Flammable gases (Entry 18, natural gas)	*System 7 – Condensate tank* Storage vessel for condensate and contaminants separated from the process gas stream in the scrubbers.	Valves Condensate tank			

Substance including Part no. in Schedule 1 to the Regs, and entry no. if Part 2, category if Part 1, identity if Part 3	*Description of process(es)*	*Major items of plant**	*Max. quantity (tonnes)*	*Max. temp. (°C)*	*Max. pressure (bar absolute)*
P2 Flammable gases (Entry 18, natural gas)	*System 8 –Scrubbers x2* 2 no gas scrubbers (separators) which remove contaminants in the process gas stream, including liquid gas condensate, other hydrocarbon residues (e.g. lubrication oil) and pipe scale.	Scrubbers	[redacted]	[redacted]	[redacted]
P2 Flammable gases (Entry 18, natural gas)	*System 9 –Station suction* Comprising pipework from station suction isolation valves to scrubbers, also pipework connecting the outlet of the gas scrubbers to the compressor inlet (suction) header (terminating at the unit suction isolation valves), conveying clean process gas for compression. System includes process gas recycle line for compressor units A, B and C. This allows a process gas recycle loop to be created, which is necessary for process gas compressor startup and under certain process conditions. In normal running operation, no gas flows through the recycle line.	Pipework Valves			
P2 Flammable gases (Entry 18, natural gas)	*System 10 –Station discharge* Pipework comprising discharge line from compressors A, B and C and discharge headers to discharge outlet isolation valve.	Pipework Valves			

Substance including Part no. in Schedule 1 to the Regs, and entry no. if Part 2, category if Part 1, identity if Part 3	*Description of process(es)*	*Major items of plant**	*Max. quantity (tonnes)*	*Max. temp. (°C)*	*Max. pressure (bar absolute)*
P2 Flammable gases (Entry 18, natural gas)	*System 11 –PIG traps C, A, B and D* Comprising pipeline inspection gauge (PIG) launcher / receiver vessels. Only pressurised during in-line inspection (ILI) operations.	PIG traps	[redacted]	[redacted]	[redacted]
P2 Flammable gases (Entry 18, natural gas)	*System 12 – AGI* Comprising above and below ground pipework valves and other equipment associated with the above ground installation (AGI) / multi-junction allowing process gas flows to be routed as required to the local NTS feeders.	Pipework Valves Other equipment (e.g. gas quality and metering)			

* Identify by reference to substance location plan

Includes 10% contingency which has been added to the overall tonnage estimate for the station

5 Additional Information

(a) If you have an existing PHS consent(s) as referred to in Table A, attach a copy of each consent to this application.

(b) List the maps or plans or any explanatory scale drawings of plant/buildings submitted with this application (as a minimum submit a site map and a substance location plan – see Notes below).

Figure 1 – Site location plan

Figure 2 – Substance location plan

Figure 3 – Transportation routes in and out of site (gas feeder pipelines)

Figure 4 – Nearby potential sensitive receptors

Appendix 1 – Existing PHS correspondence (1992)

Appendix 2 – Site gas inventory calculation sources

(c) Provide a brief overview description of the main activities carried out or proposed to be carried out on the land to which the application relates.

Natural gas from the NTS enters the station via feeders (large bore pipes). Within the station there is a network of buried and above ground pipework and valves at a range of sizes from small to large bore. Gas flows are redirected using values or compressed as required. Prior to compression gas passes through one of two scrubbers (separators) which remove any liquid hydrocarbon condensate, and other contaminants present in the gas stream, e.g. pipe scale dust and traces of lube oil). Material entrained in the scrubbers is transferred to the condensate tank prior to removal from the site as waste. Following scrubbing, natural gas is compressed in one of six process compressors. Following which it is redirected to the NTS via valves. PIG traps are used to launch and recover inspection and cleaning gauges used periodically on the system.

This application is being made due to a major site upgrade which will result in the installation of three new compressor units (D, E & F). The existing consented compressor units (A, B and C) will be decommissioned in due course.

(d) Provide details of how each relevant substance is proposed to be transported to and from the land to which the application relates, for example the size and frequency of vehicle deliveries, the size or maximum flow rate of pipeline imports/exports.

Substance including Part number in Schedule 1 to the Regulations, and entry number if Part 2, category if Part 1, identity if Part 3	*How, and other details such as frequency and quantity, transported to and from the land to which the application relates*	
	Transported to site	*Transported from site*
P2 Flammable gases (Entry 18, natural gas)	Gas feeder pipelines (import). Continuously pressurised, flow and pressure variable based on national gas demand. See Figure 3.	Gas feeder pipelines (export). Continuously pressurised, flow and pressure variable based on national gas demand. See Figure 3.

(e) Provide details of the vicinity of the land to which the application relates, where such details are relevant to the risks or consequences of a major accident (relevant details include numbers of people in neighbouring developments that could be affected by a major accident and details about environmentally sensitive receptors).

The installation is located approximately 7.5km north-west of Peterborough town centre and approximately 1km south of the village of Glinton. The installation is accessed from its south-eastern side via Waterworks Lane and Gasworks Road.

Detailed risk assessments have been carried out by National Gas Transmission which confirm that none of the identified receptors are at risk from a major accident occurring on the compressor station or Above Ground Installation (AGI). All relevant receptors are shown in Figure 4.

There are no locally or nationally designated habitat sites within the vicinity of the installation. See Figure 4.

(f) Provide a brief overview of the measures taken or proposed to be taken to limit the consequences of a major accident.

National Gas Transmission has an extensive formal process safety and environmental risk reduction governance framework which deals with potential risks at project design and construction phase and during operation of plant. These include:

- Formal Process Safety Assessments and Formal Environmental Assessments during project design and delivery stage. These include a number of formal quantitative and qualitative risk assessments.
- During the operational phase of the plant process operations are continually monitored either locally or via telemetry links to the Gas National Control Centre. All site interventions are subject to a comprehensive 'Permit to Work' system, underpinned by Risk Assessment Method Statements (RAMS).
- National Gas Transmission has a comprehensive emergency planning and business continuity system which includes emergency response exercises.
- Periodic (5 yearly) Process Hazard Reviews are carried out for the Peterborough Compressor Station.

(g) Give any further information which you consider to be relevant to the determination of this application. (For example, details about any exempted established substances on site or a copy of any notification about 'other establishments'/exempted established substances if already submitted).

(Will print as blank space if no further information provided)

I/We hereby apply for hazardous substances consent in accordance with the proposals described in the application

Signed .....

on behalf of .....
(insert name of person in control of the land if different to applicant)

Date 17th NOVEMBER 2025

To be accompanied by the notices and certificates required by regulations 6 and 7 of the Regulations.

