Defence Infrastructure Organisation

Gas Safety Management Plan (Section B)

Bristol Horfield ARC ACF

15/04/2025

Produced to meet the requirements of the Gas Safety (Management) Regulations 1996

(Gas Safety Management Plan (Section A) covers the requirements of the Gas Safety (Installation and Use) Regulations 1998

ESTABLISHMENT KEY PERSONALITIES (GAS) CONTACTS

Role	Name	Tel No.	Email
Head of Establishment	Lt Col Lee Crompton	07846 820884	Lee.crompton575@mod.gov.uk
Establishment's SHEF	W01 Matthew Robertson	07710 452749	Matthew.Robertson881@mod.gov.uk
Establishments 4C's Coordinator	W01 Matthew Robertson	01985 223723	Matthew.Robertson881@mod.gov.uk
Senior DIO Estate Representative or Equivalent	Mark Cubitt	07955 280440	wx-est-hd@rfca.mod.uk
Site DIO Estate Representative or Equivalent	Mark Armstrong	07508 129987	wx-est-mgr3@rfca.mod.uk
MMO Site Manager or equivalent	Paul Wakeford	07356101565	Paul.wakeford@vivodefence.com
Gas Safety Manager (GSM)	Justin Westcott	07793222820	Justin.westcott@vivodefence.com
Gas Responsible Person (GRP)	Jason Cuthbert	07592112763	Jason.cuthbert@vivodefence.com

The Content of this Gas Safety Management Plan (GSMP) have been Approved by the Gas Safety Manager:

Signature: JP Westcott **Date: 15/04/2025**

Authorisation for Implementation

The content and format of this GSMP has been agreed and authorised for implementation by Defence Infrastructure Organisation Technical Services Principal Gas Engineer (DIO TS PGE) and a unique reference number has been generated to support this.

Approved – J Obbard PGE – 28th Oct 2022

The Content of this GSMP have been agreed by the Senior DIO Estate Representative or Equivalent and future works following the findings will be supported:

Signature: M Cubitt **Date: 23/04/2025**

The content of this GSMP have been agreed by the Head of Establishment and future works following the findings will be supported.

Signature…… L. Crompton **…Date:…23 Apr 25.**

Reviews and Amendments

GSMPs are 'living documents' that should be subject to continual review and updating as required. Although the level of attention required will vary considerably depending on the size and complexity of each site, GSMPs should be reviewed at least once per quarter by the GRP. Although it is likely that changes are not required at each review, the date of review and any changes made should be indicated on the tables below. The review of the GSMP will include a site visit to ensure that the site and the content of the GSMP remain valid. The reviews and amendments made will be deleted during the DIO TS three yearly review when the GSMP is re-authorised by the PGE.

Date	Page No.	Amendment
31/05/2022	All	Initial Development
16/01/2023	12 & Annex B	Added Gas Line & Network Drawing Details, Icons and Drawings
16/01/2023	21 & Annex C	Added gas leak information Updated Risk Assessment Dates
16/01/2023	14 & 22 - 24	Added Network Analysis Results and Details
27/04/2023	15 & 26	Added Network Validation Results and Details
14/07/2023	ii & 1	Added New HoE Details
14/07/2023	6 & 8	Added New QM Building Details
31/10/2023	N/A	No Amendments Required
21/01/2024	18-22 & Annexe C	Added Comments to Sections 6,7,8,10,13,14,15,16 Updated Current Preventative measures
16/04/2024	22-26	Added Comments to Sections 18,19,20,21,22 Updated/Reviewed Risk Assessments
11/07/2024	5,6,7,9	Updated Pipework Descriptions after Supply to MT Workshops Capped
18/10/2024	ii & 1	Added New Head of Estates Details
18/10/2024		GSM re-authorisation (previously authorised 31/05/2022)
18/02/2025	Various	Updated document to reflect VIVO as MMO and now also responsible for Gas Safety management. RP/GSM.

Date	Reviewed by	Authorised by	Comments
31/05/2022	M Fenwick	N King	Initial Review
28/10/2022	J Obbard	J Obbard	Document Approval
16/01/2023	M Fenwick	M Fenwick	Quarterly Review
27/04/2023	M Fenwick	M Fenwick	Quarterly Review
14/07/2023	M Fenwick	M Fenwick	Quarterly Review
31/10/2023	M Fenwick		Annual Review
21/01/2024	M Fenwick	M Fenwick	Quarterly Review
16/04/2024	M Fenwick	M Fenwick	Quarterly Review
11/07/2024	M Fenwick	M Fenwick	Quarterly Review
18/10/2024	M Fenwick		Annual Review
18/10/2024	Neville King	Neville King	GSM re-authorisation
27/01/2025	M Fenwick	M Fenwick	DNV De-Mobilisation Review / Handover
18/02/2025	J Cuthbert	J Westcott	Update and Quarterly review
15/04/2025	J Westcott	J Westcott	Initial review/approval – Noting Network PPM to be delivered by VIVO in next 3 months.

FORWARD

MOD, as a gas conveyor within Great Britain, has submitted an Exemplar Gas Safety Case (MOD GSC) to demonstrate compliance with the Gas Safety (Management) Regulations 1996 (GSMR). Maintenance Management Organisations (MMO's) are engaged who have the overall contractual responsibility to operate and maintain the gas network assets under their Contract, including the management of the safe flow of gas within the system and the provision of an emergency service. The MOD delegate specific duties to the MMO but accountability for gas safety on each site rests with the Head of Establishment.

The MOD GSC considers all parts of the MOD estates gas supply system that forms part of the gas supply network. This includes all parts of the MOD estates network from the External Gas Distribution Network (EGDN) connection point to the emergency control valve (ECV) of individual consumers. The MOD GSC considers primarily those matters that relate to the management of the safe flow of gas within the system and the provision of an emergency service.

The conclusions of the assessments within the MOD GSC are:

- There is an adequate safety management system in place to manage the flow of gas safely in its gas supply system.
- Adequate arrangements are in place to comply with the requirements of GSMR and allow co-operation with other bodies that have duties under the regulations.
- Adequate arrangements are in place for ensuring that gas conveyed within the system meets the standards for composition and pressure.
- Adequate arrangements are in place for dealing with reports of gas escapes and investigation of incidents.
- Adequate arrangements have been made to ensure that the risk of a supply failure is minimised.
- Adequate arrangements have been made to ensure that supply emergencies are managed safely.

The MOD GSC is a generic document that outlines the gas safety systems and processes in place for gas networks within the MOD estate. Site-specific details and arrangements are contained within this establishment Gas Safety Management Plan (Section B) (GSMP). As a site-specific component of the MOD GSC, this GSMP has the same legal standing under GSMR.

The layout and structure of this GSMP mirrors that of its parent GSC

Following initial approval by the DIO PGE, the GSM is required to reapprove this GSMP annually. GSMP must be submitted to DIO TS every three years for PGE authorisation.

The HoE and Senior DIO Estate Representative or Equivalent would only be required to re-sign this GSMP annually following the GSM reapproval, unless significant changes to the gas system or a change in one of these key personalities occurs.

GSMP Section A documents detail MOD measures to ensure compliance with the Gas Safety (Installation and Use) Regulations 1998 (GSIUR) for installation pipework (downstream of Emergency Control Valves).

Although the legal status of this document applies in the UK only, the MOD apply the same requirements to the management of natural gas networks on its overseas estate in accordance with the currently published Secretary of State's Health and Safety policy statement.

Contents

1 THE DUTY HOLDER AND ESTABLISHMENT LEVEL KEY PERSONALITIES

1.1. Gas Safety Case Duty Holder.	
The duty holder for the MOD Gas Safety Case is the Permanent Under Secretary for Defence (PUS). However, day to day responsibility for the preparation and maintenance of the document is delegated to the DIO TS Head of Engineering and Construction, who also has the responsibility for managing the system in accordance with the Safety Case. PUS delegates maintenance responsibility to the Top-Level Budget Holders (TLB's), to manage safety of the gas network. The TLB's utilise MOD Contracts i.e. MMOs who have responsibility for maintaining the gas network on behalf of the MOD.	
Name: Address:	Permanent Under Secretary Main Building Horse Guards Parade Whitehall London SW1A 2HB

1.2. DIO Technical Services Principal Gas Engineer (PGE).	
The PGE assumes the role of Senior Authorising Authority which is a term used within the MOD to recognise the authority of the person responsible for overseeing the appointment of, and auditing Authorising Engineers (AEs). For Gas the AEs are replaced by Gas Safety Managers (GSMs).	
Name: Address: ☎: ✉:	Jeremy Obbard DIO HQ Whittington Barracks Lichfield WS14 9TJ 07748 903260 Jeremy.obbard100@mod.gov.uk

1.3. Establishment Personalities.		
Name of Establishment:	Bristol Horfield ARC ACF	
Establishment Address:	Bristol Horfield ARC ACF Dorian Road Horfield Bristol BS7 0XL	
Head of Establishment (HoE) (This is the most senior MOD person identified, by the chain of command, as responsible for the establishment. The HoE holds accountability for ensuring site compliance with the requirements of GSMR and the MOD GSC, including this GSMP.)	Name: Position: Organisation: Address: ☎: ✉:	Lt Col Lee Crompton CO MoD, British Army 93 Signal Squadron Regimental Headquarters Horfield Army Reserve Centre Dorian Road Bristol BS7 0XL 07846 820884 Lee.crompton575@mod.gov.uk

