

GAS NETWORK SAFETY CASE
LU /GAS /1 – Leakage Survey Procedure
LOUGHBOROUGH UNIVERSITY

Dated 10th August 2021

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1 External Gas Network Pipework

A walking leakage survey of mains and services will be undertaken during the Spring/Summer/Autumn period when the ground is dry, the air is still and there is little or no traffic about.

The equipment used will be a hand-held flame ionisation detector (FID) capable of detecting gas in air concentrations down to parts per million.

Barholing should take place if 500 ppm or more is indicated via the flame ionization detector or at lower levels if the ground surface is believed to be completely sealed i.e. there is no un-surfaced ground, no joints or surface cracks along the route of the pipes being surveyed.

A fully equipped “leak locate and repair team” will be available throughout the survey.

Any leaks detected will be located and repaired as soon as possible. Repair work will be continuous until the leak has been stopped.

A record will be made of:

- the date,
- the precise location of the leak,
- the source of all leaks,
- the repair method used,
- the condition of the pipe,
- the ground condition and backfill material,
- the accuracy of the existing drawing and any amendments required,
- other details considered relevant.

2 Gas Installations

For gas installations, downstream of the ECV, leakage repairs are carried by the University in house Gas Safe operatives or by approved Gas Safe contractors.

GAS NETWORK SAFETY CASE
LU /GAS /2 – Mains replacement policy

LOUGHBOROUGH UNIVERSITY

Dated 10th August 2021

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1 Mains replacement

The purpose of replacing metallic mains is to minimise the risk of gas explosions or fires.

It is the policy of the University to replace (or abandon) all metallic mains and services within 30 metres of a building by 2032 unless there is evidence that the main is in good condition. This can be established by the absence of any leaks, by trial holes and by cathodic protection data if it has been installed.

From the evidence provided in current records there are no cast iron or ductile iron pipes and only very short lengths of steel buried pipe installed on the system.

The industry established mains replacement priorities are listed as follows: -

1. Ductile iron mains,
2. Steel mains known to be suffering from corrosion - this information will be derived from the results of the leakage surveys and any gas escapes reported,
3. Steel mains not leaking but found by trial hole to be suffering from corrosion and where cathodic protection is not an option.

Some mains will be replaced for economic reasons; examples of these are:

1. Mains connected to mains being replaced for reasons (1) to (3) – often the additional cost of replacing a section of main connected to a main selected for replacement is low enough to make its replacement a sensible option,
2. When it is necessary to carry out a diversion to facilitate other works,
3. When it is more economical to replace the main than continue to maintain it.

GAS NETWORK SAFETY CASE
LU /GAS /3 – Transfer of responsibility

LOUGHBOROUGH UNIVERSITY

Dated 10th August 2021

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1 Transfer of responsibility

When called, the National Gas emergency service (CADENT) engineer will provide a “respond and make safe service” for the University’s system.

If necessary, and only when the immediate threat to life and property has been adequately controlled should the “Transfer of Responsibility” form from the National Grid Gas Emergency Engineer be accepted by the University. The transfer of responsibility shall only be accepted by the Plumbing/Heating & HVAC Manager, Maintenance Services Manager or the University Gas Duty Appointed Person.

If the nominated University gas competent person accepts responsibility, the event must be recorded on the appropriate transfer of responsibility CADENT documentation.

The nominated University gas competent person must be training and accredited via competency assessment before taking on the responsibilities associated with the transfer of responsibility.

GAS NETWORK SAFETY CASE
LU /GAS /4 – Procedure for restoring gas supplies
LOUGHBOROUGH UNIVERSITY

Dated 22nd August 2021

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1 Context

In a supply emergency every effort will be made to maintain positive gas pressures in the system. Initially (and if there is time) individual consumers will be turned off at the ECV's and pressures maintained at or above 19mb.

If however gas pressures fall to zero they will be restored by following this procedure. The procedure is based on IGE/UP/1 Edition 2 and is designed to ensure supplies can be restored safely and as quickly as possible. It assumes the University plans/records and meter information are accurate.

During this procedure it is important to keep all affected gas consumers advised by carrying out a property visit informing them of the procedure, the likely duration and instructing them to ring the University Help Desk or Security office if they smell gas.

It is proposed to test this procedure by carrying out an annual mock exercise. Despite this, should the need for the procedure arise the person in charge will have to use informed engineering judgement by reference to the University appointed gas consultant. .

The volume of gas vented shall be kept to a minimum.

For any pipe that needs to be purged and recommissioned the pressure created during the purge shall not exceed the MOP of the pipe and associated fittings.

All testing purging and recommissioning activities will be controlled under a None Routine Operations Procedure (NRO).

2 Planning

Should any section of the gas network have been isolated such that a minimum pressure of 19 mbar has not been maintained then the pipework will need to be tested, purged and re-commissioned before it brought back into service. The procedure is complex and it is therefore preferable, if at all possible, a minimum pressure is maintained in the gas network to avoid the application of this procedure. For example, if a below ground section of pipework fails its pressure test then it is likely that a replacement would be more expedient than searching for the source of the gas leak.

For advance planning for a testing, purging and recommissioning procedure the following parameters will be required for the section of the network to be recommissioned.

- Location of ECV's and supply points
- Pipe Volume (V)
- Tightness Test Pressure (TTP)
- Tightness Test Duration (TTD) - using the formula $0.047(\text{GRM}) \times V \times 67$ and a water or digital gauge with a Gauge Readable Movement (GRM) of 0.5mb
- Minimum Purge Flow Rate (MPFR)

- Purge Point Dimensions and Locations
- The Maximum Purge Time (Max PT) allowed for purging to each purge point – using the formula $\text{Max PT}(\text{secs}) = 1.5 \times V \times 3600/\text{MPFR}$.

In order to keep the complexity of this procedure to a reasonable level, the number of purge points within each network will be limited to the ends of the spine main and the ends of the larger branch mains. In practice the University network comprises mostly none integrated pipes which means the recommissioning procedure will be relatively straight forward.

3 Site precautions

The following precautions will be taken throughout the procedure:

Appropriate “No Smoking” signage shall be displayed around any vent and elsewhere if necessary.

All valves will be labelled clearly “Do not Operate - Purge in Progress”.

Mobile phones will be used to co-ordinate remote activities. Care will be taken to ensure they are not taken into or used in gaseous atmospheres.

Any electrical continuity bonds will be maintained throughout the purging operation.

Two fire extinguishers will be situated close to any open purge point.

When positioning purge points and hoses, precautions shall be taken to reduce the hazards associated with venting by avoiding venting close to air intakes or sources of ignition. Venting will not take place close to electrical equipment and no electrical switches will be operated during venting. Hoses shall be long enough to vent the gas to atmosphere away from buildings and ignition sources.

The end of a purge hose/stack shall be in the open air, at least 5 metres down wind of any potential ignition source and at least 2.5 metres above ground level, and precautions will be taken to prevent vented gas drifting into buildings.

4 Plant and equipment

The following plant and equipment is required:

4.1 Bypass rig

(80 mm/3 inch diameter) with integral valve.

Note: A 3 inch diameter rider 3 metres long with 4 elbows and 2 inline gate valves (full bore) is equivalent to 10.5 m of straight pipework and will pass 216 cu. m/hr with a pressure drop of 2.0mb.

4.2 Flow rate meter

The purge point diameters will be sized to ensure the required purge velocities will be achieved providing the inlet pressure to the purge points is 19 mb or more. For example, a 5-metre purge hose/stack 100 mm diameter will pass the minimum required flow rate (216 m³ /hr) for a 12" diameter main with a pressure drop of less than 1.0 mbar. However, if in doubt a rate of flow meter capable of measuring up to 300 m³/hr may be fitted between the purge point and the hose.

4.3 One bank of nitrogen cylinders

(11 bottles) with a high-capacity pressure regulator size to deliver a flow rate of 216 cu. m/hr

Note: Obtain confirmation from the cylinder supplier that the cylinder contains nitrogen.

4.4 Two natural gas detectors

Note: Any electronic detectors (or other equipment such as test gauges) used shall:

- be certified for use in hazardous areas;
- be operated in accordance with the manufacturer's instructions;
- have their batteries tested prior to use;
- be zeroed at the commencement of each test and have their zero's checked at the finish of each test
- be tested, overhauled and calibrated in accordance with the manufacturer's instructions.

4.5 Water gauges

Sufficient water gauges calibrated in mbar

4.6 Fire extinguishers

Sufficient fire extinguishers i.e. two at each purge point.

5 Supervision and manpower

The University will ensure there are sufficient competent staff available. The supervisor must be able to demonstrate competency to supervise the work and or obtain assistance from a qualified gas engineer, either a Gas Consultant or a GIRS registered contractor.

6 Nitrogen purge

The following procedure is to be followed for each pipe where the pressure has fallen to atmospheric pressure.

1. Walk the site and suspend any work on or adjacent to the network that could result in pipe damage, or pipework being left open-ended, and be alert for third party work in the vicinity.
2. Close all emergency control valves (ECV's) and label "Do Not Open - Purge in Progress".
3. Check that the primary meter outlets are isolated and that nitrogen cannot pass into the upstream system by disconnecting and capping the primary meter outlet main, squeezing off the P.E. mains, or closing a valve. Where a valve is used it will have integral double block and bleed features; the bleed facility will be piped to a surface box and will terminate in a full bore valve.
4. Install the nitrogen injection point immediately downstream of the primary meter isolation method.
5. Ensure the normal operating pressure (NOP) will not be exceeded by installing and monitoring a water gauge to a pressure point immediately adjacent to, and downstream of, the nitrogen injection point.
6. Ensure the nitrogen regulator is capable of delivering the minimum purge flow rate (MPFR), connect the nitrogen cylinder/s and leave closed.
7. Install purge hoses/stacks and water gauges at all purge points as listed in the NRO. Leave all purge points closed.
8. Fully open the purge valve and then open the nitrogen inlet valve, commence the purge and increase the flow rate until the pressure in the main at the injection point reaches 19 mbar but ensure the NOP is not exceeded. If 19 mbar cannot be achieved with the nitrogen regulator fully open the MPFR will be achieved providing the pressure in the cylinders is 5 barg or more.
9. Simultaneously start the timer and continue the purge until a reading of 1.8% gas in air (or less) is achieved. This should occur before the maximum permitted purge time has elapsed.
10. If the 1.8% gas in air is not achieved within the maximum permitted purge time it is probably because the required flow rate is not being achieved. In this case it will be necessary to identify the reason for the problem, rectify it and repeat the purge process.
11. Upon completion of the purge, close the nitrogen inlet and then the purge point.
12. Proceed to subsequent purge points as necessary, open the purge point and then the nitrogen inlet valve and commence the purge. Increase the flow rate whilst monitoring the pressure to ensure the NOP is not exceeded. Simultaneously start the timer and continue

the purge until a reading of 1.8% gas in air (or less). This should occur before the maximum permitted branch purge time has elapsed.

13. Upon completion of the purge close the nitrogen inlet and then purge points.
14. Repeat the above for all remaining sections. To avoid making this process overly complicated (and thereby increasing the risk of human error) and because the pipework is to be re-commissioned as soon as possible, it is not proposed to nitrogen purge each service pipe nor any small diameter branch mains with volumes of less than 1m³.
15. Complete a purging certificate
16. Unless the tightness test (section 7 below) is to be carried out immediately, disconnect the nitrogen cylinder/s, plug and test the injection point.

7 Tightness test using nitrogen

The following tightness test must be carried out immediately prior to purging to gas and re commissioning: -

1. Walk the route of the network and carry out a physical check to ensure there are no obvious signs of interference damage and that all ECV's remain closed.
2. Re-connect the nitrogen cylinder/s and install pressure point and leave both closed.
3. Open the nitrogen injection valve and allow the pressure in the network to rise to the NOP of the network. Take care to ensure the NOP is not exceeded.
4. Close the nitrogen injection valve; allow 15 minutes for stabilisation.
5. During this time check that the pipe isolation valves (or squeeze offs) are not allowing gas "let-by" by testing the open bleed facility with leak detection fluid (wash off after use).
6. Monitor pressure in the network for the TTD of the network. If the pressure does not drop by greater than the GRM, i.e. 0.5 mbar for a water or digital gauge, during the TTD monitoring period the network has passed.
7. If the pressure falls by more than 0.5 mbar during the TTD the test has failed. If however the pressure has dropped between 0.5 and 2.0 mbar the actual leak rate must be calculated (see IGE/UP/1) and if this is less than or equal to 0.03 m³/hr the test has passed. If the leak rate is higher than 0.03 m³/hr the leak/s must be traced and repaired and the test repeated.
8. If the retest still indicates leakage, it will be from the below ground system and could prove impractical to locate using nitrogen as a test medium. In these circumstances a risk assessment will be carried out before proceeding to section 8 below. The risk assessment will take into consideration the volume of leakage calculated. It may be prudent to replace a section of pipe rather than determine the source of the leak.

