INSTITUTION OF GAS ENGINEERS AND MANAGERS IGEM/TSP/25/074

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IGEM/TD/101 Edition 4
Communication TBC

Adoption of pipe systems by a GT – management of GT and UIP activities

DRAFT FOR COMMENT

1 This draft Standard IGEM/TD/101 Edition 4 has been prepared by a panel chaired by Steph Marvin.

2 This Draft for Comment is presented to Industry for comments which are required by 14 May 2025, and in accordance with the attached Reply Form.

3 This is a draft document and should not be regarded or used as a fully approved and published Standard. It is anticipated that amendments will be made prior to publication.

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Andrew Richardson
IGEM
IGEM House
26-28 High Street
Kegworth
Derbyshire, DE74 2DA
Tel: 01509 678150
Email: andrew@igem.org.uk

Attached is the Draft for Comment of IGEM/TD/101 Edition 4 – "Adoption of pipe systems by a GT - Management of GT and UIP activities" and the associated comment form.

We wish to make it as easy as possible for those of you representing industry bodies to issue the draft to your Members. You can either forward this email with attachment complete or forward it without the attachment and invite them to visit our website via https://www.igem.org.uk/resource-library-search.html?information_type=out-for-comment where the Draft and Comment Form are posted.

Organisations to which this Draft has been circulated:

Organisation	Representative
BSI/GSE/33	MALCOLM HOWE
CADENT	HILARY BUXTON
CMAP	JOHN HEYBURN
DNO COLLAB FORUM	HILARY BUXTON
EI	MARK SCANLON
ENA	JAMES EARL
GIRSAP	KEITH JOHNSTON
GISG	BOB MURRY
HSE	THOMAS JAMES
HSENI	SEAN KEOGH
LLOYDS REGISTER	KARL MILLER
RETAIL ENERGY CODE (REC)	ERIC FOWLER
NGN	IAIN FOSTER
OFGEM	VIC TUFFEN
SGN	DOMINIC CUMMINGS
LIQUID GAS UK	RICHARD HAKEE,
WALES & WEST UTILITIES	GRANT ROGERS
YPN	HARRIET GUIRY
IGEM	
COUNCIL & SPC	LESLEY ECOB
MEMB C	CLAIRE McHUGH
AUDIT & RISK C	MICHAEL BLAKE
TCC	CHRIS GORMAN
GTDC + ACTIVE PANELS	HILARY BUXTON
GMC + ACTIVE PANELS	DAVID HARPER
HYDROGEN C	KEITH OWEN

LNGC	MARK JOHNSON
GIUSPWG	DAVE BENDLE
Industrial Affiliates	KEVIN RANSOM

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IGEM House
26-28 High Street
Kegworth
Derbyshire, DE74 2DA
Tel: 0844 375 4436
Email: general@igem.org.uk

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SECTION 1 : INTRODUCTION

1.1 IGEM/TD/101 Edition 4 supersedes IGEM/TD/101 Edition 3 (Communication 1802), which is obsolete.

1.2 This Standard has been drafted by an Institution of Gas Engineers and Managers (IGEM) Panel, appointed by IGEM's Gas Transmission and Distribution Committee, and has been approved by IGEM's Technical Co-ordinating Committee on behalf of the Council of IGEM.

1.3 This Standard sets down the minimum management requirements for the laying of newly constructed Natural Gas mains and services (pipelines) including associated installations, for example a pressure regulating installation (PRI), having a maximum operating pressure (MOP) of 7 bar, for adoption by a gas transporter (GT). Their use is intended primarily for Great Britain (GB), although the principles may be applied in other countries.

Note: The laying of such pipelines is, generally, carried out by a utility infrastructure provider (UIP).

1.4 IGE/TD/101 Edition 3 was drafted by an industry working group comprising the Association of Independent Public Gas Transporters (now the Independent Networks Association (INA), Transco (now Cadent) and the Institution of Gas Engineers (now Institution of Gas Engineers and Managers).

1.5 This Edition 4 reflects changes in practices and terminology, and has been prepared by IGEM's Panel comprising representatives of Gas Distribution Networks (GDN's), INA, independent gas transporters, Society of British Gas Industries (SBGI for UIPs) and consultants with input from the Gas Industry Registration Scheme Advisory Panel (GIRSAP).

1.6 This Standard is intended to supplement, but not amend, abridge or override, any legislation or technical standards referenced herein.

Note: This means, for example, the Pipelines Safety Regulations (PSR) take precedence over this Standard in the unlikely event of contradiction or difference.

1.7 This Standard makes use of the terms "should", "shall" and "must" when prescribing particular requirements. Notwithstanding clause 1.9:

- the term "should" prescribes a requirement which, it is intended, will be complied with unless, after prior consideration, deviation is considered to be acceptable
- the term "shall" prescribes a requirement which, it is intended, will be complied with in full and without deviation
- the term "must" identifies a requirement by law in GB at the time of publication.

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.

1.8 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:

- 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"
- 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
- have systems and procedures in place to ensure that the exercise of professional judgment by "responsible engineers" is subject to appropriate monitoring and review
- not require "responsible engineers" to undertake tasks which would necessitate the exercise of professional judgement that is beyond their competence. There should be written procedures defining the extent to which "responsible engineers" can exercise their judgment. When "responsible engineers" are asked to undertake tasks that deviate from this, they should refer the matter for higher review.

1.9 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 in the sense that actions by people initiated or contributed to the accidents, or people might have acted better to avert them.

It is therefore necessary to give proper consideration to the management of these human factors and the control of risk. To assist in this, it is recommended that due cognisance be taken of HSG48 and IGEM/G/7 Risk Assessment Techniques.

1.10 Notwithstanding clause 1.6, this Standard does 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 to this Standard. Amendments to this Standard will be issued when necessary, and their publication will be announced in the Journal of IGEM and other publications as appropriate.

1.11 Requests for interpretation of this Standard in relation to matters within its scope, but not precisely covered by the current text, should be addressed to Technical Services, IGEM, 26-28 High Street, Kegworth, Derbyshire, DE74 2DA, email: 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 IGEM, this does not relieve the responsible engineer of any of his or her obligations.

1.12 This Standard was published in {TBC}.

SECTION 2 : SCOPE

2.1 This Standard applies to pipelines (including associated installations) intended to convey Natural Gas, a 2nd family gas as defined by BS EN 437 Gases, Test pressures and Classification of appliances.

For the purposes of this Standard, the term "pipeline" means a main or a service. Where necessary, the terms "main" and "service" are used.

Pipework whose sole purpose is to serve a premise using above 75,000 therms (2,197,500 kW) per annum. Subject to contractual arrangements for adoption in accordance with section 10 (8) of the Gas Act.

Pipework whose sole purpose is to serve a premise using equal to or below 75,000 therms (2,197,500 kW), will vest as per section 10 (6) of the Gas Act.

2.2 This Standard applies to new pipelines, associated installations and to disconnections and service alteration involving existing services.

Note: There is no intent that the Standard be applied retrospectively.

Historically the scope of this standard applied to exit connections from existing gas networks. However, the principles of this standard may also be applied to pipelines laid for entry connections.

2.3 This Standard applies to pipelines (and associated installations) of MOP not exceeding 7 bar.

2.4 This Standard is intended to ensure that constructed pipelines and associated installations are suitable for adoption by a GT. It addresses the following:

- adoption criteria and process
- overall design (which also involves sufficient information being available to enable subsequent assurance of integrity and safety of all the impacted GT's systems)
- detailed design review for networks (ensuring the submission is compatible with the GT's existing network)
- construction (in accordance with relevant technical standards)
- connections to live gas networks
- variation procedures
- alterations and disconnections
- fitness for purpose of materials and equipment
- PSSR.

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

2.6 Details of all legislation, standards and other publications referenced within this standard are provided in Appendix 2.

Where Standards are quoted, equivalent national and international standards, etc. equally may be appropriate.

2.7 Italicised text is informative and does not represent formal requirements.

2.8 Appendices are informative and do not represent formal requirements unless specifically referenced in the main sections via the prescriptive terms "should", "shall" or "must".

SECTION 3 : LEGISLATION

3.1 GENERAL

3.1.1 The right to lay pipes in private land

Legal rights (known as easements in England and Wales and servitudes in Scotland) need to be obtained in accordance with the procedures outlined and there is no general right to enter onto private land without permission to lay or maintain gas apparatus. Individual GTs have their own procedures for obtaining wayleaves, etc.

3.1.2 Laying pipes in the public highway

Special provisions relate to obtaining rights to lay and maintain gas apparatus in the public highway. There is no general power for a UIP to carry out such work, unless the operator is a licensed GT in which case the rights are vested in the GT by virtue of Schedule 4 to the Gas Act. Otherwise, a licence is required in each case from the relevant street authority. This is the local Highway Authority in England (Roads Authority in Scotland) unless the street/road is privately owned in which case separate arrangements will apply.

Licenses are obtained in England and Wales under NRSWA as modified by the Traffic Management Act and the Transport (Scotland) Act for Scotland. The authority may impose conditions on the grant of such a licence or permission. It is a criminal offence under both Acts to place or maintain apparatus in a street without consent of the street authority. Both Acts contain detailed provisions relating to the giving of notice to the street authority and to the execution of the work and reinstatement of the street.

3.1.3 Planning permission

The laying of gas pipes and associated apparatus is development requiring planning permission under Town and Country Planning legislation. If the operator is a licensed GT, certain provisions exempt the construction of gas infrastructure as "permitted development". These exemptions do not apply to organisations which are not licensed as a GT. Therefore, it would be appropriate for planning permission to be obtained from the local planning authority for each individual project. However, some planning authorities may take the view that permission is not required, but it would be advisable to have this statement recorded in writing before any reliance is placed upon it. If development is carried out without planning permission, it is open to the local planning authority to take enforcement action, the final outcome of which could either be a requirement that the apparatus be removed or a fine being imposed upon the undertaker of the works. The planning authority also has the power to serve a Stop Notice requiring unauthorised work to cease.