Establishment 4C's	Name: Position: Organisation: Address: ☎: ✉:	WO1 M Robertson PSAO MoD, British Army 93 Signal Squadron Regimental Headquarters Horfield Army Reserve Centre Dorian Road Bristol BS7 0XL 01985 223723 Matthew.Robertson881@mod.gov.uk
Establishment SHEF	Name: Position: Organisation: Address: ☎: ✉:	WO1 M Robertson PSAO MoD, British Army 93 Signal Squadron Regimental Headquarters Horfield Army Reserve Centre Dorian Road Bristol BS7 0XL 01985 223723 Matthew.Robertson881@mod.gov.uk
Senior DIO representative or equivalent (This may be the SEFM, but will vary depending on the contract this establishment falls under)	Name: Position: Organisation: Address: ☎: ✉:	Mark Cubitt Head of Estates Wessex Reserve Forces' & Cadets' Association Mount House Mount Street Taunton Somerset TA1 3QE 07955 280440 wx-est-hd@rfca.mod.uk
Site Guardroom (24 Hours)	☎:	No Guardroom on site – Working Hours Contact: 01985 223723 Out of Hours Contact: Onsite Caretaker Ken Davies Mobile 07971 708733
Site emergency services (Are they 24 Hours?)	Fire ☎: Police ☎: Medical ☎:	999 999 999

1.4. Maintenance Management Organisation (MMO).		
The MMO for this establishment is:		**VIVO Defence Services**
MMO Customer Services (not 24 hours)	Organisation: Address: ☎: ✉:	VIVO Helpdesk Helpdesk 25 Goodlass Road Hunts Cross Liverpool L24 9HJ 0800 030 9320
MMO Helpdesk – Gas Emergencies Only (24 Hours) **Note:** Please do not contact the general public National Gas Emergency Service for suspected gas escapes on RFCA infrastructure.	Organisation: ☎:	RFCA National Gas Emergency Service, provided by Vivo Defence. 0800 030 9320
Site Contact	Name: Organisation: Address: ☎: ✉:	Ken Davies MoD Horfield Army Reserve Centre Dorian Road Bristol BS7 0XL 07971 708733 kendavies62@gmail.com
Gas Safety Manager (GSM)	Name: Organisation: Address: ☎: ✉:	Justin Westcott Vivo Defence Bldg. 003, CTCRM Lympstone Nr Exmouth Devon EX8 5AR 07725 038039 Justin.westcott@vivodefence.com
Gas Responsible Person (GRP)	Name: Organisation: Address: ☎: ✉:	Jason Cuthbert Vivo Defence Imjin Barracks Innsworth Gloucester Gloucestershire GL31HW 07592 112763 Jason.cuthbert@vivodefence.com

1.5. Additional Gas Contacts.		
External Gas Distribution Network (EGDN)	Organisation: Address: ☎: ✉:	Wales & West Utilities Wales & West House, Spooner Close, Celtic Close Coedkernew Newport NP10 8FZ 0800 912 2999 Steve.Harding@WWUtilities.co.uk
Meter Asset Manager (MAM)	Organisation: Address: ☎: ✉:	Energy Assets Ltd 6 Almond vale Business Park Almond vale Way Livingston Scotland. EH54 6GA 01506 405 405 box.ngm.meteringdataenquries@nationalgrid.com
Gas Supplier	Organisation: Address: ☎: ✉:	Total energies Gas & Power 55-57 High Street Redhill Surrey RH1 1RX 01737 275 746 gp.redhill.ccs@totalenergies.com
DIO SD EUS (Service, Delivery, Energy, Utility and Sustainability)	☎: ✉:	0121 311 3854 DIOSDEUS-enaccounts@mod.gov.uk
National Gas Emergency Centre (24 Hours)	☎:	0800 111999
National Emergency Services (24 Hours)	Fire ☎: Police ☎: Medical ☎:	999 999 999

2 OPERATION UNDERTAKEN

2.1 Site Overview.

A brief description of the establishment and its current use. This should include how many separate sites are present, number of buildings being supplied by gas, what the gas is used for and number of personnel who will be affected by a gas outage. Any critical loads should be initial highlighted here (quick reaction forces, large medical facilities, temp controlled ammunition stores etc)

Bristol Horfield ARC ACF is a single site establishment with four buildings on site, three of which are supplied with gas –

The main building supplied direct from the EGDN network.
QM Building supplied direct from the EGDN network.
MT Garage supplied direct from the MoD network 01.

The main Building is used for Office Space, Kitchen, Drill Hall (including events), stores, Gymnasium, classrooms and a bar/lounge.
The QM building is used for stores and offices.
The MT garages are currently used for storage,

The site is currently the headquarters of the 7th Military Intelligence Battalion, Military Intelligence Corps, 71 Military Intelligence Company and also occupied by The Royal Signals, 93 Support Squadron 39th Signal Regiment, The Horfield Army Reserve Recruitment Centre and the Horfield Detachment of the Army Cadet Force.

Day to Day there are around 10-15 people on site and there can be up to 100 people on site when there are functions, events or parades.

2.2 Document Centre.

Location of the establishment Gas Document Centre containing all information relating to the gas systems at this establishment (Ref: MOD GSC 10.2) and contact details if different to the GRP.

The Gas document centre is held electronically by VIVO on the SharePoint system.
It is intended to make the essential documents available via a QR Code in the future.

2.3 Purpose of Pipeline(s).

A brief description of demarcation agreements between the EGDN, MAM and MOD. Number of MOD networks including operating pressures and number of buildings being supplied direct from the EGDN. End users of gas being supplied such as accommodation, workshops, catering facilities etc.

There are three gas meters on site at Bristol Horfield ARC ACF.
There are two single EGDN gas supplies onto site.
There is a third EGDN supply onto site to the GRP meter box at the North end of the site just inside the perimeter fence and there is a 63mm PE service entry into this meter box.
This is Bulk Fiscal Primary Meter 01 and this supplies MoD Network 01.
The EGDN supply continues through the site and enters the Northeast side of the main building, into the meter cupboard within the plant room in 2“steel via a below ground entry.
This gas supply feeds the Single Supply Meter 01.
There is an additional EGDN supply entering the North end of site to feed the QM building via a 25mm PE riser into an external wall mounted meter box.

This gas supply feeds the Single Supply Meter 02.

The bulk fiscal meter is a single stream meter fed at Low pressure by the EGDN network (Wales & West Utilities). This meter then supplies the MoD network at 23.8 mbar with two buildings (MT Garage and MT Workshops, one service riser each) fed from the MoD network.

The single supply meters are single stream meters fed at Low pressure by the EGDN network (Wales & West Utilities). These meters then supply:
The main building installation pipework at 22.6 mbar.
The QM building installation at 21.8 mbar.

The MoD is responsible from the meter outlet valve of the primary meter up to and including the appliances in the buildings.

2.4 Consumers.

Consumers can be broadly categorised as domestic or industrial / commercial. Gas supplies to domestic consumers are normally prioritised above industrial / commercial consumers.

Domestic consumers supplied from the MOD network:	0
Industrial / commercial consumers supplied from the MOD network:	2

2.5 Description of MOD Gas Networks.

A description of the MOD gas network(s) including location of primary meter(s), twin stream or single stream, primary meter kiosk construction and condition. Pipeline length, material, diameter, pressure, age and condition. Are any PRIs present and number of buildings being supplied?

The gas supply to Bristol Horsfield ARC ACF is supplied from the Wales and West LP (Low Pressure) network and enters the site at the North end of the establishment into a standalone GRP meter box.

There is a 63mm PE riser entering the gas meter box and the gas runs through the EGDN ECV and the single stream MAM owned and operated regulator and gas meter.

The MoD's responsibility begins after the gas meter outlet valve. The outlet gas pressure is 23.8mbar so the MoD network is classed as Low Pressure (LP).
The MoD network is estimated to have been installed in the mid 2000's.

The MOD network exits the Bulk Fiscal meter outlet valve in 2" steel and increases to 3" steel before dropping below ground. The main section is thought to transition to 90mm PE to run down to the garages,

The building ECV is located at:

- MT Garages – external ECV in GRP housing. AECV internally on building entry

The total network length is an assumed approximate from site drawings and carrying out the leakage survey and trial holes.

Estimated MoD Network Pipework Length – 124 metres

2.6 Primary Meter Details.

The following table describes the basic arrangement of the incoming primary meter installation(s). (These are the responsibility of the MAM)

Number of primary meter installations:	3

Meter Name / ID	MAM Responsible	Inlet pipeline (responsibility of the EGDN)				Outlet pipeline (responsibility of the MOD)				Max Flow (M^3 hr)
		P tier – HP, IP, MP, LP	Pressure (mbar)	Material (EGDN Network)	Diameter (mm)	P tier – HP, IP, MP, LP	Pressure (mbar)	Material (MOD Network)	Diameter (mm)	
Bristol Horsfield Bulk Fiscal Meter 01	Energy Assets	LP	23.9	PE	63	LP	23.8	Steel	50	40
Bristol Horsfield Single Supply Meter 01	Energy Assets	LP	27.14	Steel	50	LP	22.6	Steel	80	3531 ft3/hr
Bristol Horsfield Single Supply Meter 02	Energy Assets	LP	NTP	PE	25	LP	21.8	Steel	32	6

2.7 Utilisation Meters (meters supplied directly from the MOD gas network)

Utilisation Meter Details can be seen in the GSMP section A.

