

**THIS PAGE NOT TO BE PRINTED**

***Continued Over Page.***

**THIS PAGE NOT TO BE PRINTED**

[illegible][illegible]

---

MANAGEMENT PROCEDURE FOR

**INSPECTION, MAINTENANCE AND MONITORING OF  
INTERNAL METALLIC SUPPLIES TO HIGH RISE  
BUILDINGS**

---

**Uncontrolled when printed**

**OCTOBER 2005**

J589 ( Rev 02/06 )

© National Grid Gas plc 2006- All Rights Reserved





Uncontrolled when printed.



Uncontrolled when printed.





### 2.3 Technical

**Main** – Defined as an extension of or change to the system with the potential to supply more than 2 supply meter installations

**Riser** – Risers are defined as an above ground arrangement of pipes (horizontal or vertical), which supply more than 2 supply meter installations in an individual premise or building containing many premises. A pipe is considered a riser from the base of the bend, which rises to each of the building floors.

**Above Ground Service (Horizontal or Vertical)** – The minimum length of pipe from the teed connection on the riser to the consumer's emergency control valve(s). This should only feed ≤2 supply meter installations.

**Fire Valve** – A valve (other than an emergency control valve) for controlling a supply of gas:

- i.) incorporated in a supply pipe between the main and the riser; and
- ii.) intended for use by a supplier or transporter of gas; and
- iii.) not situated inside a building.

**Emergency Control Valve** – A valve for shutting off the supply of gas in an emergency, being a valve intended for use by the consumer.

(NOTE: If an additional internal tamper-proof emergency control valve has been fitted at the point of entry to the building, and is accessible to all consumers, then National Grid Gas's responsibility ends at this position.)

**Tamper-proof** – Protected against unauthorised operation.

**Basement/cellar** – A room below ground level in a house or property that is being used for accommodation or as a storage area, or could easily be altered and used for accommodation or storage. **(Basements/cellars shall be regarded as a storey within the context of this policy)**

**Storey** – Floor construction level. The ground floor is counted as a storey within the context of this policy.

**Risk Level** – The value applied to distribution mains by the application of the National Grid Gas Mains Risk Prioritisation System (MRPS).

**Below ground entries** – Pipework that is buried as it enters the building.

**Above ground entries** – Pipework that is exposed externally and enters the building above ground level.

### 3. REFERENCES

This National Grid Gas Procedure makes reference to documents listed below. Unless otherwise specified, the latest editions of these documents, including all addenda and revisions, shall apply.

- a) Health and Safety Executive - Pipeline Safety Regulations 1996 – Design, construction and installation of gas pipes.
- b) Health and Safety Executive – Gas Safety (Installation and Use) Regulations 1998 – Safety in the installation and use of gas systems and appliances
- c) National Grid Gas Policy for Inspection, Maintenance and Monitoring of Internal Metallic Supplies to High Rise Buildings – T/PL/LC20
- d) National Grid Gas Surveying Guidelines in Support of Mains Risk Prioritisation System 1999 – DE64
- e) National Grid Gas Distribution Pipe Replacement Policy – T/PL/REP1 – 2003
- f) National Grid Gas Distribution Pipe Replacement Procedure – T/PR/REP2 – 2004
- g) National Grid Gas Policy for Leakage Survey – T/PL/LC17



- h) National Grid Gas Specification for Defining Pipes as Mains, Services or Risers - T/SP/NP10
- i) H, S & E Management Systems.
  - Procedure PROC/H,S&E 002
  - Auditing Directive DIR/H, S&E 10
- j) National Grid Gas Procedure for Walking Leakage Detection Surveys Using Portable Instruments of High Sensitivity (ppm detectors) – T/PR/LC13
- k) National Grid Gas Escape Procedures – EM 71&72

#### 4. GENERAL REQUIREMENTS

**4.1** The Responsible Engineer within the LDZ shall ensure that within 5 years of the policy commencement, electronic data is compiled on all 6 storey and above high rise buildings containing a gas supply. Information held shall include records of the location of all high rise buildings, the owner, the number of floors, the number of flats per floor, construction details of riser and building, the location of fire valves and risers, the method of riser entry and access to riser etc. A proforma for collecting this information can be found in Appendix A.

In addition the database shall be updated with any information available from sources such as mains surveys and meter reading agencies.

#### 5. INSPECTION

The supplies to all high rise buildings of 6 storey and above containing a gas supply, shall be inspected within five years of the commencement of the policy at a rate of approximately 20% per annum.

Priority should be given to buildings not previously inspected.

Subsequent inspections shall be carried out at a frequency not exceeding ten years.

