
SPECIFICATION FOR

DEFINING PIPES AS MAINS AND SERVICES

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MAY 2007

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FOREWORD

This Specification was approved by the UKD Policy Manager May 2007 for use by 3rd parties designing system extensions.

National Grid Gas documents are revised, when necessary, by the issue of new editions.

Compliance with this Document does not confer immunity from prosecution for breach of statutory or other legal obligations.

BRIEF HISTORY

First published as external version T/SP/NP10/E	May 2007	
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KEY CHANGES (Identify the changes from the previous version of this document)

Section	Amendments
	Internal version T/SP/NP10 May 2006 has been translated into an external version. Removal of non relevant background information

DISCLAIMER

This document is provided for use by National Grid Gas and such of its contractors as are obliged by the terms and conditions of their contracts to comply with this document. Where this document is used by any other party it is the responsibility of that party to ensure that this document is correctly applied.

MANDATORY AND NON-MANDATORY REQUIREMENTS

In this document:

shall: indicates a mandatory requirement.

should: indicates best practice and is the preferred option. If an alternative method is used then a suitable and sufficient risk assessment shall be completed to show that the alternative method delivers the same, or better, level of protection.

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SPECIFICATION FOR

DEFINING PIPES AS MAINS AND SERVICES.

1. INTRODUCTION

This specification defines the factors to be considered when making the decision whether a pipe should be defined as a main or a service.

2. SCOPE

This document describes how pipes connected to <7bar systems are defined as mains and services within the constraints imposed by legal obligations, construction standards, records policy and regulatory reporting mechanisms.

In addition to all below ground pipes, above ground pipes (including risers) are included in this specification since they introduce particular issues for multi storey buildings.

It is outside the scope of this document to detail the requirements for valves associated with mains and service isolation and/or emergency control valves (ECV)

3. FACTORS IN DEFINITION OF MAINS, SERVICES

This document refers to primary meter installations in the context of what a pipe supplies. However a service to an individual meter installation terminates at the outlet of the first ECV upstream of the individual meter installation. Refer to 'Defining the end of the Network, a meter installation and installation pipework' IGE/G/1 for definition of ECV

Pipes are laid for the purpose of being a main or service, however the criteria by which pipes are treated may change between the planning stage and commissioning. In addition a pipes status may change from service to main during its life cycle as a result of re designation.

For example a 90mm PE pipe laid to a factory for the purpose of being a service may be sized according to service pressure drop criteria, but constructed and laid to mains standards before being recorded as a service in asset record systems.

Once installed and commissioned it may be re-designated as a main, subject to appropriate integrity checks and due process, at some time in the future to allow other premises to be supplied.

3.1 Basic Definitions

Most of the pipes forming National Grid's pipeline system fall clearly into the following categories. However, due to the complexity of the commercial environment and some special circumstances, there are times when additional interpretation is required.

3.1.1 Definition of a main

A main, that is to be recorded as such in the asset record, is a below ground pipe, or exceptionally an exposed pipe (e.g. bridge crossing) laid as an extension of, or change to, the system that supplies, or has the capability to supply, more than 2 primary meter installations

3.1.2 Definition of a service

A service, that is to be recorded as such in the asset record, is a pipe from a main up to and including the outlet of the 1st ECV to an individual meter installation. This definition may occasionally include a dual service, supplying up to 2 primary meter installations in one or two buildings, with no other potential connections.

3.1.3 Definition of a Mains Riser

A mains riser is any above ground horizontal or vertical arrangement of pipes that supplies more than 2 primary meter installations in an individual premises or building.

3.1.4 Definition of a Service Riser

A service riser is any above ground horizontal or vertical arrangement of pipes that supplies up to 2 primary meter installations.

A lateral is a term in current use to describe an above ground pipe connecting a riser to a single primary meter installation.

3.2 Legal Obligations

In addition to, and consistent with, Section 9, National Grid has a specific obligation to have regard to future demand. This does not mean that National Grid shall lay pipes in anticipation of connections being made nor does it mean National Grid shall increase the size of its pipes to take account of all possible demands. It does mean that when National Grid is laying a main it shall consider the potential for other demands and the economics of the various options.

3.3 Network Design/Sizing

The pressure drop on new services is defined in T/PR/NP/14E and is limited dependant on the resultant service size and available mains pressure.

For the purpose of design, a pipe supplying more than 2 primary meters is permitted an allowable pressure drop according to mains design criteria.

Mains extension pressure drop criteria is based on available pressure in the parent mains system, or where deemed appropriate, fixed or standardised pressure drop criteria depending on, but not limited to such factors as length, demand, velocity, parent main size and parent system operating pressure range. These principles are applicable for mains system extensions, including mains risers.

