

Rodney Hancox
Gas Engineering
Grenfell Tower Inquiry

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Introduction

1. In my report for the Inquiry dated 1 October 2019 I made four recommendations covering the supply of gas relevant to the issues addressed in my report. Two of those related to
 - a. A replacement/decommissioning riser programme
 - b. Accessibility of Pipeline Isolation Valves (PIV)
2. I have been asked to provide a supplementary report dealing with issues raised by James Harrison of Cadent Gas Ltd in his third witness statement {CAD00003043} in response to my recommendations relating to a replacement/decommissioning riser programme and the accessibility of PIVs. My instructions are:

Considering the witness statement of James Harrison dated 19 March 2021 {CAD00003043}.

In relation to your recommendation on Replacement / Decommissioning Riser Programme (at paragraphs 468 to 469),

- a. *Who should be responsible for riser replacement or decommissioning?*
- b. *Should a riser replacement/decommissioning programme be reactive or proactive, or both?*
- c. *What timescales do you consider appropriate for any such replacement/decommissioning programme?*

In relation to your recommendation as to the accessibility of Pipeline Isolation Valves (at paragraphs 470 to 472),

- a. *Do you agree with the proposal by Cadent that the Accountable Person as identified in the Draft Building Safety Bill has the responsibility to ensure accessibility of PIVs proactively?*
- b. *Should the obligation to inspect and keep accessible PIVs be reactive, proactive or both?*
- c. *Given your responses to (a) and (b), has your view on the frequency of assessing and remediating accessibility of PIVs changed?*

3. In preparing this report, I understand that my duty is to assist the Inquiry on matters within my expertise. I have complied, and will continue to comply, with that duty. I am aware of the requirements of Part 35 of the Civil Procedure Rules (CPR 35) and the supporting Practice Direction 35 (PD 35), and of the Civil Justice Council Guidance for the Instruction of Experts in Civil Claims 2014.
4. I confirm that I have exercised reasonable skill and care in preparing this report.
5. I confirm that I have made clear which facts and matters referred to in this report are within my own knowledge and which are not. Those that are within my own knowledge I confirm to be true. The opinions I have expressed represent my true and complete professional opinions on the matters to which they refer. Where, in my experience, a range of opinions on any matter exists amongst gas engineering professionals, I have summarized the range of opinion, while clearly giving my opinion along with the reasons for it. I have also identified any assumptions that I have made in reaching my conclusions.
6. Moreover, particularly in the case of guidance and the content of standards, I have set out only the key issues that, subjectively, I consider might be most relevant to the Inquiry. Accordingly, before relying on these Parts of this report in relation to any significant findings of the Inquiry, reference should be made to the full copies of the standards, legislation and guidance, as amended at the relevant time.
7. I reserve the right to alter my opinions and conclusions in the light of any further information of which I am currently unaware. Under such circumstances, I recognize, and will comply with, my obligation to inform the Inquiry.

HSE Intervention Programme 2018 – 2019

8. In May 2018 the HSE Energy Division initiated an inspection programme on the arrangements for integrity management of network pipelines in high rise buildings which they defined as being those with six or more floors. A Topic Pack {RHX00000015} for inspectors was published and it was also made available to all Gas Transporters and those owners of private gas networks known to convey gas to and within multi-occupancy buildings. The Topic Pack addresses:-

- Legal framework and principal legal duties;
- HQ activities such as policies, procedures, records and risk ranking;
- On site activities, which are to be undertaken primarily to verify the results of the HQ intervention;
- Enforcement management and guidance;
- Checklists for use by the HSE Inspectors as prompts when undertaking HQ and on site interventions.

9. Of particular relevance to the subjects of this supplementary report are:

- In section 7 when discussing risk and the benchmark of Regulation 13 of the Pipelines Safety Regulations 1996 - *The operator shall ensure that a pipeline is maintained in an efficient state, in efficient working order and in good repair* – the HSE has qualified the Regulation with the phrase “*so that in all cases there is a nil/negligible chance of a significant injury occurring*” so as to indicate the standard to be expected from a Gas Transporter complying with this Regulation.
- The HQ inspection checklist includes consideration of the question “*is a clear risk based prioritisation system in place in relation to inspection, maintenance and condition replacement*”. *(My emphasis)*
- The on-site inspection checklist includes the questions “*How much of the overall system is available for inspection? How has an adequate representative view of riser condition been formed?*”

10. Inspections of each Gas Transporter were carried out during 2018 and 2019 by HSE Inspectors. A report (“the HSE Inspection Findings Report”) {RHX00000014} was published in February 2020. It summarised the findings of the HSE Inspectors across the Gas Transporter population¹ as well as identifying areas requiring future work. Consequently it can be considered to be a very authoritative and informed review of

¹ The Gas Transporter population is made up of the successors to British Gas/Transco and which are often referred to collectively as Gas Distribution Network Operators (GDNOs) and the Independent Gas Transporters (IGTs). Each Gas Transporter is an independent company in its own right, both operationally and financially. The GDNOs are Cadent Gas, Scotia Gas, Northern Gas Networks and Wales and West Utilities. The IGTs have come into being since the enactment of the Gas Act 1995 which amended the 1986 Act. Generally the IGTs design and construct gas networks supplying new developments and it is very unlikely that any of them supply gas to pre 1997 multi-occupancy buildings.

11. GSMR also requires under Regulations 7(12) and 7(13) that gas escapes resulting in or likely to have resulted in fires or explosions shall be investigated and a report of the investigation shall be made to the HSE. Paragraph 3.7 of the HSE Inspection Findings Report on the 2018-2019 Intervention Programme {RHX00000014/8} includes the information that an analysis of the data recorded between 2011/12 and 2018/19 indicate that of 2121 reports made under these Regulations, 19 involved multi-occupancy buildings and of those 16 resulted in evacuation.

12. (Paragraph 468) Many high and medium rise blocks of flats were designed and constructed prior to the effective introduction of the Gas Safety Regulations 1972, which required pipes to be sleeved through walls and floors and not to be placed in unventilated voids. To my knowledge there are a significant number of blocks of flats in London, Scotland Central Belt and other cities in the United Kingdom of similar vintage and with the same sleeving and ventilation issues as exhibited by Residential Gas Supply No.1.
13. (Paragraph 469) Therefore, I believe the Inquiry should recommend the Gas Transporters and by implication other interested parties such as the HSE, Ofgem and Local Authorities and Housing Associations with private gas networks have a replacement/decommissioning programme for internal risers and laterals that are not compliant with the Gas Safety Regulations 1972.