##### 5.1 LEAKAGE SURVEY

**5.1.1** A walking perimeter leakage survey shall be conducted which shall include surface boxes, visible gas pipework and accessible pipe entries, from the distribution main to the building line, in accordance with National Grid Gas Procedure – 'Walking leakage detection surveys using portable instruments of high sensitivity (ppm detectors)' T/PR/LC13

**5.1.2** A complete internal leakage survey of all risers and above ground services shall be conducted with an intrinsically safe gas detection instrument. In the event of a continuous riser shaft being present for the full height of the riser, a leakage survey should be undertaken at the top of the shaft. If a complete internal leakage survey cannot be undertaken, the reasons shall be recorded on the electronic database.

**5.1.3** If there is no such shaft, e.g. shaft sealed at each floor, the riser should be leakage surveyed in the same way as the above ground services, by gaining access to every unit and carrying out a gas detection test. Where access cannot be gained an intrinsically safe gas detection instrument shall be used to check the atmosphere through an opening such as a letterbox or ventilation grill.

**5.1.4** In the event of leakage being detected it shall be actioned in accordance with National Grid Gas Escape Procedures – EM 71&72.

##### 5.2 Visual Condition Assessment

The minimum visual inspection regime to be followed after each leakage survey is:

**5.2.1** Risers - An external visual inspection of all risers should be undertaken to determine the condition at the top, middle and bottom of the structure.

**5.2.2** Above Ground Services - A minimum of 10% of the above ground services, equally spaced, should be inspected in each high rise building. At least one inspection at the top, middle and bottom of the structure should be conducted to determine the condition at each inspection site.

**5.2.3** Further intermediate sampling shall be undertaken if any of the initial samples indicate poor condition from severe corrosion where flakes of oxidised material or pipe wrapping can be easily removed.

**5.2.4** In the event of enclosed risers or above ground services, arrangements shall be made with the owner of the building to gain access to enable the pipe condition to be determined.

### **5.3 Pipe Wall Thickness Assessment**

**5.3.1** If following the visual condition assessment, any section of pipe is found to be in poor condition from corrosion as indicated in 5.2.3 its remaining wall thickness shall be established by the use of non-destructive testing. A minimum of four equally spaced points around the pipe circumference should be tested at each corrosion location and the readings recorded on the database.

**5.3.2** A minimum wall thickness of >2mm shall be maintained, with particular attention given to the pipework immediately above sealed inter-floor positions and shoulders of socketed joints where severe corrosion is most likely to occur.

## **6. MAINTENANCE**

**6.1** If any pipe wall thickness is found to be  $\leq 2$ mm, sectional pipework repair, or full pipework replacement if the overall general condition is poor, shall be carried out as soon as practicable. A riser support risk assessment shall be undertaken prior to any sectional repairs.

**6.2** Any leaking joints identified during the inspection process shall be repaired using National Grid Gas approved techniques.

**(NOTE: Approved leakage repair techniques are for use on leaking joints only. They shall not be applied as a permanent barrel corrosion repair.)**

**6.3** When the LDZ have identified or exposed risers/above ground services, consideration shall also be given to the following to minimise further deterioration:

- ◆ Painting of exposed and accessible pipework;
- ◆ Over-wrapping damaged wrapping;

**6.4** In the event of limited gas usage within the building consideration should also be given to its removal, subject to customers, shippers and regulatory agreement.

## **7. MONITORING**

**7.1** LDZs shall liaise with Local Authorities and other property owners to obtain and record demolition programmes, enabling consideration to be given to the timing of the replacement of risk mains in the vicinity of buildings included on the database.

**7.2** In order to further validate corrosion data and enhance inspection methodology, the LDZ should wherever possible prior to demolition obtain additional riser/lateral samples for analysis.

**7.3** Upon completion of the first five-year inspection programme future individual building inspections shall be conducted in accordance with the minimum pipe wall thickness found, as follows:

>2 mm and <5 mm	Maximum five-year inspection frequency
$\geq 5$ mm	Maximum ten-year inspection frequency

**(NOTE: Inspection frequencies shall be reviewed in the first quarter of 2005 following analysis of available inspection data.)**

## **8. RECORDS**

**8.1** In the event of visiting 6 storey or above high rise buildings containing a gas supply, due to an escape or for any other reason, the maximum amount of inspection information and data gathering shall be undertaken and recorded on the electronic database.