3.4 Construction Standards

It is National Grid's policy to construct mains, services and any associated mains/service risers in accordance with the relevant Industry documents (where adopted), National Grid Management Procedures for Main Laying and Service Laying T/PM/MSL/1 and associated work procedures. Some of the important factors are as follows.

All steel and PE pipes laid in sizes >2"/63mm PE or equivalent shall be constructed and tested in accordance with mains standards. All service pipes should be laid to the standards set out in IGE/TD/4 (which makes reference to IGE/TD/3 for pipes >2"/63mm)

Regardless of whether they are designed to pressure drop criteria for mains or services, mains and service risers have special construction requirements. Reference should be made to the current versions of mains and service laying procedures for multi storey premises.

New LP dual services, although permitted, should be discouraged wherever reasonably practicable, as the line of the service pipe should be as predictable, and as far as possible, laid within the curtilage of the premises being supplied.

3.5 Records

All asset pipe details shall be recorded in TEAR.

Pipes should be recorded as a digital record in accordance with T/PM/DR/8 Management procedure for the Capture of Pipe Asset records by UIP/GT organisations vesting Plant in National Grid.

All pipes shall be recorded in NGS, with the exception of LP services <2"/63mm. However it is helpful to identify the start and finish location and the approximate length such that an inferred route can be established in the absence of a graphical record.

3.6 Re-designation

A pipe laid as a service to a large industrial premise might be suitable for re-designation as a main if subsequent connections are required.

This is particularly true of service pipes sized >63mm which have been laid and tested to mains standards, and which had sufficient capacity and adequate pressure. The engineering criteria to be assessed when re-designating are set out in more detail in Appendix A.

With regard to existing assets, a pipe should not be re-designated unless a change of use is required and if a pipe is re-designated a suitable audit trail shall be created.

3.7 Utility Infrastructure Providers (UIPs)

National Grid, as a Network Operator, takes ownership of pipes laid by UIPs. The Network Operator also has an obligation to ensure the proposed UIP system is fit for purpose.

The Network Operator who adopts the pipe(s) can opt to declare the pipes non relevant mains if it is deemed there is insufficient capacity to connect future potential loads. In such circumstances the asset record will show the pipe as non relevant

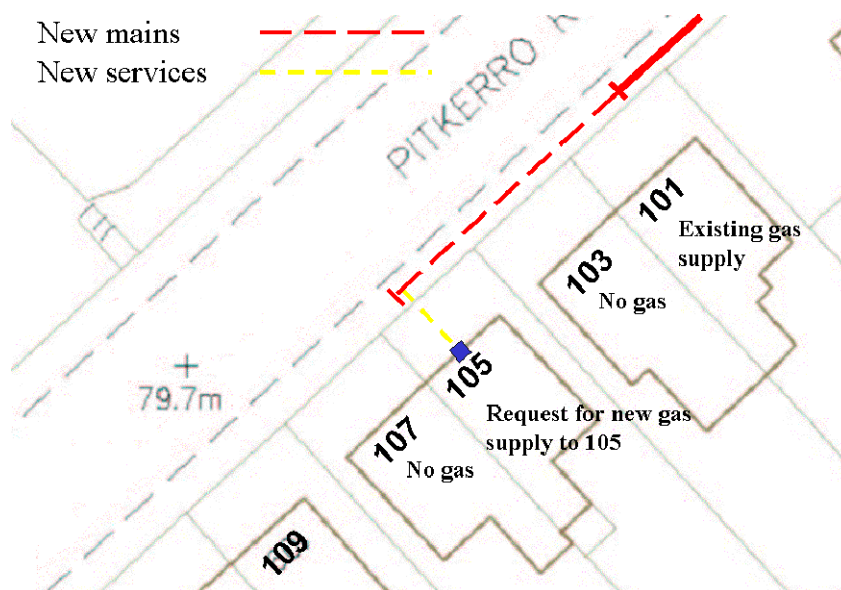
4. APPLICATION OF DEFINITION FACTORS

4.1 Mains v Service v Riser Considerations

These examples below set out application of the definitions. However, whilst these examples cover the majority of situations this is not a definitive list.