14. On behalf of Cadent Gas Ltd Mr Harrison rejects my recommendation to have a replacement/decommissioning programme for internal risers and laterals that are not compliant with the Gas Safety Regulations 1972 on the following grounds:

- *There is already an effective and proportionate regime in place to manage the risks associated with gas infrastructure in MOBs, [Multi-occupancy Buildings] which has been recently reviewed by the HSE, including in the period after the fire at the Tower;*
- *In addition to being disproportionate and unnecessary, the recommended approach would be hugely disruptive for customers, resulting in many having their supply interrupted, in some cases, for lengthy periods of time;*
- *The likely cost associated with the recommendation is in excess of £170 million, which would be borne by customers through the regulatory regime; and*
- *It results in timing and workforce issues, which cannot be addressed without further driving up cost.*

15. Mr Harrison goes on to say in support of his claim that there is already an effective and proportionate regime in place to manage the risks associated with gas infrastructure in MOBs that

- *there has never been an incident² (e.g. an explosion or fire causing loss of life or injury or significant property damage) caused by the failure of a riser.*
- *The risks ... are currently managed through an effective combination of: (1) a proactive rolling survey programme, which results where necessary (based on survey results) in the carrying out of repairs and maintenance, refurbishment or replacement; and (2) a reactive fast response National Gas Emergency Service, resulting – where necessary – in repair, refurbishment or replacement.*

Risks Associated with Pre 1973 Riser Systems

16. As stated in my main report the Gas Safety Regulations came into force on 1st December 1972. They were very prescriptive and they included the requirements that

- pipes were to be sleeved through walls and floors
- installing pipes in an unventilated void was prohibited.

17. From conversations with other Gas Engineering professionals of a similar age to myself, I understand that the requirement to sleeve wall and floor penetrations stemmed from there having been a number of gas leaks in the period prior to the introduction of the Regulations from pipes that had been degraded by the chemical reaction of the concrete in which they had been encased. One of the roles of the sleeve, therefore, was to protect the pipe from such degradation.

18. The reason for prohibiting the installation of gas pipes in unventilated voids is to minimise the risk of there being a build-up of a gas in air mixture from credible minor leaks to the lower explosive limit (5% gas in air).

Access Difficulties

19. A feature of many of the pre 1973 blocks of flats which I have seen is that risers often rise up from one flat to the one above. Access to them is only from within the flat.

² Please see paragraph 11 above.