Notes

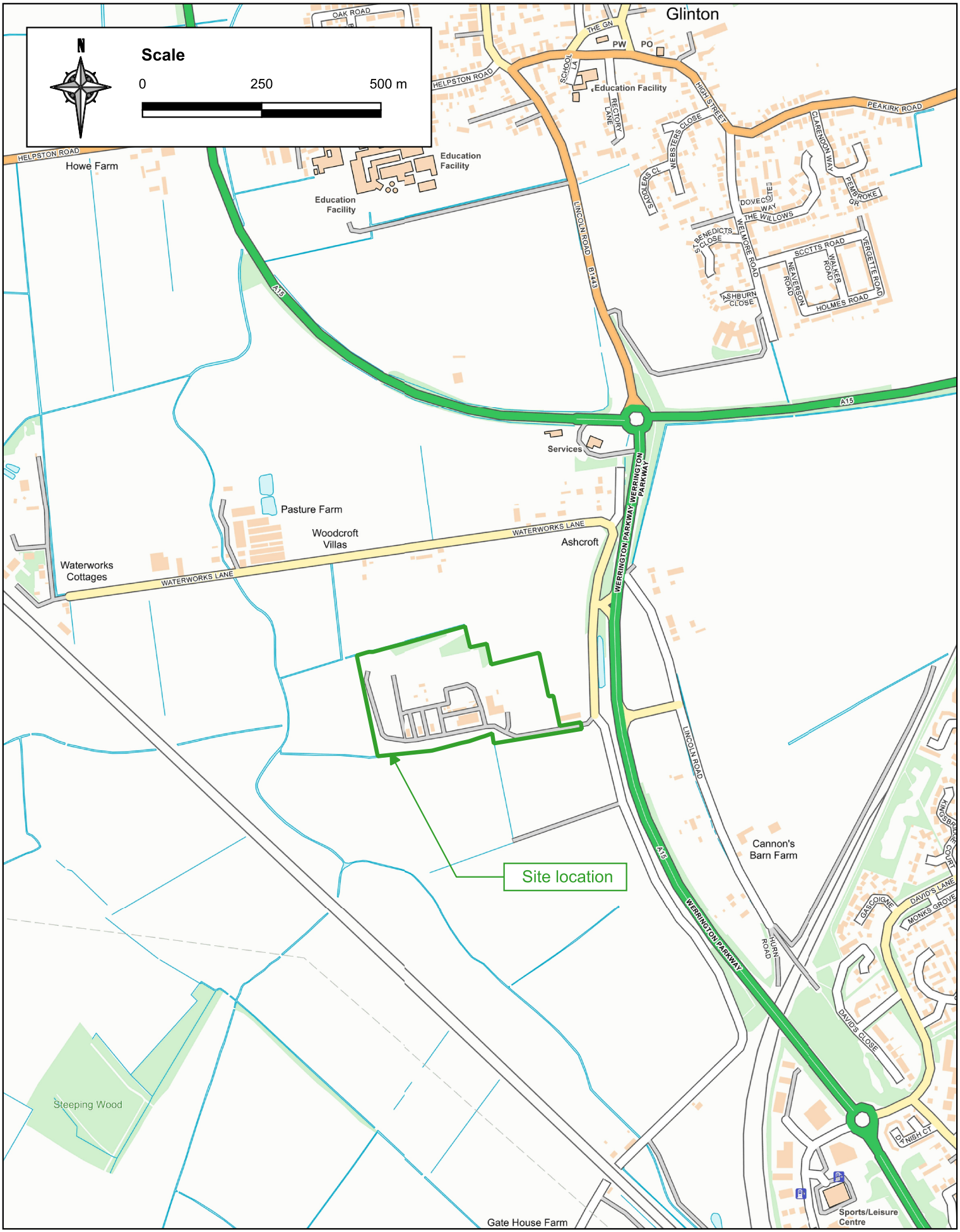
"**Site map**" is a map, reproduced from, or based on, an Ordnance Survey map with a scale of not less than 1:10,000, which identifies the land to which the application relates and shows gas transmission lines and reference numbers.

"**Substance location plan**" is a plan of the land to which the application relates, drawn to a scale of not less than 1:2,500, which identifies-

(a) any area of land intended to be used for the storage of the substance;
(b) where the substance is to be used in a manufacturing, treatment or other industrial process, the location of the major items of plant involved in that process in which the substance will be present; and
(c) access points to and from the land.

Part II: Figures

Figure 1 Site location plan



national gas transmission
Project Environmental Solutions

Date	December 2025
Revision	FINAL Rev 1
Scale	1:10,000 @ A4
PESL No.	JAC.001.b

Project
Application for Hazardous Substances Consent - Peterborough Compressor Station

Drawing title
Figure 1: Site Location Plan

Figure 2 Substance location plan

Scale

Scale 1:1,250

0 10 20 30 40 50 100

metres

national gas transmission

Project Environmental Solutions

Date	June 2025
Revision	FINAL(Rev 0)
Scale	1:1,250 @ A3
PESL No.	JAC.001.b

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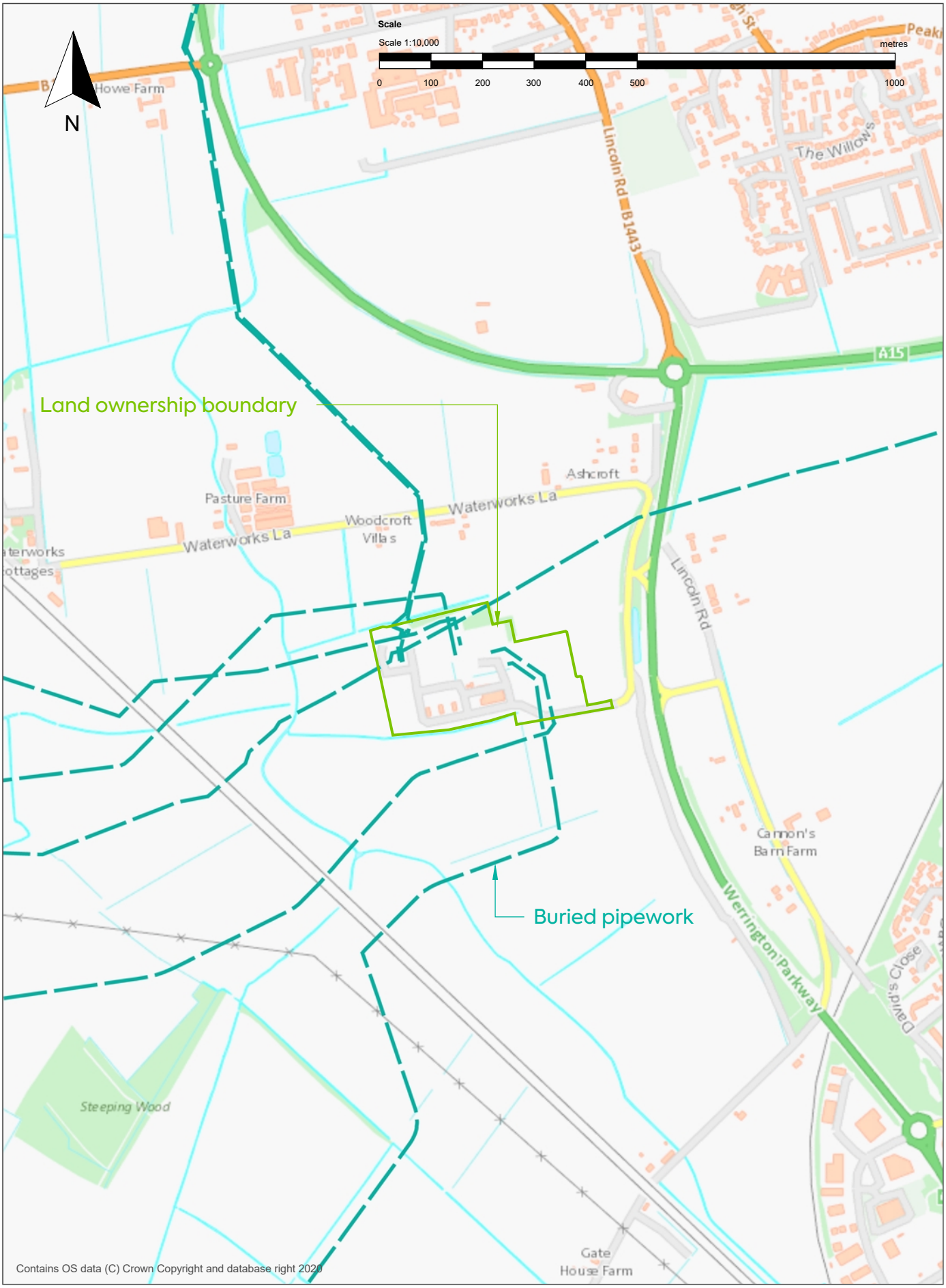
Drawing title