Example 4.1.1 Single service request

In this scenario there is a request for a new supply at number 105. Before any system extension is undertaken an assessment of the infill potential should be made according to National Grid's infill policy, however in this example it should be assumed there is not a viable infill

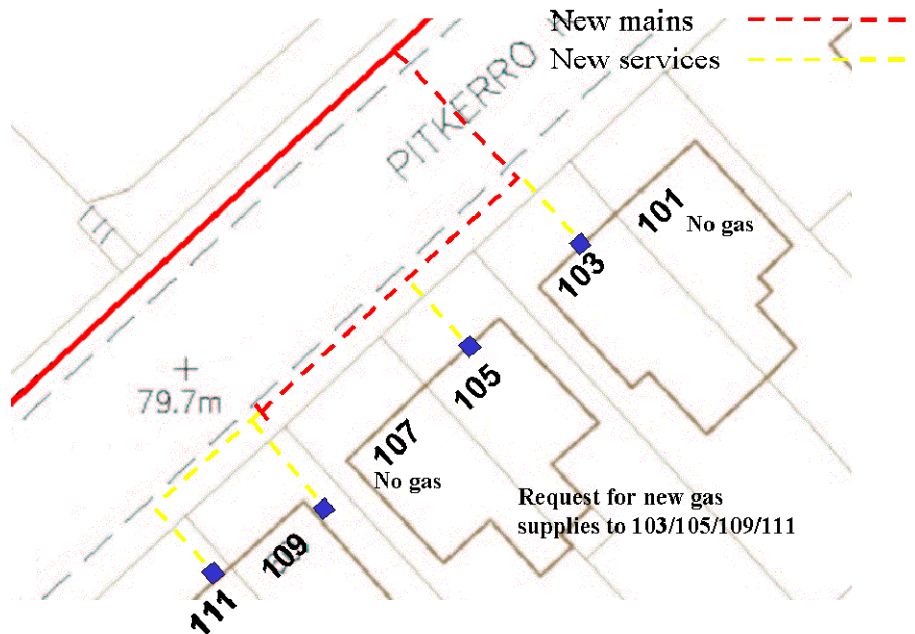


System extensions that travel parallel to the street should normally be treated as mains. In this example a main is extended to Number 105 to the point where the pipe diverts into the premises along the line of the service. The service is normally perpendicular to the main and/or building. Future statutory obligations should be taken into account. The main passes number 103, and ends within 23m of number 107. These properties are not on gas, and with no viable alternative source of supply hence it would be normal to ensure sufficient capacity exists in the mains extension to provide supplies to numbers 103/107. Since the scheme is not considered a viable infill there is no requirement to consider the potential to supply number 109 as part of this request.

The cost, and approval, of any upsizing should be in accordance with National Grid's connection and investment policy

Example 4.1.2 Multiple premises request

This scenario is a Local Authority refurbishment of 4 properties (numbers 103/105/109/111). This is one of a number of refurbishments in the area and it has been established that future requests for properties currently without gas is likely.



This configuration has been designed to minimise the number of road crossings, and overall cost, both now and in the future. The main should normally be sized to cater for future potential load, in this case numbers 101 and 107, and this will avoid potential future service road crossings to 101 and 107

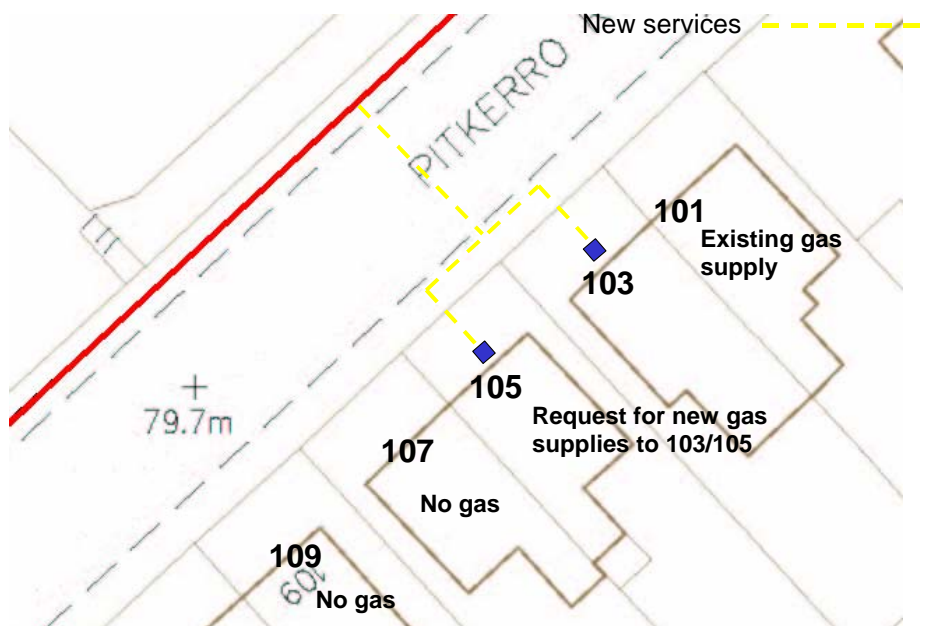
The mains extension finishes o/s number 109 on the basis that:

- there is another distribution main, albeit on the other side of the road, that would allow other properties without gas beyond number 111 to have a supply.
- it minimises the amount of service pipe laid in the footpath, hence this would normally exclude laying service pipe that passes other properties that are not supplied e.g. number 107
- it minimises the amount of main i.e. limits the extension to a position fronting number 109.

