



**Defence  
Infrastructure  
Organisation**

**MOD EXEMPLAR  
GAS SAFETY CASE**

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

MOD Exemplar Gas Safety Case

Page No	Amendment	Revised Issue No	Authorised	Date
	Replace Authorising Engineer (AE) with Gas Safety Manager (GSM)	5.2	RAC	12-03-2013
	Replace JSP 375 Vol 3 chapter 2 with GSMP Section B annex G	5.2	RAC	12-03-2013

## Executive Summary

MOD, as a Gas Transporter within Great Britain, has submitted this Exemplar Safety Case to demonstrate compliance with the Gas Safety (Management) Regulations 1996. Maintenance Management Organisations<sup>1</sup> (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, have assisted in the preparation of this document. The MOD delegate specific duties to MMO but retain accountability as Duty Holder under GS(M)R.

The Safety Case 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 connection point to the emergency control valve of individual consumers. The Safety Case considers primarily those matters that relate to management of the safe flow of gas within the system and the provision of an emergency service.

The MOD has commissioned consultants to carry out a network analysis of the gas supply network and this safety case is being submitted including this analysis.

The conclusions of the assessments within this Safety Case 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 GS(M)R 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.

---

<sup>1</sup> *Maintenance Management Organisation (MMO) is the generic term used to represent the contractor providing services under all delivery methods*

1	INTRODUCTION.....	1
1.1	Reasons for the Safety Case .....	1
1.2	Objectives.....	2
1.3	Contributors to the Safety Case.....	2
1.4	Duty Holder .....	3
2	OPERATION UNDERTAKEN.....	5
2.1	General Description of the Operations.....	6
2.2	MOD Distribution Networks .....	7
3	PLANT AND PREMISES.....	8
3.1	Information .....	8
3.1.1	Distribution Gas Supply System .....	8
3.1.2	Pressure Regulating Installations .....	9
3.1.3	Interfaces with other gas transporters .....	9
3.1.3.1	Direct Interfaces.....	9
3.1.3.2	MOD/EGDN Site Communication and Access Arrangements .....	9
3.2	Location of Facilities and Safety Critical Plant.....	10
3.2.1	Location of Control Centres.....	10
4	TECHNICAL SPECIFICATION .....	11
4.1	Overview .....	11
4.1.1	Document Governance .....	12
4.2	Procedures for Operation and Maintenance .....	13
4.2.1	Network Operation and Maintenance.....	13
4.2.2	System Maintenance .....	13
4.2.3	Maintenance Requirements.....	13
4.2.3.1	Distribution System.....	13
4.2.3.2	Safety Inspections and Planned Preventative Maintenance.....	14
4.2.3.3	Pressure Regulating Installations (Service Regulators).....	14
4.2.4	Third Party Works in the vicinity of the Distribution Network System .....	15
4.2.5	Maintenance Support .....	15
4.2.6	Responsibility for Maintenance .....	15
4.2.6.1	Safe Control of Operations .....	15
4.2.6.2	Gas Networks Isolation Methodology .....	17
4.2.6.3	Co-ordination of safety Inspections and Planned maintenance on the Distribution Networks.....	17
4.2.7	Plant Breakdown .....	17
4.2.7.1	Repair of PE Network and Service Regulators .....	17
4.2.8	Systems Modifications .....	18
4.2.9	Non – Routine and Emergency Maintenance .....	18
4.2.10	MOD Gas Network Audit Arrangements .....	18
4.2.11	Site Security .....	19
5	RISK ASSESSMENT.....	19
5.1	Safe Management of the flow of gas.....	19
5.2	Risk Assessment Review and Update.....	21
5.3	Emergency Response .....	22
6	SAFETY MANAGEMENT SYSTEMS .....	23
6.1	Overview of the MOD/MMO’s Safety Management Systems .....	23
6.1.1	Policy.....	23
6.2	Organisation - Allocation of Responsibilities .....	24
6.2.1	Directors .....	24
6.2.2	Managers and Supervisors.....	24

6.2.2.1	Commanding Officer/Head of Establishment (CO/HoE) .....	24
6.2.2.2	Chief Environment and Safety Officer (CESO)(DIO).....	25
6.2.2.3	Roles and Responsibilities .....	26
6.2.2.4	All Employees.....	26
6.2.3	Governance Process .....	27
6.3	Distribution Network .....	27
6.3.1	Network System Development.....	28
6.3.2	Network System Maintenance .....	28
6.3.3	Emergency Response .....	28
6.4	Health Safety and Environment .....	29
6.5	Quality Assurance .....	29
6.6	Distribution (Operational) Support .....	29
6.7	Monitoring Process .....	29
6.8	Monitoring Safety Performance	30
6.8.1	Audit	30
6.8.2	Monitoring	30
6.8.3	Review	30
6.8.4	Accident / Incident Reporting (including hazards and near misses)	30
6.8.5	Learning from Experience	31
6.9	Documentation Control	31
6.10	Risk and Change Management	31
6.10.1	Change Management	31
6.10.2	Risk Management	31
7	EMPLOYEE COMPETENCE	
333 7.1	Competency	
333		
7.2	Appointment of MMO Staff .....	333
7.3	Key Employees with Responsibility for the Safe Flow of Gas.....	33
7.4	Safety and Competence Training .....	334
7.4.1	Gap Action Management.....	344
7.5	GSM and RP (Gas) Training and Competence.....	344
7.6	Assessment of Competence.....	344
7.7	Training Records.....	344
7.8	Absence Cover.....	344
8	CONTRACTORS.....	355
8.1	Policy.....	355
8.1.1	Organisational Structure .....	355
8.1.2	Contractor Competencies.....	355
8.1.2.1	..... Contractors Working on < 7 bar and Upstream of the Emergency Control Valve .....	366
8.1.2.2	Contractors Working on or Downstream of the Emergency Control Valve ....	366
8.1.3	Emergency Response .....	366
8.1.4	Planning and implementing .....	366
8.1.5	Measuring Performance .....	376
8.1.6	Audit and review.....	377
9	HEALTH AND SAFETY INFORMATION .....	388
9.1	Internal Communication.....	388
9.2	Site 4Cs Duty Holder	39

10	HEALTH AND SAFETY COMMUNICATION .....	41
10.1	Liaison with other transporters, enforcing authorities and emergency service providers.....	41
11	AUDIT .....	43
11.1	Introduction	43
11.2	Audit Aims	43
11.3	Audit Objectives	43
11.4	Roles and Responsibilities	44
11.5	Audit by MOD	44
11.6	Audit by DIO Chief Environment and Safety Officer (CESO)	44
11.7	Audit of JSP 375 Volume 3	44
11.8	Audits by ODC E&C SME (Gas)	44
11.9	External Auditing	44
12	CO-OPERATION	45
12.1	Continuity of Supply	45
12.2	Co-operation Arrangements for Operations at MOD/EDGN Network Interface	45
12.3	Network Exit Agreements	45
12.4	Co-operation Arrangements for the Design of New System Connections	45
12.5	Co-operation on Gas Escapes	44
12.6	Co-operation Arrangements with 3rd Parties in Network Supply Emergencies	45
12.7	Co-operation with Suppliers	46
13	EMERGENCY SERVICE RESPONSE TO GAS ESCAPES	47
13.1	Management of Gas Escapes	47
13.1.1	Dealing with gas escapes and other emergencies	47
13.1.1.1	Site Emergencies	47
13.2	Responsibilities	48
13.2.1	Distribution Support	48
13.2.2	Distribution Network	48
13.3	MMO Helpdesk and National Gas Emergency Line Call Centre	49
13.3.1	Emergency Line Call Centre Equipment	50
13.4	EGDN Emergency Response	50
13.4.1	Escape Isolation Response Time	51
13.5	Spillage of Products of Combustion	51
13.6	Repair of Gas Escape	51
14	INVESTIGATIONS	52
14.1	Incident Investigation	52
14.1.1	Incident reporting - Internal	52
14.1.2	Incident reporting - External	53
14.1.3	Accident/Incident Investigation	53
15	GAS QUALITY	55
15.1	Gas Composition and Pressure	55
15.2	Gas Contents and Characteristics	55

15.2.1	Source of Gas .....	55
15.2.2	Contractual Arrangements.....	55
15.2.3	Suitable Pressure for Appliances.....	55
15.2.4	Network Contamination .....	55
16	CONTINUITY OF SUPPLY.....	57
16.1	Planning and Organisation of Gas Supply .....	57
16.1.1	Long term demand forecasting .....	57
16.1.2	Long term supply forecasting.....	58
16.1.3	Short term demand forecasts.....	58
16.1.4	Short term supply forecasts .....	58
16.1.5	Load Balancing.....	58
17	ADEQUATE NETWORK PRESSURE .....	59
17.1	Network Planning .....	59
17.1.1	Planning and Design Criteria .....	59
17.1.2	Network Analysis & Planning.....	59
17.1.3	Network Monitoring.....	60
17.1.4	Minimum Pressures.....	60
17.1.5	Normal Pressures.....	61
18	GAS SUPPLY EMERGENCIES.....	62
18.1	Gas Supply Emergencies .....	62
18.1.1	Low pressure gas supply emergencies.....	62
18.1.1.1	MMO and EGDN Low Pressure Gas Supply Emergency Procedures .....	62
18.1.2	Network Risk Assessment .....	63
18.1.2.1	Insufficient Gas Supplies Available to the MOD Networks from the EGDN System .....	63
18.1.2.2	A transportation constraint within the MOD Medium or Low Pressure system	63
18.2	Arrangements for co-operation with third parties in network gas supply emergencies.....	64
18.2.1	Emergency Gas Supply Exercises.....	65
18.3	Criteria for invoking low pressure gas supply emergency .....	65
18.4	National EGDN Low Pressure Gas Supply Emergency Procedures .....	65
19	GAS QUALITY – SOLE CONVEYOR.....	66
20	DISCONTINUING SUPPLY .....	67
20.1	Interruption .....	62
20.2	System Isolation .....	62
21	RESTORATION OF SUPPLY.....	68
21.1	System Restoration .....	68
21.1.1	Restoration of Gas Supplies – Guidance Criteria.....	68
22	CONCLUSIONS .....	69
23	REFERENCES.....	69
24	GLOSSARY.....	70
25	ABBREVIATIONS .....	71

Appendix A	MOD Health and Safety Policy Statement
Appendix B	List Of Maintenance Management Organisations And Areas Of Responsibility
Appendix C	Content Page for JSP 375 MOD Health and Safety Handbook
Appendix D	Location of MOD Estates Networks
Appendix E	Schematic of a Typical MOD Network
Appendix F	Typical Domestic Entry Detail
Appendix G	Flow Chart of Audit Process
Appendix H	MOD Estates Distribution System Details
Appendix I	<del>MOD Safety Rules - Common Elements</del> (deleted)
Appendix J	<del>JSP 375 Vol.3 Chapters 4 &amp; 5 Gas Systems</del> (deleted)
Appendix K	Site Specific Information
Annex 1	Gas Safety Management Plan (Section A)
Annex 2	Gas Safety Management Plan (Section B)
Annex 3	DE & MMO Policy and Organisation & Arrangement statements
Annex 4	Establishment layout and schematic diagram
Annex 5	General description of the MMO Operations
Annex 6	Organisation chart showing lines of communication between Establishment/DE/MMO
Annex 7	Flowchart of MMO assurance processes



# 1 INTRODUCTION

Defence Infrastructure Organisation (DIO) is part of the Ministry of Defence (MOD), which have been given the role in providing a strategic overview of the MOD Estate, rationalisation and disposals, following on from the Strategic Defence Review.

DIO as the main Estates Management Organisation within the MOD aims, through the award of Regional Prime Contracts, to employ Prime Contracting methods for the procurement of substantially all construction and maintenance services across Great Britain (Other Estate Management Organisations within MOD may use other procurement routes e.g. Public Private Partnership/Public Finance Initiatives (PPP/PFI) to deliver estates management services and construction). The objective of Prime Contracting is to achieve better long-term value through improved Partnering, Supply Chain Management, continuous improvement and economies of scale. A Prime Contractor has overall single point responsibility for the management and delivery of a project, or provision of an integrated estate service including new assets and maintenance of the existing infrastructure, with a recognition of the military and other needs of the MOD.

Prime Contracting is the method of contract used by DIO for the provision of estate services based on the maintenance of assets and facilities management (FM), but may also include capital works projects (generally new build or refurbishment). A prime contractor will have overall responsibility for the management and delivery of a project, including co-ordinating and integrating the activities of his sub-contractors to meet the overall specification efficiently, economically and to time.

MOD owns a number of gas supply networks within the UK. The Maintenance Management Organisations identified in Appendix A have the overall contractual responsibility to operate and maintain these gas network assets under the conditions of their contracts. This includes the management of the safe flow of gas within the system and the provision of an emergency service (i.e. make safe).

It is the policy of MOD to safeguard the health, safety and welfare of its employees and all persons likely to be affected by its undertakings. MOD acknowledges that successful health and safety management contributes to its overall performance. In the process of delivering its health and safety goals MOD has developed and implemented its Health, Safety and Environment Policy which is shown in Appendix B. Reference can also be made to MOD Publication JSP 375 Health & Safety Handbook which details the MOD's arrangements for health and safety, the index of which is shown in Appendix C.

## 1.1 Reasons for the Safety Case

In order to meet MOD responsibilities as a Public Gas Transporter (PGT) a Safety Case has been compiled by DIO using the Scotland Gas Safety Case for its basic structure in accordance with the 'Gas Safety (Management) Regulations 1996' (GS(M)R)<sup>2</sup> [Reference 1], the HSE booklet H&S Legal Series L80, "A Guide to the Gas Safety (Management) Regulations 1996 [Reference 2], and the Institution of Gas Engineers (IGE) Communication 1632, IGE/GL/7, Gas Legislation Guidance for Safety Cases [Reference 3]. Further requirements and information have been taken from within the suite of IGEM Gas Legislation Guidance or MMO documents and included where deemed appropriate.

Regulation 3 of GS(M)R requires that any gas transporters intending to convey gas in a network must prepare a safety case containing particulars specified in Schedule 1 and have it accepted by the Health and Safety Executive (HSE) before they can convey gas in a network.

The MOD has prepared this Safety Case to demonstrate that it has made adequate arrangements to manage the safe flow of gas within the MOD networks, and to provide an effective emergency

---

<sup>2</sup> Gas Safety (Management) Regulations 1996. SI 1996 No.551

service. Within this Safety Case, MOD will address its intent in satisfying issues relating to the objectives listed below.

The regulations require that safety cases be reviewed every 3 years, if any material changes occur between regular review periods, the safety case may be resubmitted. The MOD will notify and discuss material changes with the HSE in advance before re-submitting the safety case. A system for recording all modifications and updates to the Safety Case has been established.

## **1.2 Objectives**

The primary objectives within the Safety Case are as follows:

- To manage to an appropriate standard the MOD's requirements for compliance with the GS(M)R.
- Describe MODs operations.
- Provide particulars to demonstrate that the MOD has, through its Maintenance Management Organisations (MMOs), an adequate safety management system to manage the safe flow of gas.
- Provide particulars to demonstrate that the MOD has systems in place to communicate all relevant information to ensure the safe operation of the gas supply system.
- Provide particulars to demonstrate that MOD co-operates with all other bodies that have safety duties.
- Provide particulars to demonstrate that MOD has arrangements in place, both through its own systems and those of its MMO, for dealing with gas escapes and investigations into incidents.
- Provide particulars to demonstrate that the gas conveyed meets the composition requirements.
- Provide particulars to demonstrate that MOD both through its own systems and those of its MMO has arrangements in place to ensure continuity of supply.
- Provide particulars to demonstrate that MOD has arrangements in place, both through its own systems and those of its MMO, for dealing with gas supply emergencies.

In order to achieve these objectives this Safety Case has been structured in the manner suggested in Schedule 1 of the GS(M)R [Reference 1]. This format allows the Safety Case to be set out in a logical way.

## **1.3 Contributors to the Safety Case**

The following Organisations (both internal & external) were involved in the preparation of this Safety Case.

DIO CESO

GL Noble Gas Consultants

### 1.4 Duty Holder

**GS(M)R Schedule 1 – Paragraph 1 Requirements**

**Mr Robin A Cawthorne (Chief Environment & Safety Officer (DIO))**  
**Defence Infrastructure Organisation**  
**Kingston Road**  
**Sutton Coldfield**  
**B75 7RL**

**Tel 0121 311 3228**  
**Fax 0121 311 3809**  
**Email [robin.cawthorne687@mod.uk](mailto:robin.cawthorne687@mod.uk)**

This Safety Case is the responsibility of the ‘duty-holder’ who also has the responsibility for managing the system in accordance with the Safety Case. The name and address of the person undertaking the role of ‘duty-holder’ on behalf of the MOD is;

Name            Permanent Under Secretary.  
Address;        Main Building  
                    House Guards Avenue  
                    Whitehall  
                    London  
                    SW1A 2HB

PUS delegates maintenance responsibility to the Top Level Budget Holders (TLBH's), to manage safety of the gas network. The TLBH's utilises MOD Contracts i.e. MMOs who have responsibility for maintaining the gas network on behalf of the MOD. This responsibility is shown graphically in Fig 1.

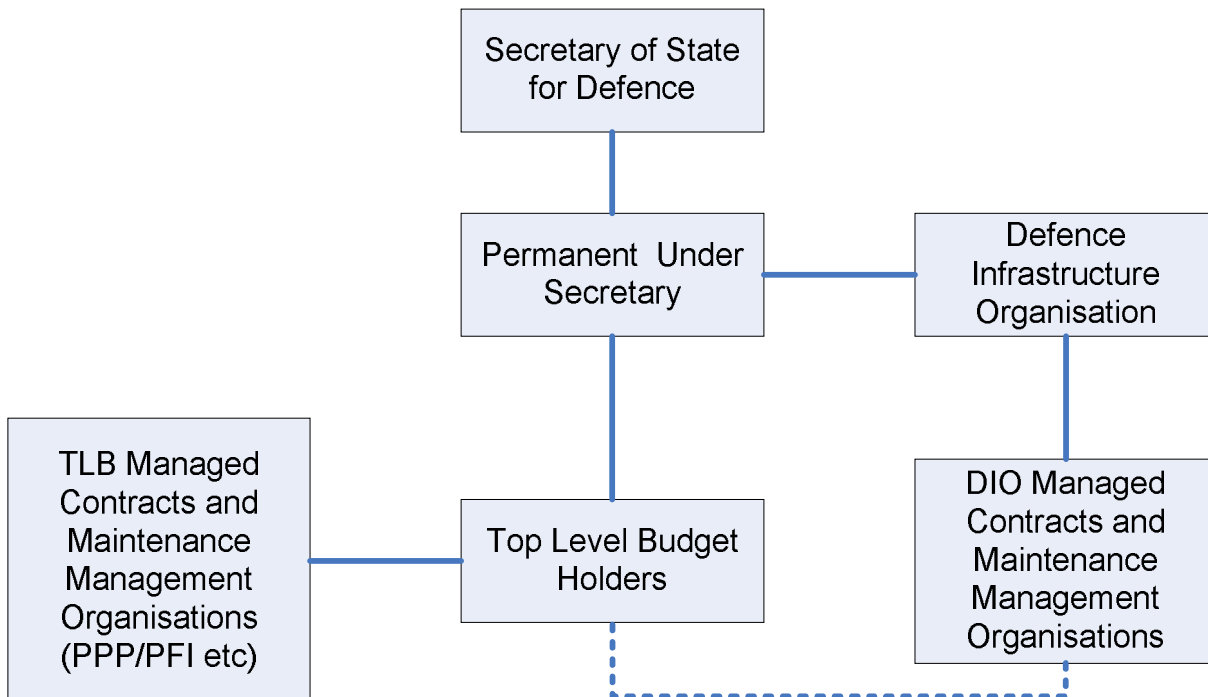


Fig 1

The contacts in the TLBs for maintenance issues are shown in the relevant Establishment Annex.

The methodology by which the MOD manages health and safety is described in Appendix C.

### **Contacts**

On behalf of the MOD the ultimate contact for Gas Safety Management is the Secretary of State for Defence:

Secretary of State for Defence  
Horse Guards Avenue,  
Whitehall,  
London,  
England,  
SW1A 2HB

Other contacts for gas safety related matters are identified in the relevant Establishment Annex listed at Appendix D:

## 2 OPERATION UNDERTAKEN

### GS(M)R Schedule 1 – Paragraph 2 Requirements

A description of the operation intended to be undertaken by the duty holder

#### 2.1 General Description of the MODs Operations

The MOD operates gas supply systems located at the sites listed at Appendix D.\ These gas supply systems supply a mixture of domestic and commercial developments. These developments are described in the individual annexes that are produced for each establishment:

Appendix E shows a schematic representation of a typical MOD Establishment gas supply system. The schematic shown is similar to that shown in IGE/G/1<sup>3</sup> Figure 38 Legacy Arrangement and is used as the basis for defining the end of the Network, a meter installation and installation pipework.

The capacity constraints in the networks are determined by the bulk meter size at the External Gas Distributor Network<sup>4</sup> (EGDN)/MOD Site supply interface.

The following section provides an example of a summary description of the operation for each gas network in terms of;

- a. the purpose of the pipeline network;
- b. pressure at which the pipeline is designed to operate and the supply pressure from EGDN;
- c. total length of the different types of pipeline that make up the network;
- d. volumes of gas likely to be conveyed;
- e. capacity constraints of pipeline networks.

Network Description	Address	Number of Properties	Capacity Constraints on System
This information will be provided in the establishment specific detail contained in the relevant GSMP Annex			
This information is to be found on separate spreadsheet which is regularly updated and copied to HSE	RAF Brize Norton RAF Alconbury RAF Whittering RAF Lossiemouth/Kinloss Middle Wallop	Approx 4500	

Table 2.1

Under the MOD contract the MMOs operate the gas supply systems located at a number of establishments which are listed at Appendix D. These gas network are used to transport gas

<sup>3</sup> IGE/G/1 – Communication 1703 – Defining the End of the Network, a Meter Installation and Installation Pipework

<sup>4</sup> The Networks are operated by; a) National Grid Gas plc. b) Northern Gas Networks Ltd. c) Scotland Gas Networks Ltd. d) Southern Gas Networks Ltd. e) Wales and West Utilities Ltd.

from the local EGDN supply system via Individual System Exit Points (ISEP) to the consumers emergency control valve. EGDNs supply the MOD gas networks from an Intermediate Pressure (IP) system via boundary governor/meter installations, the locations of which are shown in the GSMP section (B) for the relevant establishment. Gas pressure in the MOD systems varies across the network as follows

<b>MOD Supply System</b>	<b>Operating Pressure Range</b>	<b>Supply Pressure from EGDN Network</b>
Medium Pressure (MP) Distribution System	Between 75 mbarg and up to 2 barg	Specified in relevant annex
Low Pressure (LP) Distribution System	Up to 75 mbarg	

A description of the plant and premises used to transport the gas within the networks is given in Section 3 of this Safety Case.