Figure 2 - Site layout plan showing substance location

Base layer derived from C:\Users\alroberts\OneDrive - Jacobs\AJR-Work Projects\Huntington\New Figures\PAC2698-EPV-002_REV1.dwg - 19/01/2021 12:05:31 - A3Frame NOT FOR PR - ALRoberts (Rev 1)

Figure 3 Transportation routes in and out of site (gas feeder pipelines)



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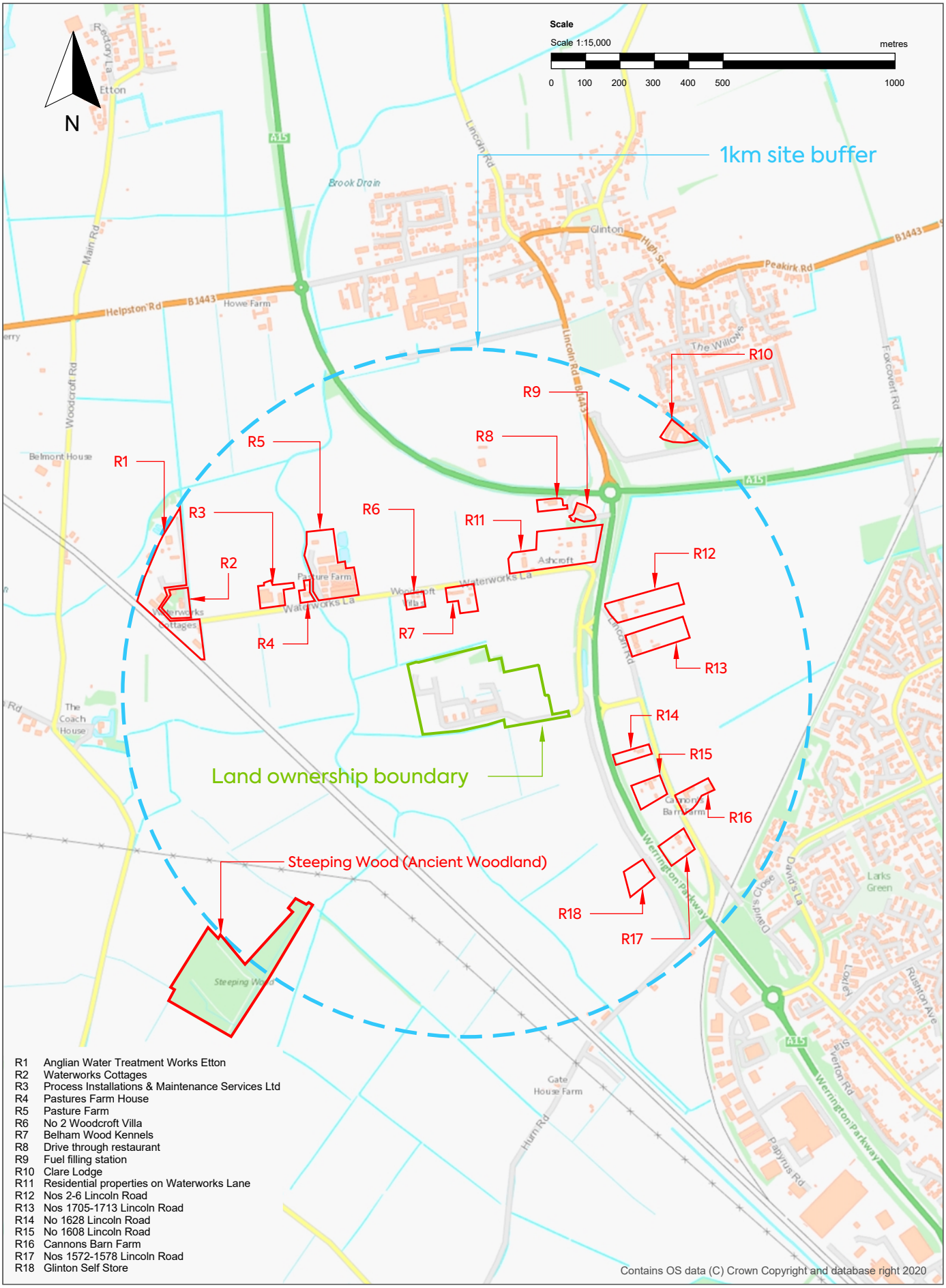
Drawing title

Figure 3 - Site location plan showing location of buried pipework

Figure 4 Nearby potential sensitive receptors



R1 Anglian Water Treatment Works Etton
R2 Waterworks Cottages
R3 Process Installations & Maintenance Services Ltd
R4 Pastures Farm House
R5 Pasture Farm
R6 No 2 Woodcroft Villa
R7 Belham Wood Kennels
R8 Drive through restaurant
R9 Fuel filling station
R10 Clare Lodge
R11 Residential properties on Waterworks Lane
R12 Nos 2-6 Lincoln Road
R13 Nos 1705-1713 Lincoln Road
R14 No 1628 Lincoln Road
R15 No 1608 Lincoln Road
R16 Cannons Barn Farm
R17 Nos 1572-1578 Lincoln Road
R18 Glinton Self Store

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Project Environmental Solutions

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Drawing title
Figure 4 - Site location plan showing nearby sensitive receptors

Part III: Appendices

Appendix 1 Existing PHS correspondence (1992)

F Waddle → 1/12/92.

PETERBOROUGH CITY COUNCIL
Bridge House, Town Bridge
Peterborough PE1 1HB

Telephone (0733) 63141
DX 12310 Peterborough 1
Facsimile: (0733) 890348

PLANNING AND
ENVIRONMENTAL HEALTH
(Planning Services)

CITY OF EUROPE

British Gas PLC
Compressor Group Centre
1650 Lincoln Road
Glinton
PETERBOROUGH

Please ask for: Miss V Stokes
ext 3638
Telephone direct (0733)
Our ref: VS/FAC/92/D/HS003

Your ref:

Date: 25 November 1992

Dear Sir(s)/Madam

The Planning (Hazardous Substances) Act 1990
The Planning (Hazardous Substances) Regulation 1992 (Regulation 14)
NATURAL GAS COMPREHENSION TO MAINTAIN PRESSURE/FLOW IN THE NATIONAL TRANSMISSION SYSTEM
BRITISH GAS PLC, PETERBOROUGH COMPRESSOR STATION, 1650 LINCOLN ROAD, GLINTON, PETERBOROUGH

I acknowledge receipt of your application for Hazardous Substances deemed consent under the Planning (Hazardous Substances) Act 1990, Regulation 14.

Yours faithfully

D. Mansfield

Head of Planning Services

BGC POG G M			30-11-92		
APPT	ACTN	INFO	APPT	ASTN	INFO
SEC			AE P		
S/CLK			AE S		
CLK/T			AE K		
			AE W		
CE P/S			AE H		
CE K			AE C/I		
CE W/H			AE ELEC		

The Planning (Hazardous Substances) Act 1990 – Section 11 **Form 8**
The Planning (Hazardous Substances) Regulations 1992 (Regulation 14)

PART 1 CLAIMANT AND SITE

1. **Claimant**

Address British Gas plc
Peterborough Compressor Station
1650 Lincoln Road
Peterborough
Cambs
PE6 7HH

Tel No 0733 572601

Agent to whom correspondence should be sent

Address British Gas plc
Compressor Group Centre
1650 Lincoln Road
Peterborough
Cambs
PE6 7HH

Tel No 0733 572601

Contact Mr W F MacDonald, Group Manager

2. **Full postal address or location of land to which the claim relates**

As in 1, Claimant

3. **General description of activities carried on at the site during the establishment period**

Natural gas compression to maintain pressure/flow in the National Transmission System.

