

***Recommendations on Transmission and  
Distribution Practice  
IGE/TD/4 Edition 4 (with Amendments - November 2013)  
Communication 1725***

***PE and steel gas services and service  
pipework***



Founded 1863  
Royal Charter 1929  
Patron: Her Majesty the Queen

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## CONTENTS

<b>SECTION</b>	<b>PAGE</b>
I Introduction	1
S Scope	4
R References	
• R1 Legislation	6
• R1.1 Acts	6
• R1.2 Regulations and Orders	6
• R2 European Legislation	7
• R3 HSE ACoPs and Guidance	7
• R4 Institution of Gas Engineers and Managers (IGEM)	8
• R5 British Standards	10
• R6 Other standards	10
• R7 Advantica Technology Specifications	11
• R8 Gas industry standards	11
• R9 Other publications	12
G Glossary, acronyms, abbreviations, symbols, subscripts, units and conversion factors	
• G1 Glossary	13
• G2 Acronyms and abbreviations	16
• G3 Symbols	17
• G4 Subscripts	18
• G5 Units	18
• G6 Conversion factors	18
<b>PART 1 : GENERAL (ALL MOP AND ALL DIAMETERS)</b>	<b>19</b>
P1.1 Competency, quality assurance and integrity of a service	19
• P1.1.1 Competency	19
• P1.1.2 Quality assurance	19
• P1.1.3 Integrity of a service	19
P1.2 Legal considerations	20
• P1.2.1 General	20
• P1.2.1.1 European Community (EC) legislation	20
• P1.2.1.2 National and local legislation	20
• P1.2.1.3 Building or engineering work	20
• P1.2.1.4 Health and safety law	20
• P1.2.1.5 Environmental protection	20
• P1.2.1.6 Land rights and easements	21
• P1.2.1.7 Rivers and canals	21
• P1.2.1.8 Railway land	21
• P1.2.1.9 Deposits of waste	21
• P1.2.1.10 Control of noise	22
• P1.2.2 Legal considerations in Great Britain	22
• P1.2.2.1 Gas Act	22
• P1.2.2.2 Pipelines Act, as amended	22

	• P1.2.2.3	New Roads and Street Works Act (NRSWA)	22
	• P1.2.2.4	Town and Country Planning Act	22
	• P1.2.2.5	Health and Safety at Work etc. Act (HSWA)	23
	• P1.2.2.6	Management of Health and Safety at Work Regulations (MHSWR)	23
	• P1.2.2.7	Pipelines Safety Regulations (PSR)	23
	• P1.2.2.8	Pressure Systems Safety Regulations (PSSR)	23
	• P1.2.2.9	Gas Safety (Installation and Use) Regulations (GS(I&U)R)	23
	• P1.2.2.10	Construction (Design and Management) Regulations (CDM)	24
	• P1.2.2.11	Forestry Act and Hedgerows Regulations	24
	• P1.2.2.12	Environment Act	24
	• P1.2.2.13	Control of Pollution Act (COPA), etc.	25
	• P1.2.2.14	Dangerous Substances and Explosive Atmospheres Regulations (DSEAR)	26
P1.3	Design		27
	• P1.3.1	Design process	27
	• P1.3.2	Demand	28
	• P1.3.3	Pressure	29
	• P1.3.3.1	General	29
	• P1.3.3.2	Source pressure	29
	• P1.3.3.3	Pressure at the outlet of an ECV	29
	• P1.3.3.4	Pressure drop	29
	• P1.3.3.5	Changes in flow rates	30
	• P1.3.4	Velocity	30
	• P1.3.5	Service sizing and flow analysis	30
	• P1.3.6	Flow analysis systems	31
	• P1.3.7	Routing and service termination	32
	• P1.3.8	Selection of materials and components	33
	• P1.3.8.1	General	33
	• P1.3.8.2	Steel	34
	• P1.3.8.3	PE	34
	• P1.3.9	Electrical insulation joints	36
	• P1.3.10	Cathodic protection (CP) and insulation	36
	• P1.3.11	Risk assessment	37
	• P1.3.11.1	General	37
	• P1.3.11.2	Interference damage	37
	• P1.3.11.3	Prevention of gas entering buildings	38
	• P1.3.12	Proximity to properties	38
	• P1.3.13	Water crossings	38
P1.4	Site activities		38
	• P1.4.1	Safety management	38
	• P1.4.1.1	General	38
	• P1.4.1.2	Construction	40
	• P1.4.1.3	Works of a non-routine nature	40
	• P1.4.2	Quality Control	40
	• P1.4.3	Materials	41
	• P1.4.3.1	General	41
	• P1.4.3.2	Construction	41
	• P1.4.4	Resource planning	41
	• P1.4.5	Safety and protection of excavations	42