3.1.4 Gas Act (as amended)

The construction of a Gas pipeline is an activity which can be undertaken by, or on behalf of a licenced GT.

The Gas Act places an obligation on GTs to develop and maintain an efficient and economical pipeline system for the conveyance of gas.

Section 10 of the Gas Act specifies the duty to connect certain premises.

3.1.5 **Pipelines Act**

This Act (which applies in England, Wales and Scotland) imposes certain notifications and authorisation requirements in respect of the construction of pipelines. In the context of the Act, "pipeline" includes any pipe or system of the pipes (together with associated apparatus) for the conveyance of (among other things) gas. Under the Act, there are two types of pipeline – cross country pipelines (which are pipelines exceeding 16.093 km in length) and local pipelines which are any other type of pipeline. Under Section 2 of the Act, there is an obligation to give notice in the prescribed form to the appropriate Minister not less than 16 weeks in advance of the construction of a local pipeline. Separate provisions apply to cross-country pipelines which require specific construction authorities from the Department for Energy Security and Net Zero (DESNZ).

Under the provisions of the Act, a person proposing to construct a pipeline may apply to the Minister for compulsory purchase powers which would then be subject to special parliamentary procedure.

The Act also gives the operator the power to place pipelines in a street, but only with the consent of the appropriate street authority. These provisions are, therefore, parallel to those in NRSWA and the Transport (Scotland) Act relating to street works licenses.

If works are carried out for the construction of a pipeline without the notification requirements having been met, a criminal offence is committed and, furthermore, the appropriate Minister may take action under the Act to require the works to be removed.

3.1.6 **Construction (Design and Management) Regulations (CDM)**

These Regulations place a duty on clients (including domestic) designers, principal designers, principal contractors, contractors and workers to manage the risks by applying the general principles of prevention, appointing the right people and organisations at the right time, making sure everyone has the information, instruction, training and supervision they need to carry out their jobs in a way that secures Health and Safety.

3.1.7 **New Roads and Street Works Act 1991**

An Act to amend the law relating to roads so as to enable new roads to be provided by new means; to make new provision with respect to street works and, in Scotland, road works; and for connected purposes.

3.1.8 **Pipelines Safety Regulations (PSR)**

PSR apply to any gas pipes laid by a UIP. The GT will require confirmation that the design and construction of the pipe does conform to all aspects of PSR and that notification of its construction has been given to the HSE in accordance with PSR.

3.1.9 **Pressure Systems (Safety) Regulations (PSSR)**

There is a statutory requirement under PSSR for the GT to follow a written scheme of examination for any pipeline and its protection devices in which the pressure exceeds 2 bar above atmospheric pressure in normal operation (see clause 6.3).

3.1.10 **The Street Works Regulations 2002**

These Regulations prescribe the form of records of apparatus placed in streets to be kept by undertakers in accordance with the provisions of Section 79 of the New Roads and Street Works Act 1991.

3.1.11 Gas Safety Management Regulations (GS(M)R) 1996

GS(M)R applies to the conveyance of natural gas (methane) through pipes to domestic and other consumers, the GT is required to operate the network in compliance with an accepted safety case.

SECTION 4 : PIPELINE ADOPTION CRITERIA

4.1 GT Responsibilities

The GT shall make available on request all their UIP procedures relevant to the adoption process, including

- contact details and escalation process
- quality assurance systems
- safety management systems
- method statements.
- technical bulletin and briefings

4.2 UIP Responsibilities

The UIP shall satisfy the following criteria before a GT will consider them for Design and/or Construction of a new network/installation for adoption:

- for companies registered under the Gas Industry Registration Scheme (GIRS), compliance of the UIP organisation in accordance with the requirements of the Gas Industry Guidance document (GIG2)

- for companies not registered under GIRS, the submission of documentation/evidence with any application/tender demonstrating the competency of the company, as specified by the adopting network. The GT will undertake assessment of this documentation/evidence (which shall include a site audit). The documentation/evidence submitted shall include:

  - quality assurance systems
  - safety management systems
  - competency of the Company
  - competency of the individuals
  - method statements.

    Note: This list is not exhaustive.

- compliance with this Standard.

SECTION 5 : ADOPTION PROCESSES

5.1 PURPOSE

This Section defines the overall process to be completed for the design and construction of pipelines, including associated installations, (the system) for adoption by a GT.

There are three adoption models described. Each model also shows the two alternate connection processes i.e. connection by the UIP or by the upstream GT.

5.2 INITIAL PROCESS FOR ADOPTION MODELS

5.2.1 The UIP shall agree with the developer/consumer the details of the requirements for the site.

5.2.2 The UIP shall confirm with the GT the parameters for the design of any service and for any network of mains. An outline checklist of the parameters (normally provided by the adopting GT) should be completed.

5.2.3 An initial design assessment shall be carried out and address the following parameters:

- pressures (see Sub-Section 6.7)
- demand details (see Sub-Section 6.6)
- phasing of demand (see clause 6.6.5)
- further demand requirements (see clause 6.6.6.1)
- location plan (see clause 6.9.1.1)
- assess land ownership rights (see clause 6.9.1.1.1).

5.2.4 On the basis of the design parameters, the demand details for the site shall be calculated. Where the upstream GT publishes a design pressure matrix, this can be used to determine the connection pressure available. Otherwise, the demand details, together with the required plans, shall be sent to the upstream GT as a request for the connection pressures available.

5.2.5 Where required, the upstream GT shall provide information on connection pressures for system extensions and for any services with a pressure drop greater than 2 mbar, together with details of any reinforcement required. The method of connection shall be agreed between the upstream GT, the adopting GT and the UIP.

5.3 SYSTEM TO BE ADOPTED BY THE UPSTREAM GT (see Figure 1)

5.3.1 The UIP, or its contracted GIRS registered design company, should carry out the detailed design, including design assumptions of the point of connection, in accordance with Section 6 and submit the design with any other details that the GT requires, to the GT.

5.3.2 The GT shall validate the system design and ensure the necessary documentation, accreditation and permissions are in place to allow the design to be forwarded for construction.

5.3.3 Acceptance of the GT connection quotation should initiate the GT connection process.

5.3.4 When applicable, the Easement/Servitude shall be submitted to the upstream GT prior to construction. When applicable the UIP shall ensure that all permissions are obtained prior to construction.

Note: Adoption of the apparatus remains at risk until easements/servitudes are in place.

5.3.5 The UIP shall then carry out the system construction and the connection shall be made by the UIP or the GT as agreed.

5.3.6 Following satisfactory construction of the system, a Completion File shall be submitted to the GT. If the UIP carries out the connection, a Certification and/or Completion File, as appropriate, shall be submitted to the GT (see Section 10).

5.3.7 Irrespective of any adoption criteria that had been agreed between the UIP and the GT, responsibility for any part of the network that has been commissioned is immediately vested in the GT.

5.4 SYSTEM TO BE ADOPTED BY A GT OTHER THAN THE UPSTREAM GT – UIP ACTING AS AN AGENT OF THE ADOPTING GT (see Figure 2)

5.4.1 In this model, the UIP should be contractually recognised by the upstream GT as an agent of the adopting GT.

5.4.2 The UIP, or its contracted GIRS registered design company should carry out the detailed design, including design of the point of connection, in accordance with Section 6 and submit the design with any other details that the upstream/adopting GT requires, to the upstream/adopting GT as appropriate.

5.4.3 The adopting GT shall validate the system design and the upstream GT shall validate the connection design if the connection is to be carried out by the UIP.

5.4.4 Acceptance of the upstream GT connection quotation should initiate the upstream GT connection process.

5.4.5 When applicable, the Easement/Servitude shall be submitted to the upstream and/or adopting GT as appropriate, prior to construction.

5.4.6 The UIP shall then carry out the system construction and the connection shall be made by the UIP or the upstream GT as agreed.

5.4.7 Following satisfactory construction of the system, a Completion File shall be submitted to the adopting GT. If the UIP carries out the connection, a Certification and/or Completion File, as appropriate, shall be submitted to the upstream GT.

5.4.8 Irrespective of any adoption criteria that had been agreed between the UIP and the two GTs, responsibility for any part of the system that has been commissioned is immediately vested in the adopting GT and the connection (irrespective of who constructed it) with the upstream GT.

5.5 SYSTEM TO BE ADOPTED BY A GT OTHER THAN THE UPSTREAM GT – UIP NOT ACTING AS AN AGENT OF THE ADOPTING GT (see Figure 3)

5.5.1 In this model, the UIP is not contractually recognised by the upstream GT as an agent of the adopting GT. Therefore, the adopting GT should interface between these two parties.

5.5.2 The UIP, or its contracted GIRS registered design company, should carry out the detailed design, including design of the point of connection, in accordance with Section 6, and submit the design with any other details that the upstream and adopting GT requires, to the upstream and adopting GT as appropriate.

5.5.3 Where the UIP wishes to make the connection, the adopting GT shall submit the design to the upstream GT for design validation and authorisation.

5.5.4 Easement/Servitude shall be submitted to the upstream and/or adopting GT as appropriate, prior to construction.

5.5.5 The adopting GT shall validate the system design.

5.5.6 Acceptance of the upstream GT connection quotation by the adopting GT should initiate the upstream GT connection process.

5.5.7 The UIP will then carry out the system construction and the connection will be made by the UIP or the upstream GT as agreed.

5.5.8 Following satisfactory construction of the system, Completion Files shall be submitted to the appropriate adopting GTs.

Irrespective of any adoption criteria that had been agreed between the UIP and the two GTs, responsibility for any part of the system that has been commissioned is immediately vested in the adopting GT and the connection (irrespective of who constructed it) with the upstream GT.