9. The results of this test must be documented and retained with the NRO.

8 Natural gas purge

The following procedure is to be followed immediately after the tightness test.

1. Inform the Gas Supplier of the procedure and request attendance of the Meter Asset Manager (MAM).
2. Check with the MAM that their system and meter are capable of supplying the Minimum Purge Flow Rate (MPFR)* without reducing upstream pressures to unacceptable levels. The MPFR is the same as the MPFR for the nitrogen purge above.
3. Walk the site and suspend any work on or adjacent to the network that could result in pipe damage, or pipework being left open-ended, and be alert for third party work in the vicinity; carry out a physical check to ensure there are no obvious signs of interference damage.
4. Ask the MAM staff to purge the upstream side of the primary meter outlet valve and set the meter rig to feed at the NOP.
5. Erect a 90 mm /3" diameter bypass and pressure points across the primary meter outlet isolation method and leave the bypass end closed.
6. Fully open the purge point.
7. Install and monitor a pressure gauge either side of the primary meter outlet isolation point.
8. Commence the purge by slowly (but fully) opening the bypass valve, monitor the pressures either side and start the timer. The minimum pressure on the upstream side of the meter to be agreed with the MAM and the maximum pressure in the pipe under purge not to exceed the NOP.
9. Check with the MAM that the meter is functioning correctly and that inlet and outlet pressures are correct.
10. Continue the purge until a reading of 90% gas in air (or more) is achieved at the purge point. This should occur before the maximum purge time for the network has elapsed. The maximum purge time is the same as the MPT for the nitrogen purge above.
11. If the 90% gas in air is not achieved within the maximum permitted purge time it is probably because the required flow rate is not being achieved. In this case it will be necessary to identify the reason for the problem, rectify it and repeat the purge process.
12. Close the purge point taking care to ensure the normal operating pressure of the network is not exceeded.
13. Proceed to purge point 2, open the purge point/s and commence the purge of the branch. Simultaneously start the timer and continue the purge until a reading of 90% gas in air (or

more) is achieved. This should occur before the maximum permitted purge time for the branch has elapsed.

14. Once the purge is complete close purge point 2.
15. Repeat the steps above for all remaining points on the section of the network being purged.
16. Once the purge is complete check that pressures have equalised across the primary meter outlet isolation method and remove the isolation method whilst monitoring the pressures either side. Ensure the NOP is not exceeded.
17. Immediately after completing the gas purge, carry out an above ground walking leakage survey using suitable hand-held gas detection equipment. This is particularly important if the leak rate calculated exceeds 0.03m³ / hr. In these circumstances bar holes must be made in sealed surfaces and all service entries, drains and ducts into the buildings must be checked with a gas detector on the ppm scale.
18. Ensure all open ends are capped (or plugged) with an appropriate fitting and test any disturbed joints with leak detection fluid. Wash off leak detection fluid.
19. The results of this purge must be documented and retained.
20. Each step within the process must be ticked usually within the NRO.

9 Recommissioning procedure

In order to keep the complexity of this procedure to a reasonable level, the number of purge points within each network will be limited to the ends of the spine main and the ends of the larger branch mains i.e. those branch mains with volumes of 1m³ or more. Therefore the branch mains and services with volumes of less than 1m³ may still contain air or nitrogen and consequently they must be purged until a reading of 90% G.I.A. through hoses attached to the outlet of the ECV's is attained. The following procedure is applicable:-

1. Before re-commissioning supplies to individual properties, attach a purge hose to the outlet of the ECV and purge the service pipe/ branch main for a minimum of 1 second/metre length of the service/main and for longer if necessary until two consecutive readings of 90% GIA are obtained.
2. Gas supplies to the secondary meters and appliances can now be restored to gas users by the University's Gas Safe registered personnel or approved Gas Safe contactors following the University's procedures for pressure testing, purging and appliance re-commissioning. As each property is re-commissioned the "Do Not Open - Purge in Progress" labels must be removed from the ECV's.
3. Carry out a mail shot advising consumers that the procedure is complete and thanking them for their co-operation and allow any suspended works to recommence.

10 Record keeping

A written record of each step of the procedure must be made and kept, together with any notes of deviations from this procedure taken by the gas competent person. Each step within the process must be ticked and initialled by the gas competent person as it is completed. At the end of the procedure the document must be signed and dated again by the University the Gas Duty Authorised Person or nominated deputies. This process will normally be captured within the NRO for the operation.

These records should be retained with the purge, tightness test and leakage survey results, for reference purposes.

11 Network data sheets

11.1 Template

For each network pipe the following parameters will be calculated: -

- TTP = Tightness Test Pressure;
- TTD = Tightness Test Duration;
- MPFR = Minimum Purge Flow Rate;
- GRM = Gauge Readable Movement (TTD calculated using a water gauge with GRM = 0.5mb);
- PP = purge pt.
- Max PT = Maximum Purge Time.

Where: -

$$TTD = 0.047GRM \times IV \times F1,$$

Where: -

GRM = 0.5mb, IV = Internal Volume and F1 = 67 (from table 10).

The Max PT's have been calculated by making an estimate of the volume of each branch (scaled from the drawing) and assuming the minimum required purge flow rate (taken from IGE/UP/1 Edition 2) for the maximum diameter pipe in the branch will be achieved by fully opening the purge point. The formula used is taken from paragraph IGE/UP/1 Edition 2 as follows :-

$$\text{Max PT (sec)} = (PV(m^3) \times 3600) / Q$$

where PV = 1.5 x IV and Q = MPFR.

In order to keep the complexity of this procedure to a reasonable level, the number of purge points has been limited to the ends of the spine main and the ends of the larger branch mains i.e. those branch mains with volumes of 1m³ or more. The purge points for branch mains and services with volumes of less than 1m³ are not specifically referred to. In addition, it is not proposed to purge these low volume sections to nitrogen in the event of a complete loss of pressure; however, they will be purged to gas through hoses attached to the ECV's once supplies are restored.

11.2 Network data sheets

The data sheets for each network specifying the following are included in [Appendix 1](#):-

- Test pressure (network operating pressure OP)
- Tightness test duration (TTD)
- Maximum purge time (PT)
- Purge point diameter
- Purge hose diameter

Note: The network references (A-Y) relate to the network drawings contained in [Safety Case Appendix 3](#) – Network analysis results

12 AECV and ECV Locations

The University maintains an asset register of AECV and ECV locations which is contained in a separate spread sheet in [Appendix 6](#) of the Safety Case.

Appendix 1 – Network data sheets

NETWORK A	TIGHTNESS TEST PRESSURE	26.6 MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	15.36 MINUTES
NETWORK A	MAXIMUM PURGE TIME	6.23	MINUTES		
NETWORK A	PURGE POINT BORE	80	MM (Equivalent)	MAY COMPRISE MULTIPLE PURGE POINTS	
NETWORK A	PURGE HOSE BORE	100	MM (Equivalent)	MAY COMPRISE MULTIPLE PURGE POINTS	

Table 1: Network A data sheet

NETWORK B	TIGHTNESS TEST PRESSURE	27.7 MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	1.07 MINUTES
NETWORK B	MAXIMUM PURGE TIME	5.54	MINUTES		
NETWORK B	PURGE POINT BORE	25	MM (Equivalent)	MAY COMPRISE MULTIPLE PURGE POINTS	
NETWORK B	PURGE HOSE BORE	40	MM (Equivalent)	MAY COMPRISE MULTIPLE PURGE POINTS	

Table 2: Network B data sheet

NETWORK C	TIGHTNESS TEST PRESSURE	25.4 MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	3.27 MINUTES
NETWORK C	MAXIMUM PURGE TIME	6.23	MINUTES		
NETWORK C	PURGE POINT BORE	40	MM		
NETWORK C	PURGE HOSE BORE	50	MM		

Table 3: Network C data sheet

NETWORK D1	TIGHTNESS TEST PRESSURE	67.1 MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	3.42 MINUTES
NETWORK D1	MAXIMUM PURGE TIME	5.15	MINUTES		
NETWORK D1	PURGE POINT BORE	40	MM		
NETWORK D1	PURGE HOSE BORE	50	MM		

Table 4: Network D1 data sheet

NETWORK D2	TIGHTNESS TEST PRESSURE	67.1 MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	2.13 MINUTES
NETWORK D2	MAXIMUM PURGE TIME	11.06	MINUTES		
NETWORK D2	PURGE POINT BORE	25	MM		
NETWORK D2	PURGE HOSE BORE	40	MM		

Table 5: Network D2 data sheet

NETWORK E1	TIGHTNESS TEST PRESSURE	23.7 MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	1.51 MINUTES
NETWORK E1	MAXIMUM PURGE TIME	2.87	MINUTES		
NETWORK E1	PURGE POINT BORE	40	MM		
NETWORK E1	PURGE HOSE BORE	50	MM		

Table 6: Network E1 data sheet

NETWORK E2	TIGHTNESS TEST PRESSURE	24.9 MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	0.06 MINUTES
NETWORK E2	MAXIMUM PURGE TIME	0.73	MINUTES		
NETWORK E2	PURGE POINT BORE	25	MM		
NETWORK E2	PURGE HOSE BORE	40	MM		

Table 7: Network E2 data sheet

NETWORK F	TIGHTNESS TEST PRESSURE	30.2 MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	17.55 MINUTES
NETWORK F	MAXIMUM PURGE TIME	26.40	MINUTES		
NETWORK F	PURGE POINT BORE	40	MM (Equivalent)	MAY COMPRISE MULTIPLE PURGE POINTS	
NETWORK F	PURGE HOSE BORE	50	MM (Equivalent)	MAY COMPRISE MULTIPLE PURGE POINTS	

Table 8: Network F data sheet

NETWORK G	TIGHTNESS TEST PRESSURE	23 MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	0.26 MINUTES
NETWORK G	MAXIMUM PURGE TIME	3.25	MINUTES		
NETWORK G	PURGE POINT BORE	25	MM		
NETWORK G	PURGE HOSE BORE	40	MM		

Table 9: Network G data sheet

NETWORK H	TIGHTNESS TEST PRESSURE	23.9 MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	3.92 MINUTES
NETWORK H	MAXIMUM PURGE TIME	7.47	MINUTES		
NETWORK H	PURGE POINT BORE	40	MM (Equivalent)	MAY COMPRISE MULTIPLE PURGE POINTS	
NETWORK H	PURGE HOSE BORE	50	MM (Equivalent)	MAY COMPRISE MULTIPLE PURGE POINTS	

Table 10: Network H data sheet

NETWORK I	TIGHTNESS TEST PRESSURE	31.3 MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	0.46 MINUTES
NETWORK I	MAXIMUM PURGE TIME	2.38	MINUTES		
NETWORK I	PURGE POINT BORE	25	MM		
NETWORK I	PURGE HOSE BORE	40	MM		

Table 11: Network I data sheet

NETWORK J	TIGHTNESS TEST PRESSURE	TBC MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	0.39 MINUTES
NETWORK J	MAXIMUM PURGE TIME	2.01	MINUTES		
NETWORK J	PURGE POINT BORE	25	MM		
NETWORK J	PURGE HOSE BORE	40	MM		

Table 12: Network J data sheet

NETWORK K	TIGHTNESS TEST PRESSURE	25.4 MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	0.68 MINUTES
NETWORK K	MAXIMUM PURGE TIME	3.52	MINUTES		
NETWORK K	PURGE POINT BORE	25	MM		
NETWORK K	PURGE HOSE BORE	40	MM		

Table 13: Network K data sheet

NETWORK L	TIGHTNESS TEST PRESSURE	26 MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	2.76 MINUTES
NETWORK L	MAXIMUM PURGE TIME	4.15	MINUTES		
NETWORK L	PURGE POINT BORE	40	MM		
NETWORK L	PURGE HOSE BORE	50	MM		

Table 14: Network L data sheet

NETWORK M	TIGHTNESS TEST PRESSURE	24.1 MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	1.20 MINUTES
NETWORK M	MAXIMUM PURGE TIME	6.26	MINUTES		
NETWORK M	PURGE POINT BORE	40	MM		
NETWORK M	PURGE HOSE BORE	50	MM		

Table 15: Network M data sheet

NETWORK N	TIGHTNESS TEST PRESSURE	27 MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	0.82 MINUTES
NETWORK N	MAXIMUM PURGE TIME	4.26	MINUTES		
NETWORK N	PURGE POINT BORE	25	MM		
NETWORK N	PURGE HOSE BORE	40	MM		

Table 16: Network N data sheet

NETWORK O	TIGHTNESS TEST PRESSURE	21.4 MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	1.08 MINUTES
NETWORK O	MAXIMUM PURGE TIME	5.59	MINUTES		
NETWORK O	PURGE POINT BORE	25	MM		
NETWORK O	PURGE HOSE BORE	40	MM		