●	P1.4.6	Storage and handling on site	42
●	P1.4.7	Excavation	42
●	P1.4.7.1	Care of other services and safety of operatives	42
●	P1.4.7.2	Trial holes	43
●	P1.4.7.3	Site precautions	43
●	P1.4.7.4	Adverse conditions	43
●	P1.4.7.5	Preparation of trenches	44
●	P1.4.7.6	Support of excavations	44
●	P1.4.7.7	Excavated material	44
P1.5	Construction		45
●	P1.5.1	General	45
●	P1.5.2	Site survey	45
●	P1.5.3	Pre-construction considerations	45
●	P1.5.4	Depth of cover and ability to locate in the future	46
●	P1.5.5	Pipe laying without trenching	46
●	P1.5.6	Pipe laying by open cut techniques	47
●	P1.5.7	PE service construction	47
●	P1.5.7.1	General	47
●	P1.5.7.2	Insertion using PE pipe in a pre-laid duct	48
●	P1.5.7.3	Insertion using PE pipe in a carrier – general	48
●	P1.5.7.4	Dead insertion using PE pipe in a carrier	49
●	P1.5.7.5	Live insertion using PE pipe in a carrier	49
●	P1.5.8	Jointing of PE pipe systems	50
●	P1.5.8.1	General	50
●	P1.5.8.2	Fusion jointing procedures and equipment	50
●	P1.5.8.3	Mechanical jointing procedures and equipment	50
●	P1.5.9	Steel service construction	51
●	P1.5.9.1	General	51
●	P1.5.9.2	Welding procedures and equipment	51
●	P1.5.9.3	Mechanical jointing	52
●	P1.5.9.4	Pipe coating and wrapping	52
●	P1.5.9.5	Corrosion prevention	53
●	P1.5.10	Syphons, dip pipes and dip pipe collars	53
●	P1.5.11	Service isolation valve (SIV)	53
●	P1.5.12	Standpipes and valves	53
●	P1.5.13	Inlet isolation valve (IIV)	54
●	P1.5.14	Anchorage	54
●	P1.5.15	Reinstatement	54
P1.6	Service entry and termination		55
●	P1.6.1	General	55
●	P1.6.2	Provision of an ECV	57
●	P1.6.3	Meter installation	58
P1.7	Pressure testing, commissioning and de-commissioning		59
●	P1.7.1	General	59
●	P1.7.2	Test method and test medium	59
●	P1.7.3	Test pressures	60
●	P1.7.3.1	Strength tests	60
●	P1.7.3.2	Tightness tests	60
●	P1.7.4	Test criteria	60

● P1.7.5	Safety	61
● P1.7.6	Leak detection	61
● P1.7.7	Test records	62
● P1.7.8	Commissioning and temporary de-commissioning	62
● P1.7.9	Permanent de-commissioning	63
● P1.7.9.1	General	63
● P1.7.9.2	Taking a service or section of a service out of commission	63
● P1.7.9.3	Records of permanently de-commissioned services left in-situ	63
P1.8	Alterations and connections to live services	64
● P1.8.1	General	64
● P1.8.2	Planning	64
● P1.8.3	Safety	64
● P1.8.3.1	General	64
● P1.8.3.2	Anchorage	65
● P1.8.4	Methods of isolation	65
● P1.8.5	Preparation for cut-out operations	66
● P1.8.5.1	Excavation and working area	66
● P1.8.5.2	Installation of flow-stopping equipment	66
● P1.8.5.3	Preparation for cutting of pipe	67
● P1.8.5.4	Precautions when welding steel pipe	67
● P1.8.6	The cut-out operation	68
● P1.8.6.1	Isolation of section	68
● P1.8.6.2	Cutting and removal of a section of pipe	69
● P1.8.6.3	Re-connecting pipework	69
● P1.8.6.4	Withdrawal or release of stopping-off equipment	70
● P1.8.6.5	Testing	70
● P1.8.6.6	Removal of supports	70
● P1.8.7	Under-pressure connections	70
P1.9	Operation and maintenance	72
● P1.9.1	General	72
● P1.9.2	Management	72
● P1.9.3	Safety	73
● P1.9.3.1	Emergency contacts	73
● P1.9.3.2	Permit to work system	73
● P1.9.3.3	Inspection and maintenance	73
● P1.9.3.4	Electrical continuity	74
● P1.9.4	Operational pressure limits	74
● P1.9.5	Maintenance philosophies	74
● P1.9.6	Breakdown maintenance	75
● P1.9.6.1	General	75
● P1.9.6.2	Safety precautions	76
● P1.9.6.3	Temporary repairs	76
● P1.9.6.4	Methods of internal joint repair	76
● P1.9.6.5	Methods of external joint repair	76
● P1.9.6.6	Service renewal	77
● P1.9.6.7	Service isolation	77
● P1.9.6.8	Repairs to steel services	78
● P1.9.6.9	Repairs to PE services	79