Number of utilisation meter installations:	1

2.8 Secondary Pressure Regulating Installations (PRIs).

The following table describes the basic arrangement of the PRIs. (This does not include utilisation meter governors installed downstream of the consumers ECV)

Number of PRI installations:	None

PRI Name / ID	Nominal Reg size (mm)	Inlet pipeline				Outlet pipeline				Kiosk construction / condition
		P tier – MP, LP	Pressure (mbar)	Material (MOD Network)	Diameter (mm)	P tier – MP, LP	Pressure (mbar)	Material (MOD Network)	Diameter (mm)	

2.9 Emergency Control Valves (ECVs).

The ECV(s) are included in the scope of the network and are therefore the responsibility of the MOD.

The MOD gas networks at this establishment terminates at: 1 ECV

Building Name / Number	Incoming Gas Pressure	Appliance / Process / Domestic	ECV No. / Code	Indoors / Outdoors	Key required to access the ECV – Where from?	ECV Location	Handle Fitted	ECV correctly labelled	Nominal Valve Size
Garages	TBC – No test point available	Heating	WX16/ECV/001	Indoors	Yes, Caretaker	Building Entry	Yes	No – not currently funded by RFCA	80 mm

2.10 MOD Network Pipeline Details.

The table below shows the total pipeline lengths for the different pipe diameters and operating pressures.

Network Name / ID	Pressure (mbar)	Pipe Material	Pipe Diameter (mm)	Number of Sections	Total Length (m)
Network 001	23.8 mbar	PE	90	1	122
Network 001	23.8 mbar	Steel	80	1	2
				Total length of all MOD networks:	124m

2.11 Network Interconnection.

The outlet pipework system from each of the primary meter installations can be isolated networks or may be interconnected with other MOD systems. For isolated systems turning off the gas supply at a single primary meter installation will shut off supply to all buildings / processes on that pipe system. Interconnected systems will require two or more primary meter installations to be turned off. Figures 2.1 and 2.2 below show the differences.

The MOD pipework system on this establishment are:		Isolated
Supply from Primary Meter (Name / ID)	Pressure (mbar)	Can the interconnection be isolated?
None		

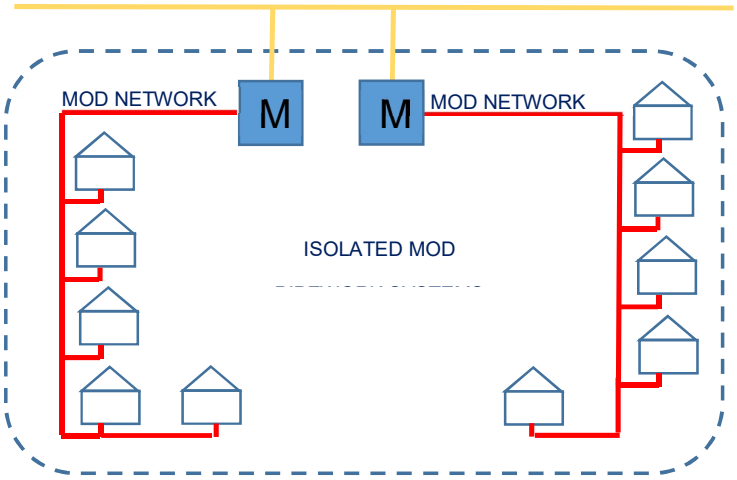


Figure 2.1 – Isolated MOD pipework systems

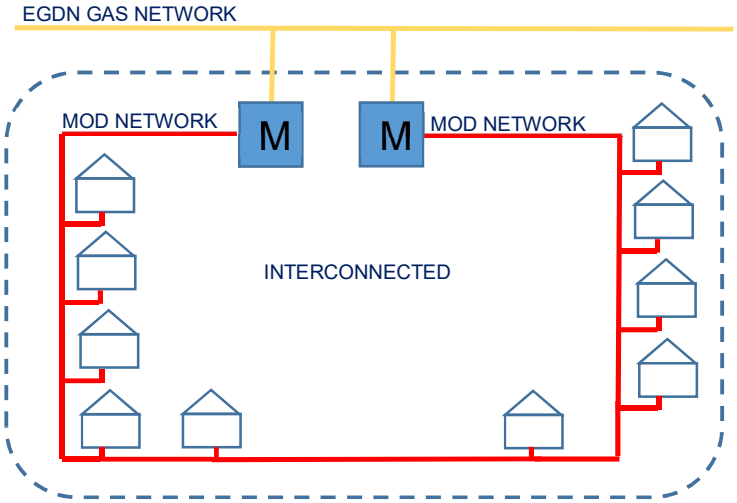


Figure 2.2 – Interconnected MOD pipework systems

2.12 Sensitive and Critical Loads.

The MOD does not have any 'interruptible consumers. Historically large industrial / commercial consumers, who had an alternative fuel supply, could opt to pay a lower rate for an interruptible contract which enabled the supplier to isolate their supply at short notice in order to preserve the gas supply to the public and 'firm contract' industrial consumers in the event of a supply shortage.

However, all industrial and commercial supplies are, effectively, 'interruptible' isolation of these will usually be requested by the supplier in times of supply emergencies in order to preserve domestic supplies for as long as possible.

Where Industrial / commercial consumers have particularly sensitive or critical end users these can be taken into consideration by the EGDN when requesting isolation. Sensitive consumers could include supplies such as a school, medical facility, temperature-controlled ammunition stores etc.

The number of sensitive loads at this establishment is:	None	
Facility / Consumers	Supplied from primary meter name / ID	Approx. max throughput (m^3 hr)
None		

2.13 Standby Alternative fuel Supplies.

Where operational critical supplies are present on site a standby alternative fuel supply should be considered which would enable continued operation in the event of either a local or national supply emergency.

Facility / Consumers	Supplied from primary meter name / ID	Approx. max throughput (m^3 hr)	Alternative fuel supply
None			

3 PLANT AND PREMISES

3.1 Drawings.

The gas layout drawings provide an overview of the gas network and the interfaces(s) with the EGDNs network.

The layout drawings should detail:

a) The site boundaries.
b) The primary meter installations.
c) Secondary PRIs.
d) Valve locations.
e) Pipeline routes, diameters, material and depth.
f) Operating pressure tier.
g) Demarcations
h) Responsibilities (EGDN / MOD)

The layout drawings are located at Annex B either embed as a PDF or hard copies. The drawings will be subject to the GRP quarterly review and following any physical changes or system updates. Hard copies of the drawings are located in the gas document centre.

Gas Layout Drawing Number	Revision Date	Scale	Detail
WX16-B-A1	08/06/2022	1:250	Site Gas Network Drawing
			WX16-B-A1.pdf

3.2 Additional Drawings.

In addition to layout drawings the below additional drawings are available from the gas documents centre and GRP.

Additional Drawing Number	Revision Date	Scale	Detail
WX16-A-A3	29/02/2022	NTS	Main Building Gas Line Drawing
WX16-A-A3	29/02/2022	NTS	Garages Gas Line Drawing
			WX16-A-A3.pdf

3.3 Responsibility Interfaces and Access Arrangements.

For gas incidents or maintenance that affect the EGDN, the EGDN representative will become the network emergency controller. The EGDN establishment direct contact will be the GRP who will make all relevant arrangements for access to the primary meter(s) and plant room access (for emergency isolation etc).

As the MOD establishments are high security, all EGDN personnel who attend for gas supply emergencies or to carry out maintenance work will be granted access to site on an individual basis.

All EGDN personnel attending this establishment will be subject to site specific security procedures and will be required to be escorted whilst on site, access and escorting may vary depending on the nature of the visit, time of incident etc.

Below are the site-specific arrangements in place to allow the EGDN access during an emergency, as agreed by the HOE:

Working Hours Contact: 01985 223723
Out of Hours Contact:
Onsite Caretaker Ken Davies
Mobile 07971 708733

4. OPERATION AND MAINTENANCE DOCUMENTATION

4.1 MOD Network Maintenance.

Network maintenance is mandated in GSMR and all network maintenance requirements and tasks on MOD establishments are detailed in the MOD Gas Network Technical Standard TS/GAS-01. TS/GAS-01 has been written in line with legislation, industry standards and guidelines.

The testing, inspecting and maintenance frequencies vary depending on the task, the table below shows the intervals at which it should be conducted and the date the tasks have been complete.