Table 17: Network O data sheet

NETWORK P	TIGHTNESS TEST PRESSURE	25.7 MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	0.76 MINUTES
NETWORK P	MAXIMUM PURGE TIME	3.97	MINUTES		
NETWORK P	PURGE POINT BORE	25	MM		
NETWORK P	PURGE HOSE BORE	40	MM		

Table 18: Network P data sheet

NETWORK Q	TIGHTNESS TEST PRESSURE	33.1 MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	1.16 MINUTES
NETWORK Q	MAXIMUM PURGE TIME	2.22	MINUTES		
NETWORK Q	PURGE POINT BORE	40	MM		
NETWORK Q	PURGE HOSE BORE	50	MM		

Table 19: Network Q data sheet

NETWORK R	TIGHTNESS TEST PRESSURE	26.6 MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	0.40 MINUTES
NETWORK R	MAXIMUM PURGE TIME	2.07	MINUTES		
NETWORK R	PURGE POINT BORE	25	MM		
NETWORK R	PURGE HOSE BORE	40	MM		

Table 20: Network R data sheet

NETWORK S	TIGHTNESS TEST PRESSURE	TBC MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	0.33 MINUTES
NETWORK S	MAXIMUM PURGE TIME	4.19	MINUTES		
NETWORK S	PURGE POINT BORE	25	MM		
NETWORK S	PURGE HOSE BORE	40	MM		

Table 21: Network S data sheet

NETWORK T	TIGHTNESS TEST PRESSURE	27.6 MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	7.81 MINUTES
NETWORK T	MAXIMUM PURGE TIME	11.74	MINUTES		
NETWORK T	PURGE POINT BORE	40	MM (Equivalent)	MAY COMPRISE MULTIPLE PURGE POINTS	
NETWORK T	PURGE HOSE BORE	50	MM (Equivalent)	MAY COMPRISE MULTIPLE PURGE POINTS	

Table 22: Network T data sheet

NETWORK U	TIGHTNESS TEST PRESSURE	28.6 MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	0.41 MINUTES
NETWORK U	MAXIMUM PURGE TIME	0.79	MINUTES		
NETWORK U	PURGE POINT BORE	40	MM		
NETWORK U	PURGE HOSE BORE	50	MM		

Table 23: Network U data sheet

NETWORK V	TIGHTNESS TEST PRESSURE	22.2 MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	1.77 MINUTES
NETWORK V	MAXIMUM PURGE TIME	9.20	MINUTES		
NETWORK V	PURGE POINT BORE	25	MM		
NETWORK V	PURGE HOSE BORE	40	MM		

Table 24: Network V data sheet

NETWORK W	TIGHTNESS TEST PRESSURE	21 MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	0.08 MINUTES
NETWORK W	MAXIMUM PURGE TIME	1.03	MINUTES		
NETWORK W	PURGE POINT BORE	25	MM		
NETWORK W	PURGE HOSE BORE	40	MM		

Table 25: Network W data sheet

NETWORK X	TIGHTNESS TEST PRESSURE	24.1 MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	2.63 MINUTES
NETWORK X	MAXIMUM PURGE TIME	3.95	MINUTES		
NETWORK X	PURGE POINT BORE	40	MM		
NETWORK X	PURGE HOSE BORE	50	MM		

Table 26: Network X data sheet

NETWORK Y - LU Stadium	TIGHTNESS TEST PRESSURE	65 MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	2.32 MINUTES
NETWORK Y - LU Stadium	MAXIMUM PURGE TIME	12.07	MINUTES		
NETWORK Y - LU Stadium	PURGE POINT BORE	25	MM		
NETWORK Y - LU Stadium	PURGE HOSE BORE	40	MM		

Table 27: Network Y- LU Stadium data sheet

NETWORK Y - Holywell Fitness Centre	TIGHTNESS TEST PRESSURE	65 MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	1.58 MINUTES
NETWORK Y - Holywell Fitness Centre	MAXIMUM PURGE TIME	8.21	MINUTES		
NETWORK Y - Holywell Fitness Centre	PURGE POINT BORE	25	MM		
NETWORK Y - Holywell Fitness Centre	PURGE HOSE BORE	40	MM		

Table 28: Network Y- Holywell Fitness Centre data sheet

NETWORK Y - NCCAT Office	TIGHTNESS TEST PRESSURE	21 MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	0.05 MINUTES
NETWORK Y - NCCAT Office	MAXIMUM PURGE TIME	0.69	MINUTES		
NETWORK Y - NCCAT Office	PURGE POINT BORE	25	MM		
NETWORK Y - NCCAT Office	PURGE HOSE BORE	40	MM		

Table 29: Network Y- NCCAT Offices data sheet

NETWORK Y - Charnwood Building	TIGHTNESS TEST PRESSURE	65 MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	5.81 MINUTES
NETWORK Y - Charnwood Building	MAXIMUM PURGE TIME	8.74	MINUTES		
NETWORK Y - Charnwood Building	PURGE POINT BORE	40	MM		
NETWORK Y - Charnwood Building	PURGE HOSE BORE	50	MM		

Table 30: Network Y- Charnwood building data sheet

NETWORK Y - Energy Centre	TIGHTNESS TEST PRESSURE	780 MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	2.73 MINUTES
NETWORK Y - Energy Centre	MAXIMUM PURGE TIME	4.10	MINUTES		
NETWORK Y - Energy Centre	PURGE POINT BORE	40	MM		
NETWORK Y - Energy Centre	PURGE HOSE BORE	50	MM		

Table 31: Network Y- Energy Centre data sheet

NETWORK Y - NCCAT Labs	TIGHTNESS TEST PRESSURE	780 MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	11.58 MINUTES
NETWORK Y - NCCAT Labs	MAXIMUM PURGE TIME	3.06	MINUTES		
NETWORK Y - NCCAT Labs	PURGE POINT BORE	80	MM (Equivalent)	MAY COMPRISE MULTIPLE PURGE POINTS	
NETWORK Y - NCCAT Labs	PURGE HOSE BORE	150	MM (Equivalent)	MAY COMPRISE MULTIPLE PURGE POINTS	

Table 32: Network Y- NCCAT Labs data sheet

NETWORK Y - STEM Building	TIGHTNESS TEST PRESSURE	70 MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	5.02 MINUTES
NETWORK Y - STEM Building	MAXIMUM PURGE TIME	9.57	MINUTES		
NETWORK Y - STEM Building	PURGE POINT BORE	40	MM		
NETWORK Y - STEM Building	PURGE HOSE BORE	50	MM		

Table 33: Network Y- STEM Building data sheet

NETWORK Z	TIGHTNESS TEST PRESSURE	21 MBAR (OP)	TIGHTNESS TEST DURATION	(TTD)	0.40 MINUTES
NETWORK Z	MAXIMUM PURGE TIME	0.16	MINUTES		
NETWORK Z	PURGE POINT BORE	80	MM (Equivalent)	MAY COMPRISE MULTIPLE PURGE POINTS	
NETWORK Z	PURGE HOSE BORE	100	MM (Equivalent)	MAY COMPRISE MULTIPLE PURGE POINTS	

Table 34: Network Z- data sheet

**GAS NETWORK SAFETY CASE
LU /GAS /5– Incident Investigation**

LOUGHBOROUGH UNIVERSITY

Dated 10th August 2021

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1 Incident Investigator

The University has assigned responsibility for carrying out incident investigations to the following organisation: -

Wilcock Consulting

Unit 21

Trinity Enterprise Centre

Furness Business Park

Barrow –in- Furness

Cumbria

LA14 2PN

GAS NETWORK SAFETY CASE
LU /GAS /6 – Emergency Procedures

LOUGHBOROUGH UNIVERSITY

Dated 20th August 2021

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1 Purpose

This Emergency Procedure has been prepared to specify the roles and responsibilities of University staff and organisations concerned with, and acting on behalf of, the University in dealing with reported emergency situations on the University Gas Distribution Network.

2 Scope

This procedure is to be followed in the event of any smell of gas or products of combustion being detected within University property or the University grounds. The procedure should be followed by Residents, Students, University Employees, Staff and Contractors.

3 Procedure overview

The procedure covers the following possible occurrences within the confines of the University boundary.

- Smell of gas reported inside or outside property.
- Smell of products of combustion inside or outside property.
- Activation of carbon monoxide alarms
- Fires or explosions (where gas is suspected to be involved)
- Damaged Gas Pipes
- Fluctuating Gas Pressure
- Other emergency situation – e.g. persons feeling unwell / nauseous solely in the presence of a gas burning appliance.

The procedures are indexed as follows:-

- Information for Residents, Students and University Employees/Staff.
- Information for University Help Desk Staff responding to a reported incident
- Information for University Security staff.
- Information for University Gas Safe registered plumber
- Information for Plumbing/Heating & HVAC Manager or Maintenance Services Manager
- Information for the University Network GIRS registered contractor
- Information for the University Duty Authorised Person (DAP)

4 Instructions to Residents, Students and University Employees/Staff

Should, they smell gas

1. **During** normal working Hours telephone University **HELP DESK** on **01509 222121**
2. **Outside** normal working Hours telephone University **SECURITY** on **01509 222141**

Provide the Help Desk or Security with your name and the details of where you smelled gas and a telephone number where you can be contacted. This number should not be in or near to the place where you smelled gas.

Normal working hours are stipulated as follows:

- **Monday to Friday – 8:30am to 5:00pm**

In the event that an report of a gas escape occurs out of normal working hours, at a weekend or a university closure day, Security should be contacted following the outside normal working hours procedure.

5 Instructions to the Help Desk During Normal Working Hours

1. The person dealing with the report from the customer shall advise the customer of the following;
 - Where possible, turn off the gas supply at the emergency control valve (or local isolation valve) unless located in the cellar or basement.
 - extinguish all sources of ignition / naked flames
 - do not smoke
 - do not operate any electrical switches
 - ventilate the building by opening doors and windows
 - if the smell persists vacate the premises
 - ensure access to the premises is possible
2. On receiving a report of a possible gas related incident, complete Gas Reporting Form
3. Check if the person making the report has already reported the matter to the National Gas Emergency Service. Obtain a telephone number from the person making the report where they can be contacted. This number should not be in or near the place where they smelled gas

4. If the person making the report has not contacted the National Gas Emergency Service, take from them the following details: -
 - Exact address where gas was first smelled.
 - A telephone number – fixed or mobile – where they can be contacted. The telephone should not be in or near to the place where they smelled gas.
5. Immediately telephone National Gas Emergency Service on: 0800 111 999 report the smell of gas if not already reported
6. Advise the National Gas Emergency Control Centre to direct the Emergency Engineer to site Security or Help Desk
7. Telephone one of the University Gas Safe Registered Plumbers to attend site. The Plumbing/Heating & HVAC Manager shall also be made aware of the situation or Maintenance Services Manager if they are unavailable. In the event when neither of these individuals are available, the University Gas Duty Appointed Person shall be contacted.

Peter Miller, Gas Safe Registered Plumber
Mobile: 07895331890

Andy Moss, Gas Safe Registered Plumber
Mobile: 07968082486

Matthew Polkey, Plumbing/Heating & HVAC Manager
Mobile: 07895331869

Adey Bonser, Maintenance Services Manager
Office: 01509 222131 Mobile: 07969919639

Jonathan Cripps, University Gas Duty Appointed Person
Office: 01509 222138 Mobile: 07814288498
8. Inform and request that person/persons to attend site.
9. Escort the National Gas Emergency Engineer to the location of the smell of gas and assist as requested.
10. If they arrive at the site of the gas escape before the National Gas Emergency Engineer check that the advice given by the National Gas Emergency Service on turning off gas at the property meter and ventilating property has been complied with. If they can see, hear or feel gas escaping, evacuate persons from the area, including themselves, to a place of safety. Do not operate any electrical switches or doorbells.

6 Instructions to the Security Outside Normal Working Hours

1. The person dealing with the report from the customer shall advise the customer of the following;
 - Where possible, turn off the gas supply at the emergency control valve (or local isolation valve) unless located in the cellar or basement.
 - extinguish all sources of ignition / naked flames
 - do not smoke
 - do not operate any electrical switches
 - ventilate the building by opening doors and windows
 - if the smell persists vacate the premises
 - ensure access to the premises is possible
2. On receiving a report of a possible gas related incident, complete Gas Reporting Form.
3. Check if the person making the report has already reported the matter to the National Gas Emergency Service. Obtain a telephone number from the person making the report where they can be contacted. This number should not be in or near the place where they smelled gas
4. If the person making the report has not contacted the National Gas Emergency Service, take from them the following details: -
 - Exact address where gas was first smelled.
 - A telephone number – fixed or mobile – where they can be contacted. The telephone should not be in or near to the place where they smelled gas.
5. Immediately telephone National Gas Emergency Service on: 0800 111 999 report the smell of gas if not already reported
6. Advise the National Gas Emergency Control Centre to direct the Emergency Engineer to site Security or Help Desk
7. Telephone the on-call Maintenance Operative to attend site.
8. Inform and request that person to attend site.
9. Escort the National Gas Emergency Engineer to the location of the smell of gas and assist as requested.
10. If you arrive at the site of the gas escape before the National Gas Emergency Engineer check that the advice given by the National Gas Emergency Service on turning off gas at the property meter and ventilating property has been complied with. If you can see, hear or feel gas escaping, evacuate persons from the area,

including yourself, to a place of safety. Do not operate any electrical switches or doorbells.