PART 2 – SUBSTANCES FOR WHICH THE CONSENT IS BEING CLAIMED AND ESTABLISHED QUANTITY

Table A

To be completed for substances notified to HSE under NIHHS before 1 June 1992

1 Name of substance(s) present during establishment period	2 Entry number in Schedule 1 to the 1991 Regulations	3 Quantity last notified to HSE before 1 June 1992	4 Quantity notified before start of the establishment period	5 Established quantity
Natural Gas	68	84 Tonnes	84 Tonnes	168 Tonnes

Table B N/A

To be completed for substances not required to be notified under NIHHS before 1 June 1992 and where a quantity not less than the controlled quantity was present at any one time during the establishment period

1 Name of substance(s) present during establishment period	2 Entry number in Schedule 1 to the 1991 Regulations	3 Maximum quantity present during establishment period	4 Established quantity

PART 3 – MOVEABLE CONTAINER STORAGE AREA N/A

For each area identified in any moveable container storage area plan which accompanies this claim specify –

(a) the maximum quantity of the hazardous substance stored in the area in moveable containers at any time during the establishment period –

(b) whether the substance was stored in a moveable container with a capacity in excess of 10% of the substance's controlled quantity in that area during that period and, if so, the capacity (in tonnes) of the largest moveable container in which the substance was so stored –

PART 4 – VESSEL CAPACITY, TEMPERATURE AND PRESSURE

(see Table C) N/A

PART 5

I/We hereby claim hazardous substances consent in accordance with the information provided.

Signed _____

on behalf of British Gas plc

Date _____

Part 4 Vessel Capacity, Temperature and Pressure – Table C NOT APPLICABLE

		Below ambient temperature (b)		At ambient temperature (c)				Above ambient temperature (d)				
		1(a)	2(b)	3(a)	4(b)	5(a)	6(b)	7(a)	8(b)	9(a)	10(b)	11(b)
Vessel area (a)	Entry number of substance in Schedule 1 to the WHS Regulations	Buried or mounded vessels				Non buried or non mounded vessels		Present at or below boiling point at 1 bar		Highest design temperature °C	Present at above boiling point at 1 bar	
		largest capacity vessel m³	highest vessel design pressure bar	largest capacity vessel m³	highest vessel design pressure bar	largest capacity vessel m³	highest vessel design pressure bar	largest capacity vessel m³	highest vessel design pressure bar		largest capacity vessel m³	highest vessel design pressure bar

Notes to Part 4 — Table C

(a) This table should be completed for each vessel area identified in any vessel location plan which accompanies this claim, with a separate row being completed for each hazardous substance in that vessel area.

(b) Only complete columns 1 and 2 in respect of a vessel area in which the substance was present in a vessel at below ambient temperature at any time during the establishment period.

(c) Only complete columns 3 to 6 in respect of a vessel area in which the substance was present in a vessel at ambient temperature at any time during the establishment period.

(d) Only complete columns 7 to 11 in respect of a vessel area in which the substance was present in a vessel at above ambient temperature at any time during the establishment period.

(e) **Column 1** Enter the capacity *(in cubic metres)* of the largest capacity vessel in which the substance was present in the relevant vessel area at below ambient temperature at any time during the establishment period.

(f) **Column 2** Only complete if the substance was present in a vessel at above atmospheric pressure at below ambient temperature in the relevant vessel area at any time during the establishment period.

To complete, enter the highest vessel design pressure of any vessel in which the substance was present in the relevant vessel area at above atmospheric pressure at below ambient temperature at any time during the establishment period.

(g) **Column 3** Only complete if the substance was present at ambient temperature in a vessel which was buried or mounded in the relevant vessel area at any time during the establishment period.

To complete, enter the capacity *(in cubic metres)* of the largest capacity buried or mounded vessel in which the substance was present at ambient temperature in the relevant vessel area at any time during the establishment period.

(h) **Column 4** Only complete if the substance was present at above atmospheric pressure at ambient temperature in a vessel which was buried or mounded in the relevant vessel area at any time during the establishment period.

To complete, enter the highest vessel design operating pressure of any buried or mounded vessel in which the substance was present in the relevant vessel at above atmospheric pressure at ambient temperature at any time during the establishment period.

(i) **Column 5** Only complete if the substance was present at ambient temperature in a non-buried or non-mounded vessel in the relevant vessel area at any time during the establishment period.

To complete, enter the capacity *(in cubic metres)* of the largest capacity non-buried or non-mounded vessel in which the substance was present at ambient temperature in the relevant vessel area at any time during the establishment period.

(j) **Column 6** Only complete if the substance was present at above atmospheric pressure at ambient temperature in a non-buried on non-mounded vessel in the relevant vessel area at any time during the establishment period.

To complete, enter the highest vessel design operating pressure of any non-buried or non-mounded vessel in which the substance was present in the relevant vessel area at above atmospheric pressure at ambient temperature at any time during the establishment period.

(k) **Column 7** Only complete if the substance was present in a vessel at above ambient temperature at or below its boiling point at bar 1 absolute in the relevant vessel area at any time during the establishment period.

To complete, enter the capacity *(in cubic metres)* of the largest capacity vessel in which the substance was present at above ambient temperature at or below its boiling point at 1 bar absolute in the relevant vessel area at any time during the establishment period.

(l) **Column 8** Only complete if the substance was present at above atmospheric pressure at above ambient temperature at or below its boiling point at bar 1 absolute in a vessel in the relevant vessel area at any time during the establishment period.

To complete, enter the highest vessel design operating pressure of any vessel in which the substance was present at above atmospheric pressure at above ambient temperature at or below its boiling point at 1 bar in a vessel in the relevant vessel area at any time during the establishment period.

(m) **Column 9** Enter the highest design operating temperature *(in centigrade)* of any vessel in which the substance was present at above ambient temperature in the relevant vessel area at any time during the establishment period.