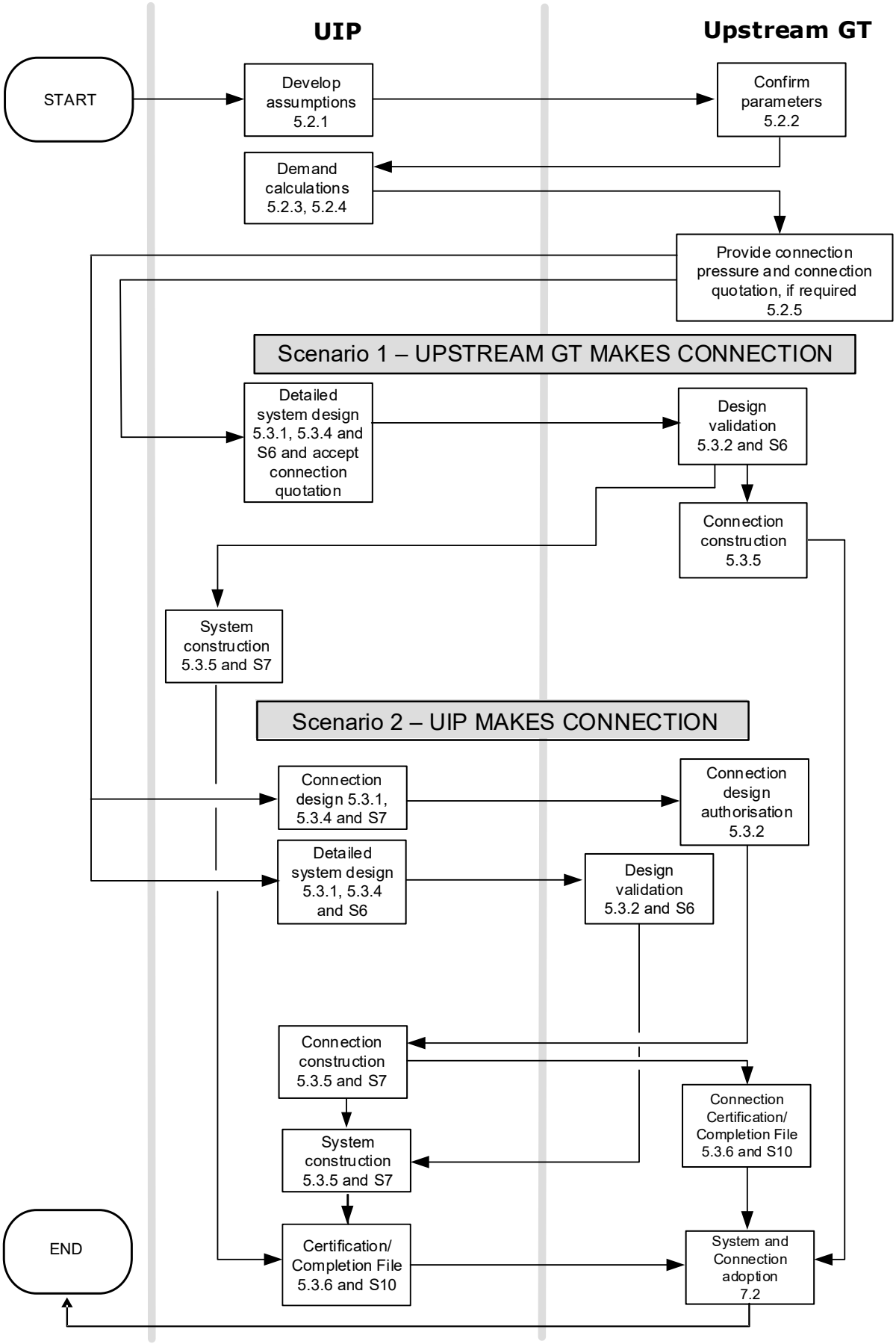


FIGURE 1 - DESIGN, CONSTRUCTION AND ADOPTION PROCESS – SYSTEM TO BE ADOPTED BY THE UPSTREAM GT

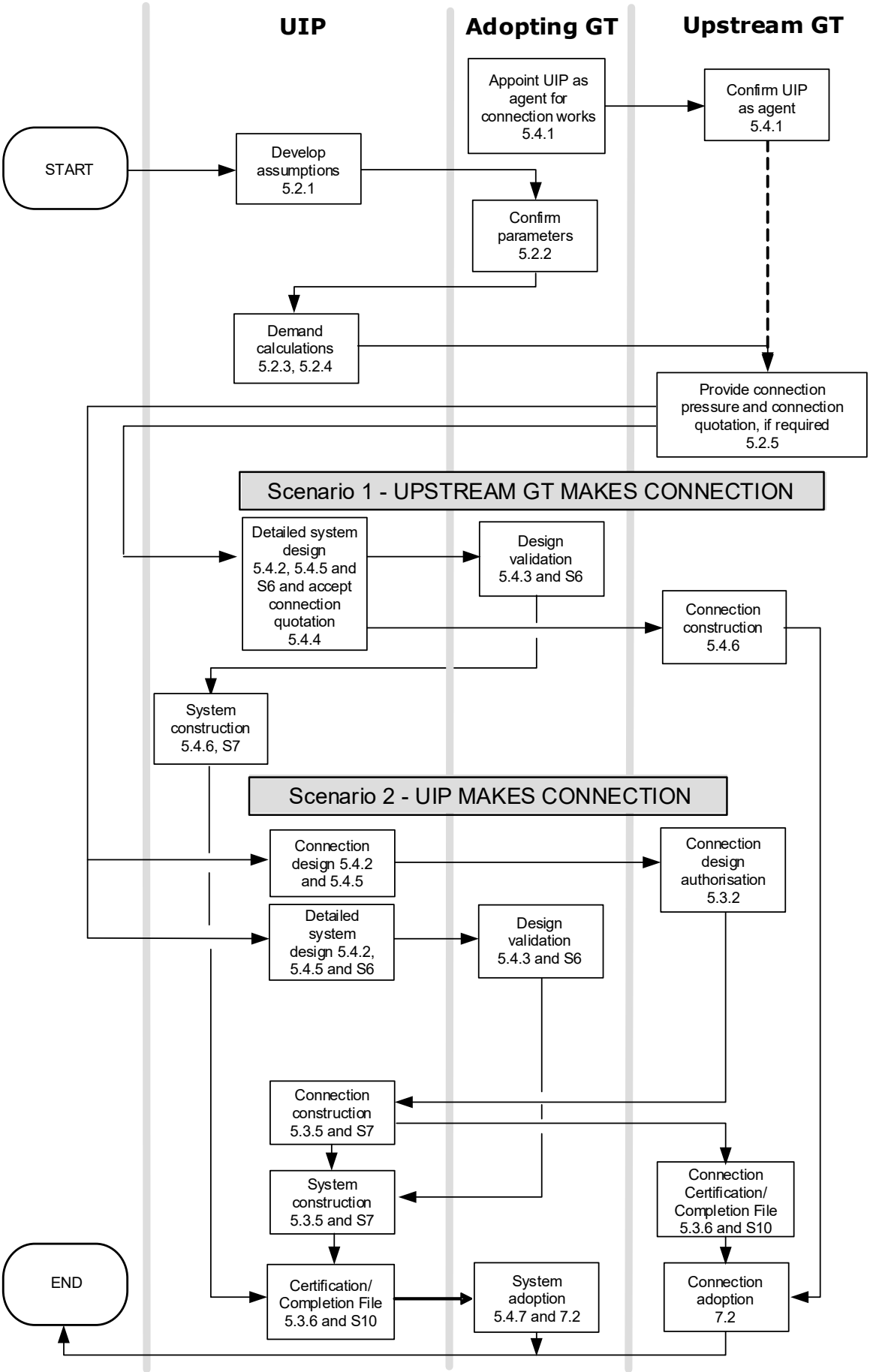


FIGURE 2 - DESIGN CONSTRUCTION AND ADOPTION PROCESS – SYSTEM TO BE ADOPTED BY A GT OTHER THAN THE UPSTREAM GT (UIP ACTING AS AN AGENT OF ADOPTING GT)