Riser

Fig. 1a - Riser Entering Flat from Below

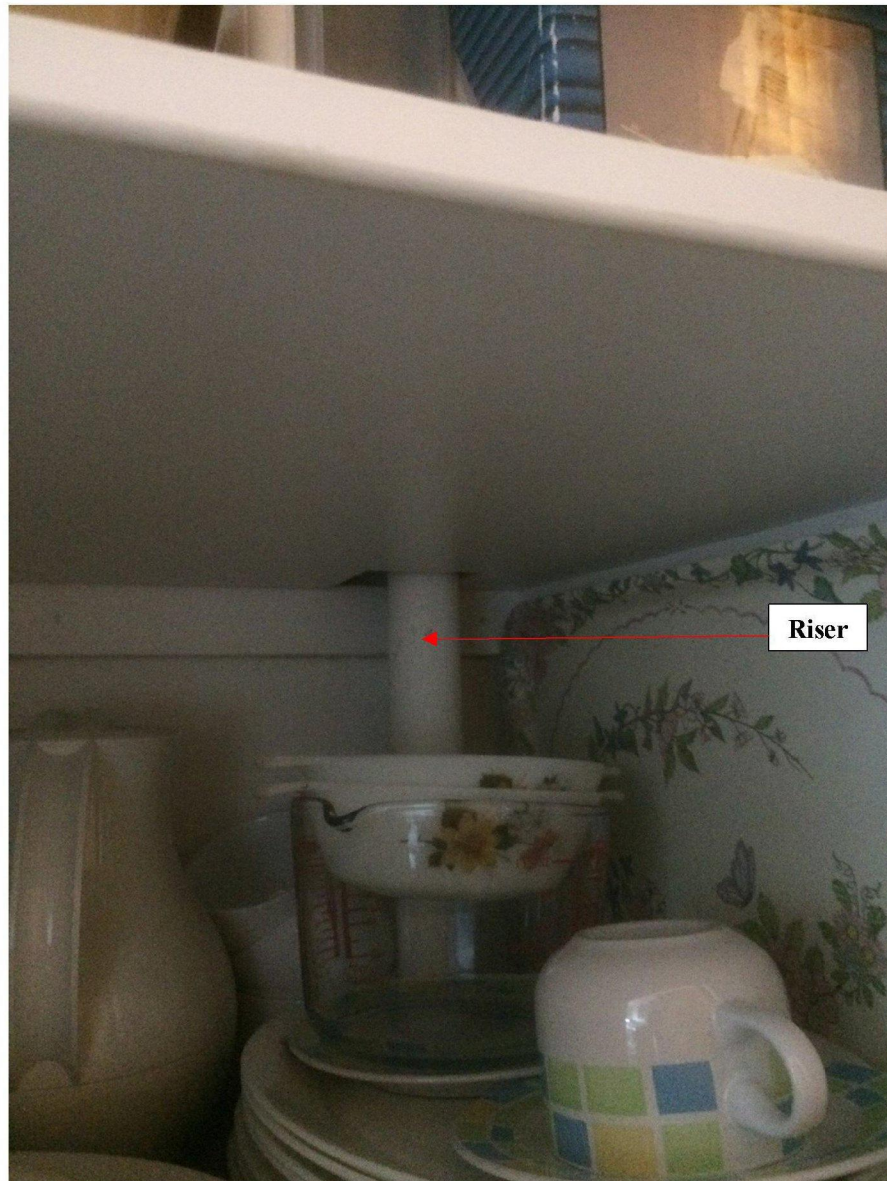


Fig. 1b - Mid-Point of Riser in Flat

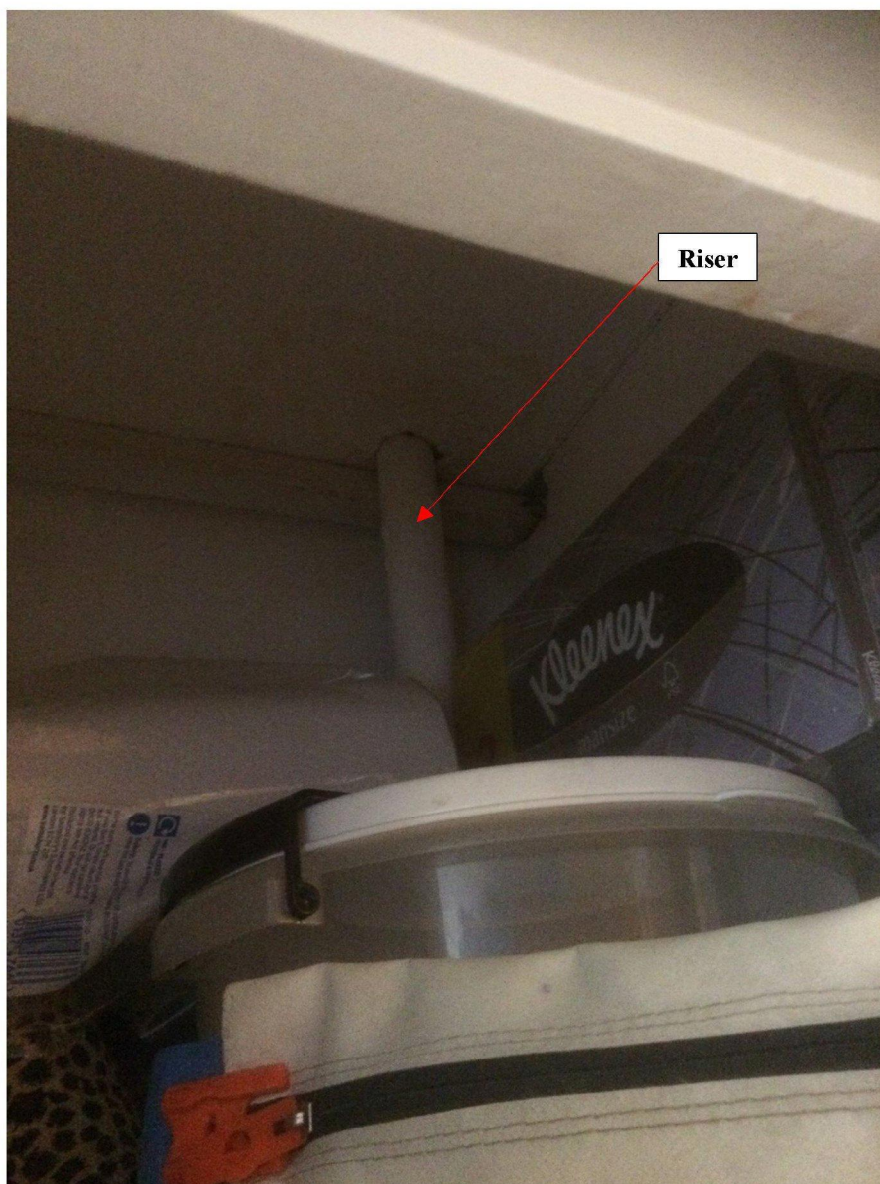


Fig. 1c - Riser Exiting Flat to go into Flat Above

20. In his third witness statement {CAD00003043} Mr Harrison discusses the difficulties Cadent Gas Ltd. experience gaining access to dwellings. I can confirm witnessing such difficulties when accompanying inspectors working for other Gas Transporters and social housing providers who operate private gas networks. Such difficulties for Gas Transporters are not surprising given that residents

- Go out to work
- Go on holiday

- Deliver children to and collect them from school or play group
- Go shopping
- Visit the Doctor
- Object to strangers entering their flat to rummage through their cupboards, especially if they do not use gas themselves.

and undertake the other multitude of activities that a normal group of people will do as they go about their daily lives.

Replacement Philosophy

21. As with maintenance there are three asset replacement philosophies which may be considered when determining the most appropriate approach for gas risers and laterals in multi occupancy buildings. They are:

- Reactive replacement which is where replacement is only considered when the riser has failed completely i.e. when it has been cut off following a gas escape.
- Predicted replacement which is where data analysis is used to predict the imminent failure of the riser such that action is taken before an escape occurs.
- Preventative replacement which is where there is a systematic programme of replacing risers and laterals with known risk factors such as pipes being concreted into floors.

22. Each replacement philosophy has its advantages and disadvantages. From a safety perspective, I believe that no matter how low is the probability of a serious gas incident,

- A serious gas incident is most likely to occur if a purely reactive replacement approach is followed.
- The efficiency of a predicted replacement approach is very dependent upon the availability of sufficient accurate data from all relevant sources including periodic survey. Any sampling must be representative of the installation as a whole and it must also be sufficient. Where risers are located in difficult to access locations such data will not be available or will not be sufficient. The risk, therefore, is that key indicators of imminent failure will be missed.

I believe this is supported by the HSE Inspection Findings Report {RHX00000014}. Paragraph 2.5 states that

“A lack of quality records is a common observation and restricts the operator’s ability to provide a robust demonstration of network integrity. Given the practical difficulties involved in providing assurance of the condition of the network, further work needs to be undertaken by the industry on the basis by which risk-based decisions on inspection frequency and replacement (my emphasis) are made”.

Paragraph 2.6 (4) states that

“A lack of consistent condition based data can call into question the validity of risk based systems”.

Other relevant observations in the HSE Inspection Findings Report {RHX00000014} include

- Paragraph 4.2.6 which highlights the need for careful consideration of the parameters and weighting used to produce inspection frequency;
- Paragraphs 5.4 – 5.8 inclusive which discuss risk based systems generally.

The 2020/2021 HSE intervention plan will include validation of risk based models. Consequently, I interpret the HSE’s findings as indicating that the “jury is still out” over the question of whether there is a sufficiently robust risk based replacement programme in existence anywhere in the industry at this point in time.

- A preventative replacement programme will involve the replacement of risers before imminent failure is likely. On the other hand, a preventative replacement programme targeting those risers with known risk factors should reduce the risk of a serious gas incident occurring and will not be overly hampered by the absence of data from difficult to access locations.

23. Mr Harrison has disclosed Cadent Gas Ltd.’s document GD/PM/MOB/2 - Management Procedure for the Inspection, Maintenance, Monitoring and

Management of Supplies to Multi Occupancy Buildings {CAD00003041}. In addition, Cadent Gas Ltd has disclosed a report from its consultants DNVGL that describes the development of the risk assessment procedure it uses for Multi-occupancy Buildings {CAD00002638}.

24. It is my understanding from reading these two documents and Mr Harrison's third witness statement that Cadent's approach³ to riser replacement in Multi Occupancy Buildings can be summarised as

- Reactive replacement is being actively pursued in response to reported escapes and it is the risk reduction measure of last resort.
- Multi Occupancy Buildings are ranked in order of perceived risk from the results of surveys. The survey score delivers a priority score rather than an absolute measurement of risk.
- Survey scores in excess of 210,000 place a building on to an annual survey programme and subject to an assessment of the need for risk reduction measures to be taken.