## 2.2 MOD Distribution Networks

The MOD establishments gas distribution system consists of approximately 45 kilometres of distribution pipelines example as shown in Table 2.2 below. The full details are made available in a separate spreadsheet which is provided to the HSE

### MOD Distribution Network (example)

DIO Region	Pressure	Type	Length (m)	comments
Central	Medium Pressure	MDPE		
		Steel		
	Low Pressure	MDPE		
		Steel		
Scotland	Medium Pressure	MDPE	21200	
		Steel		
	Low Pressure	MDPE	2200	
		Steel		
South East	Medium Pressure	MDPE	5225	
		Steel		
	Low Pressure	MDPE	790	
		Steel	1375	
South West	Medium Pressure	MDPE		
		Steel		
	Low Pressure	MDPE		
		Steel		
East	Medium Pressure	MDPE	3682	
		Steel		
	Low Pressure	MDPE	5216	
		Steel		
total	Medium Pressure	MDPE	30107	
		Steel		
	Low Pressure	MDPE	13431	
		Steel	1375	
			44913	

**Table 2.2 – Length of Pipework in MOD’s Distribution Network**

A mixture of building types and usage are supplied. The principal categories for buildings using gas are:

- Hangers (heated storage)
- Offices
- Barracks
- Workshops
- Educational facilities
- Mess buildings
- Catering premises
- Families accommodation

MOD's networks normally consists of a single system which supply a number of different consumers. The layout of the network for each establishment is shown in the relevant part of the GSMP for an establishment. The pipework in the network is designed to operate at either MP or LP, and/or a combination of medium and low pressure,with operating pressures not exceeding 2 barg (MP) and 75mbar (LP) respectively. The likely volumes of gas conveyed in the MOD networks is given in Table 2.3.

The network capacity constraints are determined by the governor and bulk meter installation at the EGDN supply interface (see APPENDIX K) details of which are also given in Table 2.3.

<b>Network Description</b>	<b>Address</b>	<b>Gas Usage</b>	<b>Gas Volume Likely to be Conveyed (std m<sup>3</sup>/hr)</b>	<b>Capacity Constraints on System (std m<sup>3</sup>/hr)</b>
Specified in relevant annex				

**Table 2.3 – Typical Quantities of Gas Likely to be Conveyed in the Network Forecast 1 in 20 Peak Day Firm Demand**

There is a mixture of both interruptible and non-interruptible consumers on the gas network.

### 3 PLANT AND PREMISES

#### GS(M)R Schedule 1 – Paragraph 3 Requirements

A general description of the plant and premises the duty holder intends to use in connection with the operation including, in particular, the geographical location where any pipes he uses join pipes used by other persons for conveying gas

#### 3.1 Information

The gas supply systems are supplied with low and/or a combination of medium and low pressure odourised gas from the EGDN distribution network, through boundary metering installations. The majority of supply outlets from each of the governor/metering installations are into a downstream distribution system, terminating with customer emergency control valves within each of the properties (there may be some local variations, details of which will be identified in the relevant section of the Establishment GSMP annexed to this Safety Case). Internal installation pipework is installed from each of the customer emergency control valves to various installations e.g. central heating boilers, direct fired gas heaters, kitchens etc.

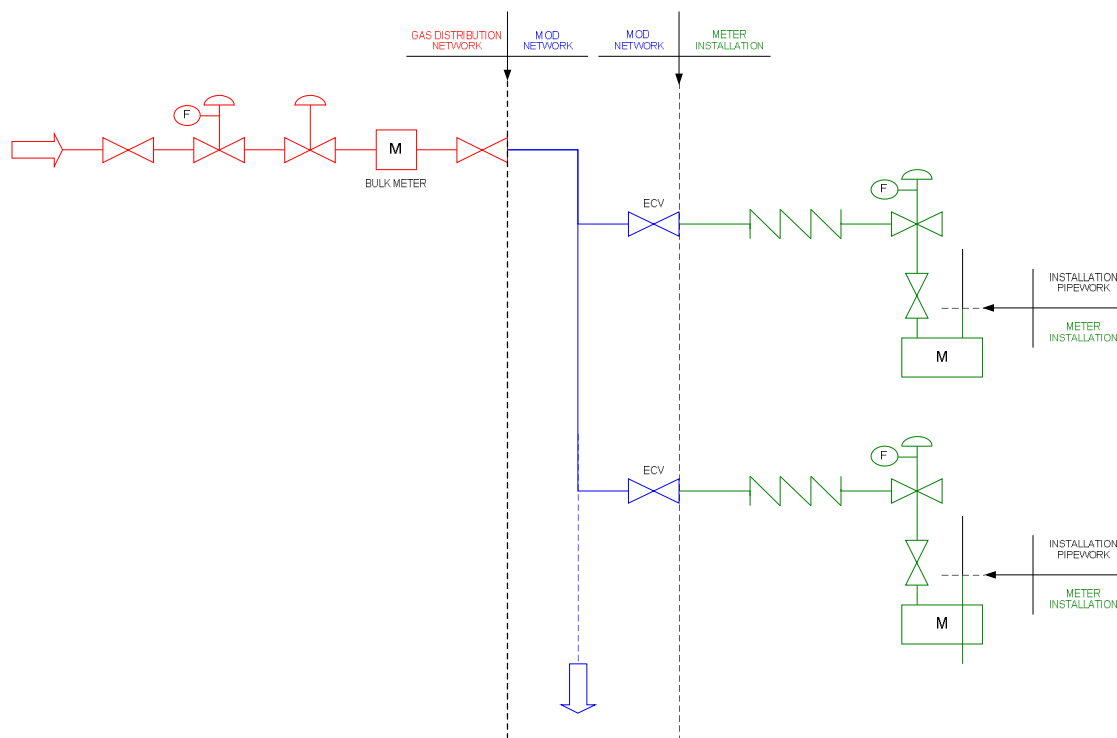


Figure 3.1 – EDGN and MOD Estates Distribution Systems

#### 3.1.1 Distribution Gas Supply System

The MOD distribution systems operate at low and/or a combination of medium and low pressure. The MP system operates between 75 mbarg and 2 barg and the LP system operates below 75 mbarg. A final stage pressure reduction from MP to LP at the customer supply point is designed to maintain a minimum pressure of 20.75 mbar at the inlet to individual properties. The systems are designed to maintain a minimum pressure at the inlet to individual properties. All of the underground mains and service connections are constructed from PE, details for individual networks are provided in the relevant Establishment annex. It is from these mains that the connections for steel service pipes are taken.



The transition from steel to PE occurs above ground and a typical sketch is shown in Appendix F. Any below ground steel tails are double wrapped to prevent corrosion. These steel tails are also subject to a five yearly maintenance leakage survey (see Section 4.2.3.2).

### **3.1.2 Pressure Regulating Installations**

The factors that are to be taken into account when designing a Pressure Regulating Installation include the provision of safety devices to protect the downstream system from overpressure, and the provision of standby equipment to ensure, when necessary, the continuity of supply to the downstream system if there is a fault condition, or during times of maintenance. The pressure regulation carried out on MOD networks is associated with the service governors situated downstream of the customer Emergency Control Valve. In addition pressure reduction is carried out using smaller diameter pipes to act as a throttle. Where pressure regulation is carried out this is to be recorded in the relevant Establishment annex.

Any new installations would be designed to meet the requirements of IGE/GM/8 [Reference 6]. As described in Section 3.1.

MOD sites are supplied from the EDGN IP network via boundary governor/metering installations, also known as district governors. These generally consist of the following equipment; inlet and outlet valves, filters, slam shuts, pressure regulators and stream selection or wafer check valves. The facility is designed to protect the downstream MOD systems from over pressurisation and provide additional capacity by duplicate streams.

### **3.1.3 Interfaces with other gas transporters**

#### **3.1.3.1 Direct Interfaces**

All networks interface with the regional EGDN's network. The EGDN identified in the relevant Establishment Annex is the only other gas transporter and this is shown diagrammatically in the appropriate annexes for each establishment.

In the event of a gas supply incident, initial contact with the EGDN would be established at a local site level via the National Gas Emergency telephone number. The appropriate MMO site manager (see relevant Annex) would be called out to attend any gas supply incident. The EGDN would implement their own GS(M)R Safety Case arrangements as appropriate.

The governor/metering facilities at the MOD/EGDN interface are owned and operated by the EGDN. The MOD's responsibility starts immediately downstream of the main incoming meters isolation valve.

MOD does not utilise any control facility on their network supply, however MOD monitors the gas supply readings from the sub meters within the establishment. This is collected by the MOD Station Energy Manager (SEM) and is used as a check for comparison with the total gas consumption provided by the gas supplier. Any significant differences in readings would be report to the MMO for further investigation. Depending on the results of the investigation this may initiate leakage survey activities or short term isolation of sections of the network to determine the location of inaccurate meter readings.

Further site specific details can be found in the relevant sections of the Gas Safety Management Plan (GSMP) section B for each establishment covered by this safety case

#### **3.1.3.2 MOD/EGDN Site Communication and Access Arrangements**

A formal agreement between the MOD and EGDN has been put in and is available on site. The means of communication is as follows:

The Establishment contact point for EDGN is the Estate Management Team Leader (EMTL)

Communication between the MOD and MMO is through the EMTL. Any requirement for access will be communicated to the MMO who holds keys to the in-coming supply emergency control valve (ECV) and plant room. Further site specific details can be found in the relevant sections of the GSMP section B for each establishment covered by this safety case

As the MOD sites are high security installations and all EDGN personnel who carry out maintenance work or may be involved in attending a gas supply emergency will be issued an Unescorted Pass for the Establishments that they will attend, these are renewed every 2 years. This allows the EDGN access to their equipment on MOD property. The MOD EMTL who reports to the Head of Establishment holds a list names of EDGN personnel who may be involved in maintenance and emergency activities this list will be reviewed and updated at least every 6 months, more frequently if there is a significant turnover of staff. The EMTL is the main site contact for EDGN during normal working hours. Out of normal working hours contact is made via the (Guardroom) and the MMO 24/7 emergency response facility. A more detailed description of the communication arrangements in the event of a potential or actual gas supply emergency is contained Section 18.2.

### **3.2 Location of Facilities and Safety Critical Plant.**

Plant at MOD Establishments that could be considered to be safety critical in terms of the management of gas flow in a supply emergency are the governor/metering facilities at the MMO/EDGN interface. These facilities include network isolation valves which may be operated by EDGN, in consultation with the MOD and MMO, in the event of a supply emergency. Isolation of individual consumer supplies can also be carried out locally by MMO via service isolation valves.

#### **3.2.1 Location of Control Centres**

There are no Control Centres associated with the control and monitoring of gas supplies on MOD networks. However, MMO and EDGN operate continually manned call centres for dealing with reports of gas network incidents and these are discussed further in Section 13.

## 4 TECHNICAL SPECIFICATION

### GS(M)R Schedule 1 – Paragraph 4(a) Requirements

Particulars of any technical specifications which the duty holder intends to follow in connection with the operation he intends to undertake, insofar as they affect the health and safety of persons

#### 4.1 Overview

The MMO's gas conveyance and emergency activities are conducted in accordance with internal and external specifications. The MMO's internal guidance is supplemented where necessary with technical specifications including European (CEN) and British (BS/EN) standards. The recommendations of the Institution of Gas Engineers and Managers (IGE) for distribution practice and for guidance on safety requirements and gas industry legislation are used as a basis for the development of policies, procedures and work instructions. Internal technical documents take priority over non legislative external documents. Documents, which are relevant to the safety of the MMO's undertakings, are referenced in this Safety Case where they contribute to the understanding of the relevant section.

The MMO is required to ensure the integrity of the below 75 mbar system is in accordance with Institution of Gas Engineers and Managers guidance; IGE/TD/3<sup>5</sup> [Reference 7] and IGE/TD/4<sup>6</sup> [Reference 8]. Maintenance of below 75 mbar systems is described in Section 4.1. The MMO complies with the requirements of MOD Policy contained within JSP 375<sup>7</sup>.

Volume 1 deals with MOD H&S policy, and describes the roles of the various boards and committees who oversee policy formation and its implementation. It also contains guidance on how the Health and Safety at Work etc Act applies to MOD, MOD Health and Safety procedures that are to be applied across the MOD, and the role of a safety advisor.

Volume 2 covers arrangements for H&S legislation, and is constructed in a leaflet format. Each leaflet covers a separate hazard or environment in which health and safety measures are required to protect employees and others. Each leaflet instructs Line Managers, and others with duties to perform, on what is expected to be done to meet legislation, and in many cases the leaflet annexes supply guidance on how the duties can be achieved, or to assist in the creation of more specific local procedures.

Volume 3 has a number of chapters all associated with property issues on the MOD Estate. The MOD Safety Rules and Procedures, produced by DIO, are included with a separate chapter for each. The purpose of JSP 375 Volume 3 is to ensure that the MOD manages activities having significant risk on the MOD Estate through the mandatory implementation of its Safety Rules and Procedures. These are compiled and maintained on behalf of the Defence Environment & Safety Authority - Corporate Policy & Assurance (DSEA - CPA by DIO).

JSP 375 and MMO safety documentation are available through DIO Network Information System and the MMO's Management Information System (MIS). All updates to MOD safety policy are governed through the DSEA - CPA, MMO procedures will be released through their accredited ISO 18001 health and safety management system.

---

<sup>5</sup> IGE/TD/3:Edition 4:2003 - Communication 1677 - Steel and PE Pipelines for Gas Distribution

<sup>6</sup> IGE/TD/4:Edition 3:1994 - Communication 1562 - Gas Services.

<sup>7</sup> JSP 375 MOD Health and Safety Handbook

#### 4.1.1 Document Governance

The content of JSP 815 and all JSP 375 Chapters are subject to continuous improvement and development to reflect changes in respect of legislation and property management as they occur, culminating in the periodic revision of JSP 375 Volume 3 through the issue of instructions, notices and version re-issues. Access to these documents is via the following links.

[www.mod.uk/DefenceInternet/AboutDefence/CorporatePublications/HealthandSafetyPublications/SSDCD/DESB/Jsp815DefenceEnvironmentAndSafetyManagement.htm](http://www.mod.uk/DefenceInternet/AboutDefence/CorporatePublications/HealthandSafetyPublications/SSDCD/DESB/Jsp815DefenceEnvironmentAndSafetyManagement.htm)

<http://www.mod.uk/DefenceInternet/AboutDefence/CorporatePublications/HealthandSafetyPublications/JSP375/>

JSP 375 and MMO safety documentation are available through their intranet. All updates to MOD safety policy is governed through DIO based in Sutton Coldfield. Locally, MMO's procedures are governed through their own organisations arrangements will be released through their accredited health and safety management system.

## 4.2 Procedures for Operation and Maintenance

### GS(M)R Schedule 1 – Paragraph 4(b) Requirements

Particulars of any procedures or arrangements relating to the operation and maintenance, which the duty holder intends to follow in connection with the operation he intends to undertake insofar as they affect the health and safety of persons

#### 4.2.1 Network Operation and Maintenance

This section describes the procedures and arrangements that the MMOs will have in place that relate to the operation and maintenance of the gas networks. These activities play a key role in ensuring network availability.

Where any cast or ductile iron pipework is identified it is to be recorded and entered into a mains replacement programme developed to meet the objectives of the HSE enforcement policy: see; <http://www.hse.gov.uk/gas/supply/mainsreplacement/irongasmain.htm>

#### 4.2.2 System Maintenance

Systems of maintenance are in place for the gas transportation system in line with IGE recommendations and MMO procedures.

In order to maximise the asset life and to ensure that the low/medium pressure gas network(s) continues to operate safely it is MMO's responsibility to adhere to proactive maintenance, based on fixed time periods. The MMO's have systems of planned maintenance governed through their Management Information System (MIS). All maintenance is issued and tracked through these systems.

Preventative maintenance is carried out in line with written schedules from MIS and planned so that maintenance activities have minimal disruption to the gas supply. These written schedules take account of the latest information on equipment faults, other defects and as a minimum are based on manufacturer's recommendations. Maintenance schedules are also updated in the light of latest information on equipment performance. All faults found during routine maintenance are reported to senior management and the appropriate action taken and documented.

Maintenance requirements are subject to a formal MMO process, this defines the requirement and time based maintenance for all gas equipment, review by suitably qualified MMO staff. These requirements will be reviewed following the Network Analysis. This information is held as controlled documentation on the MIS, and all updates are controlled through this process.

All regular maintenance is planned and recorded on MIS. Non regular maintenance is captured via MIS and can be analysed by management.

#### 4.2.3 Maintenance Requirements

##### 4.2.3.1 Distribution System

Distribution mains and services are maintained in accordance with approved engineering procedures and in accordance with IGE/TD/3 [Reference 7] and IGE/TD/4 [Reference 8]. The IGE/TD/3 recommendations emphasise the importance of maintaining safe pressures within the supply system when carrying out work on live mains, and that where continuity of supply is required, a by-pass should be fitted.

#### 4.2.3.2 Safety Inspections and Planned Preventative Maintenance

To ensure a high level of reliability and safety in operation, a system of inspection monitoring and maintenance has been established for all networks referenced in this plan. This consists of system soundness surveys. These surveys aim to establish whether significant amounts of gas are leaking from the systems and whether such leakage constitutes any form of hazard. The outline requirement of the soundness survey involves a full network leakage survey of mains and services (including steel riser tails) every five years and an annual valve leakage assessment using a gas detector (such as a Gascoseeker<sup>8</sup>). Gas valve pit covers are also checked to ensure they are fitted correctly and free of debris.

#### 4.2.3.3 Pressure Regulating Installations (Service Regulators)

The factors that are to be taken into account when designing a Pressure Regulating Installation include the provision of safety devices to protect the downstream system from overpressure, and the provision of standby equipment to ensure, when necessary, the continuity of supply to the downstream system if there is a fault condition, or during times of maintenance. The only pressure regulation carried out on the MOD networks is associated with the service governor situated downstream of the customer Emergency Control Valve. An active regulator fitted with a slam shut provides overpressure protection. When originally installed this pressure reduction arrangement was designed to meet the requirements of IGE/TD/10 [Reference 5].

Maintenance of the MOD network service governors is based on IGE/GM/8 Part 4 [Reference 6]; the code identifies the minimum requirements for the maintenance and operation of non-domestic meter installations with flow rate exceeding 6 m<sup>3</sup>h<sup>-1</sup> and inlet pressure not exceeding 38 bar. As described above guidelines on the frequency of inspection and maintenance of single stream building regulators are set out in IGE/GM/8 Part 4 [Reference 6]. Generally a five yearly functional check inspection regime would be deemed acceptable with the systems generally found for building supply point regulators. This should be supported by an annual visual check inspection to ensure that any problems can be identified at an early stage. Work conducted on the MOD service governors is logged in MMO MIS system. This can be specifically referenced to individual items of plant and equipment.

The period between overhaul and inspection may be varied according to the requirements of the system, experience gained locally or manufacturer's specific recommendations (particularly with reference to elastomeric components). Dust burden, gas humidity and abnormal chemical constituents, or the chemical additives used in the treatment of mains are factors that may affect adversely sealing materials and elastomeric components. All these factors have a direct bearing on the frequency of scheduled maintenance.

The overall maintenance strategy for service governors is reviewed periodically as part of the MMO MIS process to ensure that maintenance is being applied effectively. Plant history records form a major part of the data required to justify making any changes to existing maintenance practices.

Following a review of the networks and pressure reduction facilities a report has been produced at each establishment that provides the MMO with ongoing maintenance guidance for both the distribution network pipelines and associated service governor pressure reduction facilities. This guidance will be implemented by the MMO via their MIS maintenance control system.

---

<sup>8</sup> Developed for British Gas plc, the Gascoseeker® MK2 gas detector is a reliable means of detecting flammable gas, and of measuring the percentage of low explosive limit and the percentage by volume.

#### **4.2.4 Third Party Works in the vicinity of the Distribution Network System**

The MMO applies the recommendations of IGE/SR/18<sup>9</sup> [Reference 10] to manage the safe working of third parties near low/medium pressure gas mains. This includes issuing information on the position of mains and the precautions required while the work is in progress. This affords protection to the network in that the MMO have control of operations being undertaken.

Diversions work may be required where the work of a third party affects a MMO system or puts at risk the flow of gas.

The day-to-day responsibility for control of any third party works in the vicinity of networks lies with the appropriate MMO Manager. Works outside the remit of the MMO are the responsibility of the Head of Establishment. Further site specific details can be found in the relevant sections of the GSMP section B for each establishment covered by this safety case

#### **4.2.5 Maintenance Support**

The MMO maintains competent resources to manage the engineering analysis and support provided by external organisations. The main support activities provided by external organisations to the MMO in relation to the safe flow of gas relate to maintenance support.

All health and safety support activities are detailed in the MMO MIS system which is an intranet based information system.

#### **4.2.6 Responsibility for Maintenance**

Overall responsibility for maintenance of the gas supply systems lies with the MOD delegated to the appropriate MMO Manager. On a day-to-day basis this is delegated. Further site specific details can be found in the relevant sections of the GSMP section B for each establishment covered by this safety case

##### **4.2.6.1 Safe Control of Operations**

Approval and control of field operations to ensure compliance with the MMO's safety policy are carried out in accordance with written procedures. Proposed operations are approved and authorised by an appointed Responsible Person and any necessary consultation is undertaken before carrying out such an operation. GSMP section B Annex G [Reference 11] sets out the requirements for the management and control of work on gas systems that fall within the scope of the Regulations.

The ultimate responsibility for the safety of all personnel working on the MOD Estate is vested in the Commanding Officer, Head of Establishment or Officer in Charge of a particular establishment. The preparation and communication of safe systems of work which enable the risks of tasks to be fully analysed, are tools for the Management of Health and Safety at Work. Every person at work on the MOD Estate has safety responsibilities. Those of the Responsible Person and Competent Person are crucial to the safety of the maintenance personnel, and the communication of the effects of maintenance activities on gas networks on the MOD Estate.

---

<sup>9</sup> IGE/SR/18: Edition 2: 2002 – Communication 1678 – Safe Working Practices to Ensure the Integrity of Gas Pipelines and Associated Installations.

## Management of Work

The principal requirement of this procedure is to ensure that any work on Gas Systems are to be managed by an appointed Responsible Person (Gas) and those undertaking the works in any workplace, site or premises, are competent to do so.

The MMO will confirm that a sufficient number of Responsible Persons (Gas) are appointed with specific responsibility for the management of work on Gas Systems within the MMO's area of responsibility

The Responsible Person (Gas) will:

- ensure that, where a company is employed to work on Gas Systems, the individuals concerned are registered with the Registration Body and have a certificate of competence appropriate to the type of work and system to be worked upon
- maintain, for each geographical area, a database of sites on which Gas Systems are maintained or operated
- ensure that, for each geographical area, a database of competent staff (Approved Gas Fitters) is maintained
- ensure that a schematic drawing detailing the pipe work installation in each building is maintained and available to all Approved Gas Fitters
- ensure that a register of every gas appliance and flue is maintained and available to all Approved Gas Fitters
- undertake six monthly checks of the system documents & records.

Every company employed to carry out work on gas systems, appliances or ancillary equipment on the MOD Estate is to have suitable and sufficient management and procedures in place to discharge the duty of the Employer under the regulations.

## Competence

Approved Gas Fitters; The Approved Gas Fitter must have current membership of a registration body appropriate to the Gas System on which they are to work. This should be demonstrated through registration of Gas Safe and/or the Energy & Utilities Skills Register.

The Responsible Person (Gas) will, in order to be assessed and appointed for responsibilities with respect to gas systems:

- have a sound understanding of the Gas Safety (Installation & Use Regulations)
- have a basic knowledge of other Health & Safety related legislation
- understand the competency requirements for Approved Gas Fitters
- have a technical appreciation of gas systems including, the difference between various systems on the MOD Estate,
- have a sound understanding of the Registration Body's quality management systems as applied to work on gas systems.

