



Policy Ref:	T/PR/LC/34
Title:	Work Procedure for High Rise Building Surveys and Risk Assessment
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Issue Date:	October 2016
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Version Control

Change record

Change date	Changes Made	Author
N/A	New document	Ali Hamdani

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Brief history

Description	Date
N/A – New document	July 2016

October 2016

Management Approval

Name	Position
Hilary Buxton	Head of Engineering

Implementation

Implementation timescales	
Approved	October 2016
Published	October 2016
Fully Implemented	November 2016

Training needs analysis

Identified users Specifically which roles must have an understanding of this Management Procedure	Level of understanding Aware Does Controls Manages	Training document / presentation	Dissemination method A, M email link and brief D, C brief and record
Surveyor	A, D	Formal training	D, C
MOBs Network Lead	A, D, M	Formal training	D, C
Customer Specialist	A, D	Briefing	D, C
Data Assurance	D	Presentation	A, M
MOBs Asset Strategy Manager	A, D, C, M	Formal training	D, C

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Document Summary

Purpose

This management procedure was approved by the Engineering Policy Manager, in July 2016 for use throughout National Grid Gas

Users should ensure that they are in possession of the latest edition and related bulletins by referring to the document library of Safety and Engineering documents available on the company Infonet.

Compliance with this safety and engineering document does not confer immunity from prosecution for breach of statutory or other legal obligations.

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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

Background

To comply with current legislation, National Grid Gas, as a gas transporter, shall satisfy the requirements of Regulation 13 of the Pipeline Safety Regulations 1996, and ensure pipelines are 'maintained in an efficient state, in efficient working order and in good repair'

The application of this procedure shall satisfy the requirements of the Policy for inspection, maintenance and monitoring of supplies to high and medium rise buildings - T/PL/LC/20.

This work procedure should be used alongside T/PM/LC/21 Management Procedure for the Asset Management of Gas Supplies to Multi Occupancy High and Medium Rise Buildings.

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1. Scope

National Grid has a duty to ensure that all its assets are in a safe and reliable condition.

This procedure is developed to support the requirements of T/PM/LC/21 and provides guidance for carrying out an asset health survey on a high rise multi occupancy building including a documented survey, generating a risk score output and completing further work where applicable.

Refer to Section 1 of LC/21 for details of exclusions from the scope of assessment. For meter banks inside the building structure, checks need to be carried out in accordance with Section 5 of *T/PR/TMP/3006 Work Procedure for Assessing the Suitability of the Location, Housing and ECV for a Domestic Meter Installation*.

2. Responsibilities

The table below provides a quick reference to the responsibilities detailed in this procedure.

Responsibilities		
Description	Typical Job Role	Section
Data Assurance (DA)	Specialists in DA (CAP directorate)	4.
MOBS Asset Strategy Manager	Strategy Engineering (Multi Occupancy Buildings)	4; 6; 9; 10; 12
Operations Manager	Network Operations Manager	4; 13
Customer Specialist	Network Customer Specialist, Engagement Lead (in some circumstances MOBs Network Lead may undertake this role)	4; 6; 9
MOBs Network Lead	Network Supervisor or Network Engineer (Emergency Operations)	6; 7; 10
Surveyor	Operations First Call Operative	4; 5; 5.1.2; 5.2; 5.3; 5.4; 5.5; 5.7; 6; 8; 9; 11; 12

3. Definitions

Reference	Identifier
High Rise Building (HRB)	Defined as a building having at least 6 storeys (six ceilings) above ground level (including the ground floor) that contains an up-stream pipe-work system, including internal and/or external risers and laterals to multiple meter points.
Multi Occupancy Building (MOB)	A building with a number of dwellings used for domestic purposes that is 3 storeys or above ground level.
Main	Defined as an extension of, or change to, the system with the potential to supply more than two (2) meter points (T/SP/NP/10). The underground pipe that supplies the MOB is classed a main but is often referred to as the 'supply pipe' or 'service pipe'.
Supply pipe	See 'main' definition above
Riser	<p>Risers are defined as an arrangement of pipes (predominantly vertical but with horizontal sections), which supply more than two meter points in an individual premise or a building containing many premises. A pipe is considered to be a riser once it enters the building (for internal risers) or emerges from below ground (for external risers)</p> <p>In this survey, there are two types of risers considered:</p> <ul style="list-style-type: none"> • Vertical Riser: A vertical pipe that carries gas between floors inside/outside a building. This is a pipe that supplies gas to more than two meter points. • Horizontal Riser: A horizontal pipe typically connected to a vertical riser that conveys gas along one floor level inside/outside a building. This is a pipe that supplies gas to more than two meter points.
Lateral	An above ground arrangement of pipes that supplies gas from the riser to the outlet of the ECVs for the meter installations on that floor.
Storey	Floor construction level. The ground floor is counted as a storey within the context of this procedure but any cellar/basement is not.
Pipeline Isolation Valve (PIV) / Service Isolation Valve (SIV)	Isolation valve on the main supplying a building to enable gas transporter to shut off the gas supply from the outside in an emergency. Locally, this valve may also be referred to as an SIV.
Emergency Control Valve (ECV)	A valve, intended for use by the consumer for shutting off the supply of gas to a single premise in an emergency. It is installed at the termination of the service and is the end of the network.
Proactive work	Proactive survey work is a scheduled activity which, depending on the outcome, may generate refurbishment or replacement.
Reactive work	Reactive work follows a customer reported escape or fault which, following initial site actions, may lead to the requirement for a survey and subsequent refurbishment or replacement.