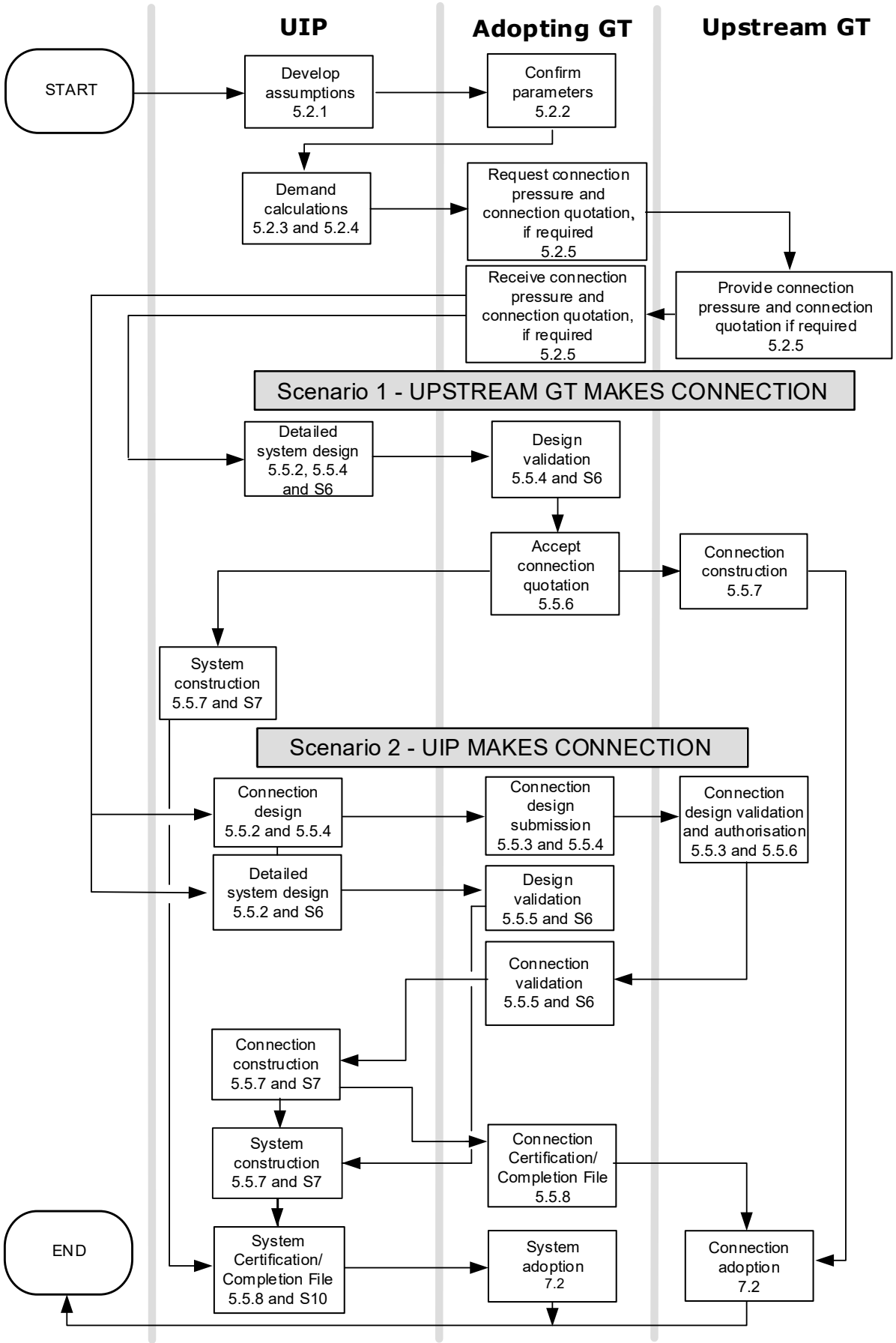


FIGURE 3 - DESIGN, CONSTRUCTION AND ADOPTION PROCESS – SYSTEM TO BE ADOPTED BY A GT OTHER THAN THE UPSTREAM GT (UIP NOT ACTING AS AN AGENT OF THE ADOPTING GT)

SECTION 6 : PLANNING AND DESIGN DEVELOPMENT

6.1 PURPOSE

6.1.1 This Section defines the minimum design requirements for proposed networks designed and constructed by a UIP, for adoption by a GT.

6.2 GENERAL

6.2.1 A design shall be developed that takes into account all relevant factors including:

- existing gas networks and associated pressure tiers
- required pressures and loads
- meter location
- supply route considerations
- GT adoption criteria
- Complex distribution systems, including MOBs
- Consideration to potential connections within 23m
- Identify instances where a deviation from approved standards is required, in line with GTs requirements.

For the initial design, the information required to undertake the design is supplied by the developer and/or shipper and/or consumer. Each GT should take any future development into account when sizing networks, normally with a 10-year horizon as described in IGEM/GL/1. If the plans give any indication of possible future development, the UIP shall discuss this with the GT, the developer or, if necessary, with the Local Authority.

Note 1: For upsizing, each GT has its own commercial procedures in place.

Note 2: Local authority development plans are obtainable via the governments Planning Portal.

6.2.2 Networks shall be planned and designed in accordance with IGEM/GL/1 and IGEM standards listed in A2.3. The peak demand shall be catered for while maintaining sufficient gas pressure at the ECV to enable meters and gas appliances to operate safely.

6.3 PRESSURE SYSTEMS SAFETY REGULATIONS

6.3.1 For systems operating at between 2 and 7 bar the design must be compliant with the requirements of the PSSR, guidance for this is given in IGEM/GL/5.

6.3.2 UIPs shall request the particular requirements of GTs for the management of PSSR. The design shall follow the process under IGEM/GL/5 of recorded Design Approval and Design Appraisal and User acceptance.

6.4 CONNECTION LOCATION

6.4.1 The connection location should be selected to ensure that:

- the engineering risk associated with the connection is minimised
- works can safely be carried out in that area
- adequate pressure and capacity is available from the upstream network.

Note: Location should consider future maintenance requirements for the life of the asset.

6.5 METER/ECV LOCATIONS

6.5.1 The meter position shall be selected such that the service can be installed in accordance with IGEM/TD/4.

6.5.2 Consideration shall be given to the suitability of meter positions to comply with the requirements of IGEM/G/5, BS/6400 and IGEM/GM suite of documents.

6.5.3 Meter and ECV locations shall be identified and marked on to a suitably scaled plan and shall be marked to indicate any special requirements such as ventilation levels.

6.6 DEMAND DETAILS

6.6.1 Details of consumers

6.6.1.1 *Individual premises*

6.6.1.1.1 Details of the peak instantaneous demand required by each consumer shall be provided. Any individual service shall be designed on the basis of supplying this demand.

6.6.1.1.2 For a non-domestic development, the demand shall consist of the peak instantaneous demand (expressed as an hourly rate) required for each unit. In the absence of specific gas demand information, estimates should be made from predicted annual gas demand, floor area or development area.

6.6.1.2 *Multi-premises sites*

6.6.1.2.1 Details of the number of domestic properties, their type, and the assumed AQ for each type shall be in accordance with the latest NEXA values as appropriate before the detailed design is undertaken. The total diversified demand for the site shall be calculated from the property type data and in accordance with IGEM/GL/1.

6.6.1.2.2 For non-domestic multi-premises sites, the peak instantaneous demand (expressed as an hourly rate) and an estimated AQ, for example for schools, halls, shops, etc. incorporated in the development, shall be agreed with the adopting GT and developer and incorporated into the design. A diversity factor shall not be applied.

6.6.2 Non-standard consumption

6.6.2.1 Details shall be provided of any non-standard consumption patterns anticipated within a site, e.g. demands which:

- occur outside the standard heating pattern or
- supply a compressor or similar device (see also IGEM/UP/6 and the Gas Act).

6.6.3 Seasonal demands

The presence and treatment of seasonal demands shall be discussed with the adopting GT prior to the detailed design.

6.6.4 Demand assignment

Sufficient information should be available to determine whether or not the loads quoted at each node are diversified.

6.6.5 **Phasing of demands**

Where a phased development is proposed, design calculations shall demonstrate that the source(s) of supply are capable of sustaining the minimum design conditions throughout the build period (see clause 6.4.1).

6.6.5.1 Each phase should be designed independently, but should be consistent with the overall development.

6.6.6 **Further demand**

6.6.6.1 Adopting GTs will consider further demands which may be fed, at a future date, through the completed site under consideration by the UIP. Where the UIP has knowledge of the existence of further phases of development, these details shall be forwarded to the adopting GT.

6.7 PRESSURES

6.7.1 **Source pressures**

6.7.1.1 The GT shall ensure that they can supply design connection point pressures within their network.

6.7.1.2 Any application for a connection to a relevant main shall be made to the upstream GT, as described in Section 5. The application should include the AQ and the peak demand expressed as defined in IGEM/GL/1. Where available, details of any future demand should be included.

Note: Where a quotation has been requested from the upstream GT, this will include details of the permitted connection points, pressure details, any reinforcement required and related interim pressures, and the cost of connection.

6.7.1.3 Where a source is being taken from a network of MOP exceeding 75 mbar, the UIP shall agree with the adopting GT the design details of the pressure tier(s) intended.

6.7.2 **Specified pressures**

6.7.2.1 Details shall be provided of any specific pressure requirements, together with the reason for the pressure being specified.

Note: An example would be a request for an elevated pressure, when it is important to outline whether it is required to drive the consumer's installation or to reduce pipe sizes.

6.7.2.2 Where an elevated pressure is required, the design calculations shall take this into account.

6.7.3 **Design minimum pressure (DmP)**

6.7.3.1 A new network designed and constructed by a UIP and supplying gas at MOP not exceeding 75 mbar shall be sized to maintain a specified design minimum pressure (DmP) normally at the outlet of the ECV and a consequent minimum pressure to size the main (see IGEM/GL/1).

Note: For networks to be fed at MOP not exceeding 75 mbar directly from the outlet of a PRI, DmP varies between GTs.

6.7.3.2 For a network which will be fed at MOP exceeding 75 mbar, the UIP shall agree with the adopting GT the details of DmP to be used in the detailed design.

6.7.3.3 Where off-peak conditions are more onerous than peak hourly flow, due to the presence of demands with non-standard consumption patterns, the ability of the

system to sustain minimum system requirements shall be demonstrated within the design.

6.8 PRIs

6.8.1 General

Any PRI shall comply with IGEM/TD/13.

6.8.1.1 Any PRI shall be sized to pass the peak demand at design minimum inlet pressure and maximum outlet pressure to ensure that the PRI will not require rebuilding as the load increases on the network, and capacity will not be restricted in the event of a reduction in operating pressure during emergencies.

6.8.1.2 Advice should be sought from the adopting and/or upstream GT regarding the design inlet assumptions to be used.

6.8.1.3 The control accuracy shall be compatible with the expected pressure drop across the supply network, and shall also be acceptable for the minimum proposed load on the PRI. For PRI's on large phased developments, this may require the use of a temporary PRI of capacity and control accuracy to suit the initial load. Reference should be made to the adopting GT where this occurs.

6.8.1.4 The UIP shall consult the GT regarding requirements for standby capacity of any PRI.

6.8.2 Design parameters

6.8.2.1 Refer to the adopting GTs own requirements for the selection of above or below ground PRI installations and the commissioning of such.