P1.10	Records	80
	• P1.10.1 General	80
	• P1.10.2 Design records	80
	• P1.10.3 Map-based records	80
	• P1.10.4 Alpha-numeric records	81
	• P1.10.5 Operation and maintenance records	81
	• P1.10.6 Plant and equipment records	81
	• P1.10.7 Digital records	82
	• P1.10.8 Availability of records	82
	• P1.10.9 Records updating	82
<b>PART 2 (MOP ≤ 2 bar and Ø ≤ 63 mm)</b>		<b>83</b>
P2.3	Design	83
	• P2.3.4 Velocity	83
	• P2.3.5 Service sizing and flow analysis	83
	• P2.3.7 Routing and service termination	84
	• P2.3.12 Proximity to properties	84
P2.5	Construction	85
	• P2.5.11 Excavation	85
P2.6	Service entry and termination	85
	• P2.6.1 General	85
	• P2.6.2 Provision of an ECV	86
P2.7	Pressure testing, commissioning and de-commissioning	86
	• P2.7.1 General	86
P2.8	Alterations and connections to live services	87
	• P2.8.1 General	87
	• P2.8.4 Methods of isolation	87
P2.9	Operation and maintenance	87
	• P2.9.1 Performance of an SEFV, where installed	87
	• P2.9.2 Accessibility of the SIV	87
<b>PART 3 (2 bar &lt; MOP ≤ 7 bar or MOP ≤ 2 bar and Ø &gt; 63 mm)</b>		<b>88</b>
P3.1	Competency, quality assurance and integrity of a service	88
	• P3.1.2 Quality assurance	88
	• P3.1.3 Integrity of a service	88
P3.2	Legal considerations	90
	• P3.2.2 Legal considerations in Great Britain	90
P3.3	Design	92
	• P3.3.2 Demand	92
	• P3.3.4 Velocity	92
	• P3.3.5 Service sizing and flow analysis	92
	• P3.3.7 Routing and service termination	92

	● P3.3.8 Selection of materials and components	93
	● P3.3.12 Proximity to properties	95
	● P3.3.14 Impact protection	96
	● P3.3.15 Sleeving	98
	● P3.3.16 Pressure regulating installations (PRIs)	98
	● P3.3.17 Pigging	98
P3.5	Construction	98
	● P3.5.11 Excavation	98
	● P3.5.16 Jointing, coating, wrapping and corrosion prevention for steel pipe systems	98
	● P3.5.23 Marker posts	98
	● P3.5.24 Warning tape	98
	● P3.5.25 Records	98
P3.6	Service entry and termination	99
	● P3.6.1 General	99
	● P3.6.2 Provision of an ECV	99
P3.7	Pressure testing, commissioning and de-commissioning	99
	● P3.7.1 General	99
	● P3.7.2 Safety	99
	● P3.7.5 Commissioning and de-commissioning	100
	● P3.7.7 Pneumatic testing	100
	● P3.7.8 Hydrostatic strength testing	100
P3.8	Alterations and connections to live services	101
	● P3.8.1 General	102
	● P3.8.2 Planning	102
	● P3.8.3 Safety	102
	● P3.8.4 Methods of isolation	102
	● P3.8.5 Preparation for cut-out operations	103
P3.9	Operation and maintenance	104
	● P3.9.2 Management	104
	● P3.9.4 Operational pressure limits	104
	● P3.9.7 Preventative maintenance	106
	● P3.9.8 Planned maintenance	106
P3.10	Records	112
	● P3.10.1 Construction records	112
	<b>PART 4 (MOP &gt; 7 bar)</b>	<b>113</b>
P4.1	Competency, quality assurance and integrity of a service	113
P4.2	Legal considerations	113
P4.3	Design	113
	● P4.3.2 Demand	113
	● P4.3.4 Velocity	113