Basement/ cellar	A room below ground level in the building that is being used for accommodation or as a storage area, or could easily be altered for accommodation or storage. Basements/cellars shall NOT be regarded as a storey within the context of this procedure.
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4. Survey preparation

The Operations Manager shall ensure that only competent surveyors are used to carry out the surveys of high rise buildings. The MOB's Asset Strategy Manager and Data Assurance shall ensure that the Surveyor has a full survey pack as detailed in T/PM/LC/21 (section 5.3).

Prior to the survey being carried out the Customer Specialist for the network shall ensure that:

- The building owner and occupiers have been contacted to explain the purpose of the survey and arrange a suitable date/time for the work. This contact information shall form part of the survey pack and be included on the associated engagement plan.

The surveyor shall ensure that the following equipment is available when carrying out the survey:

- Gas Detection Equipment (PPM)
- Camera (iPhone)
- Inspection Mirror
- Cat and Genny
- Bar Hole Tool
- Other instruments that may allow closer inspection of pipework subject to approval

5. Carrying out the survey

The surveyor shall attend site on the date and time agreed with the building owner. The survey shall be undertaken using the latest version of the HRB Risk Assessment Worksheet.

5.1 Supply pipework checks

5.1.1 Leakage checks

A walking leakage survey shall be carried out on the supply pipework from the main to the building line and around the perimeter of the building using a PPM gas detection instrument, covering:

- Surface boxes
- Visible gas pipework
- Accessible pipe entries
- Any openings to the building itself

If a sweep search using a PPM machine reveals no trace of gas then bar holing is not required. If the PPM survey identifies gas readings or the ground is sealed / frozen etc. then bar holing shall be used to break the surface at strategic points to assist the search.

5.1.2 Visual checks

In addition to the visual inspections of all the leakage survey locations above, all visible supply pipes shall be inspected to assess the condition. The location and condition of supply pipe along with photographs shall be recorded on the survey documentation.

Single services to ground floor flats/laundrettes, etc. in an HRB, should not be counted as supply pipes in the HRB risk calculation.

However, if the single supply to the ground floor flat has a below ground entry, the surveyor shall record this information in the HRB Risk Assessment Worksheet in the Supply Pipe Information section.

It is not necessary to record single services with external meters/above ground entries.

5.2 Isolation valve checks

Where an isolation valve is present and has been identified this shall be recorded on the survey documentation. Photographs shall be taken of the supply pipe isolation valve (along with its environment to assist subsequent location) and attached within the survey form along with the grid reference of the valve. Details shall also be given as to whether the valve can be accessed in an emergency; please refer to IGEM/G/5 Edition 2, section 7.1.

Where a supply isolation valve has been viewed as part of the survey, the surveyor shall confirm that it has been captured on ESRI. If the isolation valve has not been captured, a DR/4 report shall be raised.

5.3 Riser pipework

The surveyor shall attempt to inspect all visible riser pipework during the survey and complete the following actions:

- Locate and record the position of all risers and indicate whether they are internal or external
- Note the location where internal risers enter the building on the survey documentation
- Undertake a leakage survey measuring gas concentrations at a PPM level.
- Gas readings shall be taken and recorded at each location where a visual assessment is carried out.

Where risers are not visible this shall be clearly recorded on the survey documentation. If removal of screwed panels may allow more visibility of riser pipework, attempts should be made to get a copy of the Asbestos Survey Report from the property owner to confirm Asbestos or Asbestos Containing Materials (ACMs) are not present within the panels. Following this confirmation, the screws can be removed to view the pipework.