TS/GAS-01 Job No.	Maximum Interval Period	Brief Description of Task	Task was completed on
1	**General**		
1.1	5 Years	Network Analysis – to model the adequacy of network design	24/06/2022
1.2	5 Years	Network Validation Survey – to check network analysis model with measured data	17/05/2022
2	**Iron Pipelines, mains and services (includes buried outlet pipework from Primary Meter Installations and PRIs.)** Note: iron pipes are not permitted for use with LPG – any such pipes must be immediately scheduled for replacement		
2.3	12 Month	FIM (or similar) leakage survey – Pipes within 30m of a building	N/A
2.4	12 Month	Over line pipe survey – Pipes within 30m of a building	N/A
2.5	5 Years	FIM (or similar) leakage survey – all pipe routes within site, regardless of proximity to buildings	N/A
2.6	5 Years	Over line pipe survey – all pipe routes within site, regardless of proximity to buildings	N/A
3	**Steel Pipelines, mains and services (includes buried outlet pipework from Primary Meter Installations and PRIs.)** Note: buried steel pipes are not permitted for use with LPG – any such pipes must be immediately scheduled for replacement, and the SME(Gas) informed		
3.1	12 Month	Cathodic Protection (CP) monitoring survey	N/A
3.2	12 Month	Leakage survey (where no CP installed) – pipes within 5m of buildings	17/05/2022
3.3	5 Years	Leakage survey (where no CP installed) – regardless of proximity to buildings	N/A
3.4	5 Years	Over line pipe survey (where no CP installed) – regardless of proximity to buildings	17/05/2022
3.5	10 Years	Close Interval Potential Survey (CIPS) – for buried pipelines, mains and services with CP installed	N/A
4	**Polyethylene (PE) Pipelines, mains and services**		
4.1	5 Years	Leakage survey – All pipes within site regardless of proximity to buildings	17/05/2022
4.2	5 Years	Over line pipe survey – All pipes within site regardless of proximity to buildings	17/05/2022
5	**This section refers to LPG installations only – refer to TS/GAS-01**		

6	**Secondary Pressure Regulating Installations (PRIs).** Note: this is for secondary network PRIs only – it does not include the PRIs associated with the Primary Meter Installation(s), first-stage LPG regulators or the Meter regulator(s) installed downstream of the consumers / user ECVs		
6.1	12 Month	Functional check of PRI including safety / redundant systems	N/A
6.2	12 Month	Visual inspection of pipework within PRI housing	N/A
7	**Meter and PRI Housings** Scope for this activity includes the housing of all meter and PRI installations		
7.1	12 Month	Inspection of PRI housing (where present)	N/A
8	**Valves**		
8.1	12 Month	Inspection of valve chambers	N/A
8.2	12 Month	Leakage detection survey within valve chamber	N/A

4.2 Iron Pipework.

Where cast iron (including spun iron) or ductile iron pipework exists on an MOD establishment it is to be risk assessed in accordance with section 4.3 of the MOD GSC and, where required, entered into a mains replacement programme in order to comply with the UK mains replacement enforcement policy.

Below is the amount of Cast Iron and / or Ductile Iron pipe, and details, identified at this establishment from a survey:

Cast Iron (m):		Not Applicable				
Ductile Iron (m):						
Pressure (mbar)	Nominal Diameter (“)	Cast Iron or Ductile Iron	Total Length (m)	Closet Proximity to buildings (m)	Risk Score	Planned Replacement Date

5. RISK ASSESSMENTS

5.1 Model Risk Assessments.

The Model Risk Assessment (RA) shown in the table below, highlight the factors that will affect the safe management of the flow of gas, and the provision of the emergency response service. These RA, reviewed and modified as appropriate to this establishment, are shown at Annex C. (These RA must be reviewed and authorised by the GRP as being correct for this establishment with the date entered at the top of the RA).

RA No.	Title (Model Risk Assessments)
1	Any gas leak considered hazardous to persons or property (Under med/low pressure conditions).
2	Fire or explosion near to, or directly involving, a pipeline or gas facility.
3	A failure of operation of pipeline/plant onsite, or immediately downstream of site, that is maintained by the gas transporter.
4	A failure of operation of pipeline/plant onsite that is maintained by site services.
5	Failure of safety critical equipment.
6	Under-pressure in the gas system.
7	Over-pressure in the gas system.
8	Failure in system during load shedding.
9	General changes to the gas network.
10	Failure of PPM, general operation of the gas network plant/equipment and safety inspections.
11	Emergency Shutdowns.
12	Interface with Gas Transporter.
13	Interface with the consumers.
14	Interface with Emergency Services.
15	Natural Disasters, civil disturbances, other unforeseen events.

5.2 Additional Site-Specific Risk Assessments.

In addition to the model RA shown above, the site-specific RAs shown below have been identified. These RA are shown in Annex D (As with the Model RAs above, these must be reviewed and authorised by the GRP as being correct for this establishment with the date entered at the top of the RA).

16	
17	
18	
19	

6. SAFETY MANAGEMENT SYSTEMS

No site-specific considerations (refer to MOD Gas Safety Case Section 6) unless stated below:
Network maintenance will be undertaken by VIVO under the SFG regime to Tec/GAS/01

7. EMPLOYEE COMPETENCE

No site-specific considerations (refer to MOD Gas Safety Case Section 7) unless stated below:
No additional site specific measures in place

8. CONTRACTORS

No site-specific considerations (refer to MOD Gas Safety Case Section 8) unless stated below:
No additional site specific measures in place

9. HEALTH AND SAFETY COMMUNICATION – INTERNAL

9.1 Health and Safety Communication This section describes the systems in place to enable effective communications within this establishment. Different forms of communication are used to pass information to people within the MOD/MMOs depending on the type of information and the audience including in the event of an emergency.
9.1.1 Public Address System. The public address arrangements for this establishment are shown below
There is no public address system on site
9.1.2 Internal Electronic Correspondence. Details of any internal email or intranet correspondence are shown below
The site has the facility for email to be used for communication. Email addresses for Key site personalities are listed in section 1 of this document.

9.1.3 Direct Contact. Details of any site-specific arrangements for direct MOD / MMO contact with site personnel and families are shown below
Face to face meetings with key personnel are possible on a regular basis if required.
9.1.4 Emergency Plans. Details of any site-wide emergency plans and arrangements, including MMO documents are shown below
No specific gas emergency plan for the establishment is in place. MOD Exemplar Gas Safety Case to be used as guidance.
9.1.5 On-Site Emergency Services. Details of site-specific arrangements for communication with site emergency services, such as fire, are shown below
There are no on-site emergency services. Site personnel will dial 999 for Police, Fire and Emergency Medical services. For Gas Emergencies site will dial 0800 030 9320

10. HEALTH AND SAFETY COMMUNICATION – EXTERNAL

No site-specific considerations (refer to MOD Gas Safety Case Section 10) unless stated below:
No additional site specific measures in place

11. AUDITS

11.1 GSM Audit.

The audit process in place monitors and measures compliance with legislation and company policy and is aimed at ensuring the safe flow of gas within the MOD networks and downstream of the consumers ECV.

The GSM audit role is primarily concerned with assuring that the GRP duties are being effectively undertaken and that the gas risks are being effectively managed on the site. All GSM Audits will be carried out using the standard audit template prepared by the DIO PGE. Every site with gas networks shall be audited as frequently as practicable, ideally annually and in accordance with a programme agreed with the DIO PGE. Every site shall be audited at least once every three years. Each GSM shall implement an audit programme which must be agreed by the DIO PGE. All completed audit reports shall be sent to the DIO PGE for review and filing.

As agreed with the PGE, GSM audits on this establishment will be carried out:	On a three-yearly basis
The last GSM audit was conducted on:	15/07/2024
The last GSM audit was carried out by:	Neville King

The qualitive assessment of the GSM audit concluded this establishment is: (safe to continue / safe to continue subject to caveats / unsafe to continue)	Safe to continue subject to Caveats
Audit findings:	See Audit Report
Points addressed following last audit:	

12. CO-OPERATION

12.1 Emergency Exercises.

On MOD networks, the MMO utilises EGDN to provide a gas emergency response service for dealing with reported gas escapes. However, the EGDN response would normally be to isolate MOD supplies at the incoming meter installation(s). As this is likely to cause considerable inconvenience and expense to MOD facilities, where possible MMO staff / contractors would attempt to attend the emergency in advance of the EGDN personnel to assess the emergency and advise EGDN accordingly.

It is the responsibility of the HoE to ensure that a gas emergency exercise is conducted on the establishment at least once in a three-year period. The HoE will require the support and involvement of the MMO and all key stakeholders such as the EGDN. Lessons learnt should be actioned and kept within the gas document centre.

Date of last emergency exercise:	No previous emergency exercises
Date of next planned emergency exercise:	Within 3 years
Date of last actual emergency involving EGDN:	31/10/2023
Were the EGDN involved in the last emergency exercise:	N/A
Were the MOD emergency services involved in the last emergency exercise or actual emergency:	No, no MoD emergency services on site
Summary of lessons learnt from the last emergency exercise or actual emergency:	Procedures were followed correctly albeit after a phone call was replaced to the Gas RP to ask if the 'sort of gas smell' should be reported. All interested parties were reminded any suspected smell of gas should be reported immediately.
Date MMO emergency contact numbers and procedures were last tested:	31/10/2023

13. EMERGENCY SERVICE RESPONSE TO GAS ESCAPES

No site-specific considerations (refer to MOD Gas Safety Case Section 13) unless stated below:
No additional site specific measures in place

14. INVESTIGATIONS

No site-specific considerations (refer to MOD Gas Safety Case Section 14) unless stated below:
No additional site specific measures in place

15. GAS QUALITY

No site-specific considerations (refer to MOD Gas Safety Case Section 15) unless stated below:
No additional site specific measures in place

16. CONTINUITY OF SUPPLY

No site-specific considerations (refer to MOD Gas Safety Case Section 16) unless stated below:
No additional site specific measures in place

17. ADEQUATE NETWORK PRESSURE

17.1 Network Analysis.

Network Analysis is the primary tool by which the MOD satisfies itself that anticipated levels of demand can be supplied from its MP and LP networks to gas consumers. It allows different scenarios to be examined. The technique ensures the efficient management and operation of the MP and LP gas supply systems. It enables a detailed understanding of the gas supply system to be developed upon which cost effective planning and operating decisions can be made.