	● P4.3.5 Service sizing and flow analysis	113
	● P4.3.7 Routing	114
	● P4.3.8 Selection of materials and components	114
	● P4.3.12 Proximity to properties	114
	● P4.3.14 Impact protection	115
	● P4.3.15 Sleeving	115
	● P4.3.16 PRIs	115
	● P4.3.17 Strategic valves	115
	● P4.3.18 Pigging	115
P4.5	Construction	115
	● P4.5.11 Excavation	115
	● P4.5.16 Jointing, coating, wrapping and corrosion prevention of steel pipe systems	115
	● P4.5.23 Marker posts	115
	● P4.5.24 Warning tape	115
	● P4.5.25 Records	115
P4.6	Service entry and termination	116
	● P4.6.1 General	116
	● P4.6.2 Provision of an ECV	116
P4.7	Pressure testing, commissioning and de-commissioning	116
	● P4.7.1 General	116
P4.8	Alterations and connections to live services	116
	● P4.8.1 General	116
	● P4.8.2 Planning	116
	● P4.8.3 Safety	116
	● P4.8.4 Methods of isolation	116
	● P5.8.5 Preparation for cut-out operations	116
P4.9	Operation and maintenance	117

## **APPENDIX**

1	Pressure decay tests	118
2	Creep effects	121
3	Examples of pressure test certificates	122
4	Compressibility of Natural Gas	124
5	Properties of LPG	127
6	Typical service installations	128
7	Positioning ECVs	131

**FIGURE**

1	Relative pressure levels	3
2	Electrical insulation joints and bonding. Pipe diameter $\leq 25$ mm	36
3	Example of live service insertion (external)	49
4	Typical above ground entry – PE service	56
5	Typical above floor level entry – steel service	57
6	Typical below floor level entry – steel service	57
7	Typical label for an ECV	58
8	Permissible arrangement of a service (MOP > 75 mbar)	84
9	Service integrity network	89
10	Commonly used forms of impact protection for services	97
11	Compressibility (Z) for “Mean Bacton Gas”	125
12	Compressibility ratio (ZB/Z) for “Mean Bacton Gas”	126

**TABLE**

1	Sources of required data	28
2	Efficiency factor (e) for butt welded PE when internal joint beads are not removed	31
3	Typical properties of PE pipe	34
4	Operating pressure limits for grades of PE for the ambient temperature range 0° to 20°C	35
5	Minimum bend radii of PE pipe	47
6	Minimum duct sizes for PE pipe insertion	48
7	Carrier and pipe sizes for domestic live service insertion	49
8	Maximum tapping diameter in a metallic pipe less than 200 mm (8 inch) nominal bore	67
9	Minimum proximity of pipes parallel to normally – occupied buildings (Natural Gas). Part 2	85
10	ECV specification. Part 2	86
11	Commonly used steel grades, SMYS and SMTS. Part 3	93
12	Minimum wall thickness of steel linepipe. Part 3	94
13	Minimum proximity to normally – occupied buildings (Natural Gas). Part 3	96
14	Minimum depth of cover. Part 3	98

15	ECV specification. Part 3	99
16	Minimum proximity to normally – occupied buildings (Natural Gas). Part 4	114
17	Minimum depth of cover. Part 4	115
18	ECV specification. Part 4	116
19	Typical Natural Gas compositions	124
20	Compressibility (Z) for “Mean Bacton Gas”	125
21	Z <sub>FACTOR</sub> for “Mean Bacton Gas”	126

## INTRODUCTION

I.1 Recommendations on steel gas service pipes were first published by the Institution of Gas Engineers (IGE) in 1959 as Communication 563.