11. If a member of the site “roaming” Security Staff is present, or likely to be present, at the location of the gas escape, ensure they are aware of the need to avoid introducing possible sources of ignition e.g. smoking, operating electrical switches or doorbells. Also ensure that they do not allow members of the public near the location, especially if they can see, hear or feel gas escaping. If this is the case they should evacuate persons from the area, including themselves, to a place of safety.

7 Instructions to the University Gas Safe Registered Plumber

Should on receiving information that a smell of gas has been reported:

1. Check with Helpdesk or Security that a National Gas Emergency Engineer has been requested to attend.
2. Attend site without delay, liaise with and assist the National Gas Emergency Engineer.
3. If you arrive at the site of the gas escape before the National Gas Emergency Engineer check that the advice given by the National Gas Emergency Service on turning off gas at the property meter and ventilating the property has been complied with. If you can see, hear or feel gas escaping, evacuate persons from the area, including yourself, to a place of safety. Do not operate any electrical switches or doorbells.
4. If the gas escape is obviously down stream of the meter/building ECV isolate the gas supply and carry out repairs as necessary or call the Plumbing/Heating & HVAC Manager or Maintenance Services Manager to arrange for a Gas Safe subcontractor to attend site as necessary.
5. If the escape appears to be upstream of the secondary meter isolation valve, or you are unsure call the to arrange for the attendance of the Plumbing/Heating & HVAC Manager or Maintenance Services Manager who will arrange for a GIRS registered contractor and/or to arrange for the primary meter ECV to be closed.
6. Remember the first priority is to safeguard life and property – including your own!
7. Inform and liaise with the Plumbing/Heating & HVAC Manager or Maintenance Service Manager at all times

8 Instructions to the Plumbing/Heating & HVAC Manager or Maintenance Services Manager

Should, on receiving information that a smell of gas has been reported:

1. Check with Help Desk or Security that the incident has been adequately reported to the National Gas Emergency Service.
2. Ensure Security or Help Desk are assisting or will assist the NG Emergency Engineer to locate the address of the incident and support as necessary.
3. Ensure the Gas Safe Registered Plumber or on-call Maintenance Operative arrive on site without delay to liaise with the National Gas Emergency Engineer as required.
4. If they arrive at the site of the gas escape before the National Gas Emergency Engineer check that the advice given by the National Gas Emergency Service on turning off gas at the property meter and ventilating the property has been complied with. If they can see, hear or feel gas escaping, evacuate persons from the area, including yourself, to a place of safety. Do not operate any electrical switches or doorbells.
5. If the gas escape is obviously downstream of the emergency control valve /building ECV isolate the gas supply and carry out repairs as necessary with qualified personnel.
6. If the escape appears to be upstream of the secondary meter isolation valve, or you are unsure arrange for a GIRS registered contractor and/or to arrange for the primary meter ECV to be closed. If the primary meter ECV is to be isolated to rectify the escape of gas on the private network, the gas appliances within the connected buildings shall be electrically isolated and the AECV's in each building shall be isolated before isolating the primary meter ECV. The gas network shall only be recommissioned after the decommissioned pipework has been tested and subsequently purged from air to gas.
7. If necessary, and only when the immediate threat to life and property has been adequately controlled, accept the "Transfer of Responsibility" form from the National Grid Gas Emergency Engineer. These shall only be accepted by the Plumbing/Heating & HVAC Manager, Maintenance Services Manager or the University Gas Duty Appointed Person.
8. The National Gas Emergency Engineer may then be allowed to leave site.
9. Record details of the incident to update the pipework replacement programme.

10. If necessary arrange to report details of the incident to the HSE under Gas Safety (Management) Regulations 1996 (GS(M)R) or Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR).

9 Instructions to the GIRS registered infrastructure contractor

If you are called to attend site:

1. Check with Security or Help Desk that the matter has been reported to the National Gas Emergency Service.
2. Attend site without delay, liaise with and assist the National Gas Emergency Engineer and the Plumbing/Heating & HVAC Manager or Maintenance Service Manager as required.
3. If you arrive at the site of the gas escape before the National Gas Emergency Engineer check that the advice given by the National Gas Emergency Service on turning off gas at the property meter and ventilating the property has been complied with. If you can see, hear or feel gas escaping, evacuate persons from the area, including yourself, to a place of safety. Do not operate any electrical switches or doorbells.
4. Liaise with the Plumbing/Heating & HVAC Manager or Maintenance Service Manager on actions/repairs necessary.
5. Remember the first priority is to safeguard life and property – including your own!

10 Instructions to the University Gas Duty Appointed Person

1. Check with Security or Help Desk that the matter has been reported to the National Gas Emergency Service and that the gas escapes form has been completed and emailed over for filing.
2. Ensure the appropriate steps have been taken to protect life and property in line with the emergency procedures.
3. If neither of the Plumbing/Heating & HVAC manager or Maintenance Services Manager are available, the University Gas Duty Appointed Person shall take on those responsibilities within the emergency procedures.

GAS NETWORK SAFETY CASE
LU /GAS /7 – Safety Case Audit Procedure
LOUGHBOROUGH UNIVERSITY

Dated 10th August 2021

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1 University Audit Procedure

The following schedule provides an audit activity list, required evidence of compliance and the evidence to be provided. The audit is carried out annually.

Activity	Evidence of Compliance	Evidence provided
Work on industrial and commercial gas appliances	<ol style="list-style-type: none"> 1. Employee competency records 2. Sub-contractor competency records 3. Policies & procedures 4. Scheduled maintenance achievement reports 5. Commercial arrangements 6. Instrument calibration records 	
Work on below and above ground pipework	<ol style="list-style-type: none"> 1. Employee competency records 2. Sub-contractor competency records 3. Policies & procedures 4. Scheduled maintenance achievement reports 5. Commercial arrangements 	
Risk assessments	<ol style="list-style-type: none"> 1. Generic risk assessments 2. Completed specific risk assessments 	
Codes of practice and standards for work on industrial and commercial appliances	<ol style="list-style-type: none"> 1. Library of applicable standards 	
Codes of practice and standards for work on below and above ground pipework	<ol style="list-style-type: none"> 1. Library of applicable standards 	
Emergency work	<ol style="list-style-type: none"> 1. Emergency response procedure 2. Details of competent persons 3. Sub contract arrangements 	

Maintenance of network governor equipment	<ol style="list-style-type: none"> 1. Employee competency records 2. Sub contractor competency records 3. Policies & procedures 4. Scheduled maintenance achievement reports 	
Records of gas supply ancillary equipment and network governor equipment	<ol style="list-style-type: none"> 1. Paper or data base Asset records 	
Compliance of gas governor equipment	<ol style="list-style-type: none"> 1. Relevant standards 2. Procurement policy 3. Purchase orders 	
Essential equipment	<ol style="list-style-type: none"> 1. Equipment and evidence of in-date calibration for portable natural gas in atmosphere monitoring equipment 2. Equipment and evidence of in-date calibration for portable CO monitoring equipment 3. Equipment and evidence of in-date calibration for portable flue gas monitoring equipment 4. Equipment and evidence of in-date calibration for underground plant monitoring equipment 5. Equipment and evidence of in-date calibration of pressure gauges 	

Table 1: Audit schedule

GAS NETWORK SAFETY CASE
LU /GAS /8 – Gas Service Replacement Policy
LOUGHBOROUGH UNIVERSITY

Dated 10th August 2021

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- 3 Condition monitoring.....3
- 4 Gas Service replacement policy3
- 5 Service replacement schedule4

1 Context

Loughborough University operates a private gas network supplying gas to commercial and residential buildings.

The University is required by the Gas Safety Management Regulations to have a Safety Case to demonstrate safe management of its gas network. Implicit in this Safety Case is the requirement to ensure all assets are maintained in good condition and replaced or made redundant when they have reached the end of their useful life or are likely to be a hazard to persons or buildings on the University premises.

2 Gas Services

Gas services convey gas from the gas mains network into occupier premises and are normally constructed from polyethylene, steel or lead.

They enter building either below ground or via an above ground riser situated outside the building to comply with modern standards.

It is understood from survey information that there are no lead services within University premises.

New services are constructed from polyethylene and enter buildings in compliance with modern standards requirements.

There are a number of older steel services of varying condition and in many cases enter buildings below ground resulting in uncontrolled pipework being situated under floors and inside buildings. Steel services in good condition do not present a hazard and it is only when they deteriorate due to corrosion or joint failure do they present a hazard.

3 Condition monitoring

The University carries out system monitoring by undertaking regular leakage survey of its network and it is proposed that this will be supported by a condition check on steel services where an above ground condition survey has highlighted corrosion, at the position where a service pipe emerges from ground level, by excavation and checking the condition of wrapping and the integrity of the steel material.

4 Gas Service replacement policy

The following replacement policy has been prepared taking account of UK standards and local conditions pertaining at the University.

A gas service shall be fully replaced from the gas main to the gas meter emergency control valve if any of the following conditions are present:-

- The gas service is found to be leaking

- The service is found to be corroded or the service wrapping is found to be damaged during a system monitoring check
- The service is in the same location or believed to be in a similar condition to adjacent services which have been replaced
- The meter control valve is seized and cannot be replaced safely
- The gas meter and its associated emergency control valve is not situated immediately within an outside wall at the boundary of the building

All new and replacement services shall be installed such that the gas meter and its associated emergency control valve is positioned immediately within an outside wall at the boundary of the building and enters the building via an outside riser in accordance with the recommendations made in IGEM/TD/4 – Gas services.

All new installed gas services shall have an external isolation valve.

5 Service replacement schedule

The University is currently undertaking a survey of the material type and condition of gas services and their entry pipe to plant rooms and properties. The replacement of services will then be prioritised based on the findings of the survey. The University has established a target of replacing all below ground steel pipework within 10 years of July 2021.

GAS NETWORK SAFETY CASE
LU /GAS /9 – Gas Governor Maintenance Policy
LOUGHBOROUGH UNIVERSITY

Dated 10th August 2021

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- 3 Inspection and maintenance4**
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 - 3.3 Major overhaul..... 5
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1 Context

Loughborough University operates a private gas network supplying gas to commercial and residential buildings.

The University is required by the Gas Safety Management Regulations to have a Safety Case to demonstrate safe management of its gas network. Implicit in this Safety Case is the requirement to ensure all assets are maintained in good condition and replaced or made redundant when they have reached the end of their useful life or are likely to be a hazard to persons or buildings on the University premises.

2 Gas governors

Gas 'Governors' are preassembled modular equipment used for reducing the gas pressure in a network from one pressure tier to another. They normally incorporate pressure regulators, filtering devices and slam shut devices to protect the downstream gas network from over pressurisation. The majority of gas governor installations located on the University premises are operated and maintained by a Meter Asset Manager.

The following is a list of governors operated by the University: -

- Martin Hall (004) – Asset number 6001418
- Core A (55) – Asset numbers 6001421, 6001422, 6001423, 6001424
- Core B (55) – Asset numbers 6001425, 6001426, 6001427
- Core C (55) – Asset numbers 6001428, 6001429, 6001430
- Core E (55) – Asset numbers 6001444, 6001446, 6001447, 6001448
- Core J (56) - Asset number 6001440
- Core H (56) - Asset number 6001436
- Core F (56) - Asset number 6001432
- Core D (55) - Asset number 6001431
- Main Boiler House (55) – Asset numbers 6001458, 6001459, 6001460, 6001461, 6001462, 6001463, 6001464, 6001465, 6001466, 6001467, 6001468, 6001469, 6001470, 6001471, 6001472, 6001473
- Hollywell Park Meter House – Asset numbers 6001454, 6001455, 6001453, 6001452
- Core L (56) – Asset numbers 6001481, 6001482, 6001483
- Swimming Pool (70) – Asset numbers 6001450, 6001452

- Energy Centre (59) – Asset numbers 6001480, 6001496, 6001497
- Stadium and Holywell Gym (205, 216) – Asset numbers 6001478, 6001479
- Stem Lab (219) - Asset number 6001474
- John Beckwith (71) - Asset number 6001495

Details of each asset is listed in the University asset register.

For equipment owned by the University the following policy shall apply.