## Audit and Monitoring

System audits will be conducted by the Responsible Person (Gas). System audits will review, as a minimum the existence and continued competence of the Appointments mandated by this procedure and the existence and completeness of the documents referred to in this procedure.

Monitoring of work on Gas Systems will be undertaken as required, by the Employer. This will include checks on the current Registration of the Approved Gas Fitters; the adherence to safe work instructions and Quality Assurance procedures; witnessing the results of tests and the checking of any completed records.



Audits and monitoring by the Employer of an Approved Gas Fitter are to be carried out as required to satisfy the requirements and maintain registration with the applicable Registration Body.

#### **4.2.6.2 Gas Networks Isolation Methodology**

The isolation methodology used on the MOD Estate is based on the risk exhibited by the system. The isolation methodology used is based on the Health and Safety Executive publication 'HSG 253 - The Safe Isolation of Plant and Equipment'. The Safe Isolation of Plant and Equipment is used as the lead reference when determining isolation for gas networks.

#### **4.2.6.3 Co-ordination of safety Inspections and Planned maintenance on the Distribution Networks**

Planned Preventative Maintenance (PPM), including safety inspections are organised by the MMO in accordance with the maintenance and test schedules for the site. Tasks are scheduled to meet the needs of the site and are programmed in collaboration with the Estate Management Team (EMT) to ensure there are no impacts on operations. The MMO's supply chain contract staff are inducted onto site and given clear instruction on any relevant task requirement. The MMO appoint skilled persons to carry out the tasks and issue permits to work <sup>10</sup>as necessary. Any work carried out on the distribution networks which could impact the potential supply to consumers would be conducted under a safe system of work, and would be organised in such a manner to minimise any disruption of gas supplies to consumers. The LP and MP networks on MOD establishments are single feed and depending on the type of work undertaken may require isolation of consumer supplies. The notification to consumers of a requirement to isolate supplies would be co-ordinated by the EMTL.

#### **4.2.7 Plant Breakdown**

Although a high standard of planned maintenance will reduce the possibility of plant breakdown, it may not completely eliminate the need to carry out repairs. Knowledge of a breakdown or any abnormal events may arise from the following;

- system monitoring via soundness surveys
- FIM surveys
- pipeline pressure surveys
- during sub meter readings by the SEDM or routine service regulator maintenance
- reports of poor pressure on site
- during monitoring in various plant rooms to check combustion efficiencies and equipment settings.
- a report of a gas escape (see Section 13)

The MMO Helpdesk provides a customer notification focal point for the reporting of poor pressure and gas escapes. Customer notification provides an important early indication of potential and actual network problems. The MMO Helpdesks are continuously staffed for use by site personnel (see Section 13.3).

##### **4.2.7.1 Repair of PE Network and Service Regulators**

Any permanent repair of network fault or interference damage would be undertaken only while ensuring the integrity of the system is maintained. Any faulty or damaged section will be replaced by a new section of PE pipe using appropriate electrofusion couplers.

---

<sup>10</sup> Permits to work – these will be issued by the MMO using their own permit system details of which can be found in their own Safety management arrangements

If a fault is detected during routine maintenance a defective service regulator would be repaired or replacement in line with manufactures instructions and the requirements of IGE/GM/8 [Reference 6].

#### **4.2.8 Systems Modifications**

All modifications to the gas supply system are undertaken to ensure that they meet or exceed the original design and construction standards.

#### **4.2.9 Non – Routine and Emergency Maintenance**

In the case of an impact of gas maintenance on others, notice would be given by the Site Estate Delivery Manager (SEDM) and/or the EMTL to the Head of Establishment to site occupants and units. The EMTL acts in a coordinating role between DIO and MOD as shown in APPENDIX E and is part of the EMT.

EDGN would be notified of any issues believed to be caused by external network issues, such as gas escapes, supply emergencies, pressure reductions and gas quality. This would normally be done via the National Gas Emergency number operated by National Grid. In the event of an external network incident site communication and access arrangements are described in Section 3.1.3.2.

Major incident emergency situations are managed by the Civilian Emergency Services who would be contacted directly by the Guard Room and would be managed in line with the requirements of JSP 375 Volume 2 Leaflet 1 [Reference 12]. In the event of a major incident this document describes the roles and responsibilities of all parties, in particular the roles of Site Main Controller and Site Incident Controller and is discussed further in Section 13.

Further site specific details can be found in the relevant sections of the GSMP section B for each establishment covered by this safety case

#### **4.2.10 MOD Gas Network Audit Arrangements**

Auditing of operation and maintenance arrangements associated with the MOD gas networks and pressure regulating facilities are undertaken through the MMO and DIO internal audit processes. This is discussed further in Section 11.

Further site specific details can be found in the relevant sections of the GSMP section B for each establishment covered by this safety case

#### **4.2.11 Site Security**

MOD sites are under varying degrees of security dependant on site status. All manned sites have controlled access and CCTV monitoring. All above ground gas network installations are within the perimeter security fences.

## 5 RISK ASSESSMENT

### GS(M)R Schedule 1 – Paragraph 5 Requirements

A statement of the significant findings of the risk assessment the duty holder has made pursuant to regulation 3 of the Management of Health and Safety at Work Regulations 1992, and particulars of the arrangements he has made in accordance with regulation 4(1) thereof.

Network risk assessments have been carried out to identify those areas of MMO operations that affect the safe management of the flow of gas and the provision of an emergency response service. The findings of the risk assessments are identified in the following sections.

Each site covered by this Safety Case has a local site risk assessment

### 5.1 Safe Management of the flow of gas

Events that are considered to affect the safe management of the flow of gas are those events that could produce a gas supply emergency or would have the potential to produce a gas supply emergency depending on, the magnitude of the events or the response to the event.

The following table outlines those broad categories of events, which could give rise to a gas supply emergency. The two broad categories of events that would produce a gas supply emergency are outlined below:

	<b>EVENT</b>	<b>CAUSE</b>
1	Insufficient gas supplies available to the low pressure system	Loss of network integrity/equipment failure/excessive demand
2	A capacity constraint of the low pressure system	Loss of network integrity/equipment failure/excessive demand

Either type of event on a lesser scale (i.e. affecting one gas supply network) would produce localised gas supply emergency to any of the networks operated by the MMO.

In Table 5.1 below, the events are further categorised into the effects that those events would have on the system in order to identify where the appropriate control and preventative measures are employed, these measures are described elsewhere in this document in more detail.

<b>EVENT</b>	<b>EFFECT</b>	<b>PRVENTATIVE MEASURES (SAFETY CASE SECTION NO.)</b>
1. A severe earthquake	Loss of network integrity	MOD System Design to relevant IGE standards 4 MMO/EGDN Emergency Response 13
2. Ground Movement	Loss of network integrity	MOD System Design to relevant IGE standards 4 MMO/EGDN Emergency Response 13
3. Design/installation failure	Loss of network integrity	MOD System Design to relevant IGE standards 4 MMO/EGDN Emergency Response 13
4. MMO maintenance errors	Loss of network Integrity Loss of local gas supply to consumer.	MMO use of competent maintenance personnel 4.1 MMO/EGDN Emergency Response 13

5. Sudden unexpected or prolonged temperature fall resulting in excessive gas demand	Gas supply short fall	MOD Network Design to relevant IGE standards 4 MMO Emergency Response 13.
6. EGDN interface equipment failure	Integrity/gas shortfall	EGDN System Design to relevant IGE standards 4 EGDN/MMO Emergency Response 13
7. Unauthorised Closure of boundary meter inlet and/or outlet valves.	Gas supply failure	Kiosk Security. EGDN System Design to relevant IGE standards 4 MMO/EGDN Emergency Response 13
8. Impact damage	Loss of network integrity Potential Water Ingress	MOD Network Design to relevant IGE standards 4 MOD Permit to Work system MMO/EGDN Emergency Response 13
9. Corrosion	Gas Leakage Potential Water Ingress	MOD Network Design 4. All PE construction (mains and services). Double wrapping of steel tails. MMO/EGDN Emergency Response 13
10. Overpressure of MOD Network due to plant/equipment failure upstream, maintenance or operating error.	Loss of network integrity	EGDN System Design to relevant IGE standards 4 EGDN gas competent personnel.
11. Out of specification gas due to; a. out of specification gas introduced upstream of MOD network. b. incorrect purging operations allowing water/air into network following operation.	Loss of network integrity	EGDN gas quality monitoring at National Grid Offtakes via SCADA systems (odorant injection). MOD/EGDN gas competent personnel. MOD Permit to Work System
12. Low pressure due to; a. Uncontrolled restoration of supply. b. Inadequate capacity due to network extensions/ replacement	Loss of network integrity Loss of gas supply	MOD System Design to relevant IGE standards 4 MMO/EGDN Emergency Response 13 MMO/EGDN Competent personnel
13. MOD gas supply failure due to pipe blockage	Loss of network supply	EGDN System Design to relevant IGE standards 4 Gas streams filtered at EGDN boundary and MOD network Customer supply points.
14 Vandalism	Gas supply failure Loss of network integrity	Kiosk Security. MMO/EGDN Emergency Response 13
15. EGDN Local Gas Supply Emergency (LGSE)	Gas supply failure Loss of network integrity	MMO/EGDN Emergency Response 13

**Table 5.1 MOD Network Risk Assessment**

Given other circumstances it is foreseeable that a gas supply emergency could arise e.g. due to an EGDN network supply failure, but such circumstances are considered unlikely. This is largely because the EGDN network is configured in such a way to ensure high availability of supplies and the MOD is not in an interruptible supply.

Other events such as a severe earthquake are unlikely events, but if they did occur could cause gas supply problems. Loss of system integrity functions may also lead to gas supply problems.

In Table 5.1 the threats and causes that could lead to events that affect the safe flow of gas within MOD networks and the protective measures taken have been categorised. Those events occurring on consumer premises are summarised in Table 5.2 below.

Event	Consequences	Mitigation Means
Incorrectly fitted appliances. Incorrectly maintained appliances. Airflow affected by building modifications. Misuse of appliances. Inappropriate use.	Incomplete combustion of gas leading to spillage of products of combustion	1. EGDN Emergency System (see Section 13).  2. Gas Safety Management Plans Sections A & B.
Impact damage Vibration Corrosion Incorrect Installation Flooding Fire Inadequate maintenance Misuse Inappropriate use Chemical action	Gas release which could lead to fire or explosion if ignited	1. Publication of advice in newspapers, phone directories and on TV/radio about what to do on smelling gas.  2. Site Communication Networks – tannoy, email and intranet 3. EGDN Emergency System  4. Gas Safety Management Plans Sections A & B.

**Table 5.2 Consumer Premises Events**

Both the MOD and MMOs have formal health and safety systems in place to ensure staff are aware of their responsibilities. These include formal procedures available on the respective organisations intranets, training, induction training and staff appraisals. Each organisation also has dedicated staff to ensure the application of these processes and to advise Senior Management and other staff on requirements.

**5.2 Risk Assessment Review and Update**

In line with the requirements of JSP 375 Volume 2, Leaflet 39 [Reference 14], risk assessments are regularly reviewed to ensure they remain suitable and sufficient. A review of the risk assessment associated with the management of the safe flow of gas and the provision of an emergency service is conducted:

- At least every 3 years in line with the GSM Regulation 4(3) and the GSMP requirements.
- If there is reason to doubt the effectiveness of the assessment.
- Following an accident or incident associated with the gas network.
- Following significant changes to the tasks, process, procedures or Line Management associated with the safe management of the flow of gas.
- Following the introduction of more vulnerable personnel, e.g. persons who are not familiar with the management of the safe flow of gas and who may have special needs.

If following review there are no changes to be made to the assessment, the MMO Line Manager signs and dates the original assessment confirming that it is suitable and sufficient.

### **5.3 Emergency Response**

If event of a gas supply emergency based on scenarios listed in Tables 5.1 and 5.2, The MMO utilises the National Gas Emergency Line continuously manned free phone telephone number for use by the public, consumers and the emergency services in the event of a gas escape, or a fire, or explosion where gas is suspected to have been involved (see Section 13).

There are three main types of events:

- a) Release of natural gas from mains or services, either upstream or downstream of the customers emergency control valve, as a consequence of loss of integrity;
- b) Incomplete combustion of gas at an appliance;
- c) Reports of poor pressure at consumer premises.

The network emergency service provision by EGDN covers the requirement to make safe only. Further network rectification and repair works are covered by the MMO.

Further site specific details can be found in the relevant sections of the GSMP section B for each establishment covered by this safety case

## 6 SAFETY MANAGEMENT SYSTEMS

### GS(M)R Schedule 1 – Paragraph 6 Requirements

Particulars to demonstrate that the management system of the duty holder is adequate to ensure that the relevant statutory provisions will (in respect of matters within his control) be complied with in relation to the operation he intend to undertake

### 6.1 Overview of the MOD/MMO's Safety Management Systems

The Secretary of State for Defence has issued a policy statement on safety, health and environmental protection in the MOD. It sets out the strategic principles, duties and governance for Environmental Protection and Safety to be applied throughout the MOD. The policy statement is shown in APPENDIX A, along with that of the DIO and MMO.

This policy statement is implemented in the MOD by JSP 815 [Reference 15]. JSP 815 provides instruction and guidance to the Line Manager on the policy, top-level organisation and arrangements by which the MOD ensures the maintenance of acceptable standards of health and safety throughout the organisation. The introduction of JSP 815 - Defence Environment and Safety has largely replaced the majority of Chapters of Volume 1 of JSP 375. JSP 815 is applicable to all defence activities; compliance with it is intended to ensure consistent implementation of Secretary of State's policy. It adopts a threefold approach to achieving this by:

- Describing in high level terms the corporate system for the management of environmental protection and safety within the MOD.
- Providing strategic direction to the Functional Safety Boards (FSBs) charged with developing policy, setting of standards, ensuring appropriate scrutiny and, where appropriate, regulation to be applied to all defence activities within their authority.
- Providing strategic direction to Top Level Budget (TLB) and Trading Fund Agency (TFA) duty holders responsible for implementation of environment and safety policy and management systems within the Ministry of Defence.

JSP 815 has been structured to follow the component parts of an effective management system, drawing on HSE's publication HS(G)65 and the ISO 14001. Although the JSP 815 does not exactly mirror the source documents, it does address the 5 main elements expected of a management system, namely:

- Policy and Management Plan
- Organisational Structure
- Planning and Implementation
- Measuring Performance
- Reviewing Performance
- Audit

#### 6.1.1 Policy

The MOD's approach to the requirements of the GS(M)R is aligned with the principles stated in the Health and Safety Policy of the MMOs, which makes a clear commitment:

- Designing, constructing, operating and maintaining its assets to ensure high standards of H&S performance throughout their complete life cycle.

- Continually developing an understanding of the hazards and risks associated with operations and implementing appropriate controls including, where necessary, standards, policies and work procedures.
- As a minimum, complying with legislative requirements.
- Setting and communicating H&S standards, objectives and targets to help towards its goal of zero injuries, no incidence of work-related ill health.
- Working towards an injury free and healthy workplace and protecting the safety of the public and the environment.
- Always seeking to achieve the highest H&S standards.
- Monitoring H&S performance to help ensure continual improvement.
- Producing Business Plans that give priority to the achievement of H&S objectives.
- Ensuring that all staff and contractors are competent and accountable for good H&S performance.
- Actively promoting co-operation, consultation and communication.
- Recognising employees and supply chain partners who make a positive contribution to improved H&S management and performance.

## **6.2 Organisation - Allocation of Responsibilities**

The various MMO organisational chart extracts are shown in the GSMP for the relevant Establishment Annexes these also show the structure for Health and Safety Support within the MMOs. Responsibilities are delegated to all relevant employees across the organisations.

### **6.2.1 Directors**

Directors have ultimate responsibility for health and safety and an overriding responsibility to ensure that all MMO Operations are in compliance with applicable Policy and statutory instruments as well as MOD Policy.

### **6.2.2 Managers and Supervisors**

MMO and MOD Managers and Supervisors have a responsibility for the health and safety of their subordinates and the people in the areas for which they have been given responsibility. This Section discusses the principal roles and duties of those involved in the management of the Safe System of Work on MOD sites containing gas networks.

- a. Commanding Office/Head of Establishment
- b. Gas Safety Manager
- c. Responsible Person (Gas) (RP)
- d. Approved Gas Fitter

The general roles and duties of all individuals listed above are to be found either in JSP 375 or in the GSMP section B - Annex G. The following paragraphs summarise those key roles and duties as well as to identify any specific roles and duties connected with the management of the safe flow of gas and provision of an emergency service.

#### **6.2.2.1 Commanding Officer/Head of Establishment (CO/HoE)**

This is the most senior MOD person identified, by the chain of command, as responsible for the site, establishment, base or building. The site CO/HoE is responsible for ensuring site compliance with the requirements of GS(M)R and associated Safety Case. Other duties include;

- Carry out and maintain an integrated site Risk Assessment and site hazard register and make these available to DIO and site personnel.



- Ensure arrangements in place to ensure proper co-operation, co-ordination and communication with all other site users or their appointed representative, on the site. The arrangements are also to include visiting workers, contractors and commercial partners.

The arrangements are to:

- a. Specifically address issues associated with safe systems of work which could impact on others e.g. gas network modifications that may require isolation of supplies, road closures, site wide radiography and power outages.
  - b. Highlight to a particular EMT representative any hazard or activity creating a risk that is not under the CO/HofE control.
  - c. Notify known site hazards to other site users and contractors prior to the commencement of their activity.
  - d. Include details of formal delegations of responsibility and accountability for site, building and maintenance operations where appropriate.
- The CO/HoE is also required to appoint a site MOD 4Cs Duty Holder (DH). The four main elements required in any visiting worker and contractor management system are: co-ordination, co-operation, communication, and control. Effective application of the four elements of this system, often referred to in MOD as the 4Cs system, will reduce the likelihood of harm or damage arising from the actions of MOD, visiting workers and contractors working on MOD sites. The role of 4Cs duty holder is normally that of the MOD delegated representative, see APPENDIX E
  - Establish suitable arrangements to deal with emergencies on the site. Including those associated with the gas distribution networks. This includes arrangements associated with any gas emergency on site, see Section 9.2a.
  - Provide all contractors with an up to date briefing, relevant to their undertaking and to working at the site, prior to work commencing.
  - Establish and Chair a Site Safety Committee that is to include appropriate representation from the EMTL associated with their site.

#### **6.2.2.2 Chief Environment and Safety Officer (CESO)(DIO)**

The CESO (DIO) appointed by the Chief Executive of DIO assisted by the ODC E&C SME (Gas) act as:

- Focal point for the application of JSP 375 Volume 3 on the MOD Estate.
- Custodian of GSC & GSMP sections A & B.
- Auditor of ODC E&C SME (Gas).
- Primary interface with DSEA – CPA & Defence Fuels & Gases Safety Regulator on matters concerning the GSC & GSMP sections A & B
- .

Together they will undertake the following duties:

- Maintain professional competence.
- Review the results of monitoring and audit reports by the GSM communities on the implementation of GSC & GSMP sections A & B and report to the appropriate authority any deficiencies identified.
- Undertake audit of process and compliance.

## *MOD Exemplar Gas Safety Case*

- Maintain and improve the Safe Systems processes.
- Provide reports to the Defence Infrastructure Executive Committee and other stakeholders as required.
- Approve and issue of Safety Systems related Policy Instructions/Notices.
- Liaise with GSMs at appropriate intervals.

The ODC E&C SME (Gas) is to act as:

- Focal point for the management & implementation of the GSC & GSMPs sections A & B
- Custodian of the GSMPs sections A & B
- Auditor of implementation
- Assessor of GSM competence.
- Adjudicator and/or Arbitrator.

The ODC E&C SME (Gas) duties of are to:

- Maintain professional competence.
- Manage, assess and approve for appointment.
- Maintain and improve the processes.
- Maintain and improve the GSMPs sections A & B
- Provide reports to the CESO (DIO) when required.
- Maintain a register GSMs

### **6.2.2.3 Roles and responsibilities**

Roles and responsibilities and details of competencies for those with specific duties relating to the implementation and administration of the safe systems is contained within GSMP sections A & B.

### **General Competence**

Competence of individual workers is to be judged by a competent person within the MMO against the specific type of work or test to be undertaken and related to their particular knowledge or experience and training. An assessment is to be carried out by a competent person within the MMO to determine the degree of supervision as may be appropriate having regard to the nature of the work or test having regard to the nature of the work or test.

### **6.2.2.4 All Employees**

The MMOs expects all employees to assist and support their organisation by exhibiting high personal SHE standards of behaviour including:

- Accepting personal responsibility for their own safety, of others they work with, members of the public and the environment that may be affected by what they do or don't do.
- Co-operating and supporting the company with the implementation of H&S including making the correct use of anything provided to protect safety, health and the environment, such as work equipment and personal protective equipment.
- Maintaining a safe working environment; identifying, reporting and, if appropriate, correcting H&S hazards, near misses and risks as they conduct their day-to-day work.
- Attending health monitoring or surveillance when required.

- Immediately reporting all injuries, suspected injuries, or environmental events, however minor, to enable prompt action to be taken.
- Complying with the H&S requirements relevant to their duties and responsibilities.