25. Whilst the percentage of the riser surveyed with a gas detection instrument is recorded, it appears to me that the consequence of not being able to record a full or sufficient set of data on the condition of the risers and laterals is that the building's score and hence ranking may be increased to the extent that the building's inspection frequency may be increased. In the absence of sufficient inspection data the need for risk reduction measures including replacement will be difficult if not impossible to determine under Cadent's current regime.

26. I would categorise Cadent's current regime for replacement as being a Reactive replacement one informed by often incomplete survey data.

³ Each Gas Transporter jealously guards the confidentiality of its approach to riser replacement. Except for one of the IGTs I am not a party to the relevant policies and procedures of other Gas Transporters and hence I am unable to comment upon those of the other GDNs which are the GTs which would be captured by my recommendation. However, I have no reason to believe that any of the other GDNs have a more robust risk based approach to riser replacement than Cadent. None of the buildings supplied by the IGTs is likely to be more than 24 years old and hence a sophisticated risk based approach to riser replacement as opposed to inspection is unlikely to be needed for some considerable time.

Decommissioning/Buy-out

27. Section 10 of the Gas Act 1986 as amended {INQ00014770/52} addresses the duty of a Gas Transporter to connect premises situated within 23 metres of a relevant main. Under normal circumstances, I believe that a Gas Transporter is required to replace the riser and laterals supplying flats unless an agreement could be reached with all of the consumers supplied by the original risers not to do so. Such an agreement would involve financial inducement i.e. buyout.
28. However, I believe Sub-section 9 of Section 10 rescinds the requirement placed upon the Gas Transporter to replace their apparatus where replacement cannot be carried out in accordance with current legislation or standards.
29. Therefore, I believe that at Grenfell Tower, once the TMO had refused to allow the replacement riser to be installed on the external wall of the Tower and given that Cadent Gas Ltd had identified the lack of ventilation for the proposed route up the stairwell, for example see {CAD00000034}, Cadent Gas Ltd should have advised the TMO and the affected residents that it was unable to proceed with the replacement of the riser. The question of buy-out or compensation for new electric cookers would then have become a customer relations or reputational issue.

Recommendation on Replacement / Decommissioning Riser Programme - Who should be responsible for riser replacement or decommissioning?

30. I believe Section 10 of the Gas Act 1986 as amended {INQ00014770/52} places the responsibility for riser replacement or decommissioning firmly upon the Gas Transporter.
31. However, if the Building Owner objects to a compliant replacement taking place then the Gas Transporter will be responsible for ensuring that their original system is decommissioned safely if it has not already so done.

Recommendation on Replacement / Decommissioning Riser Programme - Should a riser replacement/decommissioning programme be reactive or proactive, or both?

32. The recommendation in my original report, see paragraphs 8 and 9 above, was heavily influenced by my experience in the Eastern Region of British Gas in the 1970s.
33. From the beginning of 1974 to late summer 1975 I was the Leakage Control Engineer at Regional HQ. It was a relatively junior staff officer role but it did mean that I was very involved with the Region's response to a growing leakage problem which manifested itself post conversion to Natural Gas.
34. At the time it was the practice to deploy a vehicle fitted with highly sensitive gas detection equipment known as FIM or Flame Ionisation Method to survey the whole of the gas distribution network at least once a year. The indications picked up by the survey team were investigated and leaks were classified as
- Class 1 – requiring immediate attention as if it was a public reported escape
 - Class 2 – requiring programmed action such as “find and fix”, internal spraying with diethylene glycol for lead yarn joints or oil fogging to treat rubber based mechanical joints.
 - Class 3 – monitor for signs of deterioration.
 - No Trace
35. Marked up plans were produced for discussion with local management to develop a leakage control strategy for particular areas as required.
36. In common with many of the other Regions of British Gas, replacement in Eastern Region was only ever considered as a last resort and it was very rare for a replacement project to be approved. Those that were, notwithstanding a British Gas decision taken in 1974 to increase the rate of replacement mains from 500 miles per year to 1200 miles per year over a 3 year period,⁴ were for mains often deemed to be falling apart! In other words a minimal reactive replacement policy was being followed.
37. Notwithstanding the far more sophisticated approach to determining a building risk ranking list and associated inspection frequency I cannot help but see similarities between Eastern Region's pre 1977 - 1978 approach to mains replacement and the current approach to riser replacement.

⁴ See paragraph I23 in the Extracts from The King Report {RHX00000019/13}

38. In the 1976 Christmas – New Year period, there were serious high profile gas explosions in Beckenham, Bradford, Brentford and Bristol. An inquiry was set up under Professor Dr P J King and he produced a report, which became known as “The King Report”⁵, and which was published in March 1977.
39. It was my view at the time, and it still is now, that the reactive replacement policy being followed within Eastern and some other Regions of British Gas was discredited by the King Report’s recommendation to replace all high risk priority mains by 1984 at the latest. In response to that recommendation, British Gas accelerated the mains replacement programme across the country from 1978, initially targeting those mains deemed most at risk of breaking and causing fatalities e.g. 3” cast iron pipes under sealed surfaces in close proximity to property with cellars. I recall that the impact of this policy change included the rapid doubling of the number of pipelaying teams and supervisory/technical staff under my control as District Engineer for the Luton District.
40. Notwithstanding that high risk mains were dealt with many years ago, the Iron Mains Risk Reduction Programme is still ongoing and it is monitored by the HSE. Details are presented on the HSE web-site and in particular see:
- Guide to Regulation 13A of the Pipeline Safety Regulations {RHX00000018};
 - Enforcement Policy for the iron mains risk reduction programme 2013 – 2021 {RHX00000016};
 - Gas Distribution Network Operators’ approved risk reduction programmes 2013 – 2017 and 2013 – 2021 {RHX00000017}.
41. Because of the access issues highlighted by Mr Harrison, which I have also experienced and the discussion above, I do not believe that a purely reactive replacement policy minimises the risk of serious incidents sufficiently. I believe cognizance has to be taken of risk factors such as pipes over 50 years old being encased in concrete and in unventilated voids and that an approach similar to that which applies to the iron mains risk reduction programme is required.

⁵ A copy is to be found at the National Archives as POWE 29/1005 – Report of The Inquiry into Serious Gas Explosions chaired by Dr P J King. Photographs of relevant pages are disclosed as {RHX00000019}.

Recommendation on Replacement / Decommissioning Riser Programme – What timescales do you consider appropriate for any such replacement/decommissioning programme?