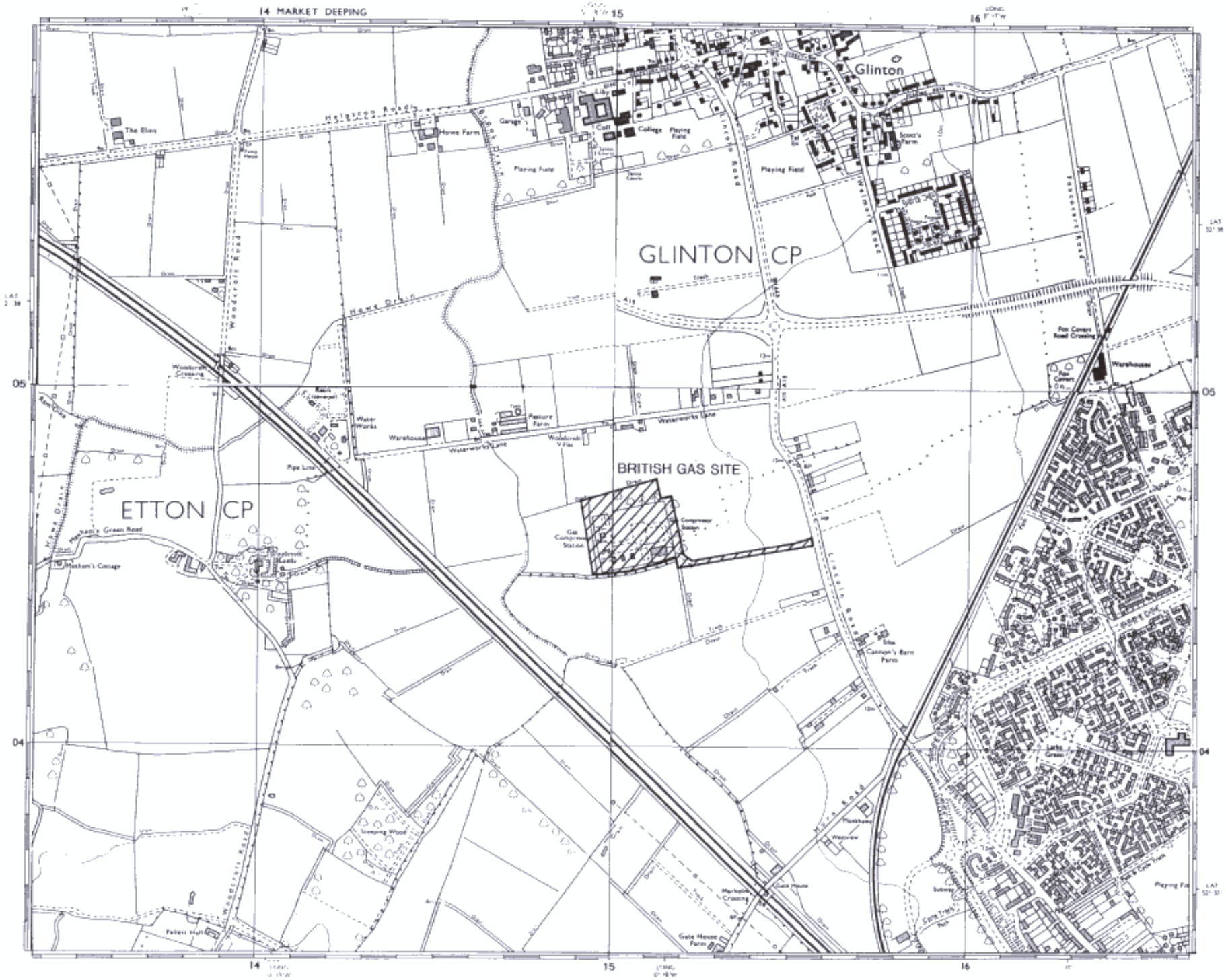
(n) **Column 10** Only complete if the substance was present in a vessel at above its boiling point at 1 bar absolute in the relevant vessel area at any time during the establishment period.

To complete, enter the capacity *(in cubic metres)* of the largest capacity vessel in which the substance was present at above its boiling point at 1 bar absolute in the relevant vessel area at any time during the establishment period.

(o) **Column 11** Only complete if the substance was present at above atmospheric pressure above its boiling point at 1 bar absolute in a vessel in the relevant vessel area at any time during the establishment period.

To complete, enter the highest vessel design operating pressure of any vessel in which the substance was present at above atmospheric pressure at above its boiling point at 1 bar absolute in a vessel in the relevant vessel area at any time during the establishment period.

Heights are given in metres above Newlyn Datum



COMPILED FROM ORDNANCE SURVEY
1:10000 GRID SERIES PLANS

TF10NW	TF10NE
TF10SW	TF10SE

MOD	DATE	DESCRIPTION	BY	CK

SITE

PETERBOROUGH
COMPRESSOR STATION

TITLE

SITE LOCATION

DRAWN	AMB	DATE	Oct 92	SCALE
CHECKED		APPROVED		1:10000

British Gas plc
Cartographic Section
Bishops House
1 High Holborn
London WC1V 8DS
Telephone 071-611-5314

British Gas

BG/N049/10/01/06/0021

Appendix 2 Site gas inventory calculation sources

System		Description	Source	m^3	Mass T	Mass T rounded
1	Compressor A					
2	Compressor B					
3	Compressor C					
4	Compressors D & E					
5	Compressors D & E					
6	Compressor F					
7	Condensate tank					
8	Scrubbers					
9	Station suction	Feed Feed				
10	Station discharge	900dia disc				
11	Pig traps					
12	Buried pipework & AGI					

Application for Hazardous Substances Consent
Peterborough Compressor Station
Appendix 2 – Site gas inventory calculation sources

System 1	Compressor A
System 2	Compressor B
System 3	Compressor C
System 9 & 10	Station suction and station discharge
Source:	Peterborough station and unit vent calcs.pdf

nationalgrid

Project Title: Methane Initiative - Peterborough Compressor Station

Unit & Station Vent Volume Calculations

Project No: TAO-20552

Document No: TAO-20552-020

REV.	DESCRIPTION	BY	PRINT NAME	SIGN INITIALS	DATE
0	ISSUED TO CLIENT	ORIGINATED	S.Carr		30.04.09
		CHECKED	P.Barrowclough		19.06.09
		APPROVED	S.Ruddy		06/07/09
		ORIGINATED			
		CHECKED			
		APPROVED			

NOTES

Vent Volume Totals

Unit K1101A
Unit K1101B
Unit K1101C
Station

[redacted]

1) The volume of the process venting is determined by retrieving information from the Pipe & Equipment GA's and also the sites ELD's
2) The length of pipe run was obtained by the Northing & Easting Co-ordinates & also the pipe Elevations shown on the GA's.
3) The line sizes, tag and line numbering could be read from the GA's but confirmation of any unclear text or tag number anomalies were sort from the ELD's
4) A site survey was carried out to inspect Valve Actuator size and details. Where sizes have not been visible from the actuator data plate, the volumes have been estimated and noted in the remarks column.
5) The Item numbers in the tables correspond to the numbers circled on the pipe & equipment GA's. These corresponding lengths represent the distance (in metres) from a particlar point-to-point, ie, a Northing, Easting or Elevation co-ordinates. In some cases, the pipe is routed neither vertical or horizontal so a 2 or even a 3 plane co-ordinate dimension is taken.
6) For clarity, Item Numbers for the Process lines start from 1. Item Numbers for the Recycle lines start from 100. Fuel to the engine start at 150.
7) Where no co-ordinates or dimensions can be found on the GA's, we have 'assumed' a length and these have been noted in the Remarks column.

Process Vents

Unit and Station Vent Volumes have been calculated within the following boundary points:-
Station Inlet/Outlet Actuated isolation valves.
Unit/Station Vent Actuated isolation valves.
Gas Actuated Valves included in total Unit/Station volumes
Actual volume = Process Vent free volume x Density

Fuel Gas Vents

Fuel Vent Volume has been calculated with the following boundary points:-
Fuel isolation valve (outside cab).
Fuel Vent isolation valve (outside cab).
Actual volume = Fuel Vent free volume x Density $_{(Nominal)}$

Gas Starter Vents

Gas Starter rates based on the following calculation method (using COAS raw data):-

$$\text{Fuel Meter Orifice Plate k factor} \times (\text{k factor sg.} / \text{sg}) \times \sqrt{(\text{orifice plate dp} \times \text{fuel density})}$$

Total Gas Starter Vent = Gas Starter rate x Gas Starter operation time (estimated from COAS)

Start up Purge Vents
Start Up Purge Vent is calculated using the following formula (supplied by Germanischer Lloyd):-

$$m = \frac{210\ PD^{2.24}}{L^{0.15}}$$

Where:
m = mass flow (kg/s)
P = inlet pressure (barg)
D = inside diameter of pipe
L = length of pipe (m)

Total purge vent = Start up purge time x Start up purge rate (see above)

Seal Leakage Vents
Two constant leakage rates have been used based on manufacturers data using nominal pressure, temperature, speed and gas composition:

Dynamic Rate
Static Rate (Pressurised but not running)

APPENDIX

The following documents have been used to collate information for the Vent Calculations:-