### **6.2.3 Governance Process**

MOD Policy and Procedures are managed nationally by Defence Environment & Safety Authority – Corporate Policy and Assurance (DSEA – CAP)

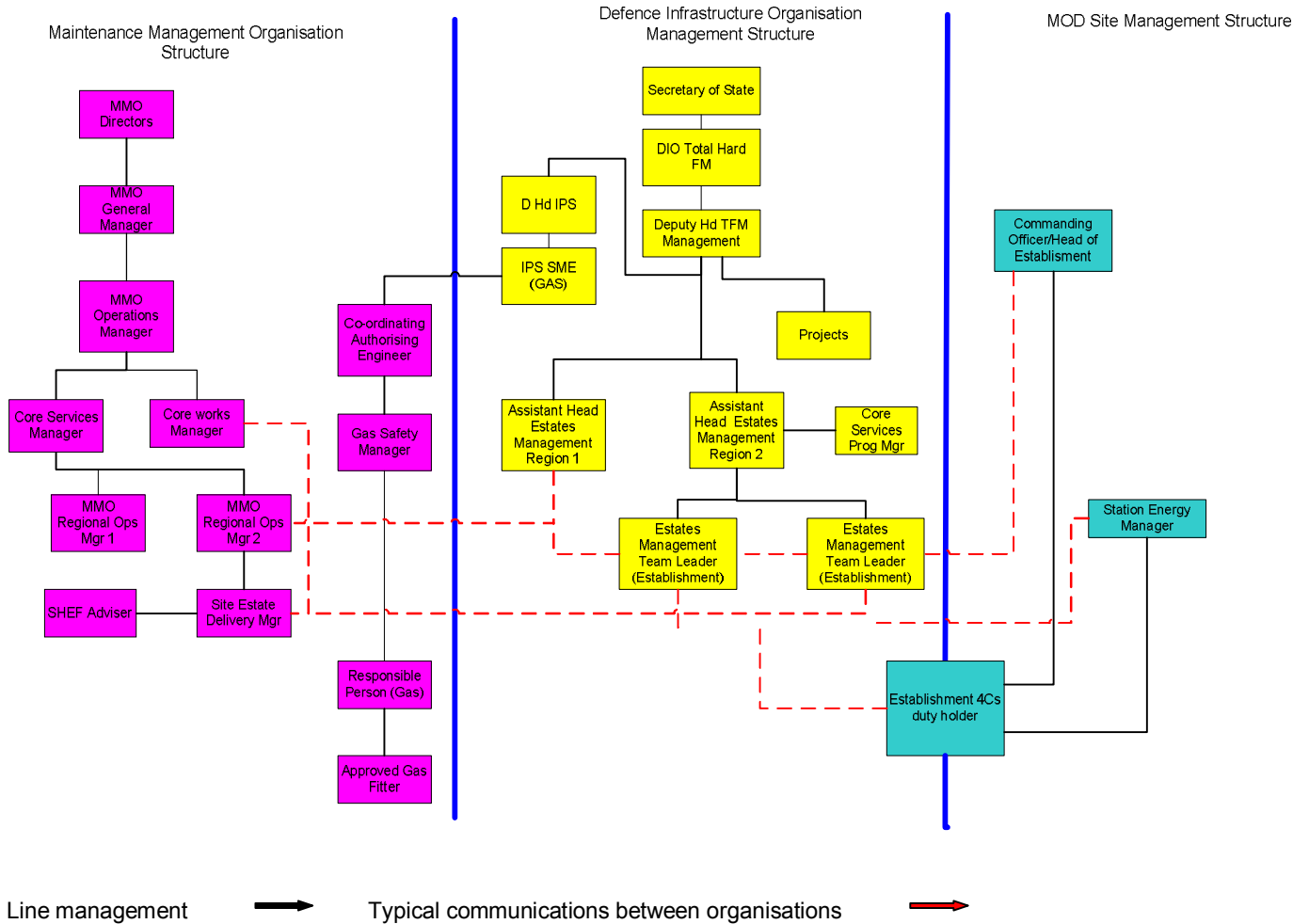
### **6.3 Distribution Network**

The network management structure as it applies to the safe flow of gas in the MOD networks is detailed below and shown in Figure 6.1. The responsibility for the safety and security of supply of the gas in the Distribution Networks is a shared responsibility between the MMO, DIO and the MOD, which includes the following activities;

- Communications with suppliers/shippers regarding the provision of an adequate supply of gas. This is the responsibility of the MOD Commercial Department, Cerium Bldg, Glasgow
- Communications with Ofgem for a gas conveyors license. This is the responsibility of the DIO via the Deputy Head Hard FM identified in the GSMP section B.
- Emergency response. This is the responsibility of MMO and is detailed in the relevant section of the GSMP section B and may also involve the EDGN as part of the supply chain (see Section 13 and 18).
- Repair and replacement of the distribution network. This is the responsibility of MMO and may also involve the EDGN or other suitable contractor as part of the supply chain.
- Meter work and network/regulator maintenance activities. This is the responsibility of MMO and may also involve EDGN or other suitable contractor as part of the supply chain.
- 

As shown in Figure 6.1 the MMO provides the Gas Safety Manager facility (GSM). The responsibilities of GSM are described in GSMP section B Annex G.

Fig 6.1 - GSMR RELATED MOD/DIO/MMO HEALTH & SAFETY ORGANISATIONAL CHART EXTRACT



### 6.3.1 Network System Development

The EMT is responsible for planning of all new system developments within the Distribution Network. This consists of the commissioning of design and construction of new and extensions to existing networks, and would include modelling of the anticipated additional gas supply demand loads, verification of adequate supply pressures, and construction of the mains and services to appropriate IGE standards. The MMO will appoint competent contracts to design and construct new/extensions to existing network.

### 6.3.2 Network System Maintenance

The MMO provides maintenance, repair, replacement, the emergency & meter response and meter work activities to the Distribution Network. The MMO is responsible for the 24/7 emergency response, incident management, and management of the staff and contractors involved in emergency repair, meter-work and replacement work. Those responsible for undertaking these activities are detailed in the relevant GSMP section B Annex G. These operational activities are carried out within defined geographical boundaries.

### 6.3.3 Emergency Response

The MMO is responsible for the emergency response in accordance with their Procedures for dealing with gas escapes. The procedures identify the responsibilities and lines of communication between the various sections and the operational procedures for dealing with gas escapes.

Competency levels of the range of staff that maybe involved in gas emergencies are described in Section 7 of this Safety Case and are detailed in the relevant GSMP section B.

#### **6.4 Health Safety and Environment**

The MMO is responsible for assisting the MOD to achieve its vision of an injury free and healthy workplace, whilst reducing the impact to the environment. The MMO's H&S team supports the Distribution Network by:

- Compiling and maintaining Safety Case submission;
- Supporting line management and providing professional H&S advice and support to the company;
- Monitoring H&S legal requirements and producing appropriate standards, guidance and advice on compliance;
- Maintaining positive relationships with enforcing authorities and external organisations;
- Providing independent audits of H&S performance;
- Benchmarking, carrying out quality assurance on H&S performance and practice and advising the company on future strategy to deliver world class performance;
- Ensuring effective systems are in place for monitoring performance, including that of contractors, against H&S objectives and performance indicators;
- Establishing an effective H&S management framework and coordinating its implementation.

#### **6.5 Quality Assurance**

MOD and its MMO contractors are responsible for development of control and governance policies and processes, and the implementation of a control framework to ensure that the MMO satisfies its gas safety obligations. This includes the Safety Case and associated processes. Changes to DIO policy are authorised by the Defence Infrastructure Executive Committee (DIEC) and the MMOs within their own change mechanisms

#### **6.6 Distribution (Operational) Support**

The MMO procures support services via contractual agreement. These services as outlined below include:-

- Emergency response
- Meter work allocation
- Information and records management

#### **6.7 Specialist Engineering Activities**

External engineering service providers, provide specialist engineering activities, which are not economic to provide within the Distribution Network. The procurement of these services is the responsibility of MMO

Engineering support is utilised in the following areas:

- Hazard and Reliability
- Mains and Services
- Electrical
- Emergency
- Consumer Metering
- Network Planning

## **6.8 Monitoring Safety Performance**

Monitoring is carried out to cover safety related performance standards. MOD uses a combination of systems which are contained in JSP 375 Volume 4 and DIO assurance strategy.

### **6.8.1 Audit**

#### **Definition and Purpose**

Audits are carried out to formally verify that the processes and procedures of GSC & GSMP are being implemented, monitored and controlled appropriately. They serve to assure, in concert with Monitoring and Review the Secretary of State for Defence Health and Safety policy is being fully and correctly implemented.

<http://www.mod.uk/DefenceInternet/AboutDefence/CorporatePublications/HealthandSafetyPublications/JSP375/>

#### **Audits by ODC E&C SME (Gas)**

To ensure the effective implementation of ODC E&C SME (Gas) also conduct regular compliance audits to assess safety performance and these are further discussed in Section 11.

Further site specific details on audit can be found in the relevant sections of the GSMP section B for each establishment covered by this safety case

### **6.8.2 Monitoring**

Monitoring is a continual informal process undertaken by the ODC E&C SME (Gas), GSM and RP (Gas) . Its purpose is to observe the implementation of the processes and procedures required by GSC & GSMP. It serves, with audit and review, to assure the Secretary of State for Defence that their Health and Safety policy is being fully and correctly implemented. Where monitoring identifies a deficiency in the implementation of the processes or procedures a formal review is undertaken and reported appropriately. Where monitoring identifies best practice this is communicated throughout the DIO and its MMOs community.

### **6.8.3 Review**

#### **Definition and Purpose**

The periodic critical examinations of the processes and procedures detailed in GSC & GSMP

#### **Policy Instruction Review & Guidance Documentation**

This review is undertaken annually. It is coordinated by the IPS SME (Gas) and undertaken in conjunction with MMO stakeholders, and CESO (DIO) The review is to consider the need for updating any relevant Policy Instructions in line with any changes in legislation and the findings of preceding audits and reports.

#### **6.8.4 Accident / Incident Reporting (including hazards and near misses)**

MOD encourages employees and contractors to report all hazards, near misses, accidents and incidents. This is further outlined in Section 14 of this Safety Case. Trends are reviewed on a periodic basis to identify key learning points to support and prioritise awareness campaigns delivered through the MOD and MMO safety management process.

#### **6.8.5 Learning from Experience**

Information gained based on learning from experience can take a number of forms e.g. incident investigation, MOD/MMO audit, monitoring and review processes. Following any incident the investigation process must establish all the facts, including the full sequence of events, all persons involved and the nature and extent of the injury or damage. Results of investigations are documented, maintained and communicated to prevent re-occurrence of the situation and also to mitigate against any impact on the gas supply network. The MOD's incident investigation procedure is described further in JSP 375. Details of the MMOs procedures can be found in the GSMP section B Annex C.

The performance monitoring processes described in Sections 6.7.1, 6.7.2 and 6.7.3, also provide feedback and learning on how local operating procedures are being implemented on site. This provides a mechanism for continual improvement by identification of deficiencies in procedures and thereby highlighted those procedures that require to be amended. Changes to operating procedures would be controlled via the GSM/RP (Gas) process as described in Section 6.9.

### **6.9 Documentation Control**

For each site, location or geographical area, as determined by the GSM, a Document Centre is required for keeping:

- a) Site Operating Record
- b) Safety Documents Register
- c) Equipment Register
- d) Permit pads
- e) Site Drawings
- f) Other standard forms

These documents are required to support the management of activities associated with GSMP and are the property of the MOD.

### **6.10 Risk and Change Management**

#### **6.10.1 Change Management**

The MOD and its MMO ensure that throughout all stages of change there are systems in place to identify, manage and minimise Safety, Health and Environment risks. Including monitoring implementation of the change, and review the change outcome to ensure continuous improvement. Overall organisational change management is carried out in line with JSP 375 Volume 2 – Leaflet 58 [Reference 17].

Technical changes to plant and equipment are managed using the GSM/RP (Gas) safety management system which ensures compliance with appropriate standards and guidance. The GSM/RP (Gas) process also ensures that training and other implementation requirements are identified to ensure effective and safe implementation of changes.

## 6.10.2 Risk Management

The Management of Health and Safety at Work Regulations require all employers (and self-employed persons) to assess risks to workers and any others who may be affected by their undertaking. Their application within the MOD sites is detailed in JSP 375 Volume 2 Leaflet 23 and Leaflet 39 [Reference 13 & 14. MOD and the MMO also follow the guidance provided within the publication, Successful Health and Safety Management – HSG65 and Five Steps to Risk Assessment published by the Health and Safety Executive.

The purpose of a Risk Assessment (RA) is to identify hazards, the persons affected and the degree of risk and to consider suitable means of controlling or eliminating the risk and recording how the control measures are to be implemented.

The MMO is responsible for ensuring that adequate task specific RA and Method Statements (MS) are in place before undertaking work and reviewing them periodically.

The RP (Gas) is required to conduct a risk assessment of the safety programme of the planned work and develop a Safety Management System. Depending on the tasks to be undertaken or the hazard identified, additional RA may be required from persons with the relevant specialist experience.

The RP (Gas) responsibilities include maintaining written copies of the RAs and MSs reviewed as required described in Section 6.2.2.4. The MMO and RP (Gas) must ensure that there is a formal means of communicating the results of the RA and contents of the MS to persons involved in, or affected by, the work.



## 7. EMPLOYEE COMPETENCE

### GS(M)R Schedule 1 – Paragraph 7 Requirements

Particulars to demonstrate that the duty holder has established adequate arrangements for ensuring the competence of his employees in health and safety matters

#### 7.1. Competency

A structured approach to competence management is used by both MOD and the MMOs which includes selection, recruitment, training and development. The competency criteria and training requirements have been established for posts with a significant safety, health and environment and engineering risk potential (this includes management, operatives and contractors). Controls are in place to ensure that people are, and continue to be, fully competent to undertake their role. The competency assessment criteria for the ODC E&C SME (Gas) GSM and RP (Gas) contained within GSMP section B Annex G

#### 7.2. Appointment of MMO Staff

The selection process for assessing the suitability of potential employees or for staff changing roles within MMO involves competency assessment. Candidates are required to provide evidence of the required competency levels. New recruits must be able to demonstrate the potential to carry out the role. With the support of line management new appointees will identify areas for development and draw up a plan to address any competency gaps.

New Appointees will receive a formal induction prior to starting work, covering as a minimum, key health, safety and environment aspects likely to be encountered in their job role and work location.

Processes are in place to maintain ongoing assessment of competence of staff in the health and safety technical aspects of their role, with formal refresher training in place for critical knowledge and skill areas.

#### 7.3. Key Employees with Responsibility for the Safe Flow of Gas

The key employees with responsibility for the safe flow of gas within MOD networks have been identified in Section 6.3 and are covered within the scope of the safety and technical competency training described in Section 7.4.

The MMO will have identified individuals within their area of responsibility. Those identified are individuals whose role has a direct safety implication beyond a general duty of care; i.e. one in which an individual has the authority to make a decision or take actions that if incorrect could have an adverse effect on the health and safety of employees, contractors and/or the public. Within an MMO this includes those employees who have responsibility for the safe flow of gas and the provision of an emergency service.

The MMO will produce a job profile for each of the roles identified in Section 6.3. The job profile describes the specific key competences required for each role in terms of job outputs, key interdependences, and person specification.

#### 7.4. Safety and Competence Training

The MMO will continue to develop its employees by:

- Meeting employee's development needs to satisfy business objectives (including safety objectives and improving personal effectiveness).

- Regularly reviewing employee's development needs to provide appropriate learning/training opportunities and identifying any gap actions.
- Focusing on developing new employees immediately after appointment and throughout their employment.

Safety related training is to be tailored to the role of the individual. Wherever, possible externally accredited qualifications are the basis for competence development and assessment.

#### **7.4.1. Gap Action Management**

The actions identified to rectify any shortfalls between the MMO's job profile and the technical competencies possessed by the employee are known as gap actions. When such gaps are identified they are discussed with the individual and assigned a priority. An associated gap action plan is then agreed and recorded. This may include attendance on an internal/external course; 'work shadowing' a named competent colleague to gain the appropriate level of expertise, knowledge or experience; or redeploying the person or withdrawing them from a specific activity until such time as arrangements are in place for corrective action to be taken.

#### **7.5. GSM and RP (Gas) Training and Competence**

GSM and RP (Gas) suitability criteria is detailed in GSMP sections A & B.

#### **7.6. Assessment of Competence**

It is the responsibility of the MMO to ensure that only suitably qualified personnel are employed and that adequate training is provided both for essential compliance issue and self development. The MMO also maintains all training records and staff appraisals.

#### **7.7. Training Records**

Records of training undertaken and competence assessments completed are kept by each organisation and maintained for each member of staff in accordance with their own requirements and referenced within the relevant section of the GSMP section B. Annex G..

#### **7.8. Absence Cover**

Cross site cover is provided in the case of sickness or vacation of key personnel. Details of these arrangements are to be found in the GSMP section B, Annex G

## 8. CONTRACTORS

### GS(M)R Schedule 1 – Paragraph 8 Requirements

Particulars to demonstrate that the duty holder has established adequate arrangements for managing work carried out by persons who are not his employees on or in relation to plant or premises which he owns or controls.

#### 8.1. Policy

Contractors who work for the MMO are required to accept the same standards of care for health, safety and environment as the MMO itself. The MMO requires contractors (as with employees) to work safely and with due consideration for the health and safety of themselves, the public and to protect the environment.

The MMO is to use only reputable contractors who have an adequate safety management system in place, and who have a good safety record.

The MOD and the MMO's are responsible for the health and safety and competence monitoring of its staff, suppliers and contractors.

##### 8.1.1. Organisational Structure

Contractors are used in the MMO's activities. Contractors are managed as appropriate depending upon the nature of the work. The MOD has the responsibility to ensure that the MMO have demonstrated suitable competence to provide its contractual services. The MMO in turn operates a tiered supply chain and is responsible for ensuring the supply chain have the appropriate competencies. This allows for good engagement with suppliers on health, safety and competence and this is verified through stringent supplier checks on being accepted into supply chain, along with ongoing audits, carried out by the appropriate MMO Manager and trained auditors. This system is accredited by an external organisation

MMO procedures for engaging contractors are described in their SMS/QA procedures. These procedures cover both the pre-qualification selection process and the tendering process.

The MMO is responsible for ensuring that suitable and sufficient H&S submissions are requested in the pre-qualification and the tendering process and for ensuring that evaluation and award of contract are carried out with full regard for H&S requirements.

##### 8.1.2. Contractor Competencies

The MMO must operate within the guidelines outlined in their procedures for the Selection and Management of Contractors (see GSMP section B. Annex G). The control of contractors is covered by both internal MMO procedures and the MOD 4Cs system<sup>11</sup>. The MMO's Senior Site Manager is responsible for contractor supervision and ensuring all appropriate method statements, risk assessments and evidence of competency are available for those working on site.

As part of the process in managing the safe flow of gas, it is the responsibility of MMO to ensure all their direct employees and employees of their sub-contractors have the necessary safety related and technical competence to meet legal requirements and complete the work satisfactorily. The MMO requires its contractors to demonstrate that they have systems in place, which define employees' roles and responsibilities, and identifies all safety, health and environment and

---

<sup>11</sup> JSP 375 Vol 2 Leaflet 34 MOD 4Cs System - Control of Visiting Workers and Contractors

technical competency requirements. Evidence of qualifications, training and experience for all relevant personnel must be maintained and available for inspection.

The MMO site manager is responsible for checking individual employees of contractors for competency by continuous audit to ensure appropriate competence in the work they normally do. Personnel found to be substandard are removed and only allowed back once their competency has been proved. Risk assessments are checked by site personnel to verify any equipment being used and appropriate test certificates may be requested.

For those contractors specifically concerned with the safe flow of gas the following key competency areas have been identified.

#### **8.1.2.1. Contractors Working on < 7 bar and Upstream of the Emergency Control Valve**

Subcontracted team leaders and assistants working on MOD gas mains and services and associated plant are registered with the Energy & Utility Skills (EUS) Council. They hold an appropriate industry recognised qualification such as Gas Distribution (GD) or Gas Network Operators (GNO) certificate. Additional certification may be required, subject to the activity involved, such as New Roads and Street Works Act (NRSWA).

#### **8.1.2.2. Contractors Working on or Downstream of the Emergency Control Valve**

MMO Contractor companies whose employee's work on the down stream of the emergency control valve must be Gas Safe Registered. Their individual employees are assessed on an annual cycle against the standards set by the Gas Safe Register for confirmation of continued competence. For details of the MMOs monitoring systems - GSMP section B. Annex G

#### **8.1.3. Emergency Response**

EGDN employees or their subcontractors involved in emergency response activities for the MMO must meet the requirements of EGDN's annual assessment procedure EGDN/PM/EM/73<sup>12</sup>.

#### **8.1.4. Planning and implementing**

If selected to tender for work, the prospective contractors are invited to discuss the scope of work at a pre-tender meeting to ensure that H&S commitment and competence are given full consideration within the contracts. The pre-tender documentation includes a health and safety questionnaire, intended to establish the current status and performance of the contractor's SMS. Once received, the information requested from the questionnaire is assessed against standards.

The contractor is made aware of any identified hazards for the particular contract and once selected; the contractor will be briefed on MOD and MMO standards and procedures, including site familiarisation and induction briefing as appropriate.

The arrangements for monitoring the work of contractors vary according to the scale of the works. For major work, fencing, if practical will delineate construction areas where contractors are operating. However, at the other end of the scale, for smaller scale work the emphasis is not on supervising contractors whilst working, but on selecting competent contractors at tender stage that can demonstrate their ability to exercise control of their employees.

---

<sup>12</sup> EGDN/PM/EM/73 - Emergency Competency Assessment of TCP Emergency Service Provider Operatives

### 8.1.5. Measuring Performance

The assessment procedure described above sets out the requirements for assessing the contractor's ability to perform work in a safe manner and within identified environmental considerations.

The assessment is performed on the information submitted by contractors in the following areas:

- H&S Policy
  - Organisation
  - Arrangements
  - Responsibilities
  - Competent advice for health and safety
- H&S Management Systems
  - Documentation
  - Procedures
  - Audit programmes.
- H&S Management Plan
  - For the proposed contract.
- Risk Assessment/Method Statements that cover the scope of work and indicate the ability to satisfactorily address all identified hazards.
- Accident/incident rates.

The MMO investigates all incidents involving contractors jointly with safety personnel employed by the relevant contractor.

### 8.1.6. Audit and review

The MOD<sup>13</sup> and MMOs operate and maintain review programmes that measure performance and compliance against required standards of performance (see GSMP section B. Annex G).

The MMO has procedures for auditing. The procedures include specific requirements in relation to the auditing of facilities, operations, suppliers and contractors that support the MMO Auditing Policy. MMO staff will conduct contractor audits. Reports will be made available to the responsible MMO managers and MOD audit authority as appropriate.

---

<sup>13</sup> JSP 375 Vol 4

## 9. HEALTH AND SAFETY INFORMATION

### GS(M)R Schedule 1 – Paragraph 9 Requirements

Particulars to demonstrate that the duty holder has established adequate arrangements for passing information relevant to health and safety to persons within his undertaking

#### 9.1. Internal Communication

Different forms of communication are used to pass information to people within the MOD/MMOs depending on the type of information and the audience. This includes written documentation, information passed via Information Technology (IT) systems and verbal communications.

Policies, procedures, specifications and work instructions are disseminated throughout the organisation to enable the MOD/MMOs to manage the safe flow of gas in the networks. These documents are available to employees and contractors working in the MOD/MMO's undertakings. Defence Instruction Notices (DINs) issued by MOD will advise amendments to the JSP 375 documents. DIO Policy Instructions (PIs) provide information to changes/introduction of new policy concerning DIO estate activities. It is the responsibility of the user to check with DIO to ascertain if amendments have been issued.

Communication mechanisms are in place between the MOD/MMOs both formal and informal communications are established at appropriate levels. The Estates Health and Safety Forum and the Estates Health and Safety Supplier Association Forum provide the main focus for communications on H&S matters between the MOD and its MMOs. The MMOs have their own mechanisms which are set out in GSMP section B. Annex G.

Contractors and employees are represented, consulted and involved in the management of health, safety and environment primarily through local monthly meetings.

Communications within MMOs encompass the following:

- Involvement in consultative arrangements
- Involvement in incident, accident & ill health investigation
- Planning, monitoring, auditing and reviewing performance
- Systems for cascading information, e.g. team briefings
- Posters, bulletins etc
- Preparation and dissemination of information to outside organisations
- Collection of information from external sources

Changes to documents, lessons learned from incidents/near miss and general engineering, health and safety awareness are briefed through team meetings that employees are required to attend.

Employees also have the opportunity to raise issues via the monthly meetings, which can be communicated back up the line management structure for resolution. Where necessary corrective actions are to be logged on a corrective actions register. It is the responsibility of the GSM/RP (Gas) to ensure that all identified and approved corrective actions that may affect the safe flow of gas or the provision of an emergency service are implemented

Information that is required to be passed to consumers is as defined in Section 4 and is via the EMTL and Commanding Officer/Head of Establishment (CO/HoE).

This process is subject to internal audit, and the MMO's Manager Systems maintains a record of these audits along with records of corrective actions required and completion dates.

All controlled documentation and corrective actions are available to all relevant staff through the MIS.