45. However, the above discussion regarding a replacement programme for multiple occupancy buildings may be rendered academic if or when the Gas Industry converts to 100% Hydrogen⁶. At this point in time IGEN is stating that services supplying 100% Hydrogen to flats and other multi-occupancy buildings are not currently permitted above 4 storeys as the safe use of Hydrogen in these buildings has not yet been demonstrated. If this position is confirmed by research then each Gas Transporter will need to carry out a decommissioning programme of gas risers and laterals in all multi-occupancy buildings with 5 or more floors as part of its conversion programme.

⁶ Currently, research is being undertaken into the consequential effects of converting the country's gas supply to firstly an 80% Natural Gas/ 20% Hydrogen mix and secondly to a 100% Hydrogen supply. Supplements to current Institution of Gas Engineer and Managers (IGEM) Standards are being developed using the latest publicly available information and they may include some conservative requirements which further research may deem not necessary. Each supplement will be updated regularly following the publication of new research.

46. (Paragraph 470) The problem of PIV valve boxes being “lost” when re-surfacing or landscaping works are carried out has been known about in the Gas Industry for years. The events of 14th June 2017 have brought attention to it.
47. (Paragraph 471) Current inspection practice is to check the accessibility of the PIV at the same time as the rest of the gas infrastructure for the block of flats is inspected. This can be as infrequent as 10 years, which in my opinion is too long.
48. (Paragraph 472) I am aware that under Regulations 4(3) and 9(1)(e) of the Gas Safety (Management) Regulations 1996, each Gas Transporter is required to undertake a thorough review of its Gas Safety Case every three years and is required to submit a report of that review ⁷to the Health and Safety Executive. As I believe 3 years is a suitable frequency for checking the accessibility of PIVs and the submission of a 3 yearly report to the HSE provides a suitable opportunity for a progress report to be made, I believe the Inquiry should recommend the HSE mandate each Gas Transporter to carry out a 3 yearly PIV accessibility inspection programme and progress on that inspection programme should be reported upon in the 3 yearly report.
49. This recommendation relates to all Multi-occupancy Buildings, not just those deemed High Rise or High Risk.

50. On behalf of Cadent Gas Ltd Mr Harrison also rejects this recommendation on the grounds that

- *The recommendation currently proposed could still lead to PIVs being inaccessible for a long period of time. This is in part because the*

⁷ The HSE's published guide to GSR, L80, {INQ00014773} states in paragraph 30 that the main purpose of the review is to ensure that the gas transporter re-examines the entire contents of their safety case at regular intervals.

- *The creation of an identifiable party for each high-rise building [who would be responsible for ensuring that PIVs do not become inaccessible as a result of building, resurfacing or landscaping work around the building] and the joined up approach between gas transporter and other stakeholders provided for in the draft Building Safety Bill, should address the industry-wide issues described in relation to PIVs.*

- Cadent would support a recommendation that a building owner or identifiable party should have an ongoing obligation for ensuring that PIVs do not become inaccessible as a result of building, resurfacing or landscaping work around the building.
- Cadent's rolling building surveys require Cadent to state whether PIVs can be visually identified at the premises surveyed. As these surveys take place every 1, 5 or 10 years, it is Cadent's view that it is important that there is also an overarching obligation on building owners or an identifiable party to ensure that PIVs are not built or covered over. The [Draft] Building Safety Bill provides the framework for this obligation.
- Cadent would support a recommendation from the Inquiry designed to address the problems caused by the wrongful building over of PIVs. However, Cadent is concerned that the recommendation currently proposed could still lead to PIVs being inaccessible for a long period of time. This is in part because the recommendation does not take account of the survey process already in place.
- In addition, Cadent considers that the most effective approach is for emphasis to be placed on preventing PIVs being covered over in the first place. This would best be achieved by the creation of an identifiable party who would be

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responsible for ensuring that PIVs do not become inaccessible as a result of building, resurfacing or landscaping work around the building. This is consistent with the approach proposed by the Hackitt Review and the role of the “Accountable Person” in the draft Building Safety Bill.

- *“...while Cadent agrees that it is appropriate to continue to inspect PIVs, it considers that this is most appropriately undertaken on the existing risk based basis aligned with our rolling building survey programme i.e. every 1, 5 or 10 years. This, combined with the creation of an identifiable party for each high-rise building, and the joined up approach between gas transporter and other stakeholders provided for in the draft Building Safety Bill, should address the industry-wide issues described in relation to PIVs.*

PIV Locations & Signage

52. PIVs may be located in the footway forming part of the public highway under the control of the local Highway Authority or in the curtilage of the Multi-occupancy Building.

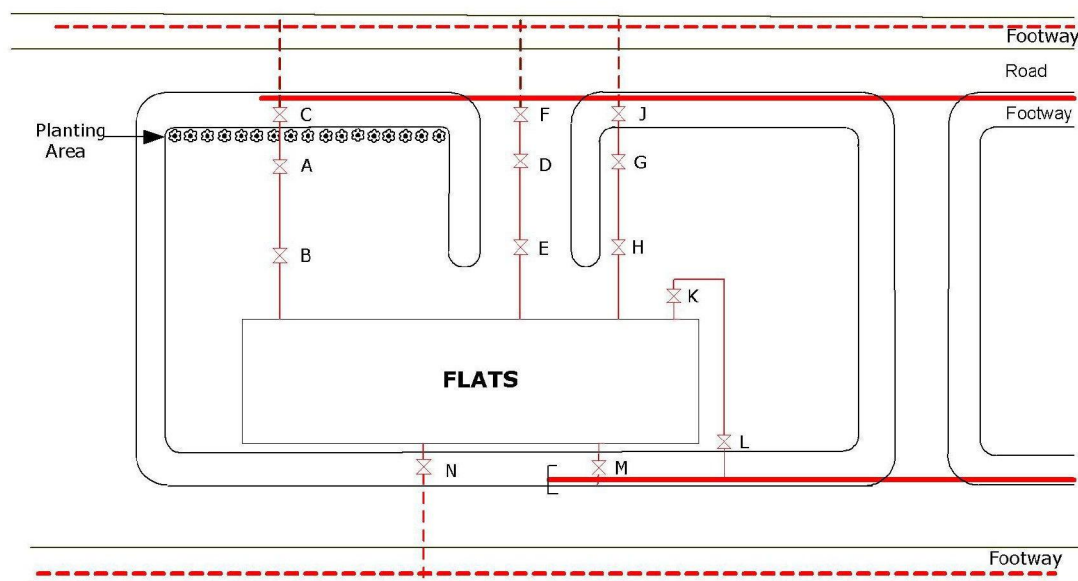


Fig. 2 – Typical PIV Locations

53. In Figure 2 above locations C, F, J, N and M are located in the public highway. PIV valve boxes in these locations are at risk of being lost or discarded as a result of resurfacing works and/or kerb re-alignment carried out by the Highway Authority. In

addition they are at risk of being lost or discarded as a result of work including reinstatement, carried out by other utilities. In each of these cases the Building Owner or their representative has no responsibility for or control over such works.