Pipework General Arrangement Drawings

BG/L080/01/02/00/0002	- Key Plan
BG/L080/01/02/00/0001	- Plot Plan
BG/L080/01/03/00/0001	- Piping Arrangement Compressor K1101A
BG/L080/01/03/00/0002	- Piping Arrangement Compressor K1101B
BG/L080/01/03/00/0003	- Piping Arrangement Compressor K1101C
BG/L080/01/03/00/0004	- Piping Arrangement East of Compressor K1101C
BG/L080/01/03/00/0005	- Piping Arrangement South Scrubber Area
BG/L080/01/03/00/0006	- Piping Arrangement Scrubber Area
BG/L080/01/03/00/0018	- Piping Arrangement Station Inlet/Outlet Area
11609/GAS/51/001	- Vendor Drawing -New Suction Pipework Details
11609/GAS/51/002	- Vendor Drawing -New Discharge Pipework Details
11609/GAS/51/003	- Vendor Drawing -New Scrubber Pipework Details
11609/GAS/02/007	- Vendor Drawing -New Scrubber Pipework Section Details

Plant Operating Diagram

7220/08/01/00/0001	- Operational Flow Diagram.
EGM/7220/17	- Pressure Systems Diag

ELD's

7220/08/02/00/0001	- ELD, Station Inlet & Outlet & Scrubbers
7220/08/02/00/0002	- ELD, Gas Compression
7220/08/02/00/0003	- ELD, Pressure reduction.
7220/08/02/00/0007	- ELD, Unit C Fuel and Starter Gas
7220/08/02/00/0008	- ELD, Unit C Lube and Seal oil
7220/08/02/00/0009	- ELD, Unit A&B Lube and Seal oil
7220/08/02/00/0010	- ELD, Unit A&B Fuel and Starter Gas
7220/08/02/00/0011	- ELD, Venting
7220/08/02/00/0012	- ELD, Actuating Gas

Site GA's/AGI's

7220/08/03/00/0002/001	- Site GA
7220/08/03/00/0002/002	- Station Inlet & outlet Area
7220/08/03/00/0002/003	- Pig Trap Area
7220/08/03/00/0002/004	- Compressor Area
7220/08/03/00/0002/005	- Control Building Area

Isometrics

BG/L080/01/06/00/0010	- Station Vent Line

Peterborough Compressor Station

Unit Free Volume

Unit K1101A (Suction Flange to Suction Isolation Valve HZV2101)

Item No.	Co-ordinates (a) (b) (c)	Length (M) (l)	Pipe Dia. (M) (r)	Volume (M3) (Pi.r.sqxl)	Drg. Ref.	Remarks ✓
1	[redacted]					
2						
3						

(indicates inclusion in calculations)

Unit K1101A (Discharge Flange to Discharge Isolation Valve HZV2104)

Item No.	Co-ordinates	Length (M)	Pipe Dia. (M)	Volume (M3)	Drg. Ref.	Remarks ✓
4	[redacted]					
5						
6						
6a						
6b						
6c						
6d						
6e						
6f						
6g						

Unit K1101A (Discharge Flange to Suction Flange)

Item No.	Co-ordinates	Length (M)	Pipe Dia. (M)	Volume (M3)	Drg. Ref.	Remarks ✓
7	[redacted]					

Unit K1101A (Recycle line to Isol valve V2180)

Item No.	Co-ordinates	Length (M)	Pipe Dia. (M)	Volume (M3)	Drg. Ref.	Remarks ✓
100	[redacted]					
101						
102						
103						
104						
105						
106						
107						

Unit Fuel from valve V2194 to Engine

Item No.	Co-ordinates	Length (M)	Pipe Dia. (M)	Volume (M3)	Drg. Ref.	Remarks ✓
150	[redacted]					
151						
152						
153						
154						
155						
156						
157						

Unit Valve operation

Valve Description	Vlv. Tag	Vlv. Size	No.	Litres *	Volume (M3)	Reg. Press. (bar)	Remarks ✗
Unit Suction Isol. Valve	[redacted]						
Unit Discharge Isol. Vlv.							
Unit Recycle Isol. Vlv.							
Fuel Isolation valve							
Fuel Vent Valve							
Process Vent Valve							
Process Vent Valve							

(indicates exclusion from calculations)

Peterborough Compressor Station

Unit Free Volume

Unit K1101B (Suction Flange to Suction Isolation Valve HZV2201)

Item No.	Co-ordinates (a) (b) (c)	Length (M) (l)	Pipe Dia. (M) (r)	Volume (M3) (Pi.r.sqxl)	Drg. Ref.	Remarks
8	[redacted]					
9						
10						

Unit K1101B (Discharge Flange to Discharge Isolation Valve HZV2204)

Item No.	Co-ordinates	Length (M)	Pipe Dia. (M)	Volume (M3)	Drg. Ref.	Remarks
11	[redacted]					
12						
13						
13a						
13b						
13c						
13d						
13e						
13f						
13g						

Unit K1101B (Discharge Flange to Suction Flange)

Item No.	Co-ordinates	Length (M)	Pipe Dia. (M)	Volume (M3)	Drg. Ref.	Remarks
14	[redacted]					

Unit K1101B (Recycle line to Isol valve V2280)

Item No.	Co-ordinates	Length (M)	Pipe Dia. (M)	Volume (M3)	Drg. Ref.	Remarks
108	[redacted]					
109						
110						
111						
112						
113						
114						

Unit Fuel from valve V2294 to Engine

Item No.	Co-ordinates	Length (M)	Pipe Dia. (M)	Volume (M3)	Drg. Ref.	Remarks
158	[redacted]					
159						
160						
161						
162						
163						
164						
165						

Unit Valve operation

Valve Description	Vlv. Tag	Vlv. Size	No.	Litres *	Volume (M3)	Reg. Press. (bar)	Remarks
Unit Suction Isol. Valve	[redacted]						
Unit Discharge Isol. Vlv.							
Unit Recycle Isol. Vlv.							
Fuel Isolation valve							
Fuel Vent Valve							
Process Vent Valve							
Process Vent Valve							

Peterborough Compressor Station

Unit Free Volume

Unit K1101C (Suction Flange to Suction Isolation Valve HZV2301)

Item No.	Co-ordinates (a) (b) (c)	Length (M) (l)	Pipe Dia. (M) (r)	Volume (M3) (Pi.r.sqxl)	Drg. Ref.	Remarks
15	[redacted]					
16						
17						
18						
19						

Unit K1101C (Discharge Flange to Discharge Isolation Valve HZV2304)

Item No.	Co-ordinates	Length (M)	Pipe Dia. (M)	Volume (M3)	Drg. Ref.	Remarks
20	[redacted]					
21						
22						
22a						
22b						
22c						
22d						
22e						
22f						
22g						

Unit K1101C (Discharge Flange to Suction Flange)

Item No.	Co-ordinates	Length (M)	Pipe Dia. (M)	Volume (M3)	Drg. Ref.	Remarks
23	[redacted]					

Unit K1101C (Recycle line to Isol valve V2380)

Item No.	Co-ordinates	Length (M)	Pipe Dia. (M)	Volume (M3)	Drg. Ref.	Remarks
115	[redacted]					
116						
117						
118						
119						
120						
121						

Unit Fuel from valve V2394 to Engine

Item No.	Co-ordinates	Length (M)	Pipe Dia. (M)	Volume (M3)	Drg. Ref.	Remarks
166	[redacted]					
167						
168						
169						
170						
171						
172						

Unit Valve operation

Valve Description	Vlv. Tag	Vlv. Size	No.	Litres *	Volume (M3)	Reg. Press. (bar)	Remarks
Unit Suction Isol. Valve	[redacted]						
Unit Discharge Isol. Vlv.							
Unit Recycle Isol. Vlv.							
Fuel Isolation valve							
Fuel Vent Valve							
Process Vent Valve							
Process Vent Valve							