## 9.2 Site 4Cs Duty Holder

On each MOD establishment the CO/HoE is required to appoint a site MOD 4Cs Duty Holder (DH) in line with JSP 375 Volume 2, Leaflet 34. The four main elements required in any visiting worker and contractor management system are: co-ordination, co-operation, communication, and control. Effective application of the four elements of this system often referred to in MOD as the 4Cs system. This has the objective of reducing the likelihood of harm or damage arising from the actions of MOD, visiting workers and contractors working on MOD sites. APPENDIX E

The 4C Duty Holder responsibilities can be summarised into five key areas:

a. **Emergency preparedness.** The 4C Duty Holder must ensure that arrangements are in place to deal with emergencies and that all relevant parties are aware of such arrangements through Establishment safety and emergency briefings. This includes emergencies associated with the safe flow of gas in the distribution network. Emergency information that is required to be passed to consumers in the event of a supply emergency would be via the GSM/RP (Gas). In a gas emergency this may take the form of;

- i) A site wide tannoy announcement;
- ii) Internal MOD E-mail to inform consumers;
- iii) Direct contact by MOD/MMO employees to consumers on a door to door basis. This would be backed up by a leaflet through the door if no direct contact was made.

A combination of all three methods may be used to inform consumers of a gas supply emergency.

b. **Identification of hazards.** The 4 C Duty Holder must combine all Area Registers into an Establishment Hazard Register, which is to be made available to all site personnel, hosts, visiting workers/contractors in order for them to understand fully the potential hazards that they will have to consider and mitigate.

c. **Communication of hazards.** The 4C Duty Holder must ensure that systems are in place for visiting workers/contractors to receive a relevant site safety briefing and to understand the nature of the hazards in their proposed area of work. Such briefings must:

- i) take place prior to the commencement of work
- ii) ensure that all hazards in the specific area are identified and explained, and
- iii) include daily changing hazards, Emergency and Disaster Plans, and evacuation procedures.

d. **Interfacing duties with MMOs and other contractors.** The 4C Duty Holder is responsible for providing hazard information within his competence. He is not responsible for any technical hazards or aspects of the work, unless he is responsible for a technical facility. The host, typically DIO, MMO, PFI or MAC contractor, is responsible for communicating technical hazards and for providing the management of the contractors competence, safety and work quality, via appropriate "Safe Systems of Work" as described in JSP 375 Volume 2 and Section 8 of this Safety Case. The 4C Duty Holder must co-ordinate the provision of hazard information, including ensuring the co-ordination of information on matters outside their area of competence.

e. **Feedback and co-ordination.** The 4C Duty Holder must ensure that regular feedback from Establishment personnel on the safety performance of contractors and hosts is gathered and assessed, and failings reported to the appropriate MOD Management (CO/HoE, DIO Hd TFM. SIM)



## 10. HEALTH AND SAFETY INFORMATION

### GS(M)R Schedule 1 – Paragraph 10 Requirements

Particulars to demonstrate that the duty holder has established adequate arrangements for passing and receiving information relevant to health and safety to and from other persons who have duties under these regulations

#### 10.1. External Communication -Liaison with other transporters, enforcing authorities and emergency service providers

The arrangements in place for the effective communication of information relevant to the safe management of the flow of gas are described in Section 3.1.2, Sections 4, 12, 13, 14,18, 20 and 21 of this Safety Case.

Details of the arrangements for individual establishments are to be found in the GSMP Section B

Part 3, describes the interface with the EGDN and the position of safety critical equipment

Part 4, describes the technical specifications and standards used by the MMO and MOD and the procedures and arrangements relating to the operation and maintenance of the gas networks.

Part 12, describes the co-operation arrangements in place with other GSMR duty holders.

Part 13, describes the MMOs arrangements for dealing with gas escapes on the gas networks including arrangements with emergency service providers EGDN.

Part 14, describes the MMO and MOD arrangements for incident investigation and reporting.

Part 18, describes the MMOs arrangements for dealing with gas supply emergencies.

Part 20 & 21, describes the arrangements in place for discontinuing and restoration of the gas supply and arrangements with the EGDN .

Liaison with consumers and staff or members of the public is through the establishment emergency response process. The EMTL will be notified of any emergency condition and will liaise with the CO/HoE regarding actions required.

Liaison and supply of critical information on plant and equipment is subject to the development of a formal agreement between the MOD and EGDN. This Safety Case will be updated.

#### 10.2 Document Centre

For each site, location or geographical area, as determined by the GSM, a Document Centre is required for keeping the following:

- a) Site Operating Record
- b) Safety Documents Register
- c) Equipment Register
- d) Permit pads e) Site Drawings
- f) Other standard forms

These documents are required to support the management of activities associated with the gas network. This includes relevant safety critical information on the gas networks plant and equipment. In the event of a gas supply emergency the document centre would provide gas

*MOD Exemplar Gas Safety Case*

conveyors, EGDN, shippers and suppliers with the necessary information in order to comply with MOD requirement to cooperate with other parties who have duties under GSMR

The following information is also maintained within the Document Centre:

- a) Access to Approved Codes of Practice applicable to all activities associated with maintenance and operation of the gas network.
- b) A register of appointed skilled persons collated alphabetically.
- c) Copies of Safety Documentation relating to activities associated with maintenance and operation of the gas network, collated on a discipline basis.
- c) Copies of GSM reports for all activities associated with maintenance and operation of the gas network

Access to the document control centre is via the site RP (Gas). Availability of information is appropriate to the task being undertaken e.g. if EDGN were working on the gas networks, system layouts and locations of adjacent services would be made available.

## 11. AUDIT

### GS(M)R Schedule 1 – Paragraph 11 Requirements

Particulars to demonstrate that the duty holder has established adequate arrangements for audit and the making of necessary reports.

#### 11.1. Introduction

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 customers emergency control valve.

Review and auditing will be undertaken in accordance with the MOD and MMO's Auditing Procedures, which specifies the contents of the Audit Plan, the audit format, the requirements for auditor competence, selection and auditor monitoring. The auditing procedures provide a consistent basis for safety audits throughout the MOD & MMOs. The procedures identify what should be audited; namely facilities, operations, suppliers and contractors and the management systems for managing safety. They identify who is responsible for carrying out the audit and how to prepare an action plan based on the findings and the procedure for a formal review system.

The MOD and MMO requires sample audits to be carried out on all Contractors operating under their control and undertaking works which may affect, or likely to affect gas installations.

DIO will implement an independent audit regime in accordance with the duty of care imposed to them under the Health and Safety Management at Work Regulations. That is to carry out suitable and sufficient audits on the MMO to ensure that Health and Safety is being managed to a satisfactory level.

Details of the Audits are to be found in the GSMP Section B Annex G.

#### 11.2. Audit Aims

- The audit of safety, health and environment activities is conducted to:
- Determine compliance with legislation;
- Determine compliance with Company Policy;
- Determine consistency of work practices;
- Assist in the sharing of learning experiences across MMO and the MOD;
- Assist in the implementation of best practice across MMO and the MOD.

#### 11.3. Audit Objectives

The MMO safety, health, environment audit objectives are based on the following principles:

- Activities are subject to independent audit on a planned basis;
- Management systems are subject to independent audit for the purpose of achieving continuous improvement;
- Audits are included in the business plan;
- Recommendations and actions arising from audits are assessed, documented and monitored until satisfactorily resolved.

DIO will implement an audit regime on their MMOs to ensure that health and safety is being managed to a satisfactory level and the requirements of the Safety Case are being met.

#### **11.4 Roles and Responsibilities**

The MOD has responsibility for ensuring, through audit and compliance monitoring, that the MMO has undertaken suitable and sufficient audits of their operating procedures and implementation regimes that affect the safe flow of gas and that all findings are implemented. This includes monitoring and reviewing the audit process to ensure the aims and objectives listed in 11.2 and 11.3 are achieved. Where there is under achievement/failings, corrective actions are identified and implemented.

DIO will undertake independent audits of a sample audit of approximately 5% of the completed works. The MMO is responsible for keeping all necessary records; ensuring remedial work is satisfactorily implemented and reporting progress against objectives.

#### **11.5 Audit by MOD**

Independent audits are conducted by, or on behalf of, MOD at intervals determined by the Defence Environment and Safety Board and include, but are not limited to:

- a) DIO's monitoring and audit processes.
- b) Site audits and policy implementation.

#### **11.6 Audit by DIO Chief Environment and Safety Officer**

Audits are conducted by, or on behalf of, the CESO at intervals determined by the CESO to ensure that DIO's Health and Safety governance structures, processes and procedures are suitable and sufficient and are being applied

#### **11.7 Audit of GSMP**

Audits are carried out to formally verify that the requirements of the GSC & GSMP are being implemented, monitored and controlled appropriately. They serve to assure, in concert with Monitoring (see Section 6.7.2) the Secretary of State for Defence's Health and Safety policy is being fully and correctly implemented.

#### **11.8 Audits by ODC E&C SME (Gas)**

Audits by the IPS SME (Gas) will be carried out in accordance with the processes and procedures detailed in GSMP section Annex G

#### **11.9 External Auditing**

Externally qualified auditors within MMO will audit all supply chain members periodically following initial assessment and supply chain admission. As a supply chain member this periodic external auditing would cover EGDN's ability to provide a suitable and sufficient gas emergency response service.

## 12. CO-OPERATION

### GS(M)R Schedule 1 – Paragraph 12 Requirements

Particulars of the arrangements the duty holder has established to enable him to comply with regulation 6 (co-operation) including (except where he is the network emergency coordinator) particulars of the arrangements he has established to ensure that any directions given to him by the network emergency co-ordinator are followed.

### 12.1. Continuity of Supply

The arrangements that the MOD and MMO have put in place in order to maintain continuity of supply is described in Section 16 of this Safety Case. The EGDN is part of the MMO supply chain and would be expected to meet their national standards for gas emergency response. MOD is currently reviewing its contractual arrangements with the EGDN to ensure suitable and sufficient arrangements are in place for co-operation on issues including gas supply emergencies, exercises and third party arrangements.

### 12.2 Co-operation Arrangements for Operations at MOD/SGN Network Interface

The MMOs cooperates fully with the EGDN to maintain continuity of supply to the networks shown in APPENDIX D.

In the event of a supply failure from the EGDN, the MMO would co-operate with EGDN to safely shut off supply, and then the MMO would arrange for re-commission of supplies to customers.

A formal agreement between the MOD and the EGDNs, will define arrangements and co-operation on a range of issues including emergencies, exercises and third party arrangements.

### 12.3 Network Exit Agreements

There are no large volume consumers on the MOD network and therefore no network exit agreements in place.

### 12.4 Co-operation Arrangements for the Design of New System connections

The MOD has a duty to supply the EGDN with information on any changes to the gas network. (Changes in this case refer to changes to the pipe layout where a significant amount of pipework is removed/added). It is not envisaged that there will be any third party new connections to the MOD distribution networks. However, as a minimum all contractors working on the gas networks are required to comply with the requirements of GSMP section B.

### 12.5 Co-operation on Gas Escapes

Where a gas escape is reported to the MMO via the Helpdesk, without using the emergency 0800 number, the Helpdesk will instruct the caller to contact the National Gas emergency number operated by National Grid, the MMO will co-operate with EGDN, as the emergency service provider, to 'make safe'.

### 12.6 Co-operation Arrangement with Third Parties in Network Gas Supply Emergencies

MOD and its MMOs will co-operate with EGDN on any requirement to take part in upstream emergency gas supply exercises. This request will normally be communicated by EGDN to the MOD site in accordance with the procedures detailed in the GSMP section B Annex G. Arrange will be made for MOD and MMO site personnel to be involved in the emergency exercise as required.

## **12.7 Co-operation with Suppliers**

The MMO is responsible for ensuring that all contact details for suppliers are up to date and this is done annually.

The MMO RP (Gas) is responsible for ensuring that all appropriate information is provided to their supply chain providers e.g., EGDN prior to work commencing on the gas system and this will include local pressure conditions for the LP and MP and appropriate network schematics.

All gas network information is accessible and located in the designated site Document Centre

## 13. EMERGENCY SERVICE RESPONSE TO GAS ESCAPES

### GS(M)R Schedule 1 – Paragraph 13(a) Requirements

Particulars of the arrangements the duty holder and any emergency service provider appointed by him have established to enable him or the provider, as the case may be, to comply with regulation 7(4) to (6).

### 13.1. Management of Gas Escapes

#### 13.1.1. Dealing with gas escapes and other emergencies

The MOD response to a report of a gas escape on their low/medium pressure networks is set out in their procedures for dealing with gas. On MOD networks the MMO utilises EGDN to provide a gas emergency response service for dealing with reported gas escapes. EGDN's response to a report of a gas escape is set out in detail in EGDN Procedures<sup>14</sup>. This document identifies the responsibilities and lines of communication between EGDN's Emergency Call Centre; the Distribution Network based First Call Emergency Response and others, and outlines the operational and administrative procedures for dealing with reported gas escapes and other emergencies. These include emissions of carbon monoxide from gas appliances, fire or explosion where gas is thought to be the cause, and loss of supply.

If gas is detected on any of the MOD sites then EGDN will be contacted via the National Gas Emergency number and the gas escape reported. This contact is either by the person who detects the escape directly or by site personnel if they are contacted first. Emergencies are reported to the guardroom/security, MMO Helpdesk where personnel are trained to gather all appropriate information before taking action. EGDN will respond as per their emergency response procedure and will make safe.

The MMO have the responsibility for the co-ordination of any further works to repair the underground main or service and bring any domestic properties affected by the loss of supply back on line in a safe and controlled manner.

The MMO will also ensure that all appropriate records are updated and that the relevant Manager is informed of the emergency at the earliest opportunity and the action taken to resolve the supply problem.

The EGDN will respond in line with the formalised agreement which will include access issues, performance requirements and access to schematics.

##### 13.1.1.1 Site Emergencies

Major incident emergency situations are managed by the Civilian Emergency Services who would be contacted directly by the guardroom and would be managed in line with the requirements of JSP 375 Volume 2 Leaflet 1 [Reference 12]. In the event of a major incident this document describes the roles and responsibilities of all parties, in particular the roles of Site Main Controller and Site Incident Controller.

The Site Main Controller has the overall responsibility for directing operations, normally from the Emergency Control Centre (ECC). The Site Incident Controller would normally operate at the forward control point and provide the interface between the ECC and the incident. Initially he may

---

<sup>14</sup> EGDN/PM/EM/71 - EGDN Procedures for Dealing with Reported Gas Escapes

be required to carry out the duties of the Site Main Controller until the latter assumes control at the ECC. Terms of Reference detailing the responsibilities and actions the individual is expected to undertake is provided for all significant positions. Examples of Terms of Reference for the Site Main Controller and the Site Incident Controller are given in JSP 375 Volume 2 Leaflet 1

The aims of Emergency & Disaster Plan are to develop and then implement measures which will ensure there is an effective method of:

- Containing and controlling incidents so as to minimise the effects, and to limit damage to persons, the environment and property.
- Implementing the measures necessary to protect persons and the environment from the effects of accidents.
- Communicating the necessary information to the public and to the emergency services and authorities concerned in the area.
- Providing for the restoration and clean-up of the environment following an accident.

The plans cover all contingencies identified in the site hazard survey in accordance with the site risk assessment procedures laid down in the leaflet Site Risk Assessment in JSP 375 Vol. 2. The Emergency & Disaster Plan also meets the provisions of Integrated Contingency Planning (ICP) and the requirements of JSP 503 - Business Continuity. The Emergency Plan is subject of consultation with the employees on the particular site. This may be done through the normal Trade Union (TU) consultation procedures or via the chain of command for military personnel.

### **13.2. Responsibilities**

In order to manage the process of dealing with gas escapes the EGDNs have organised and assigned responsibilities in a number of key processes summarised as follows:

#### **13.2.1. Distribution Support**

- a) Provision of emergency control facilities and operations for the receipt of calls and direction of personnel relating to gas escapes and other emergencies within specified timescales.
- b) Provision of the equipment and administrative support necessary to maintain receipt, progression and completion of emergency work incorporating fail-safe alarms.
- c) Provision of continually manned operations for dealing with suspected gas escapes and other emergencies.
- d) Despatch of personnel and other resources in order to progress reported gas escapes within the specified timescale.
- e) In the event of an emergency, the establishment of the necessary interface between the EGDN, the MOD, MMO, Emergency Service Providers, Shippers, Suppliers, Emergency Services, and other agencies.

#### **13.2.2. Distribution Network**

- a) Provision of training for all personnel in dealing with reported gas escapes and other emergencies.
- b) Establishment of business continuity arrangements and mutual aid agreements.
- c) Establishment of arrangements for dealing promptly with emissions of gases or other emergencies occurring at sites and systems not associated with a EGDN's system.
- d) Provision of Public Relations.



e) Provision of public welfare support, as appropriate, for those affected by emergency situations. This includes provision of alternative heating and cooking facilities for vulnerable sections of the community.

### **13.3. MMO Helpdesk and National Gas Emergency Line Call Centre**

The MMOs have continuously staffed Helpdesks for use by site personnel to contact the MMO in the event of any emergency. The Helpdesk also deals with out of hours call outs in line with the MMO's procedures. The Helpdesk operator takes the call and asks a series of questions linked to the problem code. The Helpdesk takes details and records the call. A work order is then generated on the MMO supply chain contractor to respond to that call. The Helpdesk operator will contact the contractor by telephone, on the supplied "on call" number and will instruct the contractor to attend and action that call out within their contracted response time scales. The contractor will contact the Helpdesk once they have completed the call out to advise of the action taken and whether or not there is a requirement for follow on work. The contractor must respond to the Helpdesk within response timings to ensure that progress on the call out can be monitored. The Helpdesk operators will monitor the call out and will report progress to the requester where the response timings cannot be met, and/or when the call out has been actioned. Typical gas related Helpdesk reports include;

- No gas at appliance
- Faulty domestic gas cooker
- No gas in building
- Faulty gas cooker or fire surround
- Pilot light has gone out
- Appliance not working
- Smell of gas (see gas escape below)

If a gas escape were reported to the MMO then this would be reported via National Gas Emergency number operated by National Grid and forwarded to the EGDN dispatch centre, where there are sufficient trained and competent personnel to ensure that calls are answered promptly whatever the time of day or night.

At the Emergency Dispatch Centre, in order to avoid delays in relaying information to the Emergency Service Provider, telephone operators utilise an outline script that enables them to:

- Establish the precise location of the emergency.
- Establish whether the leak is controllable (i.e. on the consumer's side of the emergency control valve) or uncontrollable (i.e. on the transporters side).
- Advise callers how to turn off the gas at the emergency control, and confirm that this has been done.
- Advise callers to open doors and windows to ventilate the property and warn them against operating any electrical switches (appliances) in any way. They should also be advised not to smoke and to avoid using anything that could be a possible source of ignition.
- Establish whether there are any fumes (escape of carbon monoxide into the room), and if it is possible to identify the appliance; and

Advise callers where an escape of carbon monoxide is suspected of the immediate steps to be taken,

- i. To turn off all appliances which may be emitting carbon monoxide, and
- ii. Not to use them until they have been checked by the emergency service provider.

### **13.3.1 Emergency Call Centre Equipment**

The Emergency Call Centre equipment consists of direct phone lines, protected power supplies and supported on a 24-hour basis. The quality and availability of this support is essential in achieving standards of service.

### **13.4. EGDN Emergency Response**

Having received details of the escape, an EGDN First Call Operative (FCO) will attend site without undue delay to carry out an immediate site investigation. The FCO is trained to deal with reported gas escapes in the following order of priority:

- a) Safeguard life
- b) Safeguard property
- c) Find and secure the escape.
- d) Carry out final investigation of the site.

EGDN's standards of service for responding to gas escapes require attendance at uncontrolled gas escapes within 1 hour and 2 hours for controlled escapes. The EGDN FCO maintains frequent contact with the Emergency Call Centre throughout the investigation and whenever the situation on site requires additional assistance it is requested without delay.

The Emergency Call Centre is advised when any of the following situations occur:

- a) An explosion, fire, gassing or injury of any kind.
- b) Evacuation of the affected area.
- c) Substantial escape of gas.
- d) Rapid deterioration of the situation on site.
- e) Involvement of outside agencies, e.g. Media, Police,

The Emergency Call Centre shall then immediately advise an operational manager who will take responsibility for deciding upon additional support activity.

When FCO attends a reported escape initial site, conditions and individual circumstances shall determine the priority action to be taken. If the escape cannot be brought under immediate control and the situation made safe by isolation of the leaking gas, removal of immediate sources of ignition and ventilation, then the FCO with the assistance of the MMO/MOD, should ensure occupants are evacuated if appropriate. If there is a reason to suspect that gas has escaped in or into a building and access cannot be gained immediately, then forced entry shall be made and necessary steps taken to avert danger to life and property. The presence of gas may be suspected on the basis of any relevant information including gas detection instrument readings. When a property has been evacuated, it shall not be re-entered until the source of leakage has been secured or adequately ventilated outside the property, except to carry out any necessary monitoring provided that this will not create undue risk to life.

Having made safe the escape, the FCO reports to the Emergency Call Centre and completes a job report form. EGDN provides the MMO with a “make safe” emergency service or 30 minutes of free repair to pipework whichever is the longer.

#### **13.4.1. Escape Isolation Response Time**

Given the nature of the MMO’s networks, and the provision of readily accessible isolation valves, it is considered that the maximum time that should be taken to stop gas escaping from the network once reported should be well within the 12 hours stated in Regulation 7(5).

#### **13.5. Spillage of Products of Combustion**

Arrangements for dealing with spillage of products of combustion are similar to those described for gas escapes, as they are an integral part of the EGDN emergency response process.

#### **13.6 Repair of Gas Escape**

EDGNs may be part of the MMO supply chain and as such maybe called upon to facilitate the required repairs to the LP or MP network following a gas escape. Other suitable competent supply chain contractors would also be considered by the MMOs. The objective being to minimise the time gas supplies were not available to consumers

## 14. INVESTIGATIONS

### GS(M)R Schedule 1 – Paragraph 14 Requirements

Particulars to demonstrate that the duty holder has established adequate arrangements to enable him to comply with paragraphs (12), (13), (15) and (16) of Regulation 7, for co-ordinating the investigation he causes to be carried out pursuant to that regulation with other investigations carried out pursuant thereto, and for participating in such investigations.

#### 14.1. Incident Investigation

The MOD/MMO employs people to carry out investigations, which are professionally qualified and have incident investigation experience. In the event of a fire and explosion incident requiring investigation, the MMO would call on the services of a suitably qualified supplier who has a range of staff with the necessary competence for both managerial and technical work to respond to the forensic incident investigation needs of the MMO. The supplier will have evidence of competency assessments for investigation staff. Where external specialists are engaged by supplier to provide technical support, The MMO will obtain any necessary competence assurance prior to employment.

In the case of an incident involving fire or explosion due to a gas leak, the investigation will establish whether the leak occurred upstream or downstream of the emergency control valve. Where the leak is found to be upstream of the meter, and on MOD property further detailed investigation is carried out to establish the cause and implications. The results of the investigations are reported at regular meetings held by the MMO. The implications of the incident are considered and relevant action taken, which may include the commissioning of further investigative work, changes to policy, procedures etc.

Where the incident is found to be on the EDGN network but is located within MOD property, EDGN would be expected to make safe any gas escape and investigate the incident reporting relevant findings to the MOD/MMO. The results from any EDGN network incident investigation that occurred on MOD property would normally be communicated by the EDGN to the MOD CO/HofE.

The competency arrangements for staff and suppliers are covered in Sections 7 and 8.