Recommendations superseding Communication 563 were published progressively in 1973 (Communication 879) as IGE/TD/4 Edition 1, in 1981 as Edition 2 (Communication 1180), and in 1994 as Edition 3 to include polyethylene (PE) and extraction and insertion renewal techniques (Communication 1562).

IGE/TD/4 Edition 4 supersedes IGE/TD/4 Edition 3 which is obsolete.

I.2 These Recommendations have been drafted by a Panel appointed by the Institution of Gas Engineers and Managers' (IGEM's) Gas Transmission and Distribution Committee, subsequently approved by that Committee and published by the authority of the Council of the Institution.

I.3 These Recommendations apply to the design, construction, inspection, testing, operation, maintenance and alteration of gas services and service pipework designed after the date of publication. Hence, all new services and service pipework and diversions, as well as modifications of existing services and service pipework, should be in accordance with this edition.

Existing services and service pipework that comply with IGE/TD/4 Editions 1, 2 or 3 may continue to be operated in accordance with the respective edition although surveillance, inspection and maintenance may be undertaken in accordance with Edition 4. Operating conditions are not allowed to pass outside the limits of Edition 1, 2 or 3, as appropriate, unless the new conditions are consistent with Edition 4.

I.4 Significant amendments have been made in this edition compared to Edition 3, including revised proximity details, the deletion of copper from the scope, and the extension of the scope to maximum operating pressure (MOP) not exceeding 16 bar and pipe diameter up to the largest commercially available.

It has been recognised that these extensions to the scope add a significant number of recommendations that are addressed solely for the relatively few larger/higher pressure services and service pipework. Consequently, the Recommendations are now provided in four parts, as follows:

- Part 1 General. These recommendations apply to all services and service pipework, irrespective of size and pressure (limited to MOP of 16 bar).
- Part 2 These recommendations are additional to those contained in Part 1 for services and service pipework of diameter  $\leq 63$  mm **and** MOP  $\leq 2$  bar, for example those supplying domestic and small commercial and industrial premises
- Part 3 These recommendations are additional to those contained in Part 1 and are either additional to, or replace, those in Part 2 for services and service pipework of diameter  $> 63$  mm **and** MOP  $\leq 7$  bar or of diameter  $\leq 63$  mm **and** MOP  $> 2$  bar
- Part 4 These recommendations are additional to those contained in IGE/TD/3 for services and service pipework of MOP  $> 7$  bar  $\leq 16$  bar.

I.5 Engineering recommendations are set out in accordance with current knowledge.

These Recommendations are intended to protect from possible hazards members of the public and those who work with gas services and service pipework as well as the environment, so far as is reasonably practicable. They are also intended to ensure that the security of gas supply is maintained.

I.6 These Recommendations are applicable to conditions normally encountered in the provision of gas through services and service pipework. Additional design considerations may be necessary where unusual conditions are encountered, for example unstable ground (including the possibility of mining subsidence), mechanical or sonic vibrations, long self-supported spans, massive special attachments or thermal forces other than seasonal.

I.7 These Recommendations make use of the terms “should” and “must”. Notwithstanding Sub-Section I.8:

- the term “must” identifies a requirement by law in Great Britain (GB) at the time of publication
- the term “should” prescribes an action which, it is intended, will be complied with unless, after prior consideration, deviation is considered to be acceptable.

Such terms may have different meanings when used in legislation, or Health and Safety Executive (HSE) Approved Codes of Practice (AcoPs) or Guidance, and reference needs to be made to such statutory legislation or official guidance for information on legal obligations.

I.8 These Recommendations do not attempt to make the use of any method or specification obligatory against the judgement of the responsible engineer. Where new and better techniques are developed and proved, they should be adopted without waiting for modification of these Recommendations. Amendments to these Recommendations will be issued when necessary and their publication will be announced in the Journal of the Institution and other publications as appropriate.

I.9 The primary responsibility for compliance with legal duties rests with the employer. The fact that certain employees, for example “responsible engineers”, are allowed to exercise their professional judgement does not allow employers to abrogate their primary responsibilities. Employers must:

- (a) have done everything to ensure, so far as is reasonably practicable, that there are no better protective measures that can be taken other than relying on the exercise of professional judgement by “responsible engineers”.
- (b) have done everything to ensure, so far as is reasonably practicable, that “responsible engineers” have the skills, training, experience and personal qualities necessary for the proper exercise of professional judgement.
- (c) have systems and procedures in place to ensure that the exercise of professional judgement by “responsible engineers” is subject to appropriate monitoring and review.
- (d) not require “responsible engineers” to undertake tasks which would necessitate the exercise of professional judgement that is not within their competence. There should be written procedures defining the extent to which “responsible engineers” can exercise their professional judgement. When “responsible engineers” are asked to undertake tasks which deviate from this, they should refer the matter for higher review.