In accordance with industry recommendations Network Analyses must be repeated at every site containing an MOD Network at least five-yearly, or sooner, if for gas system modification purposes or when demand profiles have changed, or are expected to change.

For this establishment the network analysis was undertaken by:	DNV
For this establishment the network analysis was undertaken on:	24/06/2022

17.2 Design Minimum Pressure.

The MOD utilises nominal minimum design pressures, in compliance with IGE/GL/1. These minimum pressures will be seen at the extremities of the systems under extreme conditions. To ensure that all gas equipment downstream of the meter can be safely operated, it is a gas industry recommendation that the network should maintain a minimum of 20.75 mbar at the end of any service pipe. However, for existing networks, it is permitted to have a pressure as low as 19 mbar at the end of any service under 1 in 20 peak six-minute conditions. This value must also include any temporary contingencies to support maintenance activities. Where any appliances have elevated minimum recommended operating pressures (P_{ign}), the DmP must allow for this, taking into account any pressure losses across the meter (4mbar) and through installation pipework (10% of P_{ign}).

The minimum modelled pressure (based on 1:20 peak 6 minutes flow conditions) at the outlet of the consumers ECV at the system extremity is:	23.6 mbar
The location of the minimum pressure is:	Garages and Workshop
The declared minimum pressure (DmP) is:	19 mbar

17.3 Network Analysis Results.

A brief description of the network analysis results is below;

Pipe Data

The pipe model was built from the 'WX16-B-A1' file produced by DNV from DNV site surveys, supplied site drawings and Utilities line drawings. The files included the pipe lengths, connectivity, diameters and materials all used in the modelling.

Demand Data

The demand levels used in the analysis are the maximum estimated flows that the network is likely to experience. This criterion is stated in IGE/GL/1 Planning of Gas Distribution Systems of MOP not Exceeding 16 bar, section 4.2.1:
'Any system should be designed to meet the maximum demands placed upon it.
Note: Experience has shown that this is likely to be the maximum demand that will occur in any period of not less than 6 minutes, expressed as an hourly rate.'
The Bristol Horfield ARC Network 01 supplies the Garages/Stores and Workshop, and the principal uses for gas are for space, catering, and water heating. The effects of diversity have not been considered. This undiversified demand modelling ensures that the worst-case scenario is assessed.

Supply Data

Gas is supplied to Bristol Horfield ARC from a low pressure (LP) main. Supply pressure data obtained by DNV in the form of instantaneous pressure readings shows the outlet pressure of the main site regulators to be as follows:
Bulk Fiscal Primary Meter (BFPM), located in the Gas Meter House had an outlet pressure of 23.8 mbarg (standing).
This instantaneous pressure recorded at the BFPM has been used as the model operating pressure.

Network Supply Details

The capacity of the main meter is 40 sm3/h which is greater than the estimated maximum flow through the meter (15.7 sm3/h). This means that the main meter is adequately sized for the identified network and appliances.

Modelled Pressure Results

The minimum modelled pressure on the network is 23.6 mbarg at the inlet to the Workshops and Garages/Stores Building. This shows a modelled pressure drop of 0.2 mbarg from the supply (23.8 mbarg).

The pipe data available at the time of producing this report, and which has been used to build the Synergi network analysis model of Bristol Horfield ARC, was of a good quality. Demands were estimated based upon appliance ratings determined during the site survey.
The BFPM has a larger capacity than the calculated maximum demand and is therefore adequately sized.
There is a reasonable degree of confidence in the pressures predicted by the network model even though no pressure comparison can be made with recorded pressures. Modelling of the documented infrastructure and maximum estimated gas demands shows that all the buildings modelled should receive gas with a pressure above the minimum limit of 19 mbarg within the network.

17.4 Network Validation Survey.

As part of the network analysis validation procedure, pressure monitoring points are to be installed on MOD networks to enable pressure surveys to be conducted. In accordance with the recommendations of Section 8.3.2. of IGE/GL/1, pressure surveys will need to be carried out on MOD networks to verify that the results from the network models were indicative of the recorded pressures on the network. This is a practice which is widely used throughout the gas industry to check network models provide realistic results.

It is the responsibility of the MMO to ensure adequate pressure surveys are conducted at regular intervals to validate the pressures predicted by network analysis results. This must be conducted at a minimum of once every five years, in conjunction with a Network Analysis or when demand profiles on the network have changed. Similarly, if the results of a previous Network Analysis are suspected to be inaccurate (for example, low extremity pressures being experienced), a repeat Network Analysis should be undertaken.

For this establishment the latest validation survey was undertaken by:	DNV
For this establishment the latest validation survey was undertaken on:	24/06/2022

17.5 Network Validation Survey Results.

A brief description of the network validation survey results is below which includes a comparison of the modelled pressure and actual pressure record;

Pressure Survey

In accordance with the recommendations of Section 8.3.2 of IGE/GL/1, a pressure survey would normally be carried out on the Bristol Horfield ARC network in order to verify that the results from the network model were indicative of the recorded pressures on the network. This is a practice which is widely used throughout the gas industry to provide confidence in network analysis models.
The network was surveyed on the 17th May 2022. Single point pressure readings using a Druck pressure gauge or similar were recorded. These were attached to the outlet of the supply regulators and at the appliances in the buildings.
A simple pressure survey of short-term single readings was undertaken at one location in the modelled area. The recorded pressures taken in this type of survey may be standing pressures where the appliances are not operational, or working pressures, where they are. There may be several mbarg difference between these pressures

Pressure Modelling and Comparison

The network model was built and analysed as detailed above. The pressure data collected during the survey was compared with the modelled pressures, as shown in the table below.

19 mbarg is used in this report as the minimum pressure requirement under maximum flow conditions for this network. This is taken as the pressure requirement for the inlet to the appliances. It is expected that the modelled pressures will fall below those recorded as the modelled demand is the estimated maximum and it is unlikely that these conditions were experienced whilst the survey was undertaken. Providing that the modelled pressures are not significantly lower than those recorded, or below the minimum pressure requirement, this should not be a cause for concern as the difference can be attributed to the lower demand flows being experienced.

Building	Modelled Flow (sm^3/h)	Pressure (mbarg)	
		Single Read	Modelled
Gas Meter House (BFPM)	15.7	23.8 (standing)	23.8
MT Workshop	4.6	No data	23.6
Garages/Stores	11.1	No data	23.6

17.6 Corrective measures.

Following the network analysis and network validation survey the below corrective or mitigation measures have been planned at this establishment;

MOD network name / ID:	MoD Network 01

The results for the Bristol Horfield ARC model as a whole are satisfactory.

18. GAS SUPPLY EMERGENCIES

No site-specific considerations (refer to MOD Gas Safety Case Section 18) unless stated below:
No additional site specific measures in place

19. GAS QUALITY – SOLE CONVEYER

No site-specific considerations (refer to MOD Gas Safety Case Section 19) unless stated below:
No additional site specific measures in place

20. DISCONTINUING GAS SUPPLY

No site-specific considerations (refer to MOD Gas Safety Case Section 20) unless stated below:
No additional site specific measures in place

21. RESTORATION OF SUPPLIES

No site-specific considerations (refer to MOD Gas Safety Case Section 21) unless stated below:
No additional site specific measures in place