##### 14.1.1. Incident reporting - Internal

The MOD and MMO's Reporting Procedures outlined in the GSMP will be used for the communication of incidents which fulfil clearly defined criteria. This will ensure that there is a standard used system for reporting, recording and investigating all accidents, environmental incidents near misses and cases of ill health, typical incidents include:

##### Operational incidents

- Loss of human life or serious injury
- Structural damage
- Failure or potential failure to significant number of consumers
- Major gas release
- Complaints from enforcing authorities

##### Environmental incidents

- Uncontrolled methane release

Should any of the above events occur, systems are in operation that; treat the injured person; make the area safe; record the accident/ incident; report the accident/incident; carry out investigation; determine the root cause/s; implement corrective and/ or preventive actions; monitor the effectiveness of the corrective and preventive actions.

#### **14.1.2 Incident Reporting - External**

The HSE is informed of incidents under The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) and GS(M)R. Further details are contained in the MOD and MMO's Incident/Accident Reporting and Investigation Procedures

Under GS(M)R Regulation 7(16) all investigations will be carried out by a competent person. The HSE will be informed of the intention to undertake an investigation before the investigation begins and a report will be submitted as soon as reasonably practicable after the investigation has been completed.

Under GS(M)R Regulation 7(12) where an escape of gas from gas fitting on domestic premises has resulted in a fire or explosion the competent person will cause an investigation to be carried out to establish that the escape was from the installation pipework or was from which of the gas appliances.

Under GS(M)R Regulation 7(13) where an escape of gas from a network has or was likely to have resulted in a fire or explosion the competent person will cause an investigation to be carried out to establish the source of the escape and the reason for it.

Under GS(M)R Regulation 7(14) where an incident notifiable under RIDDOR 6(1) has arisen as a result of an escape of carbon monoxide from incomplete combustion of gas in a gas fitting, the competent person will cause the Supplier to be notified, via contact details held by the MMO, so that it may undertake an investigation to determine the cause of escape and accumulation of carbon monoxide.

Under RIDDOR Regulation 3 the competent person will cause a notification to be made for any dangerous occurrence listed in Schedule 2.

Under RIDDOR Regulation 6 the competent person will cause a notification to be made in the event of a flammable gas incident or dangerous gas fitting.

#### **14.1.3 Accident/Incident Investigation**

It is imperative that all accidents, incidents and near miss investigation is carried out as quickly and completely as possible; conclusions are based on the relevant facts, not hearsay or opinions. The depth of investigation will be relevant to the nature of the incident. The MMO will use their own documentation to aide them with any investigation.

It may be necessary to leave the scene of the incident undisturbed until the investigation is complete. Witnesses, where available, may be interviewed and asked to provide a written statement.

The investigation must establish all the facts, including the full sequence of events, all persons involved, the nature and extent of the injury or damage, all details about the injured person, etc.

All employees both MOD & MMO will be expected to co-operate fully in accident investigations.

The MMOs have their own procedures which they will use for the recording of evidence, finding root causes, preventive measures and the monitoring of actions.

*MOD Exemplar Gas Safety Case*

Any accident/incident investigation that has an impact on JSP 375 procedures would be communicated through the GSM/RP (Gas) safety management system as described in Section 6.2.2.

## 15. GAS QUALITY

### GS(M)R Schedule 1 – Paragraph 15 Requirements

Particulars to demonstrate that the duty holder has established adequate arrangements to ensure all gas he conveys complies with Regulation 8.

#### 15.1. Gas Composition and Pressure

This section describes the control and mitigation measures necessary to ensure that gas supplied from the system meets the requirements for gas composition and pressure.

#### 15.2. Gas Contents and Characteristics

##### 15.2.1. Source of Gas

Gas is delivered to MOD distribution networks at a number of entry points comprising of EGDN district governors and metering facilities. The demarcation between the EGDN and MOD Estate gas networks is illustrated in Figure 3.1. Individual site layout schematics of gas networks along with the associated sources of supply are to be found in the relevant GSMP.

The composition of gas entering the MOD networks is identical to that supplied from the EGDN network. This gas is therefore subject of EGDN policy and systems and MOD/MMO rely on the fact that gas transported in the EGDN network is already compliant.

##### 15.2.2. MOD and its Suppliers - Contractual Arrangements

The specification for natural gas is compliant to EGDN standards and a gas supply agreement has been entered into between MOD and its gas suppliers. The MOD draw down on this supply agreement as required with no restrictions.

##### 15.2.3. Suitable Pressure for Appliances

This section describes the controls which should ensure that a suitable pressure is available for the safe operation of any gas appliance with it is reasonable to expect a consumer to operate

The provision of a suitable pressure requires:

- The control of the pressure in the MOD network.
- An appropriately designed and installed meter installation.
- Appropriately designed distribution and installation pipework.
- That persons undertaking the work are competent.
- The exchange of information between parties who have a shared duty.
- The meter regulator is appropriately set.
- 

The technical standards applicable to the MOD networks are discussed in Section 4.

**15.2.4. Network Contamination**

Gas is filtered as it enters the MOD network from EGDN. Any network contamination issues would most likely be reported to the MMO Helpdesk as a gas equipment fault (see Section 13.3) and action would be taken by the MMO to investigate and rectify the situation. The MMO safe control of operations system (see Section 4.) ensures that the risk of air contamination into the network following work activities is minimised

Network Analysis is to be carried out to highlight any areas of possible contamination (air ingress) and recommend any equipment needed



## 16. CONTINUITY OF SUPPLY

### GS(M)R Schedule 1 – Paragraph 16 Requirements

Particulars to demonstrate that the duty holder has established adequate arrangements to minimise the risk of a gas supply emergency.

#### 16.1. Planning and Organisation of Gas Supply

MOD gas supply requirements are met from a contractual agreement entered into between the MOD and current gas supplier/shipper. Under the terms of the agreement the supplier shall deliver to MOD its gas supply requirements at the metering point located at the inlet of each network.

The MP and LP networks supplied by the EGDN are automatically controlled. Installations are constructed with multiple streams of regulators to provide system security in the event of failure of the primary stream.

The continuity of supply within the MOD networks is achieved by planning and organising flows of gas as outlined below

##### 16.1.1. Long term demand forecasting

Forecasts of the growth in annual demand are based on consideration of a combination of historical trend information, local intelligence, and general government policy on MOD establishment expansion or contraction requirements.

The MOD plans for its gas supply network to be able to cope with winter demands based upon established industry recognised criteria. The 1:20 day is defined as the highest demand level for any given day that would be exceeded only once in 20 years. This is also often referred to as the "peak day" and is used by the company to ensure sufficient daily MP and LP system capacity is made available. The criteria applied to severity of a whole winter period is defined as the cumulative demand in any given winter that is calculated to be exceeded only once in a run of 50 years, also referred to as the "1 in 50 winter".

The MOD networks can comprise of a mixture of building types and usage. The principal categories for buildings using gas are:

- Hangers (heated storage)
- Offices
- Barracks
- Workshops
- Educational facilities
- Mess buildings
- Catering premises
- Families accommodation

MP and LP network analysis reports are being<sup>15</sup> undertaken for all Establishments to confirm that there is sufficient capacity in the MOD gas systems to cope with demand conditions equal to a 1:20 day. A number of demand models may be used to establish demand conditions. These include; Annual quantities conveyed, building floor area and usage type and the boiler/appliance size.

---

<sup>15</sup> Network analysis of all MOD systems due to be completed by September 2012

The MMO is responsible for reviewing consumer demands on the MP and LP networks and ensuring this review is conducted on an annual basis. This review is used to ensure current network analysis models (see Section 17) are representative of the consumer demands being placed on the establishments gas systems

Further site specific details can be found in the relevant sections of the GSMP section B for each establishment covered by this safety case

#### **16.1.2. Long term supply forecasting**

The bulk supply Contract Agreement requires that the supplier meet the demand requirements of the existing networks for the length of the supply contract. There are no gas supply constraints within the contract.

If the current gas suppliers fail to meet the contract for gas supply, then the MOD would negotiate a new supply contract with a supplier/shipper who is part of the supply chain.

#### **16.1.3. Short term demand forecasts**

The MOD gas supply networks have been designed to accommodate anticipated short-term demands.

#### **16.1.4. Short term supply forecasts**

As with long-term supply forecasts the bulk supply Contract Agreement with the supplier covers short-term supply forecasts. There are no gas supply constraints within the contract.

#### **16.1.5. Load Balancing**

The results of the Network Analysis will be used to identify areas of supply risk including 1 in 50 severe winter, 1 in 20 day peak forecasts, and minimising supply emergency whereupon this Safety Case will be updated.

There is no requirement to conduct load balancing on the MOD networks.

The MOD networks are not on the Department of Energy and Climate Change (DECC) priority users list and therefore the MOD establishments covered by this Gas Safety Case would be subject to cessation of gas use during any load shedding/interruption/isolation by the EGDN depending on the nature of the gas supply emergency. However, most MOD establishments have dual fuel capabilities which would be utilised in the event of a gas emergency.

Each establishment would, depending on activities being undertaken at the time of a gas supply emergency, undertake a dynamic risk assessment conducted by the MMO and site representatives to determine which gas supplies could be safely shut down and isolated..

## 17. ADEQUATE NETWORK PRESSURE

### GS(M)R Schedule 1 – Paragraph 17 Requirements

Particulars to demonstrate that the duty holder has established adequate arrangements to ensure that the gas he conveys will be at an adequate pressure when it leaves the part of the network used by him.

This section describes how MOD supply system is designed to ensure adequate pressure at the end points of the network.

### 17.1. Network Planning

Network planning of low and medium pressure transportation systems, is the process involved in identifying the required parameters to enable the design of suitable Distribution Systems. All MOD networks have been designed to supply the existing and future estimated demands of domestic and commercial gas consumers over a number of years.

The networks have been developed in line with Estate Planning strategies and subject to review in order to meet current and future operational demands. In line with gas industry practice MOD design their gas networks to transport the firm load that would occur on a “1 in 20 peak day”.

#### 17.1.1. Planning and Design Criteria

The planning criteria adopted for low and medium pressure systems are that systems should be designed to meet the maximum estimated demands placed upon them. The objective is that networks are designed to ensure safe operating pressures are maintained at the network extremities. The demand used for network analysis is the 1:20 peak 6 minute demand. This is the design demand for a distribution network. This criterion is stated in IGE/GL/1 [Reference 19], section 4.2.1, which states: “Any system should be designed to meet the maximum demands placed upon it.”

Because of the lead times, the planning cycle dictates that projects to modify or extend the systems are planned well ahead to ensure that future gas demands and supplies can be accommodated.

As part of the Network Analysis, pressure monitoring equipment is being installed on the Network. It will be reviewed whether the risk is such that there would be a benefit to leave this equipment in place to allow for real time monitoring. If the risk is deemed low then the equipment will be removed but tapping points will be left to allow for re-installation in the future. At present reliance is on the customer reporting low pressure issues, however, none have been recorded so far in the network life.

#### 17.1.2 Network Analysis and Planning

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.

Network Analysis uses computer simulation techniques and with these it is possible for network models to be created to simulate various options and to enable critical examination of different scenarios. Network Analysis facilitates decisions to be made so as to ensure that:

- Sufficient MOD distribution network capacity is available to deliver future gas requirements to gas consumers and the optimum use is made of the system capacity.
- System reinforcements and enhancements needed to meet consumer demands are both cost effective and sufficiently robust to withstand minor changes in requirement.
- Disruption due to maintenance or incidents is minimised thus maximising security of supply.

### 17.1.3 Network Monitoring

The validity of Network Analysis results depends upon accurate gas source and demand data that are determined by the MOD and MMO, and upon the accuracy of the computer model. Accurate distribution system models are validated at appropriate intervals by the MMO by comparing the Network Analysis results with the distribution system operation winter experience data. Due to the statistical nature of demand forecasting it is possible that demand on any particular part of the network is greater or less than anticipated. It is therefore essential to validate the network models. Where theoretical and actual results do not match, the validation process will trigger investigations to account for the inconsistencies and the models amended accordingly.

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 in order 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. The process for carrying out this validation exercise can be broken down into three activities.

1. A pressure survey of the physical gas network with pressure recording points selected at the network inlets and extremities.
2. Setting the network model to simulate the conditions experienced at the time of the pressure survey
3. Comparing the recorded and modelled pressures in order to highlight any discrepancies.

The results of the pressure surveys which are being undertaken will be used to confirm that the models being used are representing the actual LP and MP networks under the demand levels experienced on the day used for the comparison. This will help identify if there are any significant issues with the pipe model or the calculated demand figures.

As predicted by the MOD network analysis results, to date no low pressure issues have been reported and recorded on the LP and MP networks.

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 would normally be conducted at a minimum of once every two years or when demand profiles on the network have changed significantly.

### 17.1.4 Minimum Pressures

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. This is defined in IGE/GL/1 Edition 1. However, for pre December

1996 networks, it is permitted to have a pressure of 19 mbar at the end of any service under 1:20 conditions.

As confirmed by the network analysis results the service governors supplying MOD consumers have adequate capacity to meet the expected flow demands. To ensure service regulator reliability and performance they are maintained on a planned basis. The maintenance of consumer service regulators is described further in Section 4.2.3.3.

For any new installation, following MP service governor pressure breakdown the MMO utilises a minimum design pressures of 20.75 mbar at customer Emergency Control Valve. This minimum pressure requirement also applies to LP systems.

In the event adequate pressures are not being maintained in any of the MOD gas networks this would most likely result in an equipment fault being reported to the MMO's Helpdesk. Poor pressure may also be detected during plant performance monitoring in the various site plant rooms, where regular checks are made on equipment combustion efficiencies and settings. Following investigation by the MMO, if inadequate pressure was found to be an issue associated with the EDGN supply interface then the MOD would contact EDGN to report poor supply pressures and progress a solution to resolve supply pressure problems

#### **17.1.5 Normal Pressures**

The pressures given in 17.1.2 are for design conditions. However for lower demand conditions, or away from the system extremities, the pressure at the domestic customers control valve will be in excess of 20.75 mbar. At present, there has been no requirement to apply any pressure management techniques to the network. This will be reviewed in line with the Network Analysis.

## 18. GAS SUPPLY EMERGENCIES

### GS(M)R Schedule 1 – Paragraph 18 Requirements

Particulars to demonstrate that the duty holder has established adequate arrangements for dealing with supply emergencies or other incidents that could endanger persons

#### 18.1. Gas Supply Emergencies

The term used widely to describe the loss of pressure to a system that affects end-users is a gas supply emergency. This is defined as any situation, which has resulted in, or could result in, a loss of pressure to end-users which would require action to prevent one or more supply emergencies occurring.

##### 18.1.1. Low pressure gas supply emergencies

A low pressure gas supply emergency is any situation, which has resulted in, or could result in, a loss of pressure to end-users, which would require action to prevent one or more supply emergencies occurring.

A supply emergency will exist if the pressure in a pipe has fallen to a level too low for the normal operation of equipment or appliances, and then increases again allowing unburnt gas to be admitted into the premises where the equipment or appliance is located forming an explosive mixture at concentrations between 5% and 15% gas in air. In this case "normal operation of equipment" is taken to mean the maintenance of a viable pilot light. A supply emergency can only occur, therefore, where appliance pilot light and burners have been extinguished as the gas supply pressure falls and there are no safety features preventing the flow of gas when the pressure is restored. In this context a supply emergency can only arise where gas is being taken from the distribution network by an end-user and will therefore be linked to specific premises.

Once gas supply pressure has been lost the restoration of supplies to the low pressure systems is a complex time consuming process as the systems must be positively isolated by turning off every end user, purged to 100% gas, and the end users turned back on again. This is a labour intensive and lengthy process.

##### 18.1.1.1. MMO and EGDN Low Pressure Gas Supply Emergency Procedures

If event of a gas supply emergency based on scenarios listed in Tables 5.1 and 5.2, The MMOs utilise the National Gas Emergency Line, a continuously manned free phone telephone number for use by the public, consumers and the emergency services. EGDN's policy and procedures for dealing with a Local Gas supply emergencies set out in EGDN procedures<sup>16</sup> will apply. It covers all pressure regimes. It is written as a framework document and covers the criteria and responsibilities for declaring gas supply emergencies and the roles and responsibilities in the event of one happening.

As a supply emergency cannot occur if the system is fully pressurised, the EGDN low pressure gas supply emergency procedures are designed to keep the system fully pressurised for as long as possible.

The measures available include emergency interruption and system isolation. In summary the procedure for dealing with low gas supply incidents is to:

---

<sup>16</sup> EGDN/PM/E/2 - Local Gas Supply Emergency Procedures

- Remove any danger to life or property.
- Stop gas leakage.
- Maintain minimum gas pressures for as long as possible.
- Determine extent of supply loss.
- Isolate the MOD networks if required.
- Restore normal pressure as soon as practicable.

#### **18.1.2. Network Risk Assessment**

The risk assessment in Section 5 of this Safety Case has identified the causes of a gas supply emergency. There are two situations that would result in a low pressure gas supply emergency. These are:

- a) Insufficient gas supplies available to the MOD networks from the EGDN system.
- b) A transportation constraint in any of the MOD networks.

Some of the possible scenarios causing each of the situations identified above are now outlined below.

##### **18.1.2.1. Insufficient Gas Supplies Available to the MOD Networks from the EGDN System**

This could occur suddenly due to a sudden event or it could develop slowly over a number of hours or days. The foreseeable events resulting in insufficient supplies being available are:

- a) Failure on EGDN network requiring isolation of MOD supply networks.
- b) Major reduction in supply from the EGDN network but not requiring MOD line isolation.
- c) Gas received not in accordance with supply Contract Agreement
- d) Human error.

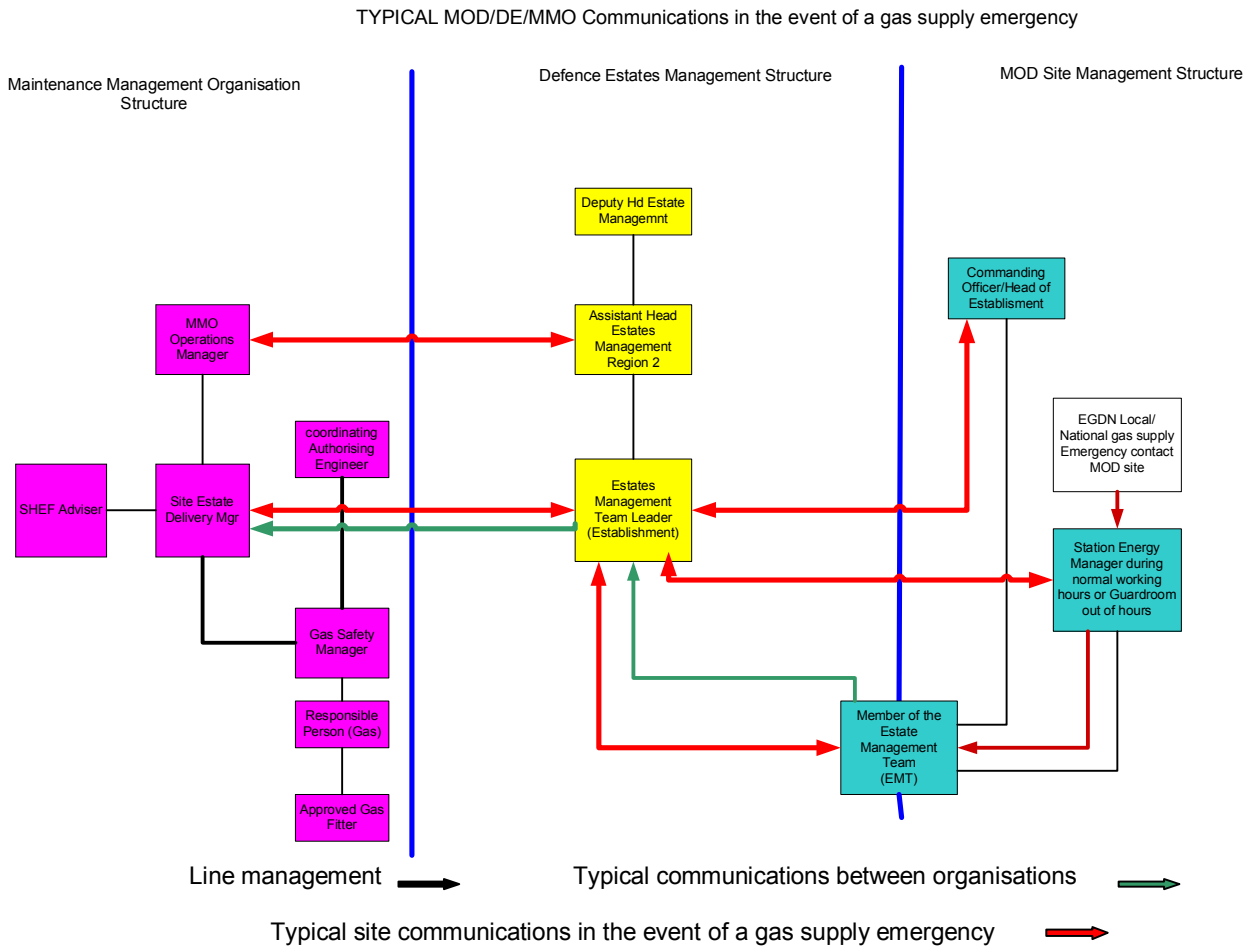
##### **18.1.2.2. A transportation constraint within the MOD Medium or Low Pressure System**

A transportation constraint is where there are sufficient gas supplies available to the MP or LP system (from the EGDN system) but the MMO is unable to maintain adequate pressures to one or more end users within the MP or LP network. The foreseeable events that could result in a low pressure transportation constraint are:

- a) Major damage to any part of the MOD MP or LP system resulting in a reduction in maximum operating pressure or shutdown of one or more distribution mains.
- b) Plant malfunction e.g. valve failure.
- c) Water ingress into one or more distribution mains.
- d) Demand for gas exceeding the supply criteria in a system or part of a system.
- e) Unplanned unavailability of distribution mains.
- f) Human error.

## 18.2. Arrangements for co-operation with third parties in network gas supply emergencies

The Establishment CO/HoE is responsible for ensuring site compliance with the requirements of GSMR and associated Safety Case. This includes ensuring arrangements are in place for proper co-operation, co-ordination and communication with other GSMR duty holders such as EDGN. This is normally delegated to the MOD 4Cs Duty Holder for the site who has responsibility for Emergency Preparedness on-site (see Section 9.2 and APPENDIX K Annex 6). In the event of a Local or National Gas Emergency EDGN would contact the MOD to inform MOD of a cessation in gas supplies to the MOD networks. The lines of communication are shown below in Figure 18.1;



**Fig 18.1 – typical MOD/MMO EDGN communications in the event of a gas supply emergency**

Depending on base activities at the time of a gas supply emergency, a Dynamic Risk Assessment would be conducted by the MOD & MMO to prioritise isolations and determine which gas supplies could be safely shut down and isolated e.g. an aircraft drying off in a spray paint bay would be given greater priority than heating supplies to catering areas. The MMO would contact the appropriate consumers via the methods outlined in Section 9.2a and implement the shut down of gas supplies (see Section 6.2.2.4 and 6.2.2.5). This may also involve EDGN as part of the MMO’s supply chain. As discussed in Section 9.2, the station wide communication system may also be used as a communication mechanism to direct consumers to cease using gas in a safe manner, if deemed appropriate by the results of the dynamic risk assessment.

The co-ordination of the action taken by the MMO in the event of a low pressure gas supply emergency is the responsibility of the MMO’s Manager. EDGN will make safe the gas supplies



to each network in the event of a gas supply emergency. The MMO would assist the EDGN in this process. In addition to making safe, the EDGN as part of the MMO's supply chain would be instructed to re-establish the gas supply following a supply failure described in 18.1.2.1 and 18.1.2.2. The MMO would also assist the EDGN in this process (See Section 13.1.1). Discontinuing and Restoration of the gas supplies to MOD networks is discussed further in Sections 20 and 21.