54. In Figure 2 above locations A, B, D, E, G, H, K and L are located within the curtilage of the building. Valve boxes in location A, in the planting area are at risk of being lost or discarded as a result of enthusiastic gardening or being overgrown by weeds if the planting area is left unattended.

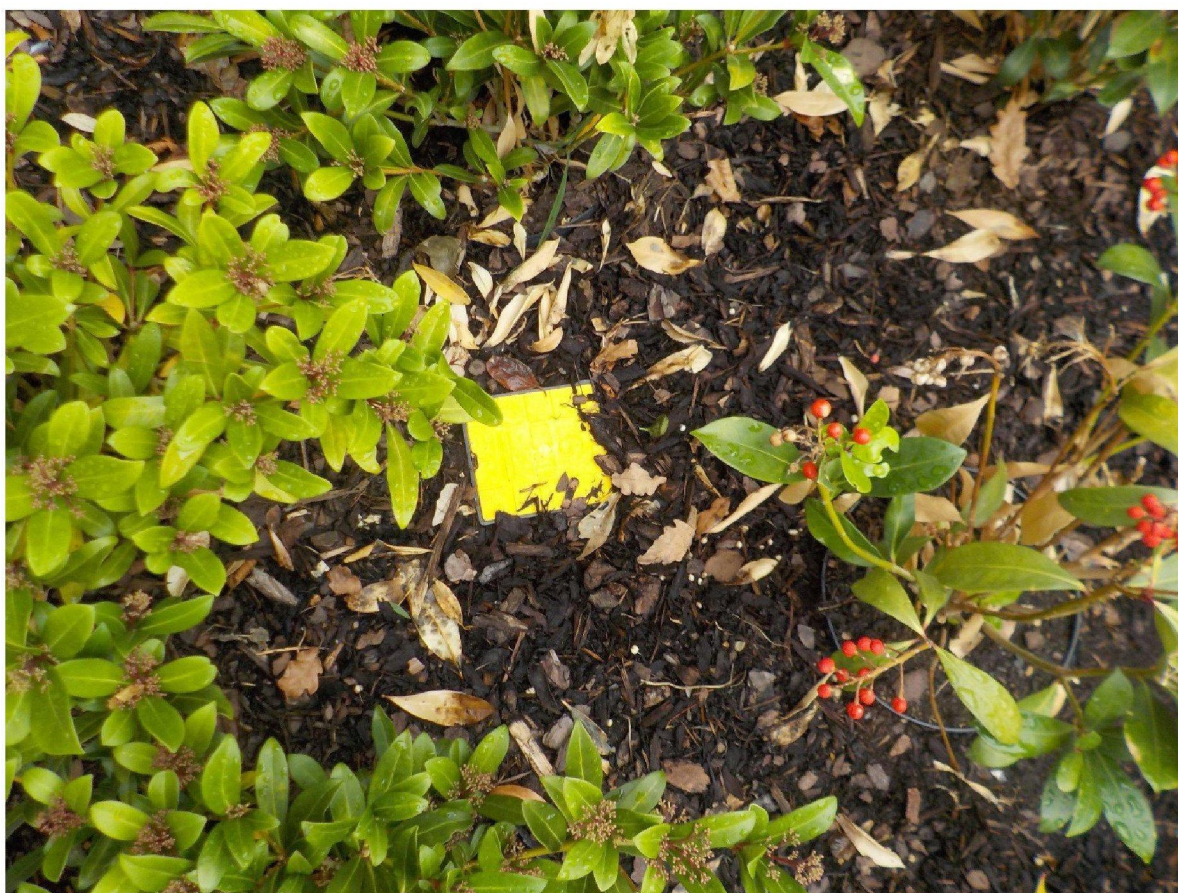


Fig. 3 - PIV Valve Box in Planting Area (Location A)

55. In Figure 2 above valve boxes in locations B, D, E, G, H, K and L are at risk of being lost or discarded as a result of resurfacing works carried out on the instructions of the building owner.



Fig. 4 - PIV Valve Box in Paved Area within Curtilage of Building (Location K)

56. It will be recalled that in paragraph 2.7 of the HSE's Intervention Report

{RHX00000014/6} the observation was included that

“the assurance that the PIVs remain accessible requires further work, as operators need to engage with stakeholders to ensure access and operation in the event of an incident is assured”.

57. In a presentation {RHX00000013} used by the HSE when discussing their

Intervention Report with Gas Transporters and other stakeholders such as IGEM were the following examples of good practice of on-site plans and marker plates which had been installed following successful engagement with building owners etc. Such plans and marker plates would assist the Gas Transporter's Emergency Service to locate the PIV and make the situation safe with the minimum of delay when responding to a gas incident.