Peterborough Compressor Station

Station Free Volume

Feeder No.2 - Station Suction Isolation Valve 722002 to Suction Scrubber Inlet Header

Item No.	Co-ordinates (a) (b) (c)	Length (M) (l)	Pipe Dia. (M) (r)	Volume (M3) (Pi.r.sqxl)	Drg. Ref.	Remarks
24	[redacted]					
25						

Feeder No.4 - Station Suction Isolation Valve 722012 to Suction Scrubber Inlet Header

Item No.	Co-ordinates	Length (M)	Pipe Dia. (M)	Volume (M3)	Drg. Ref.	Remarks
26	[redacted]					

Scrubber V1101A lines

Item No.	Co-ordinates	Length (M)	Pipe Dia. (M)	Volume (M3)	Drg. Ref.	Remarks
27	[redacted]					
28						
29						

Scrubber V1101B lines

Item No.	Co-ordinates	Length (M)	Pipe Dia. (M)	Volume (M3)	Drg. Ref.	Remarks
30	[redacted]					
31						
32						

Scrubber V1101C lines

Item No.	Co-ordinates	Length (M)	Pipe Dia. (M)	Volume (M3)	Drg. Ref.	Remarks
33	[redacted]					
34						
35						

Scrubber Outlet Header to Compressors Header

Item No.	Co-ordinates	Length (M)	Pipe Dia. (M)	Volume (M3)	Drg. Ref.	Remarks
36	[redacted]					
37						
38						
39						

New Suction Scrubber V1101D & Additional pipework

Item No.	Co-ordinates	Length (M)	Pipe Dia. (M)	Volume (M3)	Drg. Ref.	Remarks
40	[redacted]					
41						
42						
43						
44						
45						
46						
47						
48						

New 900dia Suction Line from Suction Header to Compressor Unit B Suction Header

Item No.	Co-ordinates	Length (M)	Pipe Dia. (M)	Volume (M3)	Drg. Ref.	Remarks
49	[redacted]					
50						
51						
52						
53						
54						
55						
56						

Suction Inlet to Compressors

Item No.	Co-ordinates	Length (M)	Pipe Dia. (M)	Volume (M3)	Drg. Ref.	Remarks
57	[redacted]					
58						
59						
59a						
59b						
60						
61						
62						

Discharge Line from Compressors to Discharge Header

Item No.	Co-ordinates	Length (M)	Pipe Dia. (M)	Volume (M3)	Drg. Ref.	Remarks
63	[redacted]					
64						
64a						
64b						
64c						
64d						
64e						
64f						
65						
66						
67						
68						
69						
70						
71						
72						
73						
74						

New 900dia Discharge Line from Compressor Unit C Discharge Header to Existing Discharge Outlet

Item No.	Co-ordinates	Length (M)	Pipe Dia. (M)	Volume (M3)	Drg. Ref.	Remarks
75	[redacted]					
76						
77						
78						
79						
80						
81						
82						
83						
84						

Discharge Header to Discharge Outlet Isolation Valve

Item No.	Co-ordinates	Length (M)	Pipe Dia. (M)	Volume (M3)	Drg. Ref.	Remarks
85	[redacted]					
86						
87						
88						
89						
90						

Recycle Line from Compressors C, B & A to Main Suction Inlet Line

Item No.	Co-ordinates	Length (M)	Pipe Dia. (M)	Volume (M3)	Drg. Ref.	Remarks
122	[redacted]					
123						
124						
125						
126						
127						
128						
129						
130						
131						
132						
133						
134						
135						
136						

Station Valves

Valve Description	Vlv. Tag	Vlv. Size	No.	Litres *	Volume (M3)	Reg. Pres	Remarks
Station Inlet Isol Valve	[redacted]						
Station Inlet Isol Valve							
Station Outlet Isol Valve							
Station Outlet Isol Valve							
Station Inlet Vent Valve							
Station Outlet Vent Valve							

Peterborough Compressor Station

Miscellaneous Data

Gas Starters

1) FLOW

Source data :

Reporting Value :
Source data :

[redacted]

2) OPERATING TIMES

Source data :
Reporting Value :

[redacted]

Gas Seal Leak Rates

1) REPORTING VALUE -

Source data :

STATIC :
DYNAMIC:

[redacted]

Start Up Purge Vents

ID	Engine Type	Avg Purge Time (s)	Avg Inlet Pressure (barg)	Vent Pipe Dia (m)	Vent Pipe Length (m)	Calculated Vent Rate (kg/s)	Calculated Vent Total (kg)	Reference Drawings	Remarks
A	[redacted]								
B									
C									

Source data : Andy Panks (Mech Tech) (Verbal)
Technical Memo via Bob Ingram (Germanischer Lloyd), 18.05.09

System 4 Compressors D & E

Source: 100056-MMD-TQ99-XX-TN-M-0001.pdf

MOTT MACDONALD

Technical Note

Gas pipework volume calculation

Project:	Peterborough and Huntingdon Compressor Station Upgrade		
Our reference:	100056-MMD-TQ99-XX-TN-M-0001	**Your reference:**	NA
Prepared by:	C T Lam	**Date:**	23/05/2024
Approved by:	M Campbell	**Checked by:**	M Rankovic / M Campbell
Subject:	Gas pipework volume calculation for Peterborough Compressor Station		

1 Objective

Provide National Gas Transmission (NGT) with estimates of the storage capacity (inventory) of gas within the gas pipework at Peterborough Compressor Station.

2 Methodology

The site isolation valves (confirmed by NGT) determine the extent of the pipe volumes to consider in the calculations. The 3D model of Peterborough has been used to directly measure the lengths of key sections of pipework. The pipe volumes are then calculated by multiplying the measured lengths by the pipe bore area. The gas pipework has been divided into sub-systems to aid the overall volume estimation.

The calculation of pipe bore area for each pipe size is derived using an approximate pipe wall thickness selected from the Peterborough MTO (7054-0230-028-30-1003-001) [1]. It is not known which section of pipe relates to the MTO pipe data so the calculated pipe volume is therefore an approximation, but given the insignificant variation in wall thicknesses it is not expected to impact the overall result.

Note that this calculation is for the pipe volume only and therefore the quantity of gas (inventory) within the pipe will depend on the pressure of the gas.

The general approach to determine the pipe volume estimation is as follows:

- Pipe lengths are measured point-to-point from the model up to the point of intersection at the bends (i.e., bend lengths are approximated by this method and are not calculated individually).
- Pipework smaller than size DN400 has been excluded from the calculation since the pipe volume will be dominated by the larger bore pipes. A nominal contingency has been added to account for these smaller bore pipe volumes (based on data from the existing MTO).
- Total pipe volume is the sum of all pipes greater or equal to DN400 bounded by the site isolation valves.

The following assumptions have been applied:

- Valves are considered as straight pipe.
- Nominal wall thicknesses applied from values within the MTO.

- Reducers are considered as uniform pipe at the largest pipe diameter.
- Compressor volumes have been excluded.
- Volume of vent lines is not included since they do not normally carry gas inventory.
- Condensate tank assumed empty with gas blanket in operation.
- Scrubbers not included within vented volume.

3 Results

The total gas pipe volume at Peterborough is estimated to be [redacted]

A 10% contingency has been included in the above figure to account for the error in the measurements of the models, the assumptions made, and for smaller-bore pipework that was excluded in the estimation. The breakdown of the pipe volume in each site is shown in the tables below.