### **18.2.1 Emergency Gas Supply Exercises**

The MOD and MMO would cooperate fully with any request from EDGN to participate in gas supply emergency exercises to deal with potential EDGN network emergency scenarios. Liaison on this issue would be between the MOD & MMO. The MOD would discuss and agree with the MMO their required involvement in the exercise, including duties or roles to be performed as part of the emergency scenario. To date MOD have not been requested by the EDGN to take part in any gas emergency exercises.

### **18.3. Criteria for invoking low pressure gas supply emergency**

The different types of low pressure gas supply emergencies are given in Section 18.1.2. A low pressure gas supply emergency will be invoked if any of the criteria for an EGDN supply failure or transportation constraint are met.

### **18.4. National EGDN Low Pressure Gas Supply Emergency Procedures**

The MMO would follow the process outlined in 18.1.1.1 unless notified otherwise by EGDN.

It is anticipated that the formalised agreement between EGDN and the MOD will define in detail the liaison arrangements between the respective parties on supply emergencies and exercises.

## 19. GAS QUALITY – SOLE CONVEYOR

### GS(M)R Schedule 1 – Paragraph 19 Requirements

Where the duty holder is the only person conveying gas in a network, particulars to demonstrate that he has established adequate arrangements to decide when and for how long gas not conforming with the requirements of Regulation 8(1) should be conveyed in the network pursuant to Regulation 8(4)

MOD is not the only conveyor of gas in the network. The provisions of GS(M)R Schedule 1 Paragraph 19 therefore do not apply.

## 20. DISCONTINUING SUPPLY

### GS(M)R Schedule 1 – Paragraph 20 Requirements

Without prejudice to paragraph 18 above, particulars of the procedures that the duty holder has established to discontinue safe supply to consumers, when it is known there is insufficient gas to satisfy demand.

#### 20.1. Interruption

If emergency interruption is required as a result of a local gas supply emergency. The MOD Head of Establishment would be notified by the EGDN of any requirement to interrupt gas supplies to the MOD networks. Information on the procedure for interruption of supplies is documented in EGDN procedure<sup>17</sup> Depending on Establishment activities at the time of a gas supply emergency, a Dynamic Risk Assessment would be conducted by the SEDM, EMTL and RP(Gas) to prioritise isolation and determine which gas supplies could be safely shut down and the order of consumer isolation.

If all supplies were to be interrupted the dynamic risk assessment would determine the order in which supplies would be disconnected to consumers.

The MOD will notify occupants.

#### 20.2. System Isolation

Isolation of the MOD networks would be carried on the meter installation outlet valve. In summary the steps taken by the MMO/EGDN would be as follows;

- a) The responsible EGDN manager will authorise the isolation of all, or parts of the MOD gas supply system.
- b) The responsible EGDN manager will determine the appropriate gas system isolation strategy MP, LP etc.
- c) A notification message will be made and repeated at regular intervals.
- d) The MMO would contact the appropriate consumers and implement the shut down of gas supplies via the RP (Gas), Skilled Persons organisation (see Section 6.2.2.4 and 6.2.2.5). This may also involve EDGN as part of the MMO supply chain. The station wide communication system may also be used as a communication mechanism to direct consumers to cease using gas in a safe manner, if deemed appropriate by the results of the dynamic risk assessment.
- e) This isolation process will be in conjunction with Welfare representatives (where appropriate) and local emergency arrangements.
- f) Disconnection will be in line with the output recommendations of the Network Analysis.

---

<sup>17</sup> EGDN/PM//PR/E/3 - Procedures for Local Gas Supply Emergency

## 21. RESTORATION OF SUPPLY

### GS(M)R Schedule 1 – Paragraph 21 Requirements

Particulars of the procedures that the duty holder has established to restore safely the gas supply to consumers, following interruption in supply.

#### 21.1 System Restoration

The restoration process will be carried out in line with EGDN and MMO procedures and conducted in line with the “Protocol for Restoration of Gas Supplies<sup>18</sup>”. The EGDN responsible manager will have appropriate procedures in place, documented in EGDN/PR/E/3, for effective release of appropriate notification to all gas consumers.

##### 21.1.1 Restoration of Gas Supplies – Guidance Criteria

Normally exit points from the EGDN system will be isolated at the Connection/boundary change valve as described in 20.2. Depending on base activities at the time and before gas supplies can be restored, a Dynamic Risk Assessment would be conducted by the SEDM, EMTL and RP (Gas) to determine which gas supplies could be safely restored and the order of consumer supply restoration. Supply restoration would follow the safety guidance contained in JSP 375 Chapter 5

Prior to the restoration process commencing, end users must either be made safe by closure of the customer emergency control valve or monitored. Where domestic properties have been recorded as ‘No Access’, they will be regularly monitored by atmosphere check through the letterbox, to confirm ‘No Gas’. Where gas is found then the property must be made safe, by cut and capping the service and the information recorded at the MMO/EGDN incident control point.

The MMO would contact the appropriate consumers and implement the restoration of gas supplies. This may also involve the EDGN as part of the MMO supply chain

Domestic properties would be purged up to the customers emergency control valve. The MMO/end user installation pipework would be purged and relit where it is safe to do so by either EGDN or MMO personnel.

Following restoration of all isolated supplies, the MMO/EGDN would conduct a sweep up of the end users who were cut and capped and restore supplies where practical. If not, a notice will be left giving the MMO contact number prior to the formal closure of the restoration procedure. A record of ‘No Access’ premises will be retained by the MMO and a copy sent to the Help Desk, to log restoration when the end user contacts the MMO.

Declaration of the end of a local or national gas emergency is the responsibility of Network Emergency Controller.

Declaration of the end of a gas supply emergency on the MOD networks is the responsibility of the Commanding Officer/Head of Establishment (CO/HoE) who will utilise standard communication protocols to advise base stakeholders and consumers. This declaration would only be made following full consultation with MMO and EGDN that gas supply conditions had returned to normal.

Restoration of supply will be in line with the output recommendations of the Network Analysis

---

<sup>18</sup> EGDN/PM/E/2

## 22. CONCLUSIONS

The conclusions of the assessments within this Safety Case are:

- The MOD have an adequate safety management system in place to manage the flow of gas safely in its gas supply system through contractual arrangements.
- Adequate arrangements are in place to comply with the requirements of GS(M)R to co-operate with other bodies with 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.

## 23. REFERENCES

1. Gas Safety (Management) Regulations 1996.
2. A Guide to the Gas Safety (Management) Regulations 1996 – HSE Health & Safety Series booklet 'L80'.
3. IGE/GL/7 - Communication 1632 - Gas Legislation Guidance for Safety Cases.
4. IGE/G/1 - Communication 1703 – Defining the End of the Network, a Meter Installation and Installation Pipework.
5. IIGE/TD/10 - Institution of Gas Engineers Recommendations on Transmission and Distribution Practice - Pressure Regulating Installations for Inlet Pressures between 75 mbar and 7 bar. 1976 & 1986.
6. IGE/GM/8 - Non-Domestic Meter Installations. Flow rate exceeding 6 m<sup>3</sup>h<sup>-1</sup> and Inlet Pressure Not Exceeding 38 bar. Parts 1 to 5.
7. IGE/TD/3: Edition 4:2003 - Communication 1677 - Steel and PE Pipelines for Gas Distribution.
8. IGE/TD/4: Edition 3:1994 - Communication 1562 - Gas Services.
9. JSP 375 Volume 3 – MOD Safety Rules and Procedures. 2007.
10. IGE/SR/18: Edition 2: 2002 – Communication 1678 – Safe Working Practices to Ensure the Integrity of Gas Pipelines and Associated Installations.
11. Gas Safety Management Plans sections A & B.
12. JSP 375 Volume 2 Leaflet 1- Emergency and Disaster Planning Strategy.
13. JSP 375 Volume 2 Leaflet 23 - Site Risk Assessment.
14. JSP 375 Volume 2 Leaflet 39 - Health & Safety Risk Assessments.
15. JSP 815 – Defence Environment and Safety management. October 2006.
16. JSP 375 Volume 3 Chapter 2 – Common Requirements.
17. JSP 375 Volume 2 Leaflet 58 – Managing Safety and Organisational Change. November 2006.
18. JSP 375 Volume 2 Leaflet 34 – 4 C System. Management of Visiting Workers and Contractors.
19. IGE/GL/1 – Planning of Gas Distribution Systems with MOP Not Exceeding 16 Bar.

## 24. GLOSSARY

For the purpose of this document the following definitions apply:

Consumer	A person, or persons, who consumes natural gas provided by a shipper/supplier and conveyed to the premises by a gas transporter.
Competence	The necessary skills, experience, knowledge and personal qualities necessary for an employee to carry out his or her tasks.
Competent Person	An individual who has the necessary skills, experience, knowledge and personal qualities for carrying out the relevant tasks and is approved by the MOD/MMO, as appropriate.
Distribution System	Part of the network used to distribute gas to consumers.
Duty Holder	The person or persons responsible for managing the system in accordance with the Safety Case.
Emergency Call Centre	A location which co-ordinates activities during an emergency and which may (ECC) be receiving telephone calls relating to emergencies and gas escapes, and/or from which personnel are directed by telephone and/or radio.
Emergency Control Valve	A valve, not being a service valve, for shutting off the supply of gas to individual premises in an emergency.
Emergency Services	Police, fire brigade, ambulance services and other bodies, which may be called upon in the event of an emergency.
Gas Transporter	A person who operates a pipeline or group of pipelines, which are part of a system or network, used for the transportation of gas to domestic consumers. The gas transporter so defined may also be transporting gas to industrial and commercial consumers.
Management System	The management and organisational arrangements established by the duty holder for managing his/her undertaking.
MOD	Ministry of Defence
Network	As defined in the Gas Safety (Management) Regulations 1996, Great Britain's Gas Transportation Infrastructure.
Risk Assessment	An estimation of the risks arising from an identification of hazards and dangers, with a view to their control or avoidance, or to a comparison of risks.
Shipper	Holder of a licence authorising that person to arrange with any gas transporter for gas to be introduced into, conveyed by means of, or taken out of a pipeline system operated by that transporter.
Supplier	Holder of a supplier's licence authorising that person to enter into contracts with consumers for the supply of gas.
EGDN Network or System	That part of the GB gas transportation infrastructure owned and operated by EGDN and that part of the network covered by the duty holder's Safety Case.

## 25. ABBREVIATIONS

PUS	Permanent Under Secretary
BS/EN	British Standard/European Standard (Européen de Normalisation)
CAE	Co-ordinating Authorising Engineer
CCTV	Close Circuit Television
CEN	European Committee for Standardisation (Comité Européen de Normalisation)
CESO (DIO)	Chief Environment & Safety Officer (DIO)
CO/HoE	Commanding Officer/Head of Establishment
DIO	Defence Infrastructure Organisation
E&C	Engineering & Construction
ECC	Emergency Call Centre
ECV	Emergency Control Valve
EGDN	External Gas Distribution Networks
EMT	Estate Management Team (formerly Site Estate Authority Team)
EMTL	Estate Management Team (formerly Site Estate Team Leader)
EUS	Energy Utility Skills
FCO	First Call Operative
FM	Facilities Management
GD	Gas Distribution
GNO	Gas Network Operations
GSM	Gas Safety Manager
GSMP	Gas Safety Management Plan
GS(M)R	Gas Safety Management Regulations
H&S	Health and Safety
HSE	Health and Safety Executive
IEng	Incorporated Engineer
IGE	Institution of Gas Engineers
IPS SME (Gas)	Infrastructure Professional Services (Subject Matter Expert)
ISO	International Organisation for Standardisation
IT	Information Technology
JSP	Joint Services Publication
LP	Low Pressure
mbar	millibar
MIS	Management Information System
MITS	Maintenance, Instrumentation and Testing System
MMO	Maintenance Management Organisation
MOD	Ministry of Defence
MP	Medium Pressure
NRSWA	New Roads and Street Works Act
ODC	Organisation Development & Coherence
OGC	Office of Government Commerce
PE	Polyethylene
PFI	Private Finance Initiative
PGT	Public Gas Transporter
PPP	Public Private Partnership
RIDDOR	Reporting of Injuries, Diseases and Dangerous Occurrences Regulations
RP (Gas)	Responsible Person (Gas)
SMS	Safety Management System
TLBH	Top Level Budget Holder

## HEALTH, SAFETY AND ENVIRONMENTAL PROTECTION IN DEFENCE

### A Policy Statement by the Secretary of State for Defence

1. I make the following Policy Statement for all health, safety and environmental protection (HS&EP) matters in Defence because, as Secretary of State, I am answerable to Parliament for such matters and to comply with a requirement of the Health and Safety at Work etc Act. In doing so, I emphasise the importance which I attach to the health and safety of those who deliver defence activities (including the Armed Forces and MOD civilians) and those who may be affected by defence activities and to the protection of the environment. This Policy is to be applied throughout Defence.

#### GENERAL DUTIES

2. I require that:

- a. We minimise work-related fatalities<sup>19</sup>, injuries, ill-health and adverse effects on the environment, and we reduce health and safety risks so that they are as low as reasonably practicable (ALARP).
- b. Within the United Kingdom (UK) we comply with all applicable HS&EP legislation.
- c. Overseas we apply our UK arrangements where reasonably practicable and, in addition, respond to host nations' relevant HS&EP expectations.
- d. Where Defence has exemptions, derogations or dis-applications from HS&EP legislation, we maintain Departmental arrangements that produce outcomes that are, so far as reasonably practicable, at least as good as those required by UK legislation.
- e. Those of us in positions of management or command, from the Defence Board downwards, lead by example on HS&EP as part of normal business and maintain a just culture where everyone is empowered to contribute to HS&EP objectives.
- f. We take reasonable care of the health and safety of ourselves and others who may be affected by our acts or omissions at work, we protect the environment and we co-operate with arrangements that are in place to enable us to discharge the duties placed on us.

#### GOVERNANCE

3. The Defence Board is to receive information on HS&EP matters at each meeting, is to discuss issues arising and is to review an Annual HS&EP Assurance Report submitted by the Permanent Under Secretary (PUS).

4. As the Department's most senior official for HS&EP matters, PUS is to ensure that effective management arrangements are in place to achieve compliance with this Policy Statement, which may be amplified as appropriate, drawing on advice as necessary across

---

<sup>19</sup> I wish to be notified, in writing by the responsible Senior Duty Holder, of any fatality which is potentially safety-related as soon as possible.



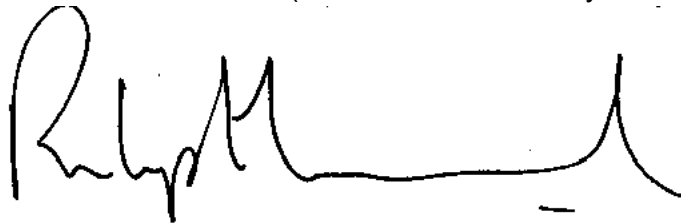
the Department. PUS is to include HS&EP performance in the Department's Holding to Account process.

5. Each Top Level Budget (TLB) Holder or Trading Fund Agency (TFA) Chief Executive is to be the Senior Duty Holder (SDH) for the safety of defence activities conducted in his/her area of responsibility (AoR) in addition to his/her wider HS&EP responsibilities. If an SDH considers that a risk from a defence activity cannot be mitigated so that it is ALARP, he/she is to refer it to me. Each TLB Holder or TFA Chief Executive is to set down and implement HS&EP management arrangements for activities in his/her AoR and ensure that commanding officers and managers to whom he/she may delegate HS&EP authority are competent and have adequate resources at their disposal.

6. Any commanding officer or manager who wishes to change organisational arrangements or resources is to ensure that, before being implemented, the proposed change is properly assessed and demonstrated not to be detrimental to HS&EP and that implementation is subsequently suitably managed.

7. There is to be organisational separation between those who conduct defence activities and those who provide regulation, so that the latter are independent whilst being part of the Department. The Director General Military Aviation Authority and the Director, Defence Safety & Environment Authority are to provide for the regulation of HS&EP in Defence where this is an MOD responsibility (for example as part of the arrangements identified at para 2d above). Defence regulators are to have appropriate powers to enforce their regulations.

8. The detailed organisation and arrangements that amplify this Policy Statement are to be set out in JSP815 (Defence Health, Safety & Environmental Protection).



Rt Hon Philip Hammond

Secretary of State for Defence

June 2013

**LIST OF MAINTENANCE MANAGEMENT ORGANISATIONS AND AREAS OF RESPONSIBILITY**

<b>MMO</b>	<b>Areas Of Responsibility</b>
<b>Regional Prime Contracts</b>	
Carillion-Enterprise	West Midlands, Yorkshire and the Humber, North East & North West England and the whole of Wales.
PRiDE	Berkshire, Buckinghamshire, Hampshire, Kent, Oxfordshire, Sussex, Surrey and Greater London.
Debut	Cornwall, Devon, Dorset, Somerset, Avon, Gloucestershire, Wiltshire and South Hampshire
Babcock-DynCore	Derbyshire, Lincolnshire, Leicestershire, Norfolk, Cambridgeshire, Northamptonshire, Bedfordshire, Suffolk, Essex, Hertfordshire, Nottinghamshire and Rutland.
Turner Facilities Management	Scotland, and CRE Airfields (see Appendix D)
<b>PFI/PPP</b>	
These sites will be notified as and when they are transferred into MOD managment	

**JSP 375 Volume 2 Contents List**

<http://www.mod.uk/DefenceInternet/AboutDefence/CorporatePublications/HealthandSafetyPublications/JSP375/Jsp375HealthAndSafetyHandbookVolume2.htm>

- [Leaflet 1 PDF \[56.7 KB\]](#) Emergency and Disaster Planning Strategy
- [Leaflet 2 DOC \[25.0 KB\]](#) Occupational Health Services (WITHDRAWN APR 07)
- [Leaflet 3 PDF \[87.6 KB\]](#) Safety Arrangements on MoD Premises (Under Review)
- [Leaflet 4 PDF \[751.9 KB\]](#) Manual Handling
- [Leaflet 5 PDF \[750.3 KB\]](#) Substances Hazardous to Health (Under Review)
- [Leaflet 6 DOC \[25.0 KB\]](#) Noise at Work (TEMPORARILY SUSPENDED)
- [Leaflet 7 PDF \[54.0 KB\]](#) Working at Heights (revised MAR 07- Under Review 2009)
- [Leaflet 8 PDF \[49.9 KB\]](#) The Purchase and Safe Use of Work Equipment
- [Leaflet 9 PDF \[47.7 KB\]](#) Lifting Operations and Lifting Equipment
- [Leaflet 10 PDF \[114.1 KB\]](#) Work in Confined Spaces
- [Leaflet 11 PDF \[88.0 KB\]](#) Safety in Military Training and Exercises
- [Leaflet 12 PDF \[71.4 KB\]](#) Safety when working with Electricity and Electrical Equipment
- [Leaflet 13 PDF \[81.0 KB\]](#) Management of Personal Protective Equipment
- [Leaflet 14 PDF \[100.6 KB\]](#) Accident / Incident Investigation
- [Leaflet 15 PDF \[68.1 KB\]](#) Driving Vehicles and Industrial Equipment
- [Leaflet 16 PDF \[15.6 KB\]](#) Site Closure Procedures (Under Review 2009)
- [Leaflet 17 PDF \[30.7 KB\]](#) Office Safety
- [Leaflet 18 PDF \[83.8 KB\]](#) Permit to Work (Under Review 2009)
- [Leaflet 19 PDF \[442.5 KB\]](#) Cooling Towers and the Control of Legionella (Revised Sept 08 - replaces versions dated June 08)
- [Leaflet 20 PDF \[178.5 KB\]](#) Health and Safety in Construction and the Management of Construction on the MOD Estate (Revised Sept 08 - replaces version dated Dec 07)
- [Leaflet 21 PDF \[203.3 KB\]](#) Conducting Health and Safety Inspections of the Workplace (Revised Sept 08)
- [Leaflet 22 PDF \[4.5 KB\]](#) Safety in the Use of Electromagnetic Radiation
- [Leaflet 23 PDF \[61.7 KB\]](#) Site Risk Assessment
- [Leaflet 24 PDF \[134.4 KB\]](#) Working with Display Screen Equipment
- [Leaflet 25 PDF \[89.9 KB\]](#) Stress at Work
- [Leaflet 26 PDF \[36.6 KB\]](#) Lone Working (Under Review 2009)
- [Leaflet 27 PDF \[127.6 KB\]](#) First Aid at Work (Revised: Jan 08)
- [Leaflet 28 PDF \[129.1 KB\]](#) Workplace Health Safety and Welfare
- [Leaflet 29 PDF \[76 KB\]](#) MOD Diving Safety Policy (Revised Oct 07)
- [Leaflet 30 PDF \[162.4 KB\]](#) Safe use of Pressure Equipment and Systems
- [Leaflet 31 PDF \[64.8 KB\]](#) Blood Borne Viruses (Previously HIV and AIDS)
- [Leaflet 32 PDF \[33.1 KB\]](#) Health and Safety on Multi-Occupier Sites (Under Review 2009)
- [Leaflet 33 PDF \[202.2 KB\]](#) Safety in Excavation (REVISED Nov 07)
- [Leaflet 33 - Annex A, Statement of known hazards DOC \[242.0 KB\]](#)
- [Leaflet 33 - Annex B, Permit to dig DOC \[97.0 KB\]](#)
- [Leaflet 34 PDF \[359.0 KB\]](#) 4C System: The Management of Visiting Workers and Contractors (REVISED Apr 09 - replaced version dated Sep 08 07)
- [Leaflet 35 PDF \[36.3 KB\]](#) The Health and Safety of Young Persons
- [Leaflet 36 PDF \[46.0 KB\]](#) New and Expectant Mothers at Work (Under Review Mar 08)
- [Leaflet 37 PDF \[46.6 KB\]](#) Radiation Protection (Ionising) and Radioactive Waste Disposal (Revised Jan 08)
- [Leaflet 38 DOC \[25.0 KB\]](#) Vibration at Work (TEMPORARILY SUSPENDED)
- [Leaflet 39 PDF \[274.3 KB\]](#) Health & Safety Risk Assessments (REVISED 2008)