6.8.2.2 The following information shall be stated by the UIP for any PRI:

- the flow capacity available at the minimum inlet pressure and the maximum outlet pressure
- the gas velocity at the inlet and outlet flange
- the predicted settings for safety devices, control accuracy and lockup
- description of the principal components together with evidence of compliance with an appropriate standard
- details of any electronic/electrical equipment fitted
- hazardous area classification (see the Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) and IGEM/SR/25)
- The design of the concrete base
- the type of housing, for example "glass reinforced plastic free-standing kiosk", the number of access doors, amount of ventilation and type of explosion relief
- the corrosion protection procedure, for example the surface preparation method and number of coats applied for all components.
- Security and accessibility
- Land rights
- Vehicle impact protection
- Flood risk

6.9 MAINS AND SERVICES ROUTE PLANNING

6.9.1 Defining mains and services

Details shall be shown of which pipes constitute mains and which constitute services within the design of the network. This will be in accordance with IGEM/G/1. The route of the new mains and services will be designed using suitable plans.

6.9.1.1 *Location plan*

6.9.1.1.1 Location plans shall be provided to a suitable scale, for example 1:2500. These should identify the location and boundary of the site and, for multi-premises sites, the site entrance, any approach mains and details of the connection point.

6.9.1.2 *Detailed site plan*

6.9.1.2.1 A detailed site plan shall be provided to a scale between 1:2500 and 1:50.

6.9.1.2.2 For multi-premises developments, detailed information relating to the site layout shall be provided in addition to details of the individual consumer loads. This should include details of any road layout, location of houses/premises, house types and required meter positions.
The plans shall also identify any land owned by third parties and/or any roads and footpaths on the development, which will not be adopted by the local highway authority on completion so that the requirement for Easements/Servitudes may be fully assessed.

6.9.1.3 *Mains layout*

6.9.1.3.1 The route shall be planned in accordance with IGEM/TD/3.

Main laying proposals shall be consistent with the overall development of the network and should, where practicable, allow any property that consequently becomes subject to a right of statutory supply to be connected.

6.9.1.3.2 Within an estate, any main shall be routed taking into account any preferred service strip indicated on the layout plan and minimising road crossings, lengths of services and lengths of the main.

6.9.1.3.3 When planning the route of a main, consideration shall be given to future maintenance.

6.9.1.3.4 Details of all existing mains surrounding and within the site shall be obtained from the relevant GTs and all shown clearly on drawings.

6.9.1.3.5 Care shall be taken when routing any pipeline to a property facing an existing road that contains the main of another GT. Parallel mains should be avoided wherever possible and, if they are proposed, specific guidance should be sought from the GT(s) concerned.

6.9.1.4 *Service Route planning*

6.9.1.4.1 The route shall be planned in accordance with IGEM/TD/4.

6.9.1.5 *Entry into buildings*

6.9.1.5.1 Methods of entry into buildings shall be as given in IGEM/TD/4 and, for buildings containing multiple dwellings, IGEM/G/5.

Design drawings for internal installations should include schematics and/or scale drawings which give adequate information for the construction, access and ventilation requirements.

6.10 MATERIALS

6.10.1 Materials should be selected in accordance with IGEM/TD/3, IGEM/TD/4, IGEM/TD/13 and IGEM/G/5 and shall conform to:

- Gas Industry Standards
- British Standards kitemark
- other fittings as agreed by the GT.

6.11 DESIGN MODELLING

6.11.1 General

6.11.1.1 To ensure that adequate capacity is designed into the new network, design modelling shall be in accordance with IGEM/GL/1 and IGEM/TD/3, IGEM/TD/4, IGEM/TD13 and IGEM/G/5 and using design tools appropriate for the complexity of the network.

6.12 NODES

6.12.1 Details of the maximum allowable distance between nodes and the requirements for individual demands shall be obtained from the adopting GT.

Note: For industrial estates, a node is required for each pipe junction and each service connection.

6.13 PIPE SIZES/LENGTHS

6.13.1 Pipe sizes and lengths shall be identified in either a table or on the plan, including details of pipe diameters and efficiencies.

6.14 DEMAND DATA

6.14.1 Domestic demands shall be diversified as described in IGEM/GL/1.

6.14.2 Any commercial or industrial load to be supplied from the network shall not be included in the diversification calculation.

6.14.3 Any allowance for future demand shall be identified with the adopting GT and allocated as a fixed peak demand at the most appropriate node.

6.15 ALTITUDE

6.15.1 Consideration shall be given to any altitude change see IGEM/GL/1, IGEM/TD/3 or IGEM/TD/4 and IGEM/G/5, as appropriate.

SECTION 7 : DESIGN REVIEW AND VALIDATION

7.1 PURPOSE

This Section provides requirements for the process ensuring that all networks are constructed in accordance with an agreed validated design and for dealing with changes to the validated submission during the construction phase.

7.2 GENERAL

The GT shall advise the UIP of their management process regarding completion files and issue of Adoption Certification. The process should include for each design submission the detailed content requirements and the timings for submission and response.

7.3 DESIGN VALIDATION

The GT shall undertake all checks as necessary to ensure that the submitted design is suitable for adoption and the necessary documentation, accreditation and permissions are in place or in progress to allow the design to be forwarded for construction.

The fully developed design and design drawing, including demand assumptions, sizing and routing shall be submitted to the adopting GT. This will be validated in line with the adopting GT's own policies and procedures.

Note: The GT may request upsizing of sections of the network.

7.3.1 As a minimum, the following information shall be provided to enable validation:

- the demand calculation sheet
- the network plan showing the nodes and the end-user allocation relative to nodes allocation
- a print out of the network analysis results showing the demand data, pipe data, source pressure and predicted pressures
- any design calculations used
- a plan marked including the development with any proposed pipeline and valves, including the diameter of such pipelines
- Design Risk Assessments, as applicable
- any assumptions used when determining the location of the emergency control valve (ECV)
- name and signature (dated) of the designer.

7.3.2 Where MOP of the network exceeds 2 bar, reference shall also be made to IGEM/GL/5.

7.3.3 If there is a major variation to the approved design at any stage of the project, such as amended routing of any pipeline or changes to the estimated peak loads, the network shall be re-analysed and amendments incorporated if necessary. If the changes increase the peak hourly demand at the Connected System Exit Point (CSEP), the available pressure shall be reassessed in conjunction with the upstream GT.

7.3.3.1 Where MOP of the network exceeds 2 bar, reference shall also be made to IGEM/GL/5 when implementing changes.

SECTION 8 : CONSTRUCTION

8.1 PURPOSE

This Section provides requirements for construction to comply with the adoption requirements of GTs.

8.2 VALIDATED DESIGN

The UIP should construct the network in accordance with the validated design, where this is not possible refer to Section 9, Variation Procedure.

8.3 GENERAL

8.3.1 Pre-construction

8.3.1.1 The UIP shall ensure that competent persons, who are to undertake the quality control (QC) or construction of gas pipes and associated plant, have been issued with copies of the project submission, generic method statements and any other relevant information which has been authorised by the relevant GT.

8.4 COMPLIANCE CHECKS

8.4.1 The UIP is responsible for construction works and shall make regular checks to ensure compliance with generic method statements and the validated submission. Regular conformity checks shall also be undertaken by the person responsible for QC. These checks shall be recorded and any non-conformances closed out in a timely manner.

GTs shall make available their technical standards and specific requirements for design, certification and construction.

8.4.1.1 Any authorised variation shall be recorded, together with the action taken to gain authorisation for these changes.

8.5 MANAGEMENT OF COMPETENCY

8.5.1 Construction projects vary greatly in their size and complexity. The UIP shall provide details of the project management structure, with roles, responsibilities and authority levels clearly identified.

UIPs shall manage the competency of personnel in accordance with IGEM/TD/102 and Gas Industry Guidance document GIG 2.

8.5.1.1 *Specialist subcontractors*

Where specialist works are required the UIP shall demonstrate the appointment of suitable specialist subcontractor organisations as described in GIG 2 and particularly with regard but not limited to:

- hot works
- routine/non routine operations
- large diameter branch saddles
- flow stopping
- trenchless technology (refer to IGEM/SR/28).

8.5.1.2 *PSSR*

For projects with operating pressures 2 to 7 bar the UIP shall demonstrate competence to manage:

- the supply, use of specialist materials with certificates of conformance
- the IGEM/GL/5 process
- the higher pressure testing requirements
- the requirement for and Written Schemes of Examination.

8.6 MATERIALS PROCUREMENT, DELIVERY, STORAGE AND HANDLING

8.6.1 Materials shall be procured in line with the validated design.

All materials purchased shall be traceable and conform to an approved standard.

Note: These include, but are not limited to, financial, commercial, quality, health, safety and environmental standards. In addition, GTs/UIPs can verify that the material meets the required specification. This would support the validation process and form part of the QC procedure and materials traceability.

8.6.2 The method of identification of small, buried mains and services and their ducts to BS 4962 is by standardised coding, to minimize danger. Underground ducts in a common trench for conveying gas pipes shall be perforated and coloured yellow. Other specialised ducting shall be identified in the design and as constructed records.

8.6.3 Materials handling and storage should be in accordance with IGEM/G/8 Handling, transport and storage of PE fittings and IGEM/TD/3 Pipelines for gas distribution.

8.7 METHOD STATEMENTS

8.7.1 The UIP shall produce a detailed method statement that covers each area of intended workload. Any method statement shall include detailed procedures to enable GTs to ensure compliance with appropriate construction standards.

8.7.2 The UIP shall confirm what actions will be taken by its personnel, including contractors, in the event of a gas escape or other incident.

Note: Further advice is contained in:

- *HSG47*
- *IGEM/SR/29*
- *IGEM/GL/8.*

8.7.3 If damage is caused to live GT plant or if a smell of gas is detected, the emergency service provider (ESP) shall be contacted immediately on 0800 111 999. Instructions provided by the ESP shall be followed.

8.7.4 Neither a UIP nor its agent shall attempt to carry out repairs to live GT plant without the permission of the GT.

8.8 PROGRAMME OF WORKS

8.8.1 The UIP shall submit a programme of works (whereabouts) to the adopting GT on a weekly basis and for the duration of the work. This shall be provided in advance of commencement of operations to enable the adopting GT to undertake independent site audits.