3 Inspection and maintenance

The University carries routine maintenance in accordance with the recommendations set out in IGEM/TD/13. The inspections are listed as follows:-

- Routine inspection – 6 monthly frequency
- Functional check – 12 monthly frequency
- Major overhaul – In accordance with manufacturer’s instructions or 5 yearly as a minimum

3.1 Routine inspection

These inspections incorporate the following actions: -

- Visually check all regulators and associated control equipment for damage or deterioration.
- Check outlet pressure from regulators
- Reporting irregularities.

3.2 Functional check

Carry out inspection as follows with a stream changeover, where appropriate.

- Visually check all regulators and associated control equipment for satisfactory operation.
- Check outlet pressure from regulators; compare with previous readings and settings.
- Correct as necessary after reporting irregularities.
- Check pressure setting on the inlet and intermediate stages of the regulators (where appropriate).

Where Slam Shut Actuators are fitted to Regulator Streams:

- Prove operation of actuator - Fire 5 times to check stiction. For twin stream installations ensure the alternative stream is feeding. For single stream installations only carry out this operation after arrangements have been made to temporarily interrupt the gas consumers supply
- Examine the general condition and check for the presence of oil / gas leakage.
- Lubricate as necessary.

3.3 Major overhaul

These maintenance activities shall be undertaken in addition to the Routine Inspection and Functional Check detailed above.

A major overhaul will include the following:

- Dismantle and clean all parts of regulators, relief valves, slam shuts and auxiliary systems. Clean filter elements, and renew where appropriate. Examine diaphragms, gaskets, 'O' rings, seats and springs and renew as necessary.

4 Competence

The above inspection and maintenance work shall only be carried out by a competent and experienced Company. – The nominated company for undertaking the works is Penspen – See [Appendix 4](#) in the University Safety Case for most recent governor maintenance records.

GAS NETWORK SAFETY CASE
LU /GAS /10 – Load shedding priorities

LOUGHBOROUGH UNIVERSITY

Dated 10th August 2021

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1 Scope

This document provides a priority listing to be followed in the event of a request from Cadent to reduce the gas demand at the university as a result of a local or national gas supply emergency.

The following schedules have been compiled as follows:

1. Priority 1 – Supplies to be isolated as priority 1. These consumers are of the lowest priority with respect to maintaining continuity of supply
2. Priority 2 – Supplies to be isolated as priority 2. These consumers are of the next higher priority with respect to maintaining continuity of supply
3. Priority 3 – Supplies to be isolated as priority 3. These consumers are of the highest priority with respect to maintaining continuity of supply

2 Priority lists

As follows:-

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Priority 1

Building Number	Building Name	MPRN Number	Meter Location	Stage of Shutdown	Usage (KW)	Usage			Isolated Yes/No	Isolated by	Reinstatement Date
						Heating	Hot Water	Process			
004	Martin Hall	10775908	Meter Housing near Shirley Pearce Square	1	295	X					
021	S Building	10773803	Meter Behind S-Building	1	7118	X		X			
022	Sir John Ferguson	8930309403	Sir John Ferguson Plantroom	1	382.2	X	X				
027	Wolfson Building	10775504	Wolfon Building Plant Room	1	6			X			
031	EIS/LU Performance Centre	10775010	PEC Corner Plant room	1	1129	X	X				
033	John Pickford	9126405	John Pickford Plant room	1	191	X					
050	Wolfson Annex	10775505	Wolfon Building Plant Room	1	44	X					
062	Security Gate House	20082108	Plant room	1	27.1	X					
063	Dan Maskell Tennis Centre	9093032101	Meter House in Grass near LTA Tennis	1	225	X	X				
066	Stuart Miller Building	8898851807	S Building Boiler House (Gas Meter House)	1	54	X					
069	Sir Richard Morris	8820909403	Sir Richard Morris Car Park	1	293.7	X					
069	Sir Richard Morris Extension	8820909403	Sir Richard Morris Car Park	1	238.6	X	X				
071	Sir John Beckwith	10775908	Meter Housing near Shirley Pearce Square	1	296	X	X				
072	LTA Tennis Centre	9093032101	Meter House in Grass near LTA Tennis	1	225	X	X				
073	Netball/Badminton	9093031806	Meter House in Grass near LTA Tennis	1	968	X	X				
074	Seb Coe HIPAC	9104557308	Paula Radcliffe Athletics Stadium (862)	1	269	X	X				
075	Hockey Pavilion	9104557409	Paula Radcliffe Athletics Stadium (862)	1	400	X	X				
080	Clyde Williams Building	10775908	Meter Housing near Shirley Pearce Square	1	1052	X	X				
090	Paula Ratcliffe Pavilion	10774906	Meter Room next to Plant Room	1	234.6	X	X				
123	S Building Boiler House	51438302C	S Building Boiler House (Gas Meter House)	1	6731	X					
204	Graham Dilley Pavilion	8820909403	Sir Richard Morris Car Park	1	84	X	X				
400	University House (Imago)	9205805	Imago sales office (VC Office)	1	101	X	X				
625	William Morris Dining Plant Room	9325501	Morris Dining Rms	1	257	X					
626	William Morris Common Room	9325209	Male Toilets in Common Room	1	37	X	X				
751	Claudia Parsons Hub	7683023109	Claudia Parsons Hubb Plant room	1	147	X	X	X			

Priority 2

Building Number	Building Name	MPRN Number	Meter Location	Stage of Shutdown	Usage (KW)	Usage			Isolated Yes/No	Isolated by	Reinstatement Date
						Heating	Hot Water	Process			
010	Edward Herbert Building	10775403	EHB Gas Meter House	2	161.76			X			
024	Sir Frank Gibb Labs	9123410	Sir Frank Gibb Labs Plant Room	2	1650	X					
031	EIS/LU Performance Centre	8930267200	Box 100 (PEC)	2	1548.3	X	X				
038	3D Design	8938358502	3D Design Outside Plant room	2	1808	X	X	X			
039	Edward Barnsley Textiles	9373669607	Edward Barnsley (Front)	2	249			X			
041	Fine Art	74093108	3D Design Meter House (038)	2	558	X					
055	Charnwood Wing	8814988810	Holywell Park Meter House Outside NCCAT Office	2	2682			X			
056	Garendon Wing	8814988810	Holywell Park Meter House Outside NCCAT Office	2	135			X			
057	Sir Dennis Rooke	8814988810	Holywell Park Meter House Outside NCCAT Office	2	175			X			
058	Holywell Building	8814988810	Holywell Park Meter House Outside NCCAT Office	2	72			X			
059	Energy Centre	8814988810	Holywell Park Meter House Outside NCCAT Office	2	11889	X					
060	NCCAT Offices & UTC	8814988810	Holywell Park Meter House Outside NCCAT Office	2	181	X					
070	Swimming Pool	8924902001	Meter Box in Grass Near Swimming Pool Plant Room	2	1790	X					
077	Keith Green	10775100	Burleigh Court Delivery Yard	2	137.6	X					
078	Michael Pearson East	203157602	Loughborough Park 1	2	546	X					
079	Michael Pearson West	8818831202	Loughborough Park 2	2	546	X					
082	Sport Park Plant Room	9219768506	Sport Park Plant Room (082)	2	1118	X	X				
205	Loughborough University Stadium	8814988810	Holywell Park Meter House Outside NCCAT Office	2	345	X	X				
209	FM Grounds & Gardens Building	8814988810	Holywell Park Meter House Outside NCCAT Office	2	101	X					
216	Holywell Fitness Centre	8814988810	Holywell Park Meter House Outside NCCAT Office	2	646	X	X				
219	STEM Lab Building	8814988810	Holywell Park Meter House Outside NCCAT Office	2	1548	X	X				
220	ATIC	9328579904	ATIC Plantroom	2	307.3	X	X				
224	Towers Dining Room	9124008	Meter House Near Matthew Arnold	2	262	X	X	X			
225	NCCAT Labs	8814988810	Holywell Park Meter House Outside NCCAT Office	2	1350	X		X			
432	Village Restaurant	9205300	Village Restaurant Meter House in Delivery Yard	2	2597	X	X	X			
466	Royce Warden Lodge	10775605	Cayley Dining Hall	2	45	X	X				
467	Faraday/Royce Dining Hall	10775605	Cayley Dining Hall	2	251.6			X			
519	Cayley/Rutherford Dining Hall	10775605	Cayley Dining Hall	2	129.05			X			
549	Butler Court Communal Block	10775302	Butler Court Block A	2	1351.8	X	X				
642	Falkner Games Room	8823516309	Falkner Eggington Car Park	2	12.7	X	X	X			

Priority 3

Building Number	Building Name	MPRN Number	Meter Location	Stage of Shutdown	Usage (KW)	Usage			Isolated Yes/No	Isolated by	Reinstatement Date
						Heating	Hot Water	Process			
002	49 Fairmount Drive	2184056603	Fairmont Drive 49	3	20.65	X	X				
030	Pilkington Library	9205300	Village Restaurant Meter House in Delivery Yard	3	1540	X					
048	Medical Centre	10774300	Medical Centre	3	200	X	X				
053	Burleigh Court	10775100	Burleigh Court Delivery Yard	3	2307.19	X	X	X			
084	11 Holywell Drive	9205704	Holywell Dr 11	3		X	X				
085	Boiler House & CHP	51438605	Boiler House Meter House	3	17193	X					
087	3 Holywell Drive	9201808	Holywell Dr 3	3		X	X				
124	7 Holywell Drive	9199500	Holywell Dr 7	3		X	X				
202	Link Hotel	17768902	Meter House in Carpark	3	593	X	X	X			
381	LSU Student Nursery	19296504	Student Union Nursery	3	46	X	X				
402	University Lodge C	9205300	Village Restaurant Meter House in Delivery Yard	3	278	X	X				
404	Telford 5A	9205300	Village Restaurant Meter House in Delivery Yard	3	310	X	X				
405	Elvyn Lodge	9205300	Village Restaurant Meter House in Delivery Yard	3	47	X	X				
407	Telford 4C	9205300	Village Restaurant Meter House in Delivery Yard	3	502	X	X				
411	Telford 3C	9205300	Village Restaurant Meter House in Delivery Yard	3	316	X	X				
413	Telford 4A	9205300	Village Restaurant Meter House in Delivery Yard	3	33	X	X				
414	Telford Common Room	9205300	Village Restaurant Meter House in Delivery Yard	3	97	X	X	X			
418	Telford 1A	9205300	Village Restaurant Meter House in Delivery Yard	3	28	X	X				
422	Telford Flat 2	9205300	Village Restaurant Meter House in Delivery Yard	3	26	X	X				
423	Telford Flat 3	9205300	Village Restaurant Meter House in Delivery Yard	3	26	X	X				
426	Telford 1C	9205300	Village Restaurant Meter House in Delivery Yard	3	407	X	X				
430	Telford 2C	9205300	Village Restaurant Meter House in Delivery Yard	3	407	X	X				
448	Faraday Warden Lodge	9199309	Faraday Warden Garage	3	46.2	X	X				
463	Faraday BB	10774210	Faraday BB	3	80	X					
464	Telford Warden Lodge	9128903	Telford Warden Lodge Garage	3		X	X				
470	Telford Smart Room	9205300	Village Restaurant Meter House in Delivery Yard	3	88	X	X	X			
472	Royce 21	9205300	Village Restaurant Meter House in Delivery Yard	3	355	X	X				
476	Royce 17	9205300	Village Restaurant Meter House in Delivery Yard	3	334	X	X				
506	Rutherford Warden Lodge	9127901	Rutherford Warden Lodge Garage	3		X	X				
513	Cayley 14	9206201	Cayley 14 Plantroom	3	62	X					
518	Cayley Warden Lodge	9128600	Cayley Warden Garage	3	29.75	X	X				
539	David Collett Dining	9201505	David Collett Dining	3	1074.5	X	X	X			
537	David Collett E Block	10773702	Burleigh Court Delivery Yard	3	923.95	X	X				
543	Butler Court Block A	10775302	Butler Court Block A	3	416.5	X	X				
545	Butler Court Block C	10775302	Butler Court Block A	3	416.5	X	X				
546	Butler Court Block D (D0)	10775302	Butler Court Block A	3	34.5	X	X				
548	Butler Court Block F	10775302	Butler Court Block A	3	416.5	X	X				
551	Falkner Block 1	8823516309	Falkner Eggington Car Park	3	29.6	X	X				
552	Falkner Block 2	8823516309	Falkner Eggington Car Park	3	29.6	X	X				
553	Falkner Block 3	8823516309	Falkner Eggington Car Park	3	29.6	X	X				
554	Falkner Block 4	8823516309	Falkner Eggington Car Park	3	29.6	X	X				
555	Falkner Block 5	8823516309	Falkner Eggington Car Park	3	29.6	X	X				
556	Falkner Block 6	8823516309	Falkner Eggington Car Park	3	29.6	X	X				