If this confirmation is not available, the FCO should not remove the screws however, pictures should be taken of all such panels with explanatory comments added.

Where a riser is entering the building, gas readings shall be taken as close as reasonably practicable to the base of the riser.

For below ground entries, the riser should be located in a sand box as per the requirements of IGEM/G/5. If this is not the case, the surveyor shall note the information in the comments field of the survey form.

If a leak is found inside the building during the survey on the internal riser, the escape shall be managed in accordance with T/PR/EM/72.

Where a riser is located in a shaft, the gas measurements shall be taken at the top of the shaft. If the shaft is sealed at each floor, a leakage survey shall be carried out by gaining access to every space containing pipework, e.g. inside flats and cupboards, etc. Where the

necessary access cannot be gained, readings shall be taken through an opening such as a letterbox or ventilation grille and recorded on the survey.

Where it is not possible to complete a full leakage survey the reasons for this shall be recorded on the survey form, e.g. 'riser pipework not accessible'.

5.4 Riser pipework inspection & condition assessment

The surveyor shall attempt to inspect all of the visible riser pipework to establish its condition. The information shall be recorded on the survey form and include (the following list is not exhaustive and the surveyor shall complete all mandatory sections of the worksheet):

- Pipe material and coating
- Location of risers including Easting's and Northing's
- Condition of pipes and level of corrosion
- Suitability of pipe supports and level of corrosion
- Assessment of sleeves and pipework that runs through floors, walls and voids, where visible
- Photographs of the riser pipework
- Location of isolations valves and a record of their accessibility
- Location and available details for any pipework that is not visible

Where riser pipework runs through individual dwellings, attempts (as per section 9) shall be made to access all of those dwellings. Where it is not possible to inspect all the riser pipework, the surveyor shall record these locations on the survey form.

5.5 Laterals inspections

Laterals shall be inspected as part of the survey on the building. The number of laterals requiring inspection shall be determined using the tables below:

Inspection location (Laterals on Vertical Risers)	10 storeys or less	11 to 20 storeys	21 or more storeys
Top	Yes	Yes	Yes
Additional inspection locations	No	Yes	Yes
Bottom	Yes	Yes	Yes
Minimum number of inspections per riser in total	2	3	4

Inspection location (Laterals on Horizontal Risers)	5 flats or less	6 to 20 flats	21 or more flats
Beginning	Yes	Yes	Yes
Additional inspection locations	No	No	Yes
End	No	Yes	Yes
Minimum number of inspections per riser in total	1	2	3

If the riser pipe environment is damp/wet or unventilated, etc. and/or severe corrosion is found, then the surveyor shall access as many laterals on that riser as is reasonably practicable.

Where the top of a riser (or the end of a horizontal riser) is inaccessible, the surveyor should attempt to access an additional point as close to the top (or to the end of riser in case of horizontal risers) of the riser as reasonably practicable.

Where access is gained a leakage survey of lateral pipework and the Emergency Control Valves shall be undertaken using a PPM instrument. Gas concentrations shall be measured and recorded at each location where a visual inspection is undertaken.

If a leak is found inside the building, the escape shall be managed in accordance with PR/EM/72.

5.6 Lateral condition assessment

Laterals pipework, as specified in section 5.5, shall be inspected to establish its condition. The information shall be recorded on the survey form and include:

- Pipe material and coating

Strategy Manager should re-schedule the survey within 6 months of the original survey being carried out.

7. Assessing the level of corrosion

A visual inspection of the riser and lateral pipework shall be undertaken and the level of corrosion assessed.

Where severe corrosion is identified, photographic evidence shall be collected and sent to the MOB's Network Lead.

7.1 Identification of severe corrosion

If severe corrosion has been identified as part of a High Rise Survey, Sections 5.5.1 and 7.5 of the LC/21 shall be followed.

8. Sleeving and fire stopping of pipework through floors, walls and voids

The survey shall identify and document the locations where sleeving for pipework passes through floors. Any other location where it is possible for water to accumulate and contribute to an increased likelihood of corrosion of pipework, shall also be documented in the survey.

The surveyor shall note locations in the vicinity of the gas pipework where escaping gas could enter the building, e.g. gaps/holes, vents, etc. Methods for sealing the potential gas entry points should also be included. It is not necessary to inspect pipe vicinity for ingress points on every floor if the pipework is in good condition or where the ingress points are identical on each floor.