Table 3-1: Gas pipe volume at Peterborough

Sub-system	Pipe lengths (m)	Pipe volume (m^3)
	[redacted]	
Scrubber pipework		
Compressor inlet pipework		
Compressor outlet pipework		
DN400 Interconnector		
DN600 Recirculation pipework		
Miscellaneous pipework		
Sub-total		
10% contingency		
Total pipe volume		

For comparison, the total gas pipe volume at Huntingdon is estimated to be [redacted]. See the corresponding TN for details [2].

4 Comparison to MTO

4.1 General

The available Peterborough MTO (7054-0230-028-30-1003-001 [3]) has been interrogated to compare the pipe volume calculated above and provide context. The MTO provides details of pipework specifications, fittings, pipe size and overall pipe lengths but is expected to be only for new pipe installed as part of the compressor station upgrade works.

A brief methodology is outlined here:

- Pipe of all sizes is included in the calculation.
- Where not directly stated the wall thickness of the pipe is determined from the specified schedule, and thus the internal diameter can be calculated. BS 3799 is also used to find some wall thickness values.
- The length of bends is derived from the bend radius and the bend angle (in radians). ASME B16.9 is used to find the standard lengths of fittings such as tees and reducers.

- Multiplying the bore area with the length of the pipe section gives the pipe volume. The total volume of the pipe fittings is calculated by multiplying the volume of each fitting by the quantity specified.

Note that the accuracy and currency of the MTO cannot be confirmed, and it is marked as “preliminary and for information only as guidance”.

4.2 Assumptions

The below assumptions have been taken:

- Where reducers/tees have two outside diameters, the greater of the two is used in the volume calculation.
- Where reducers/tees have two wall thicknesses, the greater of the two is used in the volume calculation.
- Pipe fittings (sockolets, weldolets, sweepolets etc.) are not included.
- Pipe elbows/bends are assumed to be 1.5D where not otherwise specified.
- Pup pieces on elbows/bends are not included.
- HDPE pipe/fittings are excluded.

4.3 Results

[redacted]

The breakdown of the pipe / fittings volume is shown in the table below. It is suggested that a suitable contingency is applied to account for minor pipe fittings, pup pieces and offtakes; perhaps 1%. A tolerance may also be applied to account for an error margin within the calculations.

Table 4-1: Volume of pipework at Peterborough

Item	Quantity / length	Total volume (m^3)
Pipe (all pipe sizes)	[redacted]	
Pipe (only DN400 and larger)		
Elbows / bends		
Tees		
Reducers		
TOTAL		

5 References

1 7054-0230-028-30-1003-001 Rev P2, Piping Material Take Off, 30/01/2018
2 100056-MMD-TQxx-XX-TN-M-0002
3 7054-0230-028-30-1003-001 Rev P2, Piping Material Take Off, 30/01/2018

System 5 Compressors D & E

System 6 Compressor F

Source: C652_Installation.pdf

&

FW_ MCPD Peterborough Unit F - Gas Volumes.msg

[redacted]

[redacted]

[redacted]

Lucy Kilburn

From:	Philip Smith
Sent:	20 March 2025 10:13
To:	Lucy Kilburn
Subject:	FW: MCPD Peterborough Unit F - Gas Volumes
Attachments:	RE: 4L251 NGT Peterborough MCPD Bi-Weekly RAIL (Rolling Action Items List); FW: Peterborough NGT; C652_Installation.pdf

Philip Smith| Project Environmental Solutions Ltd | [redacted] | [redacted] | www.peslconsulting.com

Please don't feel under pressure to reply if I've sent this outside your normal working hours – I adopt a flexible working pattern and my hours may be different to yours.

From: Vivienne Hoang <[redacted]>
Sent: 20 March 2025 10:04
To: Philip Smith <[redacted]>
Cc: Neil Billingham <[redacted]>
Subject: MCPD Peterborough Unit F - Gas Volumes

Hi Philip,

We recently spoke about the additional volume of gas being installed under the Unit F project at Peterborough. Please find the gas volume break-down to add to your assessment. Note, I have excluded the header volumes and vent volumes that are calculated in the OLG report. It would be worth reviewing the data in more detail:

[redacted]	
[redacted]	
[redacted]	
[redacted]	
[redacted]	

Kind regards,

Vivienne Hoang
Senior Design Coordinator
Construction

[redacted]

national gas transmission

National Gas Transmission, Warwick Technology Park, Gallows Hill, Warwick, CV34 6DA

nationalgas.com | Twitter | LinkedIn

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System 7 Condensate tank

Source: Cond Tank GA PET 7054-1202-060-001.pdf

Company
Logo here

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COSTAIN

Supplier Document Front Sheet

Supplier Name	WEFCO		
Project Name	Peterborough & Huntingdon Gas Compressor Station Upgrade Project United Kingdom		
Equipment Description & Tag No	PET Condensate Tank		
Supplier Document No.	26835/DRG 01	Supplier Document Revision	C
Supplier Document Title	GA DRAWING		

Costain Document Details

Costain Purchase Order Number	Costain Document Reference	SRTD Description	SRTD Code
7054-12002002	7054-1202-060-001	GA DRAWING	060

Revisions

Rev.	Description	Signature of Responsible Engineer	Date
0	Initial Submission		26/11/18

Acceptance/Action | Approver

NO COMMENT - Proceed with manufacture | 1

stevrich : 20/12/2018 15:30:03

This data has been reviewed and allocated a review status code. Notwithstanding this review & comments the Supplier / Subcontractor will be responsible For any discrepancies, errors or omission in this data, provided that such discrepancies, errors or omissions are not due to inaccurate information or particulars furnished by Costain

System 8 Scrubbers

Source: SSGS GA PET 7054-1201-060-003.pdf

Peerless EMEA
A CECO Environmental Brand

nationalgrid

COSTAIN

Supplier Document Front Sheet

Supplier Name	PEERLESS EUROPE LTD		
Project Name	STATION SUCTION GAS SEPARATORS – PETERBOROUGH		
Equipment Description & Tag No	STATION SUCTION GAS SEPARATORS 7220-V101A/B		
Supplier Document No.	10822/GA/B	Supplier Document Revision	04
Supplier Document Title	GENERAL ARRANGEMENT DRAWING 7220-V101B		

Costain Document Details

Costain Purchase Order Number	Costain Document Reference	SRTD Description	SRTD Code
7054-22591001	7054-1201-060-003	GENERAL ARRANGEMENT DRAWING	060-003

Revisions

Rev.	Description	Signature of Responsible Engineer	Date
4	REISSUED FOR APPROVAL. NOZZLE LOADS/MOMENTS CORRECTED FOR N1 & N2	PEB	23/05/2019
3	REISSUED FOR APPROVAL. CLIENT NOZZLE LOADS/MOMENTS INCORPORATED FOR N1 & N2	PEB	25/02/2019
2	REISSUED FOR APPROVAL	PEB	24/10/2018
1	ISSUED FOR APPROVAL	PEB	23/05/2018
0	ISSUED FOR APPROVAL	PEB	29/11/2017

Acceptance/Action | Approver

NO COMMENT - Proceed with manufacture | 1

stevrich - 15/06/2019 15:32:10

This data has been reviewed and allocated a review status code. Notwithstanding this review & comments the Supplier / Subcontractor will be responsible For any discrepancies, errors or omission in this data, provided that such discrepancies, errors or omissions are not due to inaccurate information or particulars furnished by Costain

System 11 Pig traps

Source: Pig trap calcs_PET_27.07.23.pdf

PETERBOROUGH PIG TRAP CALCS

Pig trap C

[redacted]

[redacted]

[redacted]

Pig trap A

[redacted]

[redacted]

[redacted]

Pig trap B

[redacted]

[redacted]

[redacted]

Pig trap D

[redacted]

[redacted]

[redacted]

System 12 Buried pipework & AGI

Source: PET_AGI calcs_11.07.2025.xlsx