617	Eggington Block 28	8823516309	Falkner Eggington Car Park	3	29.6	X	X			
618	Eggington Block 29	8823516309	Falkner Eggington Car Park	3	29.6	X	X			
619	Eggington Block 30	8823516309	Falkner Eggington Car Park	3	29.6	X	X			
620	Eggington Block 31	8823516309	Falkner Eggington Car Park	3	29.6	X	X			
621	Eggington Block 32	8823516309	Falkner Eggington Car Park	3	29.6	X	X			
622	Eggington Block 33	8823516309	Falkner Eggington Car Park	3	29.6	X	X			
623	Eggington Block 34	8823516309	Falkner Eggington Car Park	3	29.6	X	X			
627	215 Ashby Road	2182426600	Ashby Rd 215	3		X	X			
628	217 Ashby Road	9203509	Ashby Rd 217	3		X	X			
629	197 Forest Road	9199803	Forest Rd 197	3	32.56	X	X			
630	203 Forest Road	9199410	Forest Rd 203	3	40.7	X	X			
631	207 Forest Road	2184057010	Forest Rd 207	3	37.65	X	X			
632	Ashleigh Drive 20	2184058708	Ashleigh Drive 20	3		X	X			
633	Ashleigh Drive 40	9204904	Ashleigh Drive 40	3		X	X			
634	Ashleigh Drive 55	9126809	Ashleigh Drive 55	3		X	X			
635	Ashleigh Drive 57	9201909	Ashleigh Drive 57	3		X	X			
637	1 Holywell Drive		Holywell Dr 1	3		X	X			
638	13 Spinney Hill Drive	2184051503	Spinney Hill Drive 13	3		X	X			
641	Eggington Common Room	8823516309	Falkner Eggington Car Park	3	80.3	X	X	X		
646	209 Ashby Road	9123803	Ashby Rd 209	3		X	X			
647	211 Ashby Road	9123601	Ashby Rd 211	3		X	X			
648	Ashleigh Drive 22	9129501	Ashleigh Drive 22	3		X	X			
650	207 Ashby Road	9123500	Ashby Rd 207	3		X	X			
752	Claudia Parsons Warden	7683023210	Claudia Parsons Warden House	3		X	X			
753	The Elite Athlete Centre & Hotel	7683023008	Claudia Parsons Energy Centre Plant Room	3	64.9			X		
754	Claudia Parsons Energy Centre	7683023008	Claudia Parsons Energy Centre Plant Room	3	2679	X	X			

GAS NETWORK SAFETY CASE
LU /GAS /11 – Site works procedure
New gas infrastructure works

LOUGHBOROUGH UNIVERSITY

Dated 10th August 2021

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4 Procedure activities and responsibilities3

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1 Purpose

This site works procedure has been prepared to specify the responsibilities and authorisations required for designing, constructing and bringing into service gas distribution infrastructure at Loughborough University.

2 Scope

The procedure is to be applied to all gas distribution assets owned and operated by Loughborough University including mains, services, valves, governors and pressure loggers. Assets installed downstream of a consumer emergency control valve are subject to a separate procedure.

3 Procedure overview

The procedure includes the following components:

- Design
- Design approval
- Procurement of materials
- Method statements, routine / non- routine operations procedures
- Health & Safety compliance
- Installation including reinstatement
- Testing
- Commissioning and purging
- As built records
- Updating of Network Analysis model

4 Procedure activities and responsibilities

The activities and responsibilities concerned with New Gas Distribution Systems are summarised in the following table:

Activity	Responsibility
Specify requirement for new, alteration to, or replacement of, the gas distribution system	University Policy / Project Manager in consultation with the Gas Duty Authorised Person.
Undertake network analysis (NA) and provide design including: <ul style="list-style-type: none"> • Drawings • Specifications • Competency requirements • Operations procedure requirements • Method statement requirements • Health and Safety requirements including compliance with CDM • Material take off (MTO) 	Nominated gas infrastructure contractor
Design approval	Loughborough University Estates and Facilities Management department gas systems Competent Authority - Wilcock Consulting
Procure materials and provide manpower in accordance with design specification	Nominated gas infrastructure contractor
Preparation of method statements and/or operations procedures in accordance with design specification	Nominated gas infrastructure contractor
Approval of method statements and/or operations procedures in accordance with design specification	Loughborough University Estates and Facilities Management / Competent Authority - Wilcock Consulting
CDM regulations compliance	Loughborough University, Designer, Principal Designer, Contractor, Principal Contractor as appropriate

Site works installation including supervision, testing, purging, commissioning, provision of as built sketches and relevant testing and purging certification in accordance with the design specification	Nominated gas infrastructure contractor
Construction audit	Loughborough University Estates and Facilities Management gas systems Competent Authority - Wilcock Consulting
Update site gas network drawing, provide copy to Competent Authority for updating of the NA Model	Loughborough University Estates and Facilities Management Gas Duty Authorised Person.
Update Network Analysis Model and provide data run results	Loughborough University Estates and Facilities Management gas systems Competent Authority - Wilcock Consulting
Assemble Health and Safety / project file including drawings, documents and certificates	Loughborough University Estates and Facilities Management Gas Systems Competent Person
Final review of documents and sign off	Loughborough University Estates and Facilities Management gas systems Competent Person and Authority - Wilcock Consulting

Table 1: Activity / responsibility chart

GAS NETWORK SAFETY CASE
LU /GAS /12 – Site works process documentation
LOUGHBOROUGH UNIVERSITY

Dated 10th August 2021

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1 Scope

This document provides a template for the review of site works processes for gas infrastructure works together with evidence required for compliance with the CDM regulations.

2 Process check list

Project Description	Project Number

No	Activity	Responsibility	Review, approval and comment	Date signed off
1	Specify requirement for new, alteration to or replacement of the gas distribution system	Loughborough University account holder <u>to initiate</u> Loughborough University Estates and Facilities Management department gas systems Competent Authority - Wilcock Consulting <u>to review</u>		
2	Review and ensure compliance with CDM regulations	Loughborough University Estates and Facilities Management department with gas systems Competent Authority - Wilcock Consulting <u>to review</u>		
3	Undertake network analysis (NA)and provide design including: <ul style="list-style-type: none"> • Drawings • Specifications • Competency requirements 	Nominated gas infrastructure contractor <u>to undertake</u> Loughborough University Estates and Facilities Management department		

	<ul style="list-style-type: none"> • Operations procedure requirements • Method statement requirements • Health and Safety requirements including compliance with CDM • Material take off (MTO) 	gas systems Competent Authority - Wilcock Consulting <u>to review</u>		
4	Procure materials and provide manpower in accordance with design specification	<p>Nominated gas infrastructure contractor <u>to undertake</u></p> <p>Loughborough University Estates and Facilities Management department gas systems Competent Authority - Wilcock Consulting <u>to review</u></p>		
5	Preparation of Risk Assessments, Method Statements and/or Operations procedures in accordance with design specification	<p>Nominated gas infrastructure contractor <u>to undertake</u></p> <p>Loughborough University Estates and Facilities Management department gas systems Competent Authority - Wilcock Consulting <u>to review</u></p>		
6	<p>Construction audit including:-</p> <ul style="list-style-type: none"> • Excavation depth of cover • Pipe jointing • Ditching and backfill • Testing • Gas connections • Purging and commissioning • As built drawings 	Loughborough University Estates and Facilities Management department gas systems Competent Authority - Wilcock Consulting <u>to undertake</u>		

7	Update site gas network drawing, provide copy to Competent Authority for updating of the NA Model	Loughborough University Estates and Facilities Management Department <u>to update</u> Competent Authority - Wilcock Consulting <u>to review</u>		
8	Update Network Analysis Model and provide data run result	Competent Authority - Wilcock Consulting <u>to undertake</u> Loughborough University Estates and Facilities Management Department <u>to review</u>		
9	Assemble Health and Safety / project file including drawings, documents and certificates – review and sign off <u>For project file check list See below</u>	Loughborough University Estates and Facilities Management Department <u>to prepare</u> Competent Authority - Wilcock Consulting <u>to review</u>		

Table 1: Process Check list

3 Process CDM compliance

Compliance with Construction (Design and Management) Regulations 2015

This section provides guidance on compliance with the Construction (Design and Management) Regulations 2015 (CDM 2015). These Regulations cover the management of health, safety and welfare when carrying out construction projects. Subject to some transitional provisions (see paragraphs 181–186), CDM 2015 replaces the Construction (Design and Management) Regulations 2007 (CDM 2007) from 6 April 2015. From this date, the Approved Code of Practice (ACOP) which provides supporting guidance on CDM 2007 is withdrawn.

To ensure compliance reference shall be made to:-

Managing Health and Safety in construction
Construction (Design and Management) Regulations 2015
Guidance on Regulations

The key elements to ensuring construction health and safety include: -

1. Managing the risks by applying the general principles of prevention;
2. Appointing the right people and organisations at the right time;
3. Making sure everyone has the information, instruction, training and supervision they need to carry out their jobs in a way that secures health and safety;
4. Duty holders cooperating and communicating with each other and coordinating their work; and
5. Consulting workers and engaging with them to promote and develop effective measures to secure health, safety and welfare.

Scope and notification (Regulation 6)

The regulations cover all construction works. Certain works are notifiable as described as follows: -

A project is notifiable if the construction work on a construction site is scheduled to:-

- (1) Last longer than 30 working days and have more than 20 workers working simultaneously at any point in the project; or
- (2) exceed 500 person days.
- (3) Where a project is notifiable, the client must give notice in writing to the Executive as soon as is practicable before the construction phase begins

(4) The client is responsible for notification

Roles under the Regulations (Table 1)

The roles and duties under the regulations are summarised as follows: -

- (1) **Clients** are organisations or individuals for whom a construction project is carried out
- (2) **Domestic clients** are people who have construction work carried out on their own home, or the home of a family member that is not done as part of a business, whether for profit or not
- (3) **Designers** are those, who as part of a business, prepare or modify designs for a building, product or system relating to construction work
- (4) **Principal designers** are designers appointed by the client in projects involving more than one contractor. They can be an organisation or an individual with sufficient knowledge, experience and ability to carry out the role
- (5) **Principal contractors** are contractors appointed by the client to coordinate the construction phase of a project where it involves more than one contractor
- (6) **Contractors** are those who do the actual construction work and can be either an individual or a company
- (7) **Workers** are the people who work for or under the control of contractors on a construction site

Project check sheet

<u>CDM COMPLIANCE CHECK LIST</u>	
<u>Project</u>	
<u>Is the project notifiable and if so date notified</u>	
<u>Client</u>	<u>Loughborough University</u>
<u>Designer</u>	
<u>Principal Designer</u>	
<u>Contractor</u>	
<u>Principal Contractor</u>	
<u>Designer risk assessment prepared and issued</u>	
<u>Contractor construction plan received</u>	

Table 2: CDM check sheet

Project completion file check list

		Completed (Yes/No)
(1)	Project design documentation	
(2)	Equipment specifications	
(3)	Contract and procurement documentation	
(4)	Offers and Quotations	
(5)	Safety and Technical Competency documentation	
(6)	Orders	
(7)	RAMS	
(8)	Routine and Non- Routine Operations Procedures (For Authorisation)	
(9)	Routine and Non- Routine Operations Procedures (Authorised)	
(10)	Routine and Non- Routine Operations Procedures (Completed)	
(11)	As built drawings	
(12)	Material data sheets	
(13)	Construction audit report (If applicable)	

Table 3: Project completion check sheet

GAS NETWORK SAFETY CASE
LU /GAS /13– Safety Case Compliance Audit

LOUGHBOROUGH UNIVERSITY

Dated 17th February 2021

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1 Scope

This document provides the result of the most recent Safety Case compliance audit carried out for the University gas network. The first Audit is pending sign off of the University approved Safety Case.