All observations made during the survey shall be noted in the comments boxes within the survey form.

9. Incomplete survey

Where a survey cannot be completed in its entirety (as defined in this work procedure) at the first visit then two additional visits shall be made at different times of the day. If the survey is completed on the second visit then the third visit is not required. In order to maximise the potential for access, the additional visits shall be undertaken during different weeks and at different times of the day.

If after three visits, the survey is not fully complete then the surveyor shall sign the form to confirm that all reasonably practicable measures have been undertaken to achieve completion.

The Customer Specialist shall write to the building owner stating that National Grid Gas Distribution were unable to complete their inspection regime for the upstream gas pipework and that appropriate access must be made available - it shall also be made clear that in the event of an incident the building owner may be held responsible. A copy of the letter shall be provided to the MOB's Asset Strategy Manager for retention.

10. Survey completion

Following submission of the survey, the MOB's Network Lead shall:

- Review the survey form and sign off the findings and recommendations contained therein.
- Type their name in the 'Checked by' box (Tab No 1. Building Description) within the survey form
- email the form to the MOB's Asset Strategy Manager ([.Box.NetworkStrategy.Mobs](#))

The MOB's Asset Strategy Manager shall ensure that a unique risk score is assigned to the building. This will determine when the next survey on the building should take place, as per the requirements of table 7.4 of T/PM/LC/21.

11. Abandoned pipework

Where the internal pipework in a building has been replaced, the surveyor shall undertake a visual inspection to establish, as far as is reasonably practicable, that abandoned pipework does not include any open ends.

12. Pipework repairs

Where pipework repairs are identified during the survey, the condition of the repairs shall be visually assessed. If there are signs of damage, the Surveyor shall:

- Take gas readings with a PPM instrument
- Take photographs of the pipework.
- Record any gas readings, repair type (Interim/Temporary) and condition of the repair in survey form (Tab 6: Repairs).

Where gas readings are detected, the guidance in T/PR/EM/72 shall be followed.

Where the surveyor believes pipework has been damaged by a third party, or due to the building owners negligence, (e.g. not maintaining the building adequately) this information shall be recorded in the survey summary free text box.

The MOBS Asset Strategy Manager shall review all documented record of damage to the pipework and make a decision on whether to pursue recovery of costs.

13. HRB risk assessment worksheet

The Operations Manager shall ensure that the latest version of the HRB Risk Assessment Worksheet is used to document HRB survey output.

The blank template for this is available from the MOBs Safety & Network Strategy SharePoint website.

Appendix A - Photographs of corrosion level

Raychem repair technique



PE Riser with superficial corrosion of entry tee



Moderate corrosion along the length of riser pipe



Severe pitting corrosion (LC/33 assessment required)



Severe corrosion (LC/33 assessment required)



Appendix B Related Documents

Reference	Title
T/PR/LC/13	National Grid Procedure 'walking leakage detection surveys using portable instruments of high sensitivity Parts Per Million (PPM detectors)'
T/PL/LC/20	Policy for inspection, maintenance and monitoring of supplies to high and medium rise buildings.
T/PM/LC/21	Management Procedure for the asset management of gas supplies to Multi-Occupancy High and Medium rise buildings
T/PR/LC/29	Work Procedure for Medium Rise Building Surveys and Risk Assessments
T/PR/LC/33	Work procedure for assessment of corrosion damage on steel pipework supplying multi occupancy high and medium rise buildings
External document - 138038	DNV GL – Development of the Risk Assessment Procedure and Spreadsheet (guidance document)
NGUK/PR/EM/72	National Grid Procedure 'National Grid Gas Operational Procedure for dealing with gas escapes and other emergencies'
T/PR/EM/74	National Grid Gas Procedure 'work procedures for locating and repairing gas escapes on the network operating pressure not exceeding 7bar'
T/PM/ECP/2	National Grid Gas Procedure 'Management Procedure for Cathodic Protection of Buried Steel Systems'
T/PM/REP/2	Management Procedure for Distribution Pipe Replacement
T/PM/DR/23	Management Procedure for Pipe Asset Record Update & Validation
IGEM/G/5	Institution of Gas Engineers and Managers Document – Gas in Flats and other Multi-dwelling buildings
Health and Safety Executive	Pipeline Safety Regulations 1996 – Design, Construction and Installation of Gas Pipes
T/PR/TMP/3006	Work Procedure for Assessing the Suitability of the Location, Housing and ECV for a Domestic Meter Installation.

End note

Comments

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October 2016