- [Leaflet 40 PDF \[125.9 KB\]](#) Asbestos Prohibitions (Leaflet 40 CANCELLED the information incorporated into Leaflet 54 Asbestos Management )
- [Leaflet 41 PDF \[42.1 KB\]](#) Home Working (Under Review Feb 08)
- [Leaflet 42 PDF \[45.0 KB\]](#) Protection of Persons Using Compressed Air - RPE
- [Leaflet 43 PDF \[103.5 KB\]](#) The Management of Health and Safety at Work
- [Leaflet 44 \(Alternative Information\)](#) Safety Signs - WITHDRAWN (Nov 07)
- [Leaflet 45 PDF \[54.0 KB\]](#) Contractor Selection
- [Leaflet 46 PDF \[47.8 KB\]](#) Notifying and Recording of Accidents, Injuries, Diseases and Dangerous Occurrences: Procedures
- [Leaflet 47 PDF \[232.3 KB\]](#) Health and Safety Responsibilities and Duties of MOD employees (Under Review Oct 08)
- [Leaflet 48 PDF \[57.0 KB\]](#) Reporting of MOD Accidents and Incidents to the HSE
- [Leaflet 49 PDF \[28.5 KB\]](#) Respiratory Protective Equipment
- [Leaflet 50 PDF \[164.2 KB\]](#) Smoke-Free Premises and Vehicles (REVISED May 09 - Replaces version dated Oct 08)
- [Leaflet 51 PDF \[40.8 KB\]](#) Control of Abrasive Wheels
- [Leaflet 52 PDF \[56.9 KB\]](#) Work Related Upper Limb Disorder
- [Leaflet 53 DOC \[25.0 KB\]](#) Working Time Regulations (WITHDRAWN MAR 07)
- [Leaflet 54 PDF \[52.5 KB\]](#) Management of Asbestos in non-domestic premises (Under Review 2009)
- [Leaflet 55 PDF \[26.2 KB\]](#) Retention of Records
- [Leaflet 56 PDF \[51.1 KB\]](#) Dangerous Substances and Explosive Atmospheres
- [Leaflet 57 PDF \[129.5 KB\]](#) Safety at Public Events on MOD Property and Elsewhere (Under Review Oct 08)
- [Leaflet 58 PDF \[54 MB\]](#) Managing Safety and Organisational Change (Nov 06)
- [Leaflet 59 PDF \[136.6 KB\]](#)
- [Leaflet 60 DF \[54.1 KB\]](#) Selling Into Wider Markets (under Review Jan 08)
- [Leaflet 61 PDF \[61.2 KB\]](#) Common Law Compensation (Under Review Oct 08)

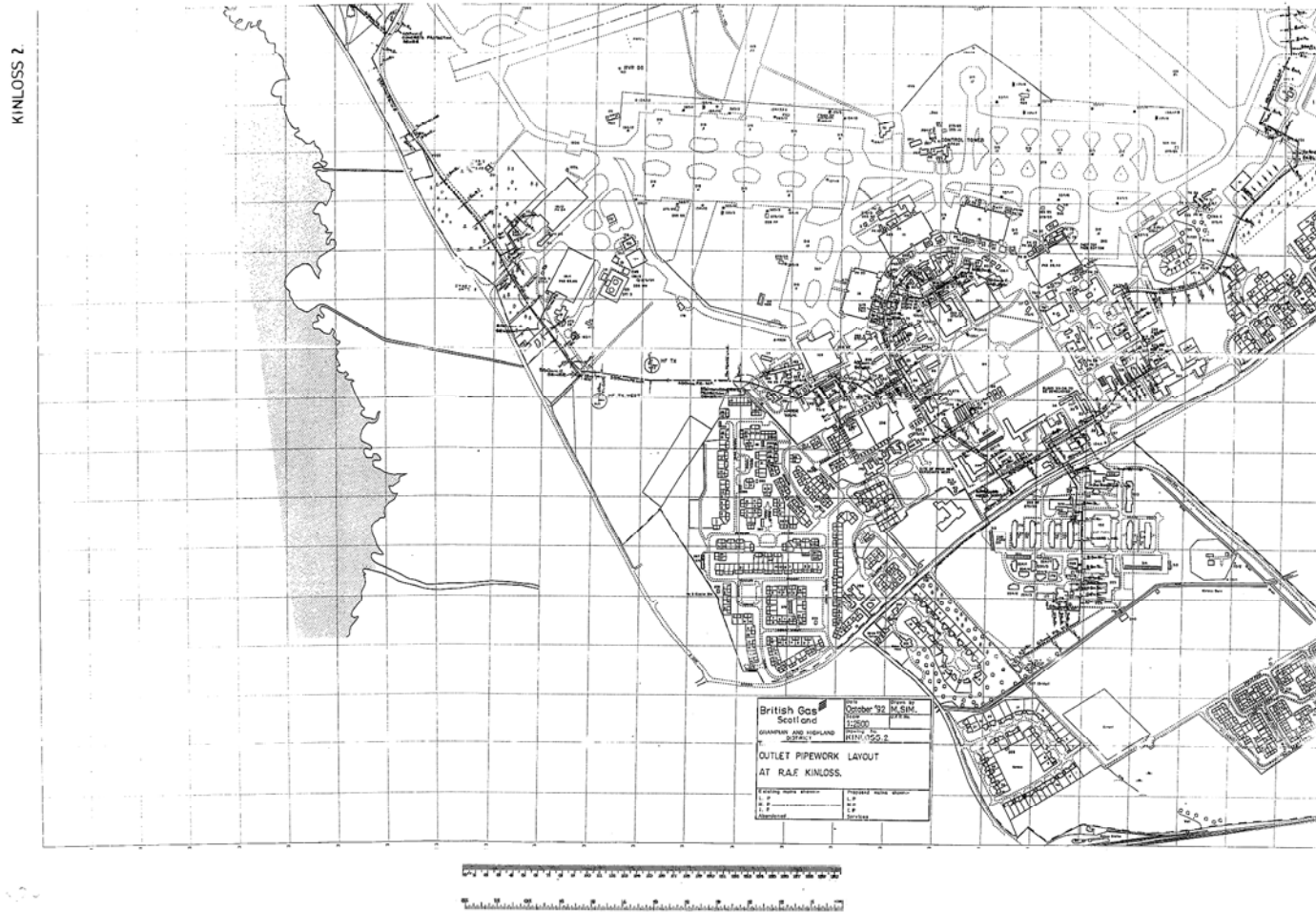
Note: JSP 375 Vol 2 is currently undergoing a complete review, the latest versions of the JSP leaflets can be down loaded from:

<http://www.mod.uk/DefenceInternet/AboutDefence/CorporatePublications/HealthandSafetyPublications/JSP375/Jsp375HealthAndSafetyHandbookVolume2.htm>

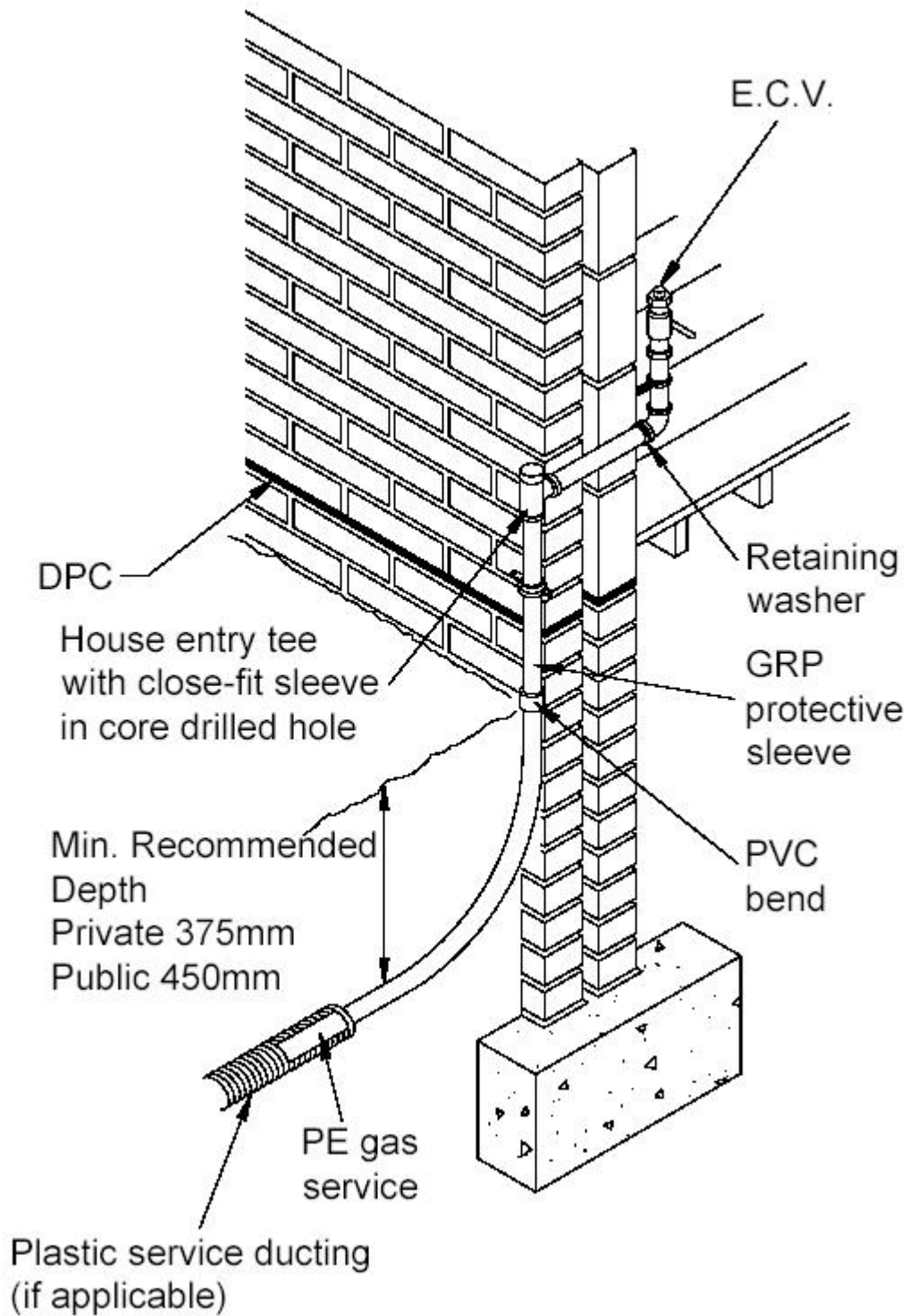


**APPENDIX D**


SCHEMATIC OF A TYPICAL MOD NETWORK

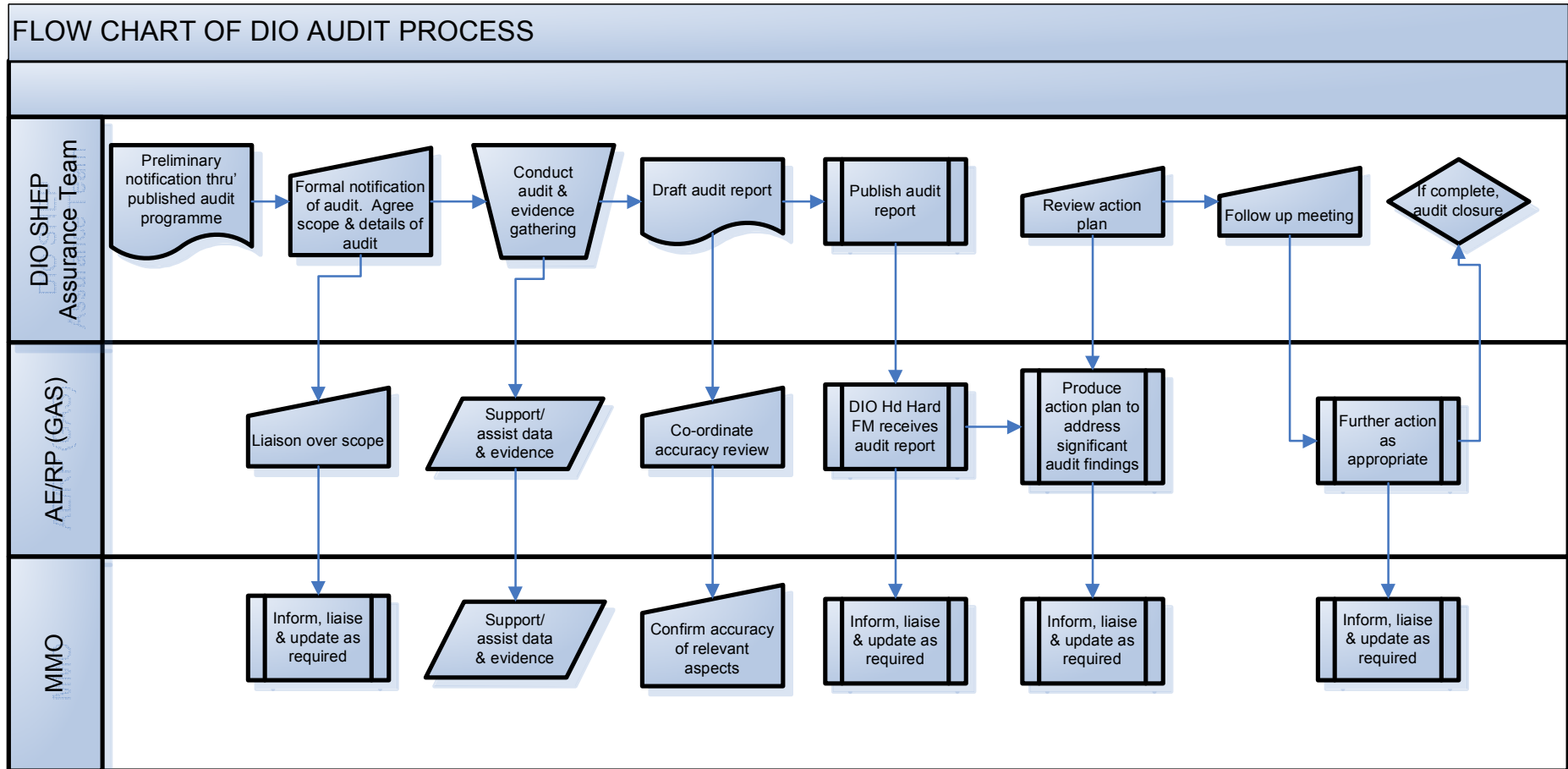


TYPICAL DOMESTIC ENTRY DETAIL





FLOW CHART OF AUDIT PROCESS



## MOD ESTATES DISTRIBUTION SYSTEM DETAILS

Example of details for each MOD network. (This will be provided separately in a spreadsheet which is being developed. First iteration due mid Nov 11)

Network Description	Steel Risers			Underground PE Pipe Length in Metres										
	25 mm	32 mm	100 mm	35mm	54mm	63mm	80mm	90mm	125mm	150mm	180mm	250mm	315mm	350mm
RAF Brize Norton				140	420			900			150	750		900
RAF Alconbury				809		1988		1614	1954		1763	743		
Middle Wallop	65	25	760	335	160	20	70	70			840			
<b>Total</b>	<b>65</b>	<b>25</b>	<b>760</b>	<b>1284</b>	<b>580</b>	<b>2008</b>	<b>70</b>	<b>2584</b>	<b>1954</b>		<b>2753</b>	<b>1493</b>		<b>900</b>

## **APPENDIX K - SITE SPECIFIC INFORMATION**

This appendix contains those elements of the Gas Safety Case which are specific to a particular establishment and are to be completed for each MOD Establishment which has a gas distribution network to which the GSMR 1996 applies.

All sites to which the GSMR apply are required to complete the following annexes. A copy of the GSMP Parts A & B is to be retained on site with a soft copy forwarded to CESO DIO at DIO Sutton Coldfield and lodged on the DIO IT networked

1. GSMP Section A which covers the requirements of the Gas Installation and Use Regulations
2. GSMP Section B which covers the requirements of the Gas Safety Management regulations  
Included within the GSMP Part B for each site
  - a. Safety Management Organisation and Arrangements insert a copy of the
    - DE Safety Directive statement and
    - MMO Safety Policy Statement
  - b. Establishment layout and schematic diagram of gas distribution network (all drawings are kept and maintained on site by the MMO)
  - c. Schematic diagram of individual networks both medium and low pressure clearly identifying the interface between the EGDN and MOD networks
4. Organisation Chart showing lines of communication between Establishment, DIO & MMO
5. Flow chart of MMO assurance process
6. General description of MMO operations relating to the establishment
  - a. Information relating to the length of the pipework in the network for both medium and low pressure systems
  - b. Typical quantities of gas transported in the network



**Defence  
Infrastructure  
Organisation**

## **Gas Safety Management Plan (Section A)**

**Produced to meet the requirements of the  
Gas Safety (Installation and Use) Regulations**

**(Gas Safety Management Plan (Section B) covers the requirements  
of the Gas Safety (Management) Regulations)**



**Defence  
Infrastructure  
Organisation**

## **Gas Safety Management Plan (Section B)**

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

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

**DE AND MMO H&S POLICY AND ORGANISATION AND ARRANGEMENTS FOR THE  
MANAGEMENT OF GAS NETWORKS**

Copy of the H&S policy statements of the DIO(or other MOD managing organisation) and Establishment MMO. Copies will be found on site.

**ANNEX 4**

**ESTABLISHMENT LAYOUT AND SCHEMATIC DIAGRAM OF GAS DISTRIBUTION NETWORK**

Schematic diagrams of individual networks both medium and low pressure clearly identifying location of the interface between EGDN & MOD networks. Copy in GSMP. All network drawings are on kept in e format and on site and available through the MMO/RP (Gas)

**ANNEX 5**

**GENERAL DESCRIPTION OF THE MMO OPERATIONS<sup>20</sup>**

The following section provides a summary description of the operation for each gas network in terms of;

- a. the purpose of the pipeline network;
- b. pressure at which the pipeline is designed to operate and the supply pressure from SGN;
- c. total length of the different types of pipeline that make up the network;
- d. volumes of gas likely to be conveyed;
- e. capacity constraints of pipeline networks.

Under the MOD contract MMO operates the gas supply systems located at {establishment name},. The gas network is used to transport gas from the EGDN supply system via Individual System Exit Points (ISEP) to the consumers emergency control valve. EGDN supply the MOD gas networks from an Intermediate Pressure (IP) system via boundary governor/meter installations, the locations of which are shown in APPENDIX C. Gas pressure in the MOD systems varies across the network as follows

<b>MOD Supply System</b>	<b>Operating Pressure Range</b>	<b>Supply Pressure from EGDN Network</b>
Medium Pressure (MP) Distribution System	Between 75 mbarg and up to 2 barg	

A description of the plant and premises used to transport the gas within the networks is given in Section 3 of this Safety Case.

***MOD Establishments Distribution Networks***

The MOD establishments gas distribution system consists of approximately {insert} kilometres of distribution pipelines as detailed in Table 2.2 below. Gas is transported to around {insert number } consumers.

<b>MOD Distribution Network</b>	<b>Length of MP Distribution System Pipelines (km)</b>	<b>Length of LP Distribution System Pipelines (km)</b>	<b>Total Length of Pipeline (km)</b>
Details will be provided in separate spread sheet			

**Table 2.2 – Length of Pipework in MOD Establishments Distribution Network**

<sup>20</sup> This data will be collected at each site and entered into their site specific GSMP Part B. A summary of this information will be entered onto a spreadsheet which will be held centrally within DIO HO



A mixture of building types and usage are supplied. The principal categories for buildings using gas are:

- Hangers (heated storage)
- Offices
- Barracks
- Workshops
- Educational facilities
- Mess buildings
- Catering premises
- Families accommodation

These networks are owned by MOD and operated and maintained by MMO.

### {Establishment Name}

The network consists of a single system which supplies some xxx consumers. The layout of the network is shown in APPENDIX xx. The pipework in the network is designed to operate at MP, with operating pressures not exceeding 2 barg. The likely volumes of gas conveyed in the network are given in Table 2.3.

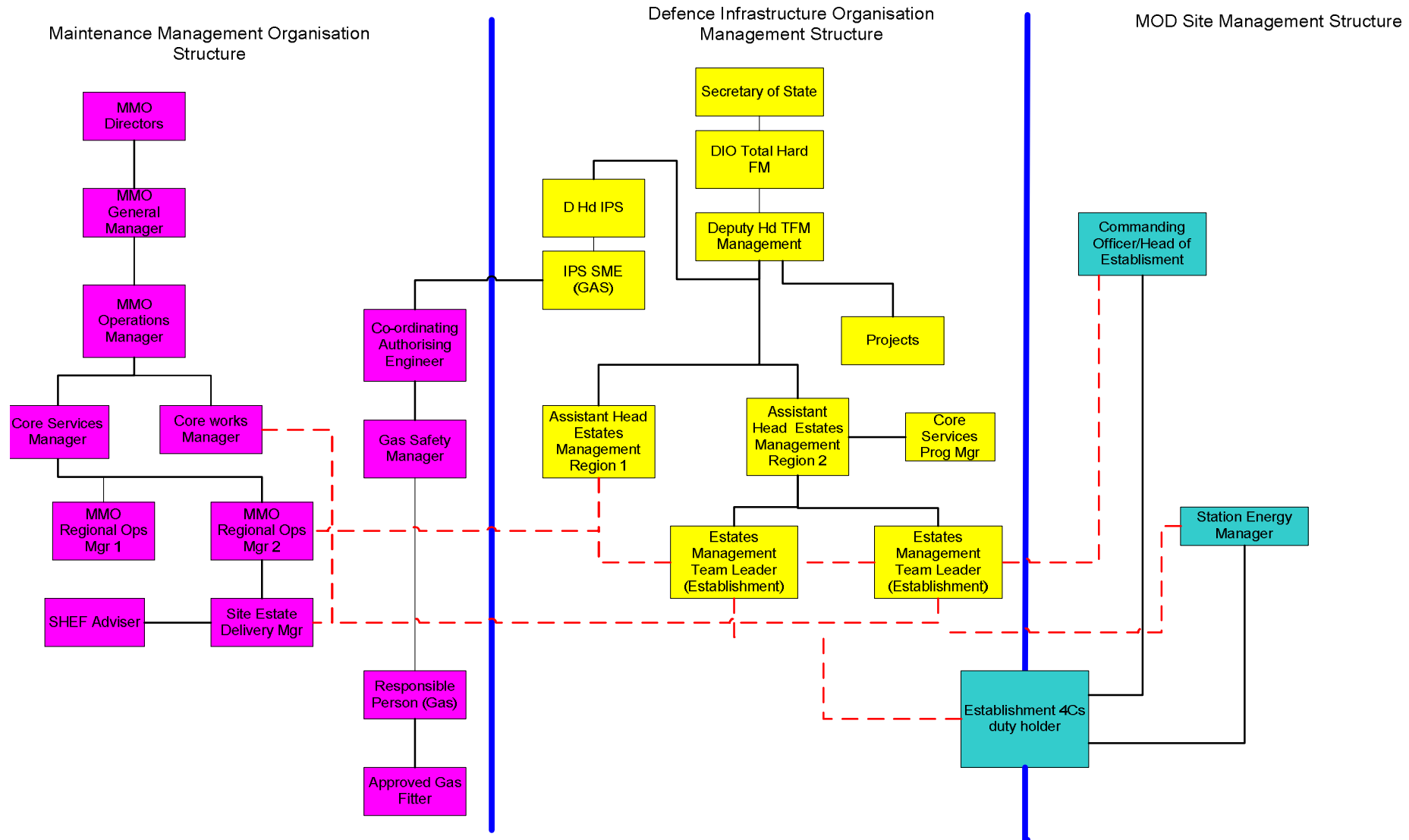
The network capacity constraints are determined by the governor and bulk meter installation at the EGDN supply interface (see APPENDIX B) details of which are also given in Table 2.3.

Network Description	Address	Gas Usage	Gas Volume Likely to be Conveyed (std m <sup>3</sup> /hr)	Capacity Constraints on System (std m <sup>3</sup> /hr)
establishment MP		Hangers Offices Barracks Mess Buildings	1640	Bulk Gas Meter 3960

**Table 2.3 – Typical Quantities of Gas Likely to be Conveyed in the Network  
Forecast 1 in 20 Peak Day Firm Demand**

There are no interruptible consumers on the gas network.

GSMR RELATED MOD/DIO/MMO HEALTH & SAFETY ORGANISATIONAL CHART EXTRACT



## **APPENDIX K**

### **ANNEX 7**

#### **FLOW CHART OF MMO ASSURANCE PROCESS**

Will be provided by the MMO and contained within the GSMP Part B