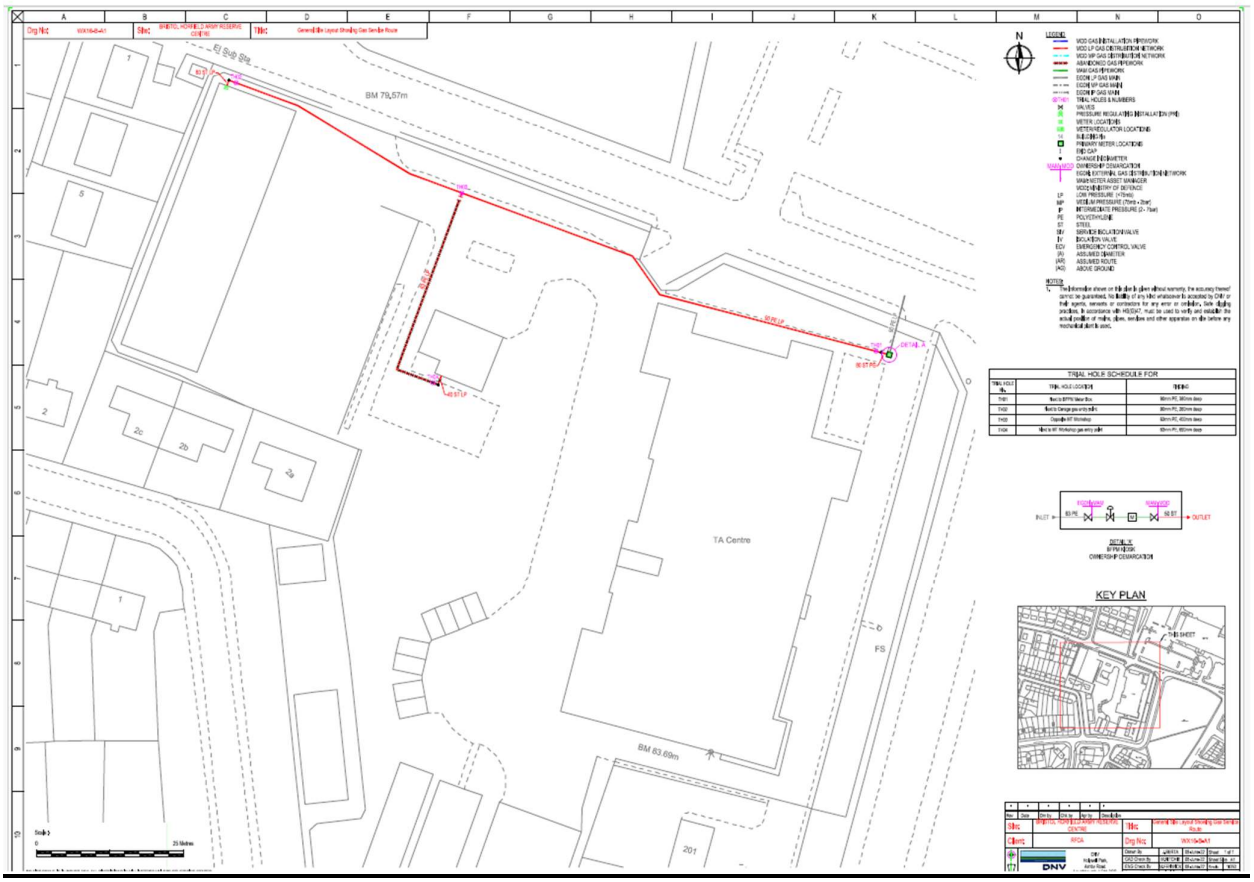
ANNEX A - ABBREVIATIONS

4C's	Co-ordination, Co-operation, Communication and Control
AE	Authorising Engineer
CI	Cast Iron
CIPS	Close Interval Potential Survey
CP	Cathodic Protection
DI	Ductile Iron
DIO SD EUS	Defence Infrastructure Organisation Service Delivery, Energy, Utility and Sustainability
DIO TS	Defence Infrastructure Organisation Technical Services
DIO	Defence Infrastructure Organisation
DmP	Design Minimum Pressure
ECV	Emergency Control Valve
EGDN	External Gas Distribution Network
FIM	Functional Independence Measure
GRP	Gas Responsible Person
GSIUR	Gas Safety (Installation and Use) Regulations1998
GSMR	Gas Safety (Management) Regulations 1996
GSC	Gas Safety Case
GSM	Gas Safety Manager
GSMP	Gas Safety Management Plan
HoE	Head of Establishment
HP	High Pressure
IGEM	Institute of Gas Engineers and Managers
IP	Intermediate Pressure
LP	Low Pressure
LPG	Liquified Petroleum Gas
MAM	Meter Asset Manager
MMO	Maintenance Management Organisation
MOD	Ministry of Defence
MP	Medium Pressure
NA	Network Analysis
NG	Natural Gas
NVS	Network Validation Survey
PE	Polyethylene
PGE	Principal Gas Engineer
PRI	Pressure Reduction Installation
PUS	Permanent Under Secretary
RA	Risk Assessment
SHEF	Safety, Health, Environment and Fire
TLB	Top Level Budget Holder

ANNEX B

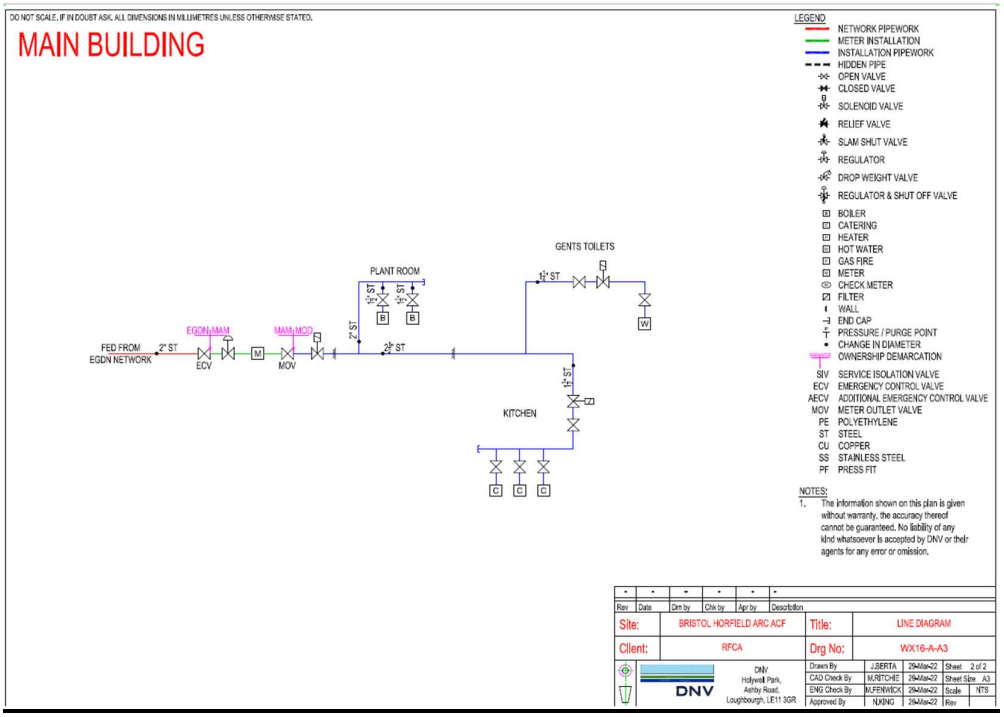
ANNEX B - SITE LAYOUT DRAWINGS.

Site Gas Network Drawing

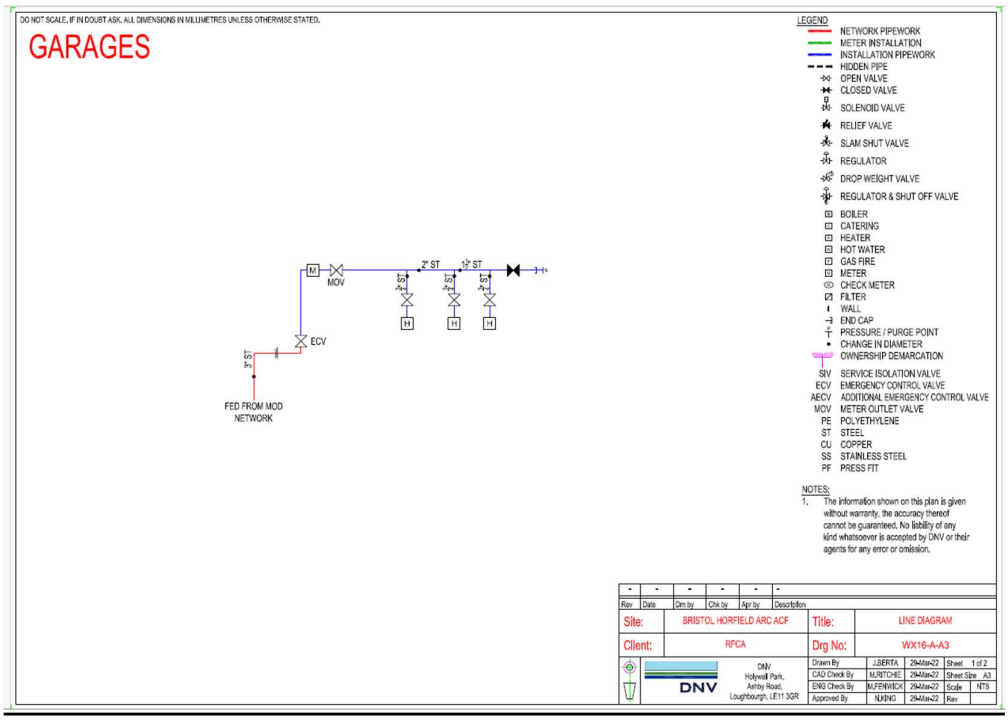


Site Gas Line Drawings

Main Building – Fed from EGDN Network



Garages – Fed from MoD Network



ANNEX C

ANNEX C - MODEL RISK ASSESSMENTS

Site Reviewed Model Risk Assessment - 01	
For: Bristol Horfield ARC ACF	**Accepted by: Jason Cuthbert**
Any gas leak considered hazardous to persons or property	**Date reviewed: 18/02/2025**
Risk	Any leak at any pressure can be quantified as a hazard. The higher the pressure and/or depending on the location of the leak the risk to the surrounding area varies
	Depending on the severity of the leak, other hazards such as explosions, fires, supply failures, pollution and associated financial implications could arise
	Depending on how quickly & thoroughly the gas leak is dealt with the resulting hazards from the incident will vary.
Caused By	Damage to pipelines from digging
	Failure of control equipment
	Damage caused by general construction
	Corrosion of pipelines
	Failure of mechanical joints and seals
	Deterioration or rupture of pipeline
	Poor communication between involved parties can exacerbate the problem
	Length of response time by first responders
Hazards Resulting from Risk	Damage to pipelines caused by uncontrolled escaping gas
	Risk of causing a supply emergency
	Damage to persons & property
	Risk of Explosions & Fire
	Pollution of environment
	Purging maybe required after corrective action
Current Preventative Methods	Permits to Dig
	Planned Preventative Maintenance
	Type & Quality control of materials used in gas network
	Strict adherence to emergency procedures in the event of an emergency
	Isolation via emergency stops
	Installation of gas network to industry standards
Further Required Preventative Methods	Pressure monitoring
	More accurate gas network layout drawings
	Use of the gas safety management plan
	Training of all involved parties
	Training and simulated gas emergency drills
Audits	In the event of an incident, near miss or any other hazardous occurrence this RA must be reviewed and updated as appropriate.