8.8.2 The programme should include the following minimum criteria:

- GT reference number

- team name/contact number
- team Energy and Utility Skills Register (EUSR) numbers
- site location
- developer name
- work type, for example main/service/connection/meters/PRI
- pipe size
- pressure tier
- New Roads and Street Works Act (NRSWA) notice confirmation
- Safe Control of Operations (SCO) permitry confirmation.

8.8.3 Any alterations to the submitted programme shall be forwarded to the GT as soon as reasonably practicable.

8.9 CONNECTIONS TO THE NETWORK

The GT's requirements for records shall usually be known to UIPs by means of the relevant construction adoption agreement. However, some projects require more detailed consideration and individual GTs should be contacted by the UIP at project commencement to ascertain their Certification File requirements for provision of records prior to the planned connection date. Usually, this will be applicable to projects that:

- are designed for MOP exceeding 2 bar
- involve wayleave agreements, deeds of easement/servitude agreements and/or planning consents
- any variations to that of the validated design (where applicable)
- are for multi-occupancy buildings, where confirmation is needed that satisfactory ventilation of risers, laterals and meter locations has been achieved
- are designed and constructed by a non-GIRS-registered UIP.

Note 1: In the majority of cases, records will not be required by the GT prior to the planned connection date, although it is important that the GT is notified of the connection date as per clauses 8.8.2, 8.11.1 and 8.11.4.

Note 2: While it may not be necessary to formally provide a Certification File to the adopting GT, it is important that records relating to site specific risk assessments, pressure testing, draft as-laid drawings including site boundaries detailed by Eastings and Northings etc. are available on site prior to any planned connection.

8.9.1 Mains and Services

8.9.1.1 The GT must ensure that the arrangements for adoption of pipe systems are described within its Safety Case, including managing work carried out by persons who are not their employee. It is essential that those who have duties to co-operate with gas transporters are made aware of the arrangements described in the safety case which are relevant to them.

8.9.1.2 Work on any live gas system shall not be carried out without the written permission of the GT who shall ensure that procedures are in place to comply with its obligations under its GT Safety Case.

8.9.1.3 The upstream GT shall give clearance for the UIP to carry out the final physical connection to the GT's live gas system. The downstream adopting GT shall give clearance for the UIP to commission gas into the new system. The GTs shall provide their own written clearance to proceed. Detailed management processes shall be prepared to ensure that any connection is made in accordance with IGEM/GL/6 or start date notification process (e.g., FM144).

8.9.2 **Pressure Regulating Installations**

8.9.2.1 Any PRI on a network shall be included for adoption and should be commissioned by the adopting GT, unless it is agreed otherwise.

Note: PRIs downstream of an ECV on domestic and non-domestic premises are the responsibility of the Meter Asset Manager (MAM) or the consumer.

8.9.3 The adopting GT and UIP should perform a pre-commissioning audit to ensure that it complies with the design. See TD/13, or following design approval the process for the adopting GTs specific guidance should be sought.

8.10 **PERMITRY FOR THE SAFE FLOW OF GAS**

IGEM/GL/6 Permitry for the safe control of gas details the additional safety required when working with gas.

The Safe Control of Operations (SCO) process is a management control system based on IGEM/GL/6 put in place to safeguard persons and the integrity of the gas network while carrying out live gas operations.

Each GT has its own SCO procedure for compliance with IGEM/GL/6. SCO procedures will be provided to the UIP, upon request, to support the UIP in mandatory compliance of the procedures.

The following roles and responsibilities are applicable to SCO activities:

- Responsible Engineer (RE). Appointed by the GT for overseeing the GT's Management Procedure for SCO
- Network Controller (NC). An individual or individuals appointed by the Responsible Engineer (RE) to act as the point of contact to coordinate and check RO/NRO procedures for work conflict and provide final clearance to proceed
- Competent Person (CP). A person deemed competent by their level of experience, training and knowledge to take overall control of all activities on site for managing the Permit to work/RO/NRO
- Authorising Engineer (AE). A person deemed competent by their level of experience, training and knowledge to authorise work to be undertaken on the permit to work/RO/NRO in a safe and proper manner.

8.11 **PERMITS TO WORK, ROUTINE AND NON-ROUTINE OPERATIONS**

These are formal written documents used to control complex operations and are predominately, but not exclusively, associated with ensuring the security of the gas supply system and that appropriate safe systems of work are implemented at all operating pressures.

8.11.1 All connections shall be notified to both the upstream and downstream GT's in accordance with their procedures.

8.11.2 AEs and CPs shall be registered with the adopting and the upstream GT, as required by the GT SCO procedures.

8.11.3 UIP's shall have permitry systems in place in accordance with IGEM/GL/6 to ensure they can comply for the types of work they undertake.

When hazardous activities that do not affect the gas flow are to be undertaken on or in the vicinity of gas apparatus, a Permit to Work may be required in addition to any RO/NRO requirements.

8.11.4 To undertake live gas work, the UIP/adopting GT shall comply with the:

- UIP's own GIRS accreditation
- upstream only GT's Management Procedure for SCO
- upstream only GT's Competency requirements for Authorising Engineer (AE) and Competent Person (CP).

The adopting GT shall be notified in advance in all instances.

8.11.5 AE authorised ROs and NROs shall be sent to the Network Controller in accordance with SCO procedures in advance of the planned work.

8.11.6 The upstream GT and adopting GT shall confirm that design approval has been given for the works to be undertaken.

8.11.7 To ensure that the connection works have no impact on the network, clearance from the Network Controller(s) (NC(s)) in accordance with relevant SCO procedures shall be obtained prior to the start of the RO or NRO.

8.11.8 UIPs shall maintain a current record of all staff competent to act as either AE or CP who are registered and authorised to work on live respective networks. This information shall be forwarded to the relevant GT's NC prior to that individual(s) making any live gas connections.

8.12 RECORDS

8.12.1 General

8.12.1.1 The UIP shall be responsible for providing all necessary information to the adopting GT, to enable the GT to discharge its legal and statutory responsibility for management of adopted assets. Information shall be provided as required to both the upstream GT (typically concerning the connection from the main to the downstream point of isolation) and also to the GT adopting the network downstream of the connection.

8.12.1.2 Records shall be provided within a Completion File, although some GTs may require that certain information is presented to them for validation prior to the planned connection date.

SECTION 9 : VARIATION PROCEDURE

9.1 PURPOSE

This Section provides requirements for the process for dealing with changes to the validated submission during the construction phase and also outlines a process for the approval of new materials, construction techniques or equipment, by GTs.

9.1.1 Where MOP of the network exceeds 2 bar, reference shall also be made to IGEM/GL/5.

9.2 VARIATIONS FROM VALIDATED SUBMISSION

9.2.1 General

9.2.1.1 When circumstances on site vary from those anticipated in a validated submission, the UIP's Authorised Person (AP) shall classify the change as either a minor or major variation. If the change is classified as a major variation, a Variation Request form shall be completed (see A4.1) and sent to the UIP's competent designer. The designer shall make an assessment (see the process flowchart in A4.2) of the changes to be made to the design and shall submit the design to the GT for approval using the Variation Request form. Major variations shall be dealt with in accordance with Section 9.4. Copies of the authorised variation request shall then be issued as follows:

- construction copy
- GT copy
- Certification File/Completion File copy – to be passed to the adopting GT
- UIP audit file copy – to be retained by the UIP
- QC copy.

9.2.1.2 Any instance of non-compliance with the validated submission needs to be recorded and reported to the adopting GT.

9.2.1.3 Minor variations shall be dealt with in accordance with Section 9.3 and the as-laid drawings should be clearly marked to show the variation.

9.2.1.4 If there is any doubt whether a variation is required or whether the classification is major or minor, further advice shall be sought from the adopting GT.

9.3 MINOR ON-SITE VARIATIONS

9.3.1 GTs shall make available their specific requirements for design variation.

9.3.2 When a UIP's AP classifies a variation request as minor, (see A4.1 and A4.2) records shall be completed to show the variation from the approved design.

9.3.3 When a minor variation request is approved subject to additional work being undertaken, for example the provision of extra protection where pipe is laid shallow, it shall be confirmed and documented that this work has been completed satisfactorily by the person responsible for QC.

Note: Possible examples of minor variations are:

- *increases in pipe depth of +25% to +50% for short distances i.e. to cross under other utilities apparatus or +25% for longer lengths*
- *decreases in pipe depth of –5% to –10% for short distances i.e. to cross over obstructions, subject to additional pipe protection being installed*
- *changes in pipe location, provided that there is no change in ownership of land, no easement impacted and this does not encroach on the minimum property clearance*

- *short lengths of additional pipe i.e. up to 10 m or 10% of designed length, whichever is the least having no impact on the overall design*
- *change of meter position i.e. up to 2 m from original position but still compliant with adopting GT standards*
- *changes in construction methods, provided that the alternative methods have been approved as part of the generic method statements*
- *minor site layout plans with no impact on designs or meter position compliance*
- *short reductions in length having no impact on the overall design.*

This list is not intended to be exhaustive. If in doubt, advice is to be sought from the adopting GT.

9.4 MAJOR ON-SITE VARIATIONS

9.4.1 When a UIP's AP classifies a variation request as a major, it shall then be sent together with supporting documentation to the GT for validation (see A4.2). The Variation Request form shall be raised as soon as its requirement is identified, to avoid delays.

Where appropriate, the GT will validate the Variation Request and return the form to the UIP designer. However, in certain cases, the GT may reject a Variation Request and require the UIP to re-submit all or part of the project.