The mains pipe extension is designed, costed, constructed and recorded as a main.

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Example 4.1.3 Multiple premises request - dual service



A dual service is permitted since it limits the number of road crossings. Additionally service pipe laid in the footpath is limited in extent to the frontage of the property that it supplies.

The extent of the shared pipe should be limited to the public highway.

It is not necessary to lay a main to cater for future potential to numbers 107/109 at this stage, since any future supplies could be made from the existing main in the opposite footpath when required.

Example 4.1.4 Request for new supplies to 6 industrial units



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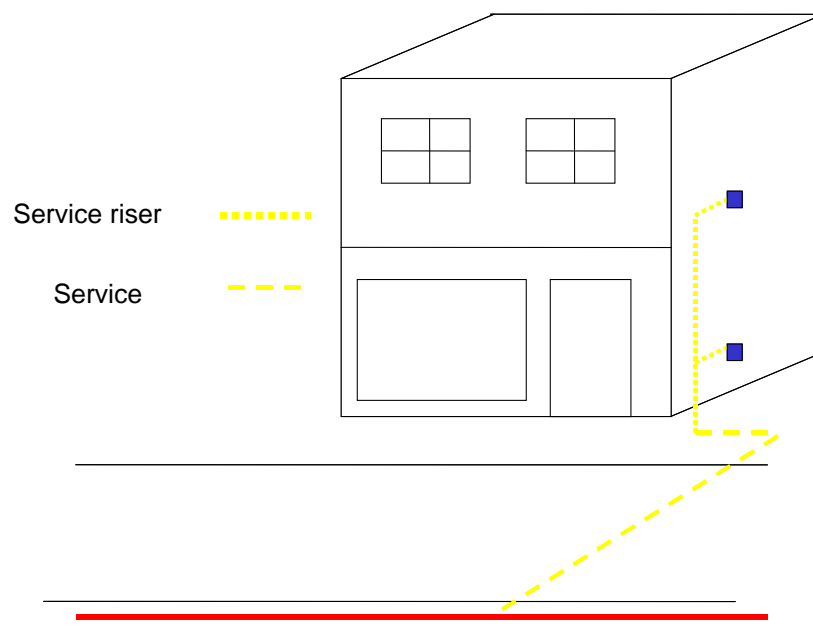
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This request is for a new industrial site development with no probability of future connections, either within or outside the site boundary.

This design reflects the same principle applied to domestic premises, in that services supply no more than 2 primary meter installations.

In this scenario the customer has specified the meter positions, however the exact layout of the mains and services will rely upon the relative costs of long dual services (subject to the demand at each meter) and the cost of main(s). An alternative fit for purpose option resulting in 2 separate mains connections may be considered but in this scenario has been discounted on the basis that it would incur higher customer costs since the additional mains connection costs exceed the additional mains costs laid on site.

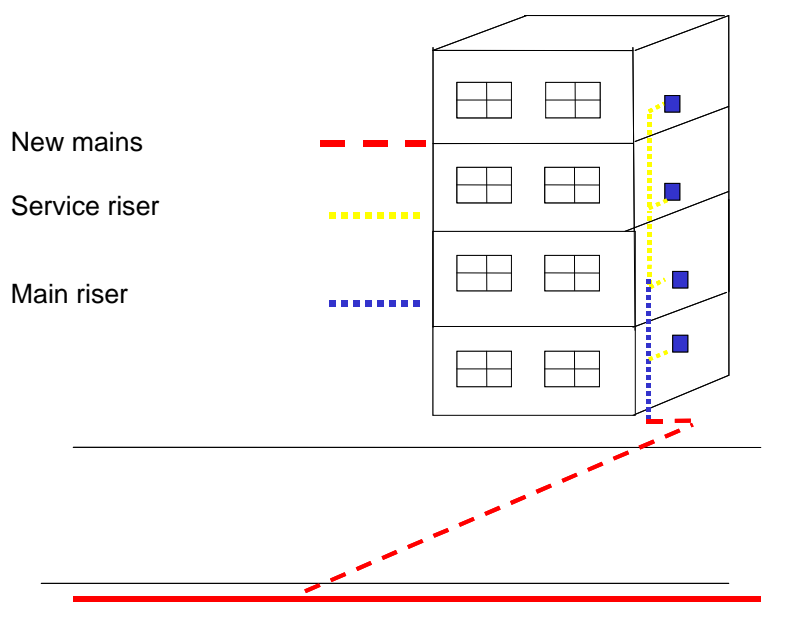
Example 4.1.5 Request to Flats and Complexes ≤ 2 primary meter installations