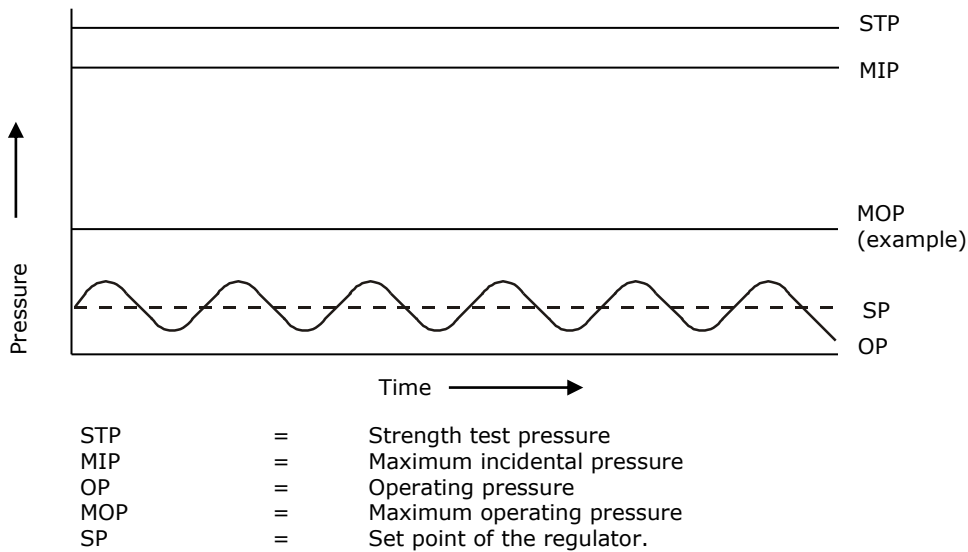
I.10 Materials and the techniques of construction and operation are constantly being improved and it is intended to keep these Recommendations under review.

I.11 It is now widely accepted that the majority of accidents in industry generally are in some measure attributable to human as well as technical factors. People who initiated actions that caused or contributed to accidents might have acted in a more appropriate manner to prevent them.

To assist in the control of risk and proper management of these human factors, due cognisance should be taken of HS(G)48.

I.12 Requests for interpretation of these Recommendations in relation to matters within their scope, but not precisely covered by the current text, may be addressed to Technical Services, IGEN, Charnwood Wing, Ashby Road, Loughborough, Leicestershire, LE11 3GH; email [technical@igem.org.uk](mailto:technical@igem.org.uk) and will be submitted to the relevant Committee for consideration and advice, but in the context that the final responsibility is that of the engineer concerned. If any advice is given by or on behalf of IGEN, this does not imply acceptance of any liability for the consequences and does not relieve the responsible engineer of any of his or her obligations.

I.13 IGEN has adopted the terms and definitions used in European standards for pressure i.e. MOP, operating pressure (OP), maximum incidental pressure (MIP) and strength test pressure (STP). Figure 1 explains these terms. Further guidance can be found in IGE/TD/13.



Note: This is extracted from IGE/TD/13 and simplified for the purposes of IGE/TD/4.

**FIGURE 1 - RELATIVE PRESSURE LEVELS**

Amendments are shown throughout the document by ► ◀.

## SCOPE

S.1 These Recommendations address Natural Gas services and Liquefied Petroleum Gas (LPG) service pipework. For the purposes of these Recommendations, the term "service" is used throughout and any recommendations unique for LPG are identified by reference to LPG and not to "service pipework".

S.2 These Recommendations cover the design, construction, inspection, testing, operation, maintenance and alteration of steel and PE services for the provision of 2<sup>nd</sup> and 3<sup>rd</sup> family gases as defined in BS EN 437; mainly dry Natural Gas (predominantly methane) with or without odourisation and LPG.