The minimum other information to be gathered is:

- property owner
- external condition of pipe (painted, corroded)
- through floor construction (sleeve, sealed)
- environment of riser (damp, effluents)
- riser construction (type of joint, material, size, dust trap, riser support, emergency control valve, suitable repair techniques)
- external provision for riser replacement
- protective measures exist/required for exposed pipework in accessible areas,
- whether a listed building

**8.2** The Responsible Engineer within the LDZ shall ensure that the presence of high rise buildings are recorded on the database using Ordnance Survey mapping co-ordinates and TeAR pipe object number (PON) of the closest/supplying pipe. Consideration should also be given to indicating high rise buildings on DRS with either a polygon or a note.

**8.3** The scheduling of the inspections shall be included in an electronic scheduling database.  
Repair work shall be recorded in Storms/TeAR

Uncontrolled when printed.

Uncontrolled when printed.



## APPENDIX A

### DATA COLLECTION FOR HIGH RISE BUILDINGS

#### SECTION 1 (MANDATORY)

This information is required to complete/update the database of High Rise buildings

##### Property Address

Name/No.  
Street/Road  
Town/City  
Post Code  
O/S References (Easting:----- Northing:-----)  
Nearest Pipe Object Number (PON)

##### Ownership of Property -

Local Authority  
Housing Association  
Private

##### Name and Address

##### Contact Name and Tele.No.

##### Property Details

Age of building  
Listed building Y/N

Number of Storeys  
Supplies per Storey

Name of PGT  
Ronan Point Construction Y/N  
(‘Large Panel Blocks’)  
Walls strengthened Y/N

Cellar/Basement/Underground Garage Y/N  
Included on Existing Supplementary Survey Register Y/N  
Provision for External Riser Replacement Y/N  
Provision for Internal Riser Replacement Y/N  
Digital Photograph(s) of the Property Taken Y/N

#### SECTION 2

This information is to be compiled from on-site inspection

##### Visual Condition Assessment - Riser Details

No. of Risers

	<u>Riser 1</u>	<u>Riser 2</u>	<u>Riser 3</u>	<u>Riser 4+</u>
▪ Length-----				
▪ Diameter(s)-----				
▪ Change Position (storey)				
▪ Material-----				
▪ Above or Below Ground Entry				
▪ Type of Joints-----				
▪ Accessible Y/N-----				
▪ Shaft Y/N-----				
▪ Ventilated Y/N-----				
▪ Exposed Y/N-----				
▪ Unventilated Voids Y/N-----				
▪ Sleeves, Fire Proofing Y/N-----				
▪ Passing Through Solid Floors Y/N-----				
▪ Interfloor Sealing Material Concrete/Mastic/Other/None—				
▪ Dust Trap(s) Fitted Y/N-----				
▪ Riser Support Fitted Y/N-----				
▪ Accessible Emergency Control Valve(s) Fitted Y/N----				

- Service Isolation Valve(s)  
Fitted Y/N-----
- Pipe Environment-  
Wet/Damp/Dry-----
- Pipe Corrosion-  
Heavy (Flaking)Y/N-----  
Minimal (Surface Rust) Y/N -----  
None Y/N -----  
Exposed Pipework Y/N-----  
Protection Required Y/N-----

Sketch of Main(s)/Riser(s)  
Configuration Provided Y/N-----

### **Visual Condition Assessment – Above Ground Service Details - Min.10% Sample**

Total No. of Above Ground Services-----

- No.Assessed at -  
Top-----  
Middle-----  
Bottom-----
- Material(s)
- Average Length-----
- Diameter-----
- Accessible Y/N-----
- Exposed Y/N-----
- Laid in Unventilated Voids Y/N---
- Sleeves, Fire Proofing Y/N-----
- Passing Through  
Solid Floors Y/N-----
- Interfloor Sealing Material  
Concrete/Mastic/Other/None—
- Pipe Environment-  
Wet/Damp/Dry-----
- Pipe Corrosion-  
Heavy (Flaking)Y/N-----  
Minimal (Surface Rust)Y/N-----  
NoneY/N-----
- Exposed Pipework  
Protection Required Y/N-----

### **SECTION 3**

This information is to be compiled from on-site investigation

#### **Leakage Survey**

Perimeter Leakage Survey From Distribution Main to Building

- No. of indications-----
- Action(s) taken-----

Internal Leakage Survey of all Horizontal and Vertical Risers/Above Ground Service.