Note 1: Examples of major variations are:

- *increases/decreases in pipe depth over those stipulated in the note to clause 9.3.3*
- *changes in pipe location, i.e. footpath to roadway, that encroach on separation distances.*
- *There is achange in ownership of land*
- *changes in construction methods which are not covered by generic method statements*
- *major changes to meter position/service entry i.e. from outside the property to inside the property*
- *decreases in pipework size, changes in materials or any other change that would require a revalidation of the design.*

Note 2: Examples when re-submission may be required are:

- *increases and decreases in consumption and modification to consumption pattern*
- *changes in pressure tier*
- *changes to pipeline route*
- *additional loads to be supplied.*

These lists are not intended to be exhaustive. If in doubt, advice is to be sought from the relevant GT.

9.5 DEVIATIONS

- If on site conditions vary from the approved design, and the approved standard cannot be met with a Minor or Major Variation a Deviation is required in line with the GT's requirements.

SECTION 10 : COMPLETIONS

10.1 COMPLETION FILE REQUIREMENTS

10.1.1 The adopting GT shall be provided with a Completion File containing relevant information and in the time specified in the adopting GT's final connections agreement, to enable the GT to update its asset management system in accordance with legal and statutory requirements.

The Completion File should typically contain*:

- as-laid plans scaled from 1:1250 to 1:50. More detail is required for special features such as bridge, motorway or river crossing
- line drawings of any gas apparatus such as PRIs (usually provided by the manufacturer)
- manufacturers' test certificates and certificates of conformity
- records of pressure tests, including the signature of the competent person responsible for carrying out the test
- materials traceability, including delivery and/or consignment notes and guarantees
- site visit and inspection records, including physical evidence of quality control such as photographs, pipe beads (numbered and dated), data from automatic fusion machines and ultrasonic testing
- variations from the validated submission, including classification of the variation
- valve location sketches and details including serial number if available
- correspondence file. Copies of all relevant correspondence with landowners, local authorities, other utilities, consumers and any other parties involved. In particular, this applies to all correspondence regarding alleged interference damage, reinstatement defects, legal claims, arrangements for access for maintenance etc.
- hazardous area drawings and compliance details
- for multi-occupancy buildings, typically diagrammatic drawings of risers and laterals and manifolds, where appropriate photographs, with particular reference to means of ventilation and location of any installed valves, flow limiters and/or thermal cut-off devices. Consult IGEM/G/5 for further guidance on MOBs completion file requirements
- where applicable, the meter point reference number (MPRN) and service information label.

*The adopting GT should be consulted as to the exact content requirements for the Completion File.

APPENDIX 1 : GLOSSARY, ACRONYMS, ABBREVIATIONS, SYMBOLS AND UNITS

GLOSSARY

All definitions are given in IGEM/G/4 which is freely available:

- as a CD, with the purchase of any IGEM Standard, upon request
- by downloading a printable version from IGEM's website www.igem.org.uk.

Recommended and legacy gas metering arrangements are given in IGEM/G/1 which is freely available:

- with the purchase of any IGEM Standard, upon request
- by downloading a printable version from IGEM's website.

Downloading from the website ensures access to the latest version.

ACRONYMS AND ABBREVIATIONS

ACoP	Approved Code of Practice
AE	Authorising Engineer
INA	Independent Networks Association
AP	Authorised Person
AQ	annual quantity
DESNZ	Department for Energy Security and Net Zero
CDM	Construction (Design and Management) Regulations
CDS	Complex Distribution System
CHP	combined heat and power
CMOB	Construction of Multi-Occupancy Buildings
CP	Competent Person
CSEP	connected system exit point
DMOB	Design of Multi-Occupancy Buildings
DmP	design minimum pressure
DSEAR	Dangerous Substances and Explosive Atmospheres Regulations
ECV	emergency control valve
ENA	Energy Networks Association – update for new title…
ESP	emergency service provider
EUC	End User Categories
EUSR	Energy and Utility Skills Register
GB	Great Britain
GDN	Gas Distribution Network
GIRS	Gas Industry Registration Scheme
GIRSAP	Gas Industry Registration Scheme Advisory Panel
GIS	Gas Industry Standard
GS(M)R	Gas Safety Management Regulations
GT	Gas Transporter
HSE	Health and Safety Executive
IGEM	Institution of Gas Engineers and Managers
MAM	meter asset manager
MPRN	meter point reference number
MOB	Multi-Occupancy Building
MOP	maximum operating pressure
NC	Network Controller
NRO	non-routine operation
NExA	Network Exit Agreement
NRSWA	New Roads and Street Works Act
PE	polyethylene
PRI	pressure regulating installation
PTW	Permit To Work

PSR	Pipelines Safety Regulations
PSSR	Pressure Systems (Safety) Regulations
QC	quality control
RE	Responsible Engineer
RO	routine operation
EUA	Energy Utilities Alliance – (Update reference in section 1.4)
SCO	safe control of operations
SHQ	supply hourly quantity
SOQ	supply offtake quantity
UIP	utility infrastructure provider.

SYMBOLS

<	less than
≤	less than or equal to
>	greater than
%	percentage.

UNITS

km	kilometre
kW	kilowatt
kWh	kilowatt hour
m	metre
mbar	millibar
mm	millimetre
m^3h^{-1}	cubic metre per hour.

APPENDIX 2 : REFERENCES

This Standard is set out against a background of legislation in force in the GB at the time of publication. The devolution of power to the Scottish, Welsh and Northern Ireland Assemblies means that there may be variations to the legislation described below for each of them and consideration of their particular requirements must be made. Similar considerations are likely to apply in other countries and reference to the appropriate national legislation will be necessary. The following list is not exhaustive.

All relevant legislation must be complied with and relevant ACoPs, official Guidance Notes and referenced codes, standards, etc. shall be taken into account.

Where British Standards, etc. are quoted, equivalent national or international standards, etc. equally may be appropriate.

Care shall be taken to ensure that the latest editions of the relevant documents are used.

All references supplied are applicable, but not an exhaustive list. Further reference should be given to IGEM/G/4 available from IGEM's website www.igem.org.uk.

A2.1 LEGISLATION

This Sub-Appendix includes items of legislation that may apply additionally to those referenced in this Standard.

- Construction (Design and Management) Regulations 2015
- Control of Substances Hazardous to Health Regulations 2002, as amended 2004
- Dangerous Substances and Explosive Atmospheres Regulations 2002
- Environmental Protection Act 1990
- Environment Act 1995
- Gas Act 1995
- Gas Safety (Installation & Use) (Amendment) Regulations 2018
- Gas Safety (Management) Regulations 1996
- Health and Safety at Work etc. Act 1974
- New Roads and Street Works Act 1991
- Pipelines Act 1962
- Pipelines Safety (Amendment) Regulations 2003
- Pressure Systems (Safety) Regulations 2000
- Roads (Scotland) Act 1984 (Fixed Penalty) (Amendment) Regulations 2011
- Town and Country Planning Act 1990
- Traffic Management Act 2004
- Transport (Scotland) Act 2005.

A2.2 CODES OF PRACTICE

- HSG47 Avoiding danger from underground services
- HSG48 Human factors in industrial safety
- HSL80 A guide to the Gas Safety (Management) Regulations
- HSL82 A guide to the Pipelines Safety Regulations.

A2.3 **IGEM**

- IGE/GL/1 Edition 2 — Planning of gas distribution systems of MOP not exceeding 16 bar
- IGEM/GL/4 Edition 2 — Gas system assets – risk management
- IGEM/GL/5 Edition 3 — Procedures for managing new works, modifications and repairs
- IGEM/GL/6 Edition 2 — Permitry for the safe flow of gas
- IGEM/GL/8 Edition 3 — Reporting and investigation of gas-related incidents
- IGEM/GM/6 Edition 2 — Non-domestic meter installations. Standard designs
- IGEM/GM/8 — Non-domestic meter installations. Flow rate exceeding 6 $m^3 h^{-1}$ and inlet pressure not exceeding 38 bar

- IGEM/TD/1 Edition 5 Supplement 1 — Handling, transport and storage of steel pipe, bends and fittings
- IGEM/TD/2 Edition 2 — Assessing the risks from high pressure Natural Gas pipelines
- IGEM/TD/3 Edition 5 — Steel and PE pipelines for gas distribution
- IGEM/TD/3 Edition 5 Supplement 1 — Handling, transport and storage of PE pipe and fittings
- IGE/TD/4 Edition 4 — PE and steel gas services and service pipework
- IGE/TD/12 Edition 2 — Pipework stress analysis for gas industry plant
- IGEM/TD/13 Edition 2 — Pressure regulating installations for Natural Gas, Liquefied Petroleum Gas and Liquefied Petroleum Gas/Air
- IGEM/SR/29 — Dealing with gas escapes
- IGE/SR/18 Edition 2 — Safe working practices to ensure the integrity of gas pipelines and associated installations
- IGE/SR/20 Edition 2 — Dealing with reported gas escapes
- IGEM/G/1 Edition 2 — Defining the end of the Network, a meter installation and installation pipework
- IGEM/G/4 Edition 2 — Definitions for the gas industry
- IGEM/G/5 Edition 2 — Gas installations in multi-occupancy buildings.

A2.4 **STREETWORKS UK**

- Volume 1 Guidelines on the positioning of and colour coding of underground utilities apparatus
- Volume 2 Recommended positioning of utilities apparatus for new development sites
- Volume 4 Guidelines for the planning, installation and maintenance of utility services in proximity to trees.

A2.5 BSI (abbreviated titles)

- BS EN 437 Test gases. Test pressures. Appliance categories
- BS 4962 Specification for plastics pipes and fittings for use as subsoil field drains
- BS 6400 Specification for installation, exchange, relocation and removal of gas meters with a maximum capacity not exceeding 6 $m^3 h^{-1}$
- BS EN ISO 9001 Quality management systems.

A2.6 ENA GAS INDUSTRY STANDARDS

This Sub-Appendix includes standards that may be of assistance, but which may or may not be referenced in this Standard.