Site Reviewed Model Risk Assessment - 02	
For: Bristol Horfield ARC ACF	**Accepted by: Jason Cuthbert**
Fire or explosion near to, or directly involving, a pipeline or gas facility	**Date reviewed: 18/02/2025**

Risk	Any fire or explosion directly involving a gas pipeline or facility could cause a major incident.
	Any fire or explosion near to a gas pipeline or facility may cause personal injury and or damage to property.
Caused By	Undetected trapped gas
	Unresolved gas leaks
	Failure of control equipment, pipelines, seals, joints etc.
	Damage to gas pipelines through digging and/or general construction
	Incorrect initial procedure when dealing with a gas leak
	Inadequate action by first responder
Hazards Resulting from Risk	Fire and/or explosions causing death and/or injury to general populous
	Damage and/or destruction of surrounding properties
	Damage to gas pipelines, gas control centres & other gas related equipment
	Disruption of gas supply
	Secondary Explosions & Fire resulting from inaction
Current Preventative Methods	Scheduled Maintenance
	Designed for purpose
	Permits to Dig
	Strict adherence to emergency procedures, including ventilating and evacuating area
Further Required Preventative Methods	Pressure monitoring
	Use of the gas safety management plan
	Training and simulated gas emergency drills
Audits	In the event of an incident, near miss or any other hazardous occurrence this RA must be reviewed and updated as appropriate.

Site Reviewed Model Risk Assessment - 03	
For: Bristol Horfield ARC ACF	**Accepted by: Jason Cuthbert**
A failure of operation of pipeline/plant onsite, or immediately downstream of site, that is maintained by the EGDN	**Date reviewed: 18/02/2025**
Risk	Any incident directly involving the medium pressure pipelines onsite can only be dealt with by Wales and West Utilities in the event of a leak the response time by Wales and West Utilities has an impact on the severity of the incident
	The level of cooperation and communication between EGDN and the onsite parties has an impact on the eventual severity of the incident
Caused By	Poor response time by Wales and West Utilities
	Poor communication between onsite parties and Wales and West Utilities
	Poor coordination of onsite parties and Wales and West Utilities
	Poor communication of procedures
	Lack of supply resulting in drop in supply pressure, resulting in site wide gas supply failure
Hazards Resulting from Risk	Disruption of gas supply to whole site
	Re-commissioning & purging after corrective action
	Re-ignition of non-automatic ignition systems
	Long down time due to above hazards
Current Preventative Methods	General communication between site and Wales and West Utilities
	Contact RFCA gas emergency help line on 0800 317 960
Further Required Preventative Methods	Communication of site procedures to Wales and West Utilities
	Understanding Wales and West Utilities procedures
	Training and simulated gas emergency drills
	Training for quicker response time
	Pressure monitoring
	Planning for load shedding (reduces the risk of site wide gas failure)
	Fitting automatic ignition systems as standard
	Use of the gas safety management plan
Audits	In the event of an incident, near miss or any other hazardous occurrence this RA must be reviewed and updated as appropriate.

Site Reviewed Model Risk Assessment - 04	
For: Bristol Horfield ARC ACF	**Accepted by: Jason Cuthbert**
A failure of operation of pipeline/plant onsite that is maintained by site services	**Date reviewed: 18/02/2025**
Risk	Any incident directly involving the low or medium pressure pipelines onsite can be dealt with by the onsite gas operatives. In the event of a leak the response time by the onsite operatives has an impact on the severity of the incident
	The level of cooperation and communication between onsite parties such as emergency services and gas operatives has an impact on the eventual severity of the incident
Caused By	Poor response time by site services
	Poor communication between onsite parties
	Poor coordination of onsite parties
	Poor communication of procedures
Hazards Resulting from Risk	Disruption of gas supply to whole site
	Re-commissioning & purging after corrective action
	Re-ignition of non-automatic ignition systems
	Long down time due to above hazards
Current Preventative Methods	Scheduled Maintenance
	Designed for purpose
	Permits to Dig
	Strict adherence to emergency procedures
	Contact RFCA gas emergency help line on 0800 317 960
Further Required Preventative Methods	Pressure monitoring
	Use of the gas safety management plan
	Training and simulated gas emergency drills
	Training for quicker response time
	Planning for load shedding (reduces the risk of site wide gas failure)
	Fitting automatic ignition systems as standard
Audits	In the event of an incident, near miss or any other hazardous occurrence this RA must be reviewed and updated as appropriate.

Site Reviewed Model Risk Assessment - 05	
For: Bristol Horfield ARC ACF	**Accepted by: Jason Cuthbert**
Failure of safety critical equipment	**Date reviewed: 18/02/2025**
Risk	Failure of safety critical equipment can have a severe impact on the safety of the gas network.
Caused By	Lack of/or poor maintenance
	Incorrect use of equipment
	Ageing equipment
Hazards Resulting from Risk	Lack of control over gas network, resulting in a gas incident
	Lack of control over gas network during a gas incident
Current Preventative Methods	Scheduled Maintenance
	Designed for purpose
	Regular operational training
	Contact RFCA gas emergency help line on 0800 317 960
Further Required Preventative Methods	Pressure monitoring
	Further training of gas operatives
	Replacing old equipment where required
Audits	In the event of an incident, near miss or any other hazardous occurrence this RA must be reviewed and updated as appropriate.

Site Reviewed Model Risk Assessment - 06	
For: Bristol Horfield ARC ACF	**Accepted by: Jason Cuthbert**
Under-pressure in the gas system	**Date reviewed: 18/02/2025**
Risk	If at any point the pressure in a gas network drops below a certain level, gas safety regulators will stop the flow of gas. These regulators are fitted to gas appliances and in some instances will also be downstream of the gas meter into individual houses. There is also a regulator on the main intake to the site.
	If the pressure in a gas network, leading into a house or facility, drops below a certain level a gas safety regulator will terminate the flow of gas. This will cause the pilot lights to be extinguished. On this site, due to the multitude of buildings and houses, it may take up to 3 days to re-ignite all the systems.
Caused By	Gas leaks
	Poor gas network management
	Failure of Compressors
	Inadequate supply of gas in the system
	Failure of pressure control system
Hazards Resulting from Risk	Loss of gas supply
	Gas safety regulators being tripped (requires manually resetting on older models)
	Long recovery period
	Potential for air in the gas network
Current Preventative Methods	Scheduled Maintenance
	Designed for purpose
	Network analysis & validation carried out
Further Required Preventative Methods	Pressure monitoring
	Regular training of gas operatives
	Replacing old equipment where required
	Fitting automatic ignition systems as standard
	Replacing manual gas safety regulators with automatic cut-outs
Audits	In the event of an incident, near miss or any other hazardous occurrence this RA must be reviewed and updated as appropriate.

Site Reviewed Model Risk Assessment - 07	
For: Bristol Horfield ARC ACF	**Accepted by: Jason Cuthbert**
Over-pressure in the gas system	**Date reviewed: 18/02/2025**
Risk	If at any point the pressure in a gas network climbs above a certain level, gas safety regulators will stop the flow of gas. These regulators are fitted to gas appliances and in some instances will also be downstream of the gas meter into individual houses. There is also a regulator on the main intake to the site
	If the pressure in a gas network, leading into a house or facility, climbs above a certain level a gas safety regulator will terminate the flow of gas. This will cause the pilot lights to be extinguished. On this site, due to the multitude of buildings and houses, it may take up to 3 days to re-ignite all the systems.
Caused By	Failure of pressure control system
	Incorrect pipe/valve sizing
	Blockages in system
	Poor gas network management
Hazards Resulting from Risk	Rupture of gas pipes due to high pressure related
	Damage to valves and other control equipment
	Damage to seals and joints
	Loss of gas supply
Current Preventative Methods	Scheduled Maintenance
	Designed for purpose
	Network analysis & validation carried out
Further Required Preventative Methods	Pressure monitoring
	Regular training of gas operatives
	Use of the gas safety management plan
Audits	In the event of an incident, near miss or any other hazardous occurrence this RA must be reviewed and updated as appropriate.