The pipe supplies 2 primary meter installations. The pipe(s) are designed and constructed as services, with the above ground pipework constructed as a service riser in accordance with riser constructional procedures.

The pipe(s) are recorded as services in TEAR and are not drawn in NGS unless any part of the pipework is $\geq 63\text{mm}$ or equivalent.

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Example 4.1.6 Request to Flats and Complexes >2 primary meter installations

In this example supplying 4 flats, the underground pipe is designed and laid to mains standards. The costing/charging of the main and risers shall be within the relevant scope of any mains or service charging schedules/contracts in place.

The mains riser is the above ground pipe supplying in excess of 2 primary meter installations. The below ground main and mains riser are designed using mains design pressure drop criteria, which depends on available pressure and/or use of any standard pressures in use.

The mains riser, supplying more than 2 primary meter installations, shall be recorded in TEAR as an above ground main, and shown graphically in NGS as either an internal or external riser pipe by means of a suitable symbol. Where available an isometric drawing of the layout should be added as a background picture to NGS.

The service riser and individual services supplied from the mains riser shall be designed using service pressure drop criteria, and recorded as services in TEAR. In this scenario there is no requirement to digitally record the service riser pipework $\leq 63\text{mm}/2''$

All above ground pipework is designed using constructional work procedures appropriate for risers.

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APPENDIX A

THE RE-DESIGNATION OF A PIPE (NOT ASSOCIATED WITH A CHANGE IN MOP)

The practicalities of re-designating a pipe are directly related to its installation procedures which will determine its integrity and fitness for purpose. For metallic pipes the inherent problems of fracture and corrosion shall be taken into account if change of use is intended.

Generally, the process of changing from main to service is acceptable as the installation and testing are at the higher level, with satisfactory depth of cover. However, there will be a need to consider Approved Code of Practice requirements stated under Gas Safety (Installation & Use) Reg. 9 (1) & Reg. 15 (section 79) regarding fitting appropriate emergency notices and ensuring suitable and accessible emergency controls are available.

The process from service to main is more restrictive. Up to 63mm diameter the laying and testing procedures are not sufficient for main's applications with proximity also being a major factor. This aspect is defined in the Pipelines Safety Regs.1996 Reg. 5 where it states - "the operator shall ensure no fluid is conveyed in a pipeline unless it has been so designed, so far as is reasonably practicable, it can withstand:

- ◆ forces arising from its operation.
- ◆ the fluids that may be conveyed in it.
- ◆ the external forces and the chemical processes to which it may be subjected."

Above 63mm the situation is eased because of the increased installation standards. A re-testing programme and risk assessment would need to be conducted if fitness for purpose is to be demonstrated. Refer also to Distribution Pipe Replacement Procedure T/PM/REP2, particularly when considering steel pipes.

Service isolation valves also create a significant obstacle if the intention is to retain part of the pipes duty as a service, since the installation of a service isolation valve would necessitate either moving the valve to the part service, fit a new one, or replace the existing one

Proximity is also a major consideration, particularly at Medium and Intermediate Pressures.

For modification to pipe operating above 2bar reference should be made to T/PM/IGE/GL/5 'The application of IGE/GL/5 (Plant Modification Procedures) by National Grid, and T/PM/G/17 'The Management of New Works, Modifications and Repairs'

KEY DIFFERENCES: (Note: Services above 63mm diameter are constructed as mains).

<u>Testing</u>	Testing requirements for services is less onerous than for mains.
<u>Depth of Cover</u>	Mains and services are subject to different requirements for depth of cover depending on surface category.
<u>Proximity</u>	Mains are subject to varying proximity restrictions dependant on material, operating pressure and size.

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ENDNOTE

Comments

Comments and queries regarding the technical content of this document should be directed to:

Safety and Engineering Registrar
SHE Directorate
National Grid
National Grid House
Warwick Technology Park
Gallows Hill
Warwick
CV34 6DA

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