2 Audit report (Template)

Activity	Evidence of Compliance	Evidence provided	Actions required	Status
1a Work on industrial and commercial gas appliances and associated installation pipe-work	Results of latest Gas Safe Audit where available			
1b	Employee competency records			
1c	Computer based maintenance scheduling system Computer based maintenance records Outstanding wok report			
1d	Library of applicable standards			

	Standards			
	Codes of Practice			
	Safety notes			

Activity	Evidence of Compliance	Evidence provided	Actions required	Status
2a Work on below ground pipe-work	Sub contract arrangements and sub contractor verification procedure			
2b	Employee competency records			
2c	Maintenance scheduling and recording system			

Activity	Evidence of Compliance	Evidence provided	Actions required	Status
	Maintenance and inspection records including: - <ul style="list-style-type: none"> • Leakage survey every 12 months • Corrosion survey of service risers every 2 years Outstanding work report			
2d	Library of applicable standards: - Standards Codes of Practice Safety notes	For the gas distribution network, the University has adopted the following documents as the basis for compliance. IGE/TD/3 – Edition 5 - Steel and PE pipelines for gas distribution IGE/TD/4 – Edition 4 – PE and steel gas services Now Edition 4		

Activity	Evidence of Compliance	Evidence provided	Actions required	Status
		IGE/TD/13 – Edition 2 Pressure regulating installations		
2e	Audit of sub-contractor works including pipe jointing and live gas operations			

Activity	Evidence of Compliance	Evidence provided	Actions required	Status
3a) Emergency work	Emergency response procedure On call arrangements On call rosters			

Activity	Evidence of Compliance	Evidence provided	Actions required	Status
3b	Site restoration procedures including Drawings and valve numberings			
3c	List of Competent Persons and qualification / training records			
3d	Sub contract arrangements and sub-contractor verification procedure			

Activity	Evidence of Compliance	Evidence provided	Actions required	Status
3e	Emergency response Training Records			
3f	Incident reporting	<p>The University 20xx incident report was reviewed.</p> <p>Xx gas related leaks/incidents were recorded this compares with xx in the period 20xx.</p> <p>The gas leak/incident reports are categorized as follows: -</p> <ol style="list-style-type: none"> 1. Installation gas/smoke alarm activated – x 2. No fault found – x 3. Leak on Cadent equipment – x 4. Internal leak – x 5. External leak - x 6. Interference damage – x 7. CO panel fault – x 8. Flue seal fault – x 		

Activity	Evidence of Compliance	Evidence provided	Actions required	Status
		9. Other/not specified - x		
3g	Leakage survey FID			

Activity	Evidence of Compliance	Evidence provided	Actions required	Status
4a) Maintenance of network governor/meter equipment/valves and safety devices where applicable	Sub contract arrangements and sub contractor verification procedure	<p>Penspen have been appointed to carry out Network Governor Maintenance.</p> <p>Results of the current maintenance results are included in the Safety Case and a folder enclosed with this audit</p> <p>The latest maintenance was carried out as follows: -</p>		
4b	Tagging and unique identification of system control and safety devices			
4c	Employee competency records			

Activity	Evidence of Compliance	Evidence provided	Actions required	Status
4d	Computer based maintenance scheduling system Computer based maintenance records Outstanding wok report			
4e	Library of applicable standards: - Standards Codes of Practice Safety notes			

Activity	Evidence of Compliance	Evidence provided	Actions required	Status
<p>5a)Essential equipment</p> <p>List of equipment to be reviewed and specified – To be updated</p>	<ol style="list-style-type: none"> 1. Equipment and evidence of in-date calibration for CROWCON portable natural gas in atmosphere monitor 2. Equipment and evidence of in-date calibration for combustion gas analyser (Work undertaken by Gas Safe registered sub-contractor) 3. Equipment and evidence of in-date calibration for portable flue gas analyser (Work undertaken by Gas Safe registered sub-contractor) 4. Equipment and evidence of in-date calibration for Gascoseeker 5. Equipment and evidence of in-date calibration of Fluke digital multimeter 			

Activity	Evidence of Compliance	Evidence provided	Actions required	Status
	<p>6. Equipment and evidence of in-date calibration for Fluke clamp meter – not needed</p> <p>7. Equipment and evidence of in-date calibration for Fluke temperature meter – not needed</p> <p>8. Equipment and evidence of in-date calibration for pressure gauges</p>			

Activity	Evidence of Compliance	Evidence provided	Actions required	Status
6a) System Drawings	List of in date system drawings			
6b	Procedure for updating drawings			
6c	Procedure for drawings issue			

Activity	Evidence of Compliance	Evidence provided	Actions required	Status
7a) University Specifications University is updating these	List of University relevant and current procedures			
7b	Availability and knowledge of University relevant and current procedures			
7c	Arrangements for disseminating procedures and associated training			

Activity	Evidence of Compliance	Evidence provided	Actions required	Status
8) Risk assessments	Availability of standard risk assessments and risk assessment procedure			

Activity	Evidence of Compliance	Evidence provided	Actions required	Status
9a)New works compliance process	Standard new works T and C's including gas system requirements	See LU / Gas 11 and 12	None	Complete
9b	Establishment of design authority	See LU / Gas 11 and 12	None	Complete
9c	Design approvals process	See LU / Gas 11 and 12	None	Complete
9d	Construction audit process	See LU / Gas 11 and 12	None	Complete
9e	System handover procedure	See LU / Gas 11 and 12	None	Complete

Table 1: Audit report

3 Audit report task recommendations

Safety Case Compliance 20xx – Specific tasks	
Task	Status

Table 2: Task report

GAS NETWORK SAFETY CASE
LU /GAS /14 – Network improvement specification
LOUGHBOROUGH UNIVERSITY

Dated 10th August 2021

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1 Scope

This specification shall be complied with by any organisation or individual who is resourcing services for the installation of gas distribution pipework, gas services, meters and associated modifications to gas installations on the Loughborough University Campus. The specification is a template to be used for new and replacement works and will be developed as a applicable to meet the required project scope.

The document applies to the gas network which is defined as gas mains or services between the gas primary meter and secondary meters or emergency control valves at the point of supply to buildings and plant rooms.

The specification applies to: -

1.1 Minor works

Where the works rely upon standard designs provided by the contractor undertaking the works. In such cases the contractor shall undertake the role of designer and contractor as required by the CDM regulations. A designer's risk assessment shall be completed by the contractor's designer. Minor Works Projects are typically of a value where the works can be carried out by a contractor who has been pre-qualified through the University pre-tender selection process.

1.2 Major works

These are typically more complex projects where an independent design has been prepared in advance. The design document must be appended with this specification. The independent designer shall provide designer's risk assessment which will also be appended to this specification. Major works projects will be subject to contractor selection through a full tendering process

The University has deemed this project to be a: -

Insert Project ID			
Major Works Project		Minor works project	

Table 1: Project type

Please place a tick in the appropriate box

2 Project description and information

The project is described as follows: -

INSERT PROJECT DESCRIPTION:

Additional information provided by the University is contained in the attachments appended to this document and listed as follows: -

Information provided by the University	
University standard terms relating to tendering and subletting of works	
University health and safety information to contractor's	
Design specification (not necessarily required for minor works)	
Utility information relevant to the project	
University gas network drawings relevant to the project	
Project specific drawings (List drawing numbers)	
Project specific technical data sheets	

Table 2: Information provided by the University

Please place a tick in the appropriate box

3 Information provided by the contractor

The contractor shall provide the following information prior to construction.

Information provided by the Contractor	
Standard design document detailing: - <ul style="list-style-type: none"> • Pipe routing • Pipe materials and sizes • Network analysis where appropriate 	
Method statements	
Routine and Non-Routine Operations procedures as appropriate	
Project drawings	
Technical data sheets	
Risk assessments	
Construction phase plan as required by Regulation 12 of the CDM regulations which shall include: - A description of the project such as key dates and details of key members of the project team The management of the work including: - <ul style="list-style-type: none"> ✓ The health and safety aims of the project ✓ The site rules 	

<ul style="list-style-type: none"> ✓ Arrangements to ensure cooperation between project team members and coordination of their work eg regular site meetings ✓ Arrangements for involving workers ✓ Site induction ✓ Welfare facilities ✓ Fire and emergency procedures 	
The control of any specific site risks where they are relevant to the work involved	
Information required by the University document (attached) Health and Safety information to contractors	
Qualifications and accreditations of all persons to be employed on the project (Not required where a contractor has been pre-qualified by the University)	
Company accreditation certificates such as GIRS registration, ISO 9001, ISO 14001 etc. (Not required where a contractor has been pre-qualified by the University)	
Company history of relevant projects (Not required where a contractor has been pre-qualified by the University)	
Commercial offer	

Table 3: Information provided by the Contractor

4 Design and construction standards

The following standards shall be adhered to for all work carried out upon the University campus (Note for IGEM/SR standards the standard may apply to more than one category of assets): -

4.1 Gas mains

IGEM/TD/3 Edition 5 – Steel and PE pipelines for gas distribution

IGE/SR/22 - Purging operations for fuel gases in transmission, distribution and storage

IGE/SR/23 - Venting of Natural Gas

IGEM/SR/28 Edition 2 - Trenchless techniques

IGEM/SR/29 - Dealing with gas escapes

4.2 Gas services

IGE/TD/4 Edition 4 - PE and steel gas services and service pipework

IGEM/G/5 Edition 2 - Gas in multi-occupancy buildings

4.3 Pressure regulation and metering

IGEM/TD/13 Edition 2 - Pressure regulating installations for Natural Gas, Liquefied Petroleum Gas and Liquefied Petroleum Gas/Air

IGEM/SR/25 Edition 2 - Hazardous area classification of Natural Gas installations

IGEM/GM/6 Edition 2 - Non-domestic meter installations. Standard designs

IGEM/GM/7B - Hazardous area classification for gas metering equipment

IGEM/GM/8 Part 1 Edition 2 - Non-domestic meter installations. Flow rate exceeding 6 m³h⁻¹ and inlet pressure not exceeding 38 bar. Part 1 Design

IGEM/GM/8 Part 2 Edition 2 - Non-domestic meter installations. Flow rate exceeding 6 m³h⁻¹ and inlet pressure not exceeding 38 bar. Part 2 Locations, housings and compounds

IGEM/GM/8 Part 3 Edition 2 - Non-domestic meter installations. Flow rate exceeding 6 m³h⁻¹ and inlet pressure not exceeding 38 bar. Part 3 Fabrication, installation, testing and commissioning

IGEM/GM/8 Part 4 Edition 2 - Non-domestic meter installations. Flow rate exceeding 6 m³h⁻¹ and inlet pressure not exceeding 38 bar. Part 4 Operation and maintenance

IGEM/GM/8 Part 5 Edition 2 - Non-domestic meter installations. Flow rate exceeding 6 m³h⁻¹ and inlet pressure not exceeding 38 bar. Part 5 Notices and labels

4.4 Gas installations

IGE/UP/1 Edition 2 - Strength testing, tightness testing and direct purging of industrial and commercial gas installations

IGE/UP/1A Edition 2 - Strength testing, tightness testing and direct purging of small low pressure industrial and commercial Natural Gas installations

IGEM/UP/1B Edition 3 - Tightness testing and direct purging of small Liquefied Petroleum Gas/Air, Natural Gas and Liquefied Petroleum Gas installation

IGEM/UP/1C - Strength testing, tightness testing and direct purging of Natural Gas and LPG meter installations

IGEM/UP/2 Edition 3 - Installation pipework on industrial and commercial premises

IGEM/UP/4 Edition 3 - Commissioning of gas fired plant on industrial and commercial premises

IGEM/UP/1101 - Guidance on gas installations for the management and staff within educational establishments

4.5 Planning and legislation

IGE/GL/1 Edition 2 - Planning of gas distribution systems of MOP not exceeding 16 bar

IGEM/GL/5 Edition 3 - Procedures for managing new works, modifications and repairs

IGEM/GL/6 Edition 2 - Permitry for the safe flow of gas

IGEM/GL/8 Edition 3 - Reporting and investigation of gas related incidents

IGE/GL/9 - Guidance for large gas consumers in dealing with Natural Gas supply emergencies

For this project the following standards are applicable: -

4.6 Project applicable standards

Project applicable standards	
IGEM/TD/3 Edition 5 – Steel and PE pipelines for gas distribution	
IGE/SR/22 - Purging operations for fuel gases in transmission, distribution and storage	
IGE/SR/23 - Venting of Natural Gas	
IGEM/SR/28 Edition 2 - Trenchless techniques	
IGEM/SR/29 - Dealing with gas escapes	
IGE/TD/4 Edition 4 - PE and steel gas services and service pipework	
IGEM/G/5 Edition 2 - Gas in multi-occupancy buildings	
IGEM/TD/13 Edition 2 - Pressure regulating installations for Natural Gas, Liquefied Petroleum Gas and Liquefied Petroleum Gas/Air	
IGEM/SR/25 Edition 2 - Hazardous area classification of Natural Gas installations	
IGEM/GM/6 Edition 2 - Non-domestic meter installations. Standard designs	
IGEM/GM/7B - Hazardous area classification for gas metering equipment	
IGEM/GM/8 Part 1 Edition 2 - Non-domestic meter installations. Flow rate exceeding 6 m ³ h ⁻¹ and inlet pressure not exceeding 38 bar. Part 1 Design	
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IGEM/GM/8 Part 5 Edition 2 - Non-domestic meter installations. Flow rate exceeding 6 m ³ h ⁻¹ and inlet pressure not exceeding 38 bar. Part 5 Notices and labels	
IGE/UP/1 Edition 2 - Strength testing, tightness testing and direct purging of industrial and commercial gas installations	
IGE/UP/1A Edition 2 - Strength testing, tightness testing and direct purging of small low pressure industrial and commercial Natural Gas installations	
IGEM/UP/1B Edition 3 - Tightness testing and direct purging of small Liquefied Petroleum Gas/Air, Natural Gas and Liquefied Petroleum Gas installation	

IGEM/UP/1C - Strength testing, tightness testing and direct purging of Natural Gas and LPG meter installations	
IGEM/UP/2 Edition 3 - Installation pipework on industrial and commercial premises	
IGEM/UP/4 Edition 3 - Commissioning of gas fired plant on industrial and commercial premises	
IGEM/UP/1101 - Guidance on gas installations for the management and staff within educational establishments	
IGE/GL/1 Edition 2 - Planning of gas distribution systems of MOP not exceeding 16 bar	
IGEM/GL/5 Edition 3 - Procedures for managing new works, modifications and repairs	
IGEM/GL/6 Edition 2 - Permitry for the safe flow of gas	
IGEM/GL/8 Edition 3 - Reporting and investigation of gas related incidents	
IGE/GL/9 - Guidance for large gas consumers in dealing with Natural Gas supply emergencies	

Table 4: Project applicable standards

Please place a tick in the appropriate box

5 University Safety Requirements and RAMS

5.1 University Contractor Induction

Contractors employed to work on the University campus shall carry out a Loughborough University Contractor Induction process before any works can commence on site. Contractors shall also be provided with contractor ID passes by Loughborough University to clearly identify workers on site and ensure any staff they have completed the before mentioned induction process.