*Note 1: For services within flats and other multi-dwelling buildings, further procedures for Natural Gas are given in IGE/G/5. Many of the principles therein will equally apply for LPG.*

*Note 2: For services within framed buildings, further procedures for Natural Gas are given in IGE/UP/7. Many of the principles therein will equally apply for LPG.*

*Note 3: For services to emergency control valves (ECVs) for permanently moored boats, caravans, holiday homes and residential park homes, further procedures are given in IGE/UP/8.*

S.3 For Natural Gas, these Recommendations cover services (see S7) of MOP not exceeding 10 bar for PE and not exceeding 16 bar for steel and at a temperature between 0°C and 20°C inclusive for PE and -25°C to 40°C inclusive for steel. For LPG, the Recommendations limit MOP to 2 bar in the vapour phase.

*Note 1: Consistent with European Standards, IGEM now defines pressure regimes by specific pressure limits, rather than using such terms as "high, intermediate, medium and low pressure". In general, it also strives to avoid using the terms "main" and "service" but, in the United Kingdom (UK), these are terms still in common use.*

*In most cases, this will mean IGE/TD/4 will apply between the "distribution main" (Natural Gas) or "bulk storage tank" (LPG) as covered by IGE/TD/3, and the ECV denoting the end of the gas Network.*

*Note 2: These Recommendations do not specifically cover the construction of services of other materials.*

*Note 3: Standard polyvinyl chloride (PVC) is brittle and can fail catastrophically and is a non-preferred material not covered by these Recommendations.*

*Note 4: When any new material, for example ductile PVC, cross linked polyethylene (PEX), reinforced thermoplastic pipe materials, etc. is to be used, a structured methodology is required to establish that its use is acceptable. Engineers may consider alternatives brought about by advances in technology and proven concepts (see I.8).*

*Note 5: IGE/TD/4 Edition 3 related the pressure range to maximum permissible operating pressure and not MOP as in Edition 4 (there may be a difference).*

*Note 6: IGE/TD/3 does not address entry into buildings. Where a pipe entering a building would, normally, be defined as a distribution main, IGE/TD/4 is considered to contain appropriate recommendations for the entry of a main into a building. For entry into flats and other multi-dwelling buildings, IGE/G/5 additionally applies for Natural Gas (see also Note 1 to S.2).*

*Note 7: Steel pipelines for Natural Gas transmission of 16 bar < MOP ≤ 100 bar are covered in IGE/TD/1 and steel and PE pipelines for Natural Gas and LPG distribution (MOP ≤ 16 bar) are covered in IGE/TD/3.*

*Note 8: Natural Gas pressure regulating installations (PRIs) for Networks are covered in IGE/TD/13 and for meter installations in BS 6400-1, BS 6400-2, IGE/GM/6 and IGE/GM/8 respectively. Domestic LPG meter installations are covered in BS 6400-3.*

S.4 These Recommendations are presented in four parts:

- Part 1 General. All gas services
- Part 2 Services of MOP ≤ 2 bar and diameter ≤ 63 mm

- Part 3
  - Services of  $2 \text{ bar} < \text{MOP} \leq 7 \text{ bar}$  and any pipe diameter
  - Services of  $\text{MOP} \leq 2 \text{ bar}$  and pipe diameter  $> 63 \text{ mm}$
- Part 4 Services of  $7 \text{ bar} < \text{MOP} \leq 16 \text{ bar}$ .

S.5 All references to gas pressure are gauge pressure, unless otherwise stated.

S.6 Italicised text is informative and does not represent formal Recommendations.

S.7 Appendices are informative and do not represent formal Recommendations unless specifically referenced in the main sections via the prescriptive terms “should” or “must”.

S.8 Recent gas safety legislation refers to the terms “gas service” (Natural Gas), “gas service pipework” (LPG), and “distribution mains”. The difference between a “service” and a “main” frequently gives rise to diverse interpretation. In recognition of the existence of such legislation, these Recommendations continue to refer to a “service”. However, in engineering terms, IGEM does not (in general) recognise any relevance in differences in definitions for a length of pipeline serving a primary meter. Hence, for the purposes of these Recommendations, IGEM makes no reference to, for example, a pipeline being termed a “service” or a “main” dependent upon how many primary meters it serves. It is recognised that the interpretation of the definitions may be relevant in terms of “non-gas safety legislation” and pipeline operators will need to establish the status of such a pipeline in terms of other legislation.