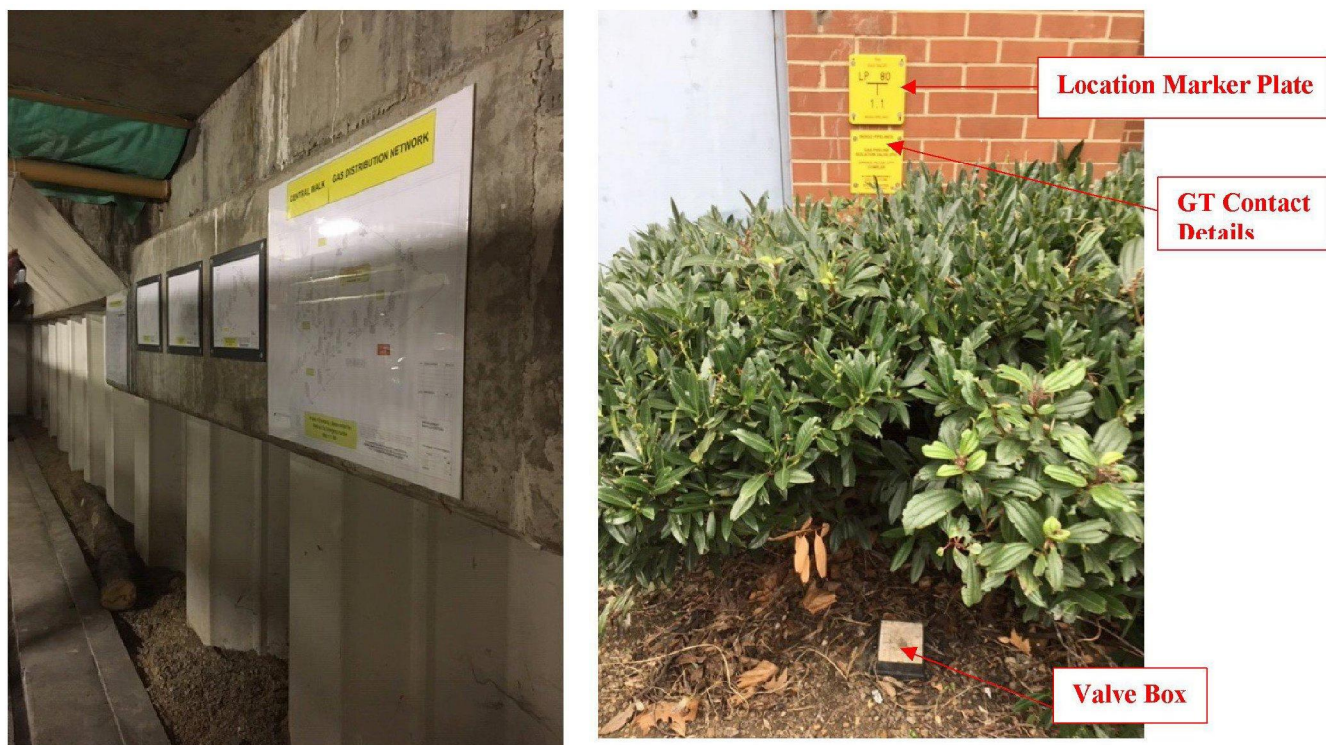


Fig. 5 – Plans and Marker Plates {RHX00000013}



Fig. 6 – Example of PIV Location Marker Plate

64. Article 22 places a duty on the Responsible Person for the Building to co-operate with other Duty Holders and vice versa. The Gas Transporter is a Duty Holder under the Gas Act.

65. Consequently, I believe that the Fire Safety Order provides a legal framework for the Gas Transporter and the Responsible Person for the Building, or their nominated representative, to co-operate with one another over the resolution of safety related issues such as PIV accessibility, maintenance of duct ventilation and fire stopping.

66. Prior to the introduction of the Gas Safety Regulations 1972 gas works in the Inner London Boroughs such as the Royal Borough of Kensington and Chelsea (RBKC) were covered by the London Gas Undertakings Regulations 1954 which had been made under the London Gas Undertakings Act 1939. A copy of the London Gas Undertakings Regulations 1954 (POWE 29/643) was located at the National Archives when undertaking research for my original report {RHX00000012}.
67. Regulation 3(c)(5) specifies that PIVs (which at that time were called Service Valves even when the pipe supplied numerous dwellings) were to be inspected every two years.

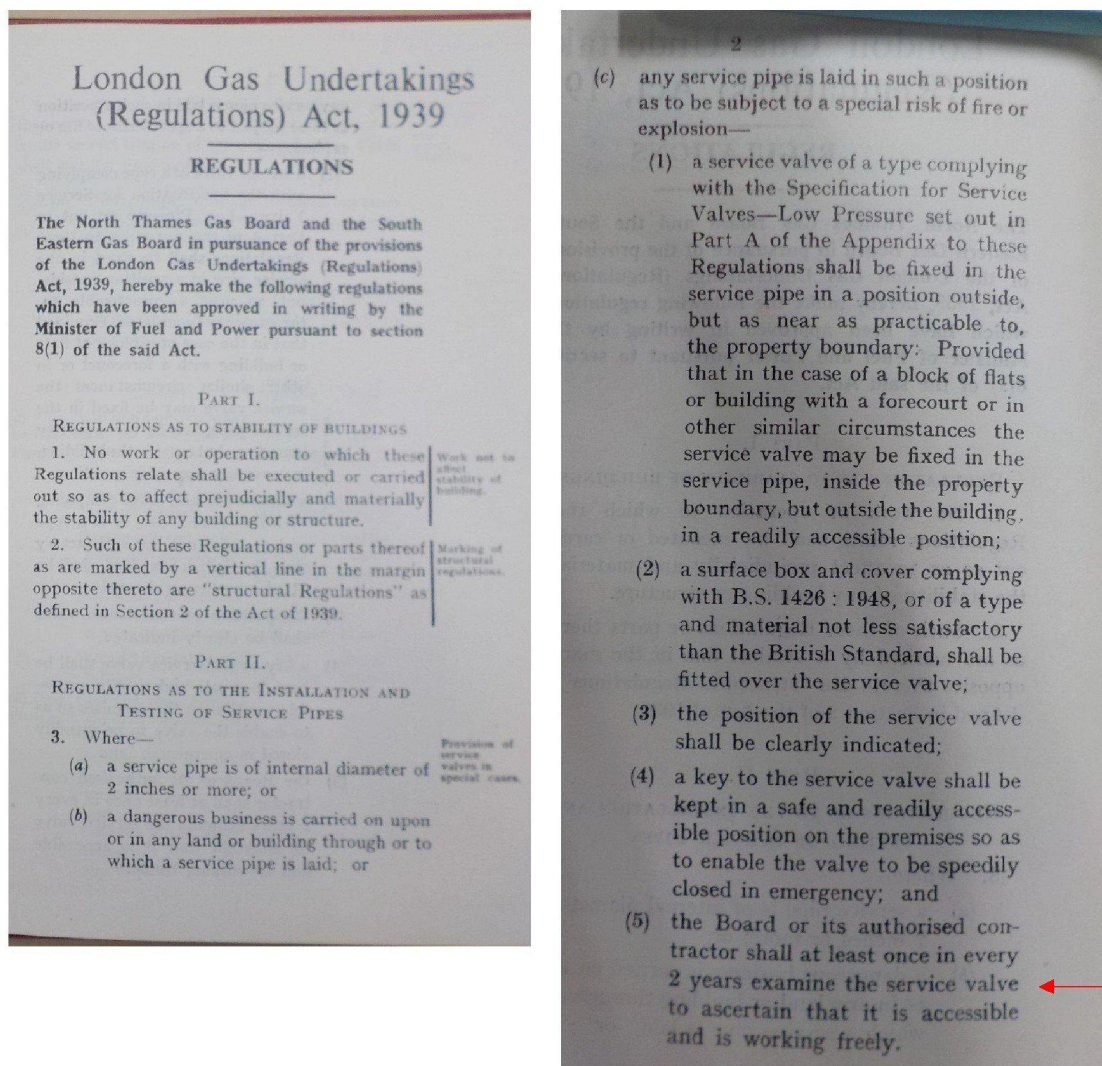


Fig.7 – Photos of Regulation 3 of the London Gas Undertakings Regulations 1954

68. The Gas Safety Regulations 1972 were not so prescriptive. Regulation 52 reads as follows:

52. An Area Board supplying gas to any building shall at all times at their own expense keep all service valves inserted in the service pipes in proper working order.