- GIS/PL2 Polyethylene pipes and fittings for Natural Gas and suitable Manufactured Gas
  - Part 2 Pipes for use at pressures up to 5.5 bar
  - Part 3 Butt fusion tooling and ancillary equipment
  - Part 4 Fusion fittings with integral heating element(s)
  - Part 5 Electrofusion ancillary tooling
  - Part 6 Spigot end fittings for electrofusion and/or butt fusion purposes
  - Part 7 Squeeze off equipment
  - Part 8 Pipes for use at pressures up to 7 bar.

Note: The documents are available at Energy Networks Association (ENA).

A2.7 GAS INDUSTRY REGISTRATION SCHEME ADVISORY PANEL

- GIG 2 GIRS requirements for registration.

APPENDIX 3 : RECOMMENDED EXAMPLE OF A UIP REQUEST FORM

This is included for demonstration purposes only and is not intended to replace any existing GT documentation. For further information refer to the adopting GT's website.

PAGE 1 OF 2

UIP QUOTATION/REQUEST & DESIGN NOTIFICATION FORM

All the information in this form supplied by the individual, firm, company to Gas Networks is confidential to that individual, firm or company and MUST NOT be disclosed to any other person, including any person employed in Gas Networks Service Provider, without the consent of that individual.

For the attention of _____ Network Support Manager _____

Date of request _____ Your Ref. No. _____

Has an enquiry form been submitted for this site previously? _____ If Yes, Ref. No. _____

Enquiring company name:	**GIRS REGISTRATION SCOPE**
Contact name:	
Address:	**CONFIRM COMPANY NAME FOR THE FOLLOWING**
Post code:	**REGISTRATION SCOPE:**
Telephone No.:	Design _____
Email.:	DMOB _____
Internal control field:	Construction Commissioning _____
	CMOB _____
	Project Management _____
	Final connection

Is request on behalf of an individual customer owner or occupier? (If yes provide customer details in Section F)	Yes	No

PROPOSED SITE INFORMATION

Site contact:				
Site name:				
Site address:				
Post code:				
Telephone No.:				
Site location plans attached?			Yes	No
Premises:			Single	Multiple
Type of works:		New supply	Alteration	Disconnection
Type of development:	Domestic	Commercial	Industrial	Mixed
Multi Occupancy Buildings		MOB	High Rise	CDS

SECTION A – PROPOSED LOAD

What is the maximum instantaneous rate?			kW
Predicted mains pressure drop at peak?			mbar
Predicted service pressure drop at peak? (where greater than 2 mbar)			mbar
Maximum annual consumption?			kWh
EUC (If known)			
Does the proposed load follow a normal space heating pattern?		Yes	No

SECTION B – CONNECTION AND/OR SERVICE DISCONNECTION DETAILS

Easting:	Northing:
Connection point location:	

Offtake diameter and material:
Length and diameter offtake:
Termination point:
Additional details:
Note: For standard source pressure table information please refer to your GT. Any other details:

SECTION C – FOR INDUSTRIAL AND COMMERCIAL PREMISES ONLY

Type of load? (For example, modulating, constant, process/on-off/CHP)		
Will a compressor / booster be fitted?	Yes	No
For individual loads > 2,196,000 kWh will the incumbent GT take ownership of the system	Yes	No
Is this a seasonal Firm load? Y/N		
Is the pressure at the inlet to supply meter installation required to be > 20.7 mbar? If Yes, please specify:	Yes	No
Do you require the final connection to be carried out outside normal working hours?	Yes	No
Do you require additional conditions or site rules and regulations? (applicable to this project only) If Yes, specify:	Yes	No

Note: The above items may attract additional costs.

SECTION D – FOR DOMESTIC PREMISES ONLY

Type?	Private	Local Authority	Housing Association	Mixed	MOB
Are there any non-domestic properties? (specify)				Yes	No
Are there any exceptional loads? For example swimming pools				Yes	No

SECTION E – FOR DOMESTIC, INDUSTRIAL AND COMMERCIAL PREMISES

Properties to be connected and gas usage							Total
Property type							
No. of premises							
Central heating? (domestic only)	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	
Peak instantaneous demand per property x number of premises (kW)							
AQ (kWh)							
Meter Housing							

Property Type: For domestic loads, FL – Flat, TH – Terraced House, SDH – Semi-Detached House, DH – Detached House, BU – Bungalow, O – Other (Specify)_____
For non-domestic loads, indicate unit numbers.

Note: The NExA table AQs are available via a website at http://www.igt-unc.com.

Is the development or the load growth phased? If Yes, provide details (including number of proposed connections, and their associated load, per year): On multiple developments, indicate the number of connections required within the site on a suitable scale drawing.	Yes	No
Do you wish to complete the final connection?	Yes	No
Planned connection date:		
Other information:		

Enclose site and location plans, with meter locations marked X.

SECTION F – SERVICE ALTERATIONS AND DISCONNECTIONS OR A CONNECTION ON BEHALF OF OWNER OR OCCUPIER ONLY

Requester name i.e. Gas consumer/supplier:
Company:
Address:

Post code:
MPRN (should be provided for alterations or disconnection requests) where known
Attach site plan indicating exact location of works and termination.
Signed: Print name: Position:

APPENDIX 4 : VARIATIONS FORM

A4.1 VARIATION REQUEST FORM (EXAMPLE OF CONTENT)

Reference Number: _____

Part A

Location: _____

_____

Person identifying variation:_____Telephone: _____

Description of variation:

_____

_____

Sketch/scale plan of proposed variation included? _____

Person responsible for Classifying the variation: _____Date: _____

CLASSIFICATION MAJOR or MINOR

For minor variations no further actions required. Maintain this form for inclusion in completion files

Part B - For major variation pass to UIP designer for design check

BY UIP DESIGNER					
Classification by UIP designer					
Comments					
Revised calculations					
UIP designer name:		**UIP designer signature:**			

Part C - For GT acceptance

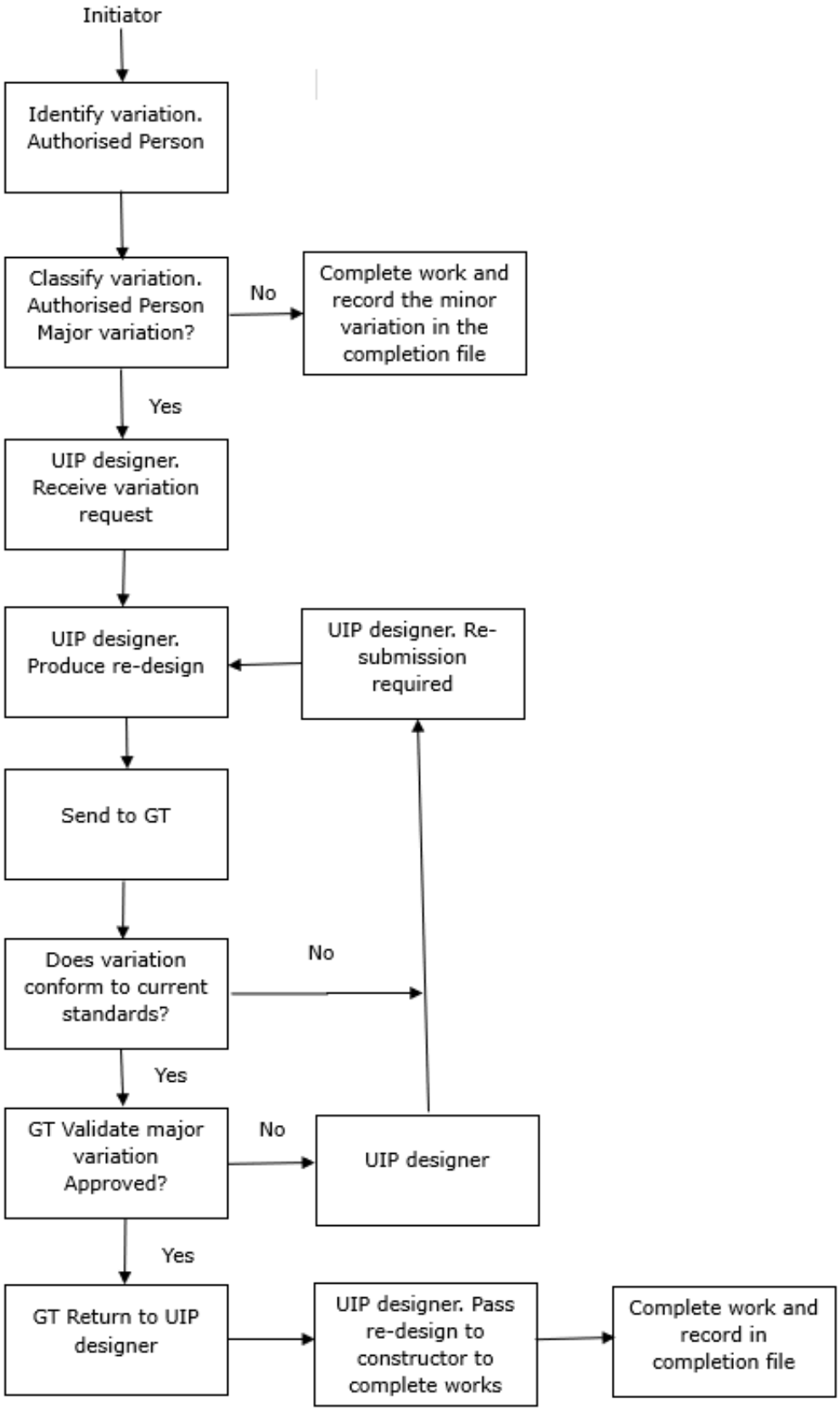
Assessment date	**Agreed/rejected**	**New submission required**	**Changes to generic method statement**
Assessment by GT competent person			

Reason for rejection: _____

GT assessor name:_____ GT assessor signature: _____

Circulation list: Site, UIP file, Certification file, QC Inspector, GT.

A4.2 PROCESS FLOW CHART – ON SITE VARIATIONS



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