- No. of indications-----
- Leaking component(s)  
Joint (state type)-----  
Pipe Wall-----  
Valve-----  
Other-----



- Action(s) taken-----

#### SECTION 4

This information is to be compiled from on-site investigation

##### **Non-Destructive Testing**

- Location of test(s) -----
- Min. Wall Thickness found -----
- Action(s) taken-----

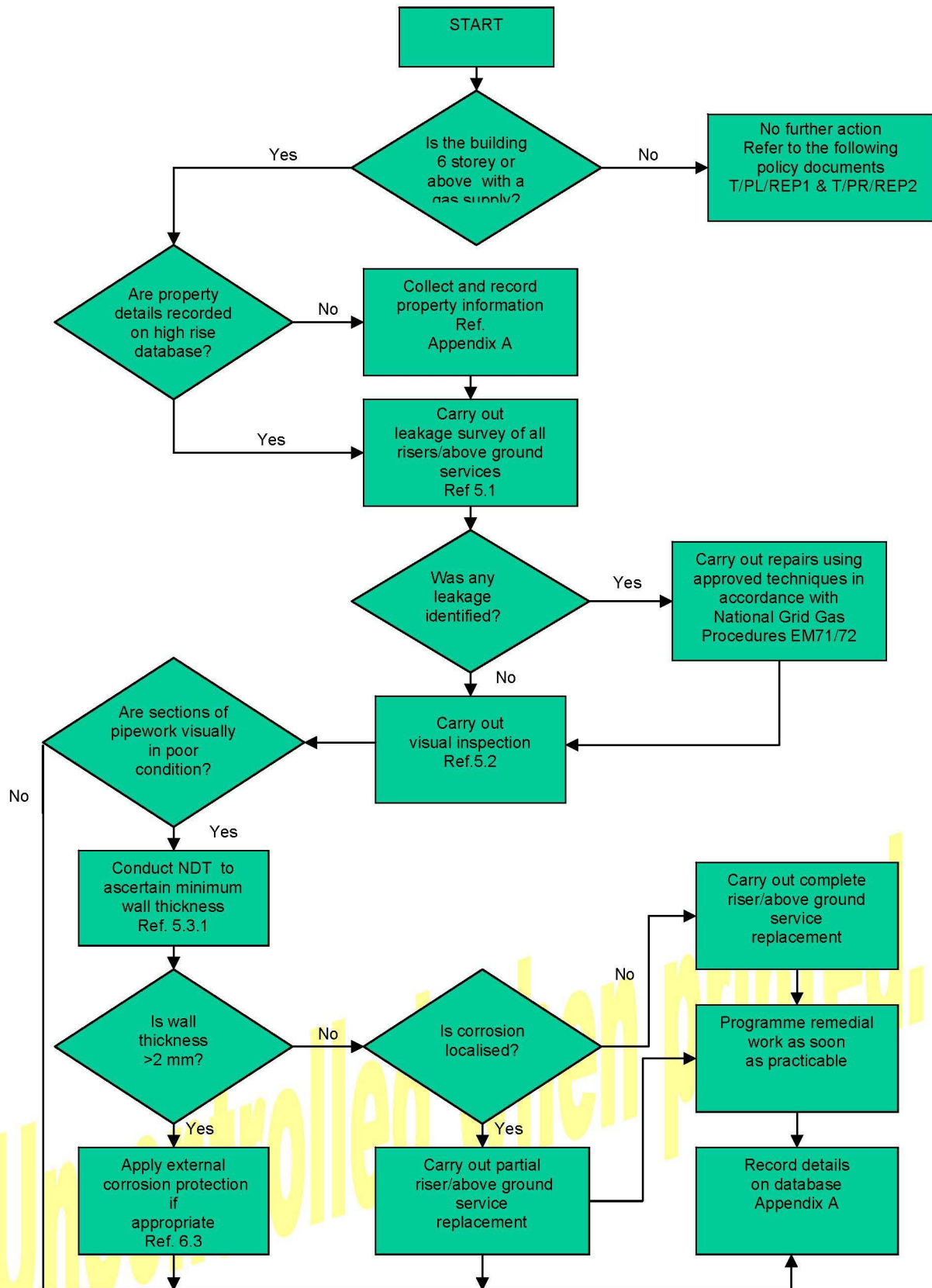
##### **Other Comments**

	Name	Signature	Pay No.	Date
Completed By:				
Verified By:				

Uncontrolled when printed.

## APPENDIX B

### DECISION FLOW-CHART



**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

**Buying documents**

Contractors and other users external to National Grid Gas should direct their requests for further copies of National Grid Gas documents to the department or group responsible for the initial issue of their contract documentation.

Copyright *National Grid Gas plc* 2006 ©, all rights reserved. No part of this publication may be reproduced in any material form (including photocopying and restoring in any medium or electronic means and whether or not transiently or incidentally) without the written permission of National Grid plc except in accordance with the provisions of the Copyright, Designs and Patents Act 1988.