Fig.8 – Extract from Gas Safety Regulations 1972

69. As can be seen, no inspection/maintenance frequency was specified in the Gas Safety Regulations 1972.

70. The Pipeline Safety Regulations 1996, which are current, are “goal setting”. Regulation 6 requires the provision of safety systems in the pipeline as are necessary for securing that, so far as is reasonably practicable, persons are protected from risk to their health or safety. As discussed in my original report {RHX00000012} the principal safety system for a pipeline supplying gas to a Multi-occupancy Building is the PIV, as specified in Standards such as IGEM/G/5.
71. Regulation 13 of the Pipeline Safety Regulations 1996 addresses inspection and maintenance. No inspection/maintenance frequency is specified and the Regulation reads as follows:
- The operator shall ensure that a pipeline is maintained in an efficient state, in efficient working order and in good repair.*
72. The 2018-2019 HSE Intervention exercise was carried out under the authority of GSMR. The HSE Inspection Findings Report {RHX00000014} made references to the PIV accessibility issue in paragraphs 2.7, 4.3.5, 5.9 and 6.4 – 6.6 inclusive. Improvements were noted but further improvements are expected. In addition, it was acknowledged that Gas Transporters needed to engage with stakeholders to ensure that access and operation in the event of an emergency is assured. In my opinion this strengthens the case for requiring Gas Transporters to report on the status of their programme for ensuring the accessibility of their PIVs in their 3 yearly Safety Case Report.

Recommendation as to the accessibility of Pipeline Isolation Valves - Do you agree with the proposal by Cadent that the Accountable Person as identified in the Draft Building Safety Bill has the responsibility to ensure accessibility of PIVs proactively?

73. In discussing this question, I believe that it must be born in mind that the PIV is the primary safety device for gas supplies into a Multi-occupancy Building, irrespective of its height or number of floors. In addition and as discussed in paragraphs 52 – 57 inclusive above, PIVs may be located either in the public highway or in the curtilage of the building.
74. I am of the opinion that the Gas Transporter is responsible for ensuring access to the PIV.

75. I am of the opinion that it would not be reasonable to expect a Responsible Person for the Building or Accountable Person to have any involvement in ensuring accessibility to PIVs located in the public highway.
76. In order to carry out the duty of ensuring access to the PIV where the PIV is located in the curtilage of the building, the Gas Transporter will require the co-operation of the Responsible Person for the Building or their nominated representative or Accountable Person in the case of a building which will be designated as High Risk.
77. I am of the opinion that Mr Harrison, on behalf of Cadent Gas Ltd, is being very optimistic in expecting the majority of Responsible Persons for the Building or Accountable Persons to ensure accessibility of Pipeline Isolation Valves (PIV) where they are located within the curtilage of their building proactively given everything else with which they will have to deal. I doubt that many Responsible Persons for the Building or Accountable Persons will have the knowledge and understanding of the importance of PIVs to act proactively to ensure accessibility.
78. In my experience of assisting social housing providers who operate private gas networks, personnel in maintenance departments are programmed to react to issues or potential issues raised by residents. Proactive action in relation to something which will not be a concern of residents is likely to be a low priority until such time as a third party such as a Gas Transporter, Technical Auditor or HSE Inspector brings the issue to their attention.
79. I accept that the Responsible Person for the Building or Accountable Person would probably react positively to a report of an inaccessible valve from a Gas Transporter, especially if there were a dialogue between the two parties regarding risks and responsibilities, but I can only foresee a small minority acting proactively.
80. I fully support the actions being taken by Cadent Gas Ltd to enter into a Memorandum of Understanding ¹⁰ with relevant parties so as to clarify responsibilities

¹⁰ In the Institution of Gas Engineers and Managers IGEM/G/5 panel I was involved in the drafting of an initial version of a Memorandum of Understanding. That document included Parties involved, Each party's statutory obligations, Description of gas safety systems including valves and inspection topics, Records, Arrangements for access and liaison with residents, Remedial work, Timescales and Contact details. I believe Cadent Gas Ltd has developed this initial version to suit its own requirements.

and communication channels and hopefully to help develop mutual respect and understanding. I would recommend all Gas Transporters and Responsible Persons for the Building enter into a Memorandum of Understanding wherever gas is supplied to a multi-occupancy building.

Recommendation as to the accessibility of Pipeline Isolation Valves - Should the obligation to inspect and keep accessible PIVs be reactive, proactive or both?

81. I am of the opinion that the Gas Transporter should inspect PIVs and keep them accessible proactively.

82. Where PIVs are located within the curtilage of the building I would expect the Responsible Person for the Building or Accountable Person as the case may be, to react positively to any request for assistance in ensuring accessibility.

Recommendation as to the accessibility of Pipeline Isolation Valves – Given your responses to (a) and (b), has your view on the frequency of assessing and remediating accessibility of PIVs changed?

83. I have not changed my opinion that 3 years is a suitable frequency for checking the accessibility of PIVs.

84. I am not aware of any data specific to the inspection of PIVs that would provide a quantitative risk assessment of the loss of a PIV through re-surfacing or gardening works. Therefore my opinion is based upon

- A “gut feeling” based on my years of experience in the gas industry as to what is a reasonable frequency of inspection,
- A belief that 10 years is far too long and five years is definitely questionable, and
- The desire to link the frequency of inspection to an existing reporting process to the HSE so as to ensure that the Gas Transporter’s management team do not lose sight of the task over time.

85. In my opinion a PIV inspection programme, separate from the riser inspection programme should only take a few minutes per building if the surveyor has been provided with accurate records. The survey would involve

- Locating the valve box.
- Lifting the valve box lid to see whether the valve spindle can be located with a valve key or whether the chamber/guide tube needs clearing of soil or other debris.
- Checking the status of any valve marker plate.

86. I do not include checking the operation of the valve. This is because checking the valve's operation, especially if it is a quarter turn valve, risks causing a loss of supply incident and I do not believe that that risk is worth taking.