Site Reviewed Model Risk Assessment - 08	
For: Bristol Horfield ARC ACF	
Failure in system during load shedding **(Not applicable at this site)**	
Risk	In the event of a gas supply emergency, load shedding can be used to stabilise the pressure in the system. However, if a section is isolated and the consumers on that branch use their gas supply the pressure in that branch will drop below acceptable levels and the pressure safety regulators will trip
Caused By	Insufficient communication between onsite parties and the end user
	Insufficient means of monitoring pressure
Hazards Resulting from Risk	Loss of gas supply
	Gas safety regulators being tripped (requires manually resetting on older models)
	Long recovery period
	Potential for air in the gas network
Current Preventative Methods	
Further Required Preventative Methods	Better communication
	Pressure monitoring
	Use of the gas safety management plan
	Fitting automatic ignition systems as standard
	Replacing manual gas safety regulators with automatic cut-outs
Audits	In the event of an incident, near miss or any other hazardous occurrence this RA must be reviewed and updated as appropriate.

Site Reviewed Model Risk Assessment - 09	
For: Bristol Horfield ARC ACF	**Accepted by: Jason Cuthbert**
General changes to the gas network	**Date reviewed: 18/02/2025**
Risk	If during the design phase the sizing of the system is under/oversized, it could result in under/over pressure scenarios.
	If during the installation of a gas network, the work is not carried out to the relevant British Standards and if the work is not undertaken by operatives trained and skilled to the same British Standards, failure may take place.
Caused By	Incorrect pipe sizing at design phase
	Underestimating impact on overall site gas supply
	Incorrect installation of plant and pipelines
	Under qualified gas operatives used for gas works
Hazards Resulting from Risk	Damage to pipelines and gas network plant and equipment
	Risk of causing a supply emergency
	Damage to persons & property
	Risk of Explosions & Fire
Current Preventative Methods	Using trained individuals to carry out work to the gas network
	Checking credentials of design authority for gas network redesign
	Network analysis to be carried out if changes to network loads
	Regular communication between contractors and Gas RP
Further Required Preventative Methods	Monitoring competence of gas network operatives
	Use of the Gas Safety Management Plan
	Further checking/commissioning of completed works
Audits	In the event of an incident, near miss or any other hazardous occurrence this RA must be reviewed and updated as appropriate.

Site Reviewed Model Risk Assessment - 10	
For: Bristol Horfield ARC ACF	**Accepted by: Jason Cuthbert**
Failure through PPM, general operation of the gas network plant/equipment and safety inspections	**Date reviewed: 18/02/2025**
Risk	Inadequate action during maintenance can cause failure in the system
	If safety inspections are not carried out regularly, the system may be vulnerable to failure
	The day-to-day operation of the system is vital to the overall performance of the gas network. If the day-to-day operation is not undertaken to industry standards, the gas network could be vulnerable to failure
Caused By	Gas plant & pipelines are not sufficiently maintained
	Scheduled activities do not take place.
	Operatives are insufficiently trained
	Inadequate co-ordination of operation
	Inadequate communication between onsite parties
	Inadequate planning of scheduled activities
	Inadequate inspection and testing of equipment
Hazards Resulting from Risk	Damage to pipelines and gas network plant and equipment
	Risk of causing a supply emergency
	Damage to persons & property
	Risk of Explosions & Fire
Current Preventative Methods	Monitored and maintained
	Using trained individuals to carry out work to the gas network
	Following PPM schedules to carry out works
	Awareness Training, drills and exercise
	Using qualified operatives
Further Required Preventative Methods	Monitoring competence of gas network operatives
	Checking credentials of design authority for gas network redesign
	Employ better lines of communication between parties
	Compliance with the Gas Safety Management Plan
Audits	In the event of an incident, near miss or any other hazardous occurrence this RA must be reviewed and updated as appropriate.

Site Reviewed Model Risk Assessment - 11	
For: Bristol Horfield ARC ACF	**Accepted by: Jason Cuthbert**
Emergency Shutdowns	**Date reviewed: 18/02/2025**
Risk	Emergency shutdowns can be used in the event of a gas incident which warrants the gas network or part thereof to be shut down. If this process fails, it can have a severe impact on the resolution of the incident
Caused By	Failure of emergency shutdown valves
	Ageing emergency shutdown valves
	Lack of sufficient facilities for segregated shutdowns
Hazards Resulting from Risk	Escalating hazard cause by existing emergency
	Damage to pipelines and gas network plant and equipment
	Risk of causing a supply emergency
	Long down time
Current Preventative Methods	Regular communication between contractors and Gas RP
	Reference made to site demarcations on site network drawings and strategic valve locations
Further Required Preventative Methods	Use of the Gas Safety Management Plan
	Providing strategically placed emergency shutoff valves
	Scheduled PPM
	Checking credentials of design authority for gas network redesign
	Replacing old equipment where required
Audits	In the event of an incident, near miss or any other hazardous occurrence this RA must be reviewed and updated as appropriate.

Site Reviewed Model Risk Assessment - 12	
For: Bristol Horfield ARC ACF	**Accepted by: Jason Cuthbert**
Interface with Gas Transporter	**Date reviewed: 18/02/2025**
Risk	If interfaces between the site team and the gas transporter are not managed carefully, the fallout from gas incidents can become more pronounced
Caused By	Poor response time by EGDN
	Poor communication between onsite parties and EGDN
	Poor coordination of onsite parties and EGDN
	Poor communication of procedures
Hazards Resulting from Risk	Damage to pipelines
	Resultant hazards from any gas incident can escalate
	Risk of causing a supply emergency
	Damage to persons & property
	Risk of Explosions & Fire
Current Preventative Methods	RFCA gas emergency help line on 0800 317 960 which alerts gas RP to gas incidents
Further Required Preventative Methods	Communication of site procedures to EGDN
	Understanding EGDN procedures
	Training and simulated gas emergency drills
	Regular communication through fixed procedures
Audits	In the event of an incident, near miss or any other hazardous occurrence this RA must be reviewed and updated as appropriate.

Site Reviewed Model Risk Assessment - 13	
For: Bristol Horfield ARC ACF	**Accepted by: Jason Cuthbert**
Interface with Consumer	**Date reviewed: 18/02/2025**
Risk	If communication between the site team and the end user are not carefully established, the fallout from gas shortages could result in the system having to be purged and the pilot lights re-ignited. On a large site such as this, it could take up to three days to re-ignite all pilot lights.
Caused By	Poor communication
	Lack of understanding
	No method of checking on gas usage
Hazards Resulting from Risk	Risk of causing a supply emergency
	Loss of pressure in system
	Long recovery period
	Potential for air in the gas network
Current Preventative Methods	Regular communication between WX RFCA, contractors and Gas RP
Further Required Preventative Methods	Pressure monitoring system
	Use of the Gas Safety Management Plan
Audits	In the event of an incident, near miss or any other hazardous occurrence this RA must be reviewed and updated as appropriate.

Site Reviewed Model Risk Assessment - 14	
For: Bristol Horfield ARC ACF	**Accepted by: Jason Cuthbert**
Interface with Emergency Services	**Date reviewed: 18/02/2025**
Risk	The first responder has a duty to minimise the risk to the surrounding area upon arrival. If the gas incident is within an enclosed area, isolating the system is the correct course of action. However, in a open, well ventilated area, isolating the system may not be necessary, and could cause secondary hazards
Caused By	Poor communication
	Lack of understanding
Hazards Resulting from Risk	Risk of causing a supply emergency
	Causing the need to purge systems
	Long downtime of gas network
Current Preventative Methods	Regular communication between WX RFCA, contractors and Gas RP
Further Required Preventative Methods	Providing training to the Emergency Services, so that they will be able to better tackle gas incidents
Audits	In the event of an incident, near miss or any other hazardous occurrence this RA must be reviewed and updated as appropriate.

Site Reviewed Model Risk Assessment - 15	
For: Bristol Horfield ARC ACF	**Accepted by: Jason Cuthbert**
Natural Disasters, civil disturbances, other unforeseeable events	**Date reviewed: 18/02/2025**
Risk	The risk of unforeseeable events causing gas related incidents cannot be planned for. However, it is possible to minimise the impact of the resulting hazards
Caused By	Explosions
	Ground tremors
	Gas pipe sabotage
Hazards Resulting from Risk	Damage to pipelines caused by uncontrolled escaping gas
	Risk of causing a supply emergency
	Damage to persons & property
	Risk of Explosions & Fire
	Pollution of environment
	Purging maybe required after corrective action
Current Preventative Methods	High security levels
Further Required Preventative Methods	Use of the Gas Safety Management Plan
Audits	In the event of an incident, near miss or any other hazardous occurrence this RA must be reviewed and updated as appropriate.

ANNEX D

ANNEX D - ADDITIONAL SITE-SPECIFIC RISK ASSESSMENT TEMPLATE
Please copy and add further sheets as required

Additional Site-specific Risk Assessment 16	
For:	**Approved by:**
	Date reviewed:
Risk	
Caused By	
Hazards Resulting from Risk	
Current Preventative Methods	
Further Required Preventative Methods	
Audits	In the event of an incident, near miss or any other hazardous occurrence this RA must be reviewed and updated as appropriate.