Contractors shall scan on and off site using their contractor ID pass to enable accurate records of persons on site in the case of an emergency.

5.2 Personal Protective Equipment (PPE)

Contractors employed on the installation of gas distribution systems shall be provided with the following PPE as a minimum:

- Safety protective footwear
- Hard hat
- Probanised overalls
- Eye protectors
- Ear defenders

5.3 Minimum equipment requirements

Contractors employed on the installation of gas distribution systems shall be provided with the following safety equipment as a minimum:

- Gascoseeker
- Cat and Genny
- Fire extinguishers
- Distance breathing apparatus

The contractor shall provide documentation for in date inspection and calibration records for all safety equipment at the commencement of the project and to cover the anticipated project duration.

5.4 Risk assessments

The contractor shall provide with his tender submission generic risk assessments to cover the following activities:

- Use of excavators
- Working near underground or overhead Services
- Excavation works
- Working at height
- Manual handling
- Use of scaffolding towers
- Use of substances hazardous to health
- Use of flammable substances
- General Housekeeping
- Use of Equipment / Tools Producing Noise Levels Above 85 dBA
- Use of Portable Electric Tools
- Working in Confined Spaces
- Dust production

- Vibration from plant operations
- Sharps and needle stick injury
- Biological hazards
- Working with asbestos (Amosite and Crocidolite) containing materials
- Excavations when carrying out work on the gas infrastructure
- Carrying out PE fusion and electro fusion welding
- Polyethylene main laying
- Carrying out Purging and relighting
- Use of petrol driven equipment
- Use of excavators as cranes
- Use of portable, mobile & static generators, welding sets, compressors and similar equipment
- Moving Compressors by hand
- Using dumpers
- Operating 180 degree and 360 degree excavators
- Using petrol driven disk cutters and abrasive wheels
- Reinstatement
- Street works
- The use of hot bitumen

The contractor shall provide with his tender submission details of specific risk assessment procedures.

5.5 Method statements

The contractor shall submit method statements, to be approved by the Loughborough University representative, for all construction activities included in the project.

The method statement shall as a minimum include:

- Statement of intent
- Details of signage and fencing
- Engineering Standards to be adopted

- PPE to be worn
- Fire fighting arrangements
- A sequence of events
- Identification of persons responsible for each activity
- Identification of the specific safety hazards to employees, householders and members of the public and how the hazards will be mitigated
- Site rules
- Emergency contact telephone numbers
- Site register of personnel

5.6 Non routine operations procedures

The contractor shall prepare a non- routine operations procedure for gas connection work as set out in Document LU/Gas/17 – Gas Safe Control of Operations, to be approved by the Loughborough University representative.

The non -routine operations procedure shall as a minimum include:

- A sequence of events
- Identification of persons responsible for each activity
- Identification of the specific safety hazards to employees, householders and members of the public and how the hazards will be mitigated
- A sketch showing the location of the operation and the identification of all equipment utilised in the gas connection operation

6 Level of supervision required for the project

The contractor shall ensure that the construction team leader is competent to effectively organise and manage all site works. Evidence shall be provided with the tender submission of employee experience and competence for managing site works commensurate with the scale of activities.

All gas connection work shall be continuously supervised by a gas competent person. Evidence shall be provided with the tender submission of employee experience and competence for supervising gas connection work.

All testing, purging and relighting of appliances shall be continuously supervised by a gas competent person. Evidence shall be provided with the tender submission of employee experience and competence for supervising these activities

7 Competency

7.1 Contractor

For work to be carried on gas mains and services including pressure reduction installations and meters the Contractor must be a gas infrastructure contractor and preferably GIRS registered. The company and the individuals carrying out the work shall be 'Gas Safe' registered for the appropriate category of works.

For work carried out on gas installation pipework only the contractor or subcontractor must be a gas installation or mechanical services contractor with the appropriate 'Gas Safe' registration

7.2 Design

A gas infrastructure design specification will normally be provided by the University with the tender pack except for minor works. Where the contractor is required to provide infrastructure design the design works shall be undertaken by an 'Incorporated' gas infrastructure design engineer with a minimum of 5 years' experience on gas infrastructure design work. Where required, evidence shall be provided with the tender submission of employee experience and competence for undertaking these activities.

7.3 Management & supervision

Contract management shall be provided preferably by persons with a degree in Civil/Mechanical engineering preferably registered with an appropriate Institution at Incorporated Engineer level. Contract managers shall have at least 5 years' relevant experience and must be competent to review and authorise non-routine procedures for gas connections work.

Supervision shall be provided preferably by persons with NVQ level 4 in Gas Network Operations preferably registered with an appropriate Institution at Technician level. Supervisors shall have at least 5 years' relevant experience and must be competent to prepare non-routine procedures for gas connections work.

Where the person(s) undertaking contract management or supervision do not meet the minimum academic standards listed above the University will accept demonstration of competence for persons having significant experience in undertaking similar gas related works. All such persons shall be approved by the University in advance of the works being commenced.

7.4 Construction employees

Operatives employed on replacing, altering or extending the gas network shall be registered with the Engineering Utilities Skills Register (EUSR) for the relevant category of work as follows:-

- EUSR – Assistant – City and Guilds Level 1 Certificate in Network Operations Gas
- EUSR – Service Layer – City and Guilds Level 2 Diploma in Network Operations Gas (Service Layer)
- EUSR – Main Layer up to 180 mm - City and Guilds Level 2 Diploma in Network Operations Gas (Mains Layer)
- EUSR – Main Layer up to 355 mm - City and Guilds Level 2 Diploma in Network Operations Gas (Mains Layer additional experience above 180 mm)
- EUSR – Main Layer 400 mm and above- City and Guilds Level 2 Diploma in Network Operations Gas (Mains Layer additional experience above 355 mm)
- EUSR – Gas escape locate and repair - City and Guilds Level 2 Diploma in Network Operations Gas (additional training and experience)
- The team leader must also be registered to SCO level 1 and 2

8 Materials and equipment

All pipework installed below ground should consist of polyethylene material as specified in IGE/TD/3 unless entries to buildings or for safety reasons where steel pipe can be used. Services shall be installed in accordance with IGE/TD/4.

8.1 Line Pipe

PE pipe operating pressure of below 2 barg shall comply with specification detailed in IGE/TD/3 - PE material and shall comply with BS EN 1551 Part 1 and Part 2.

8.2 Fittings & jointing

Fittings and jointing of PE pipe shall comply with specification detailed in IGE/TD/3.

The number of joints shall be minimised and preference shall be given to the utilisation of coiled pipe where possible.

Where jointing is necessary then fusion jointing should be used unless connecting PE pipe to metallic pipe or fittings.

Approved fusion jointing methods include

- Butt Fusion jointing
- Electrofusion jointing

Electro fusion is the preferred jointing method for PE pipe.

When connecting from PE system to a metallic system a mechanical transition fitting shall be used.

Reference shall be made to BS EN 1555 Part 5 for general information on pipe jointing Fittings shall comply with BS EN 1555 Part 3.

Mechanical fittings shall be end-load bearing.

8.3 Valves

Either of the following two types of valves shall be used on plastic systems operating up to 7 Barg as follows:

- Plastic bodied valves are preferred to metal bodied valves where these are available. Reference shall be made the manufacturers specification to ensure the maximum operating pressure of the valve is appropriate for the system under construction. The valve should be manufactured to BS EN 1555 Part 4 Valves shall have a minimum pressure rating of 2 barg
- Where a plastic bodied valve is not available in the size required a cast iron bodied valve may be used. The valve should be a Donkin 555 gate valve or a valve from an alternative supplier to an equivalent specification
- All valves are to be set in valve chambers with covers to carry traffic loading

Each valve shall be fitted with pressure points either side of the valve for monitoring pressures during valve operations.

A plate shall be mounted on a building wall nearest to the valve or on a permanent marker post to indicate the valves position. 1/4 turn valves shall be clearly identified.

Each valve chamber shall be covered with a surface box marked gas.

9 Pipework construction

9.1 Preliminary site investigations

The route shall be proved to identify the location of other services before any excavation work for pipe laying is undertaken. The following process shall be followed:

- Make reference to existing utility site drawings
- Identify the location of underground electricity cables by cable location
- Prove the route by hand excavated trial holes
- Carry out all excavation works under the control of a University permit to dig

9.2 Traffic control including signing and guarding

To be compliant with NRSWA 1991

.

9.3 Excavation

To be carried out with due regard for HSE document HSG 47.

9.4 Excavation protection

All excavations are to be protected at all times to the standards outlined in NRSWA 1991 and in accordance with the Contractor's risk assessment.

9.5 Pipe laying technique

Trenchless methods shall be utilised only after consultation and University approval. Methods to be considered include:

- Inserting a new pipe into an old or disused pipe or duct
- Moling or thrust boring
- Service insertion for replacement services

Consideration shall be given to ground conditions and the proximity of other site utilities before a trenchless technique is adopted. The method of pipe laying shall be approved by the University before commencement of works.

9.6 Proximity to other utilities

Underground PE pipe shall be installed in accordance with the proximity recommendations as set out in IGE/TD/3.

Reference shall be made to the National Joint Utilities document 'Guidelines on the positioning and colour coding of Utilities Apparatus.

The minimum depth of cover shall be adhered to as follows:

- Road ways & car parks 0.75 metres
- Footways 0.6 metres
- Grassed areas 1.1 metres

Pipes shall not be laid in a car park, road or footpath construction material.

Where pipes are laid by the open cut method a warning tape incorporating a metallic tracer shall be installed immediately above the pipe and separated from the pipe by at least 250 mm and no greater than 400 mm. BS EN 12613:2001 "Plastic Warning Devices for Underground Cables and Pipelines with Visual Characteristics" specifies the requirements of warning devices for the manual or mechanised laying of cables and pipes. The triple aim of these devices is to warn of the presence of the pipeline or cable when opening a trench, indicating its orientation and identifying the equipment protected.

9.7 Proximity to buildings

For gas pressures, up to and including 75 mbar PE pipe shall not be laid nearer to an occupied building as follows:

- Pipe sizes up to 140 mm – no less than 1 m proximity
- Pipe sizes between 140 mm and 315 mm – no less than 2 m proximity
- Pipe sizes greater than 315 mm - no less than 3 m proximity

For gas pressures between 75 mbar and 2 barg PE pipe shall not be laid nearer to an occupied building as follows:

- Pipe sizes up to 315 mm – no less than 3 m proximity
- Pipe sizes greater than 315 mm - no less than 5 m proximity

9.8 Connections

Intervention techniques are employed where an underground PE pipe is to be temporarily or permanently isolated.

Reference should be made to IGE/TD/3 for advice on appropriate methodology.

A valve is the preferred method of isolation and where possible an existing line valve should be used for isolation purposes.

Where the valve does not incorporate a double block and bleed facility a risk assessment shall be carried out and consideration shall be given to employing a second method of isolation such as squeeze off. A vent shall be installed between the valve and the squeeze off.

Where a suitably located, valve is not available then a squeeze off technique shall be used to temporarily isolate the gas supply. Two squeeze off units shall be applied in series separated by at least 2.5 times the pipe diameter.

A vent pipe shall be installed between the squeeze off units and shall be of metallic material of sufficient diameter to fully relieve the intermediate pressure. The vent pipe shall be terminated at least 2.5 meters above ground level and be terminated with a suitable flame trap. The location of each squeeze off shall be identified with marker tape to ensure that a squeeze off is not employed again at the same location.

A method statement/non- routine operations procedure shall be prepared for all flow intervention operations. The method statement/non- routine operations procedure must be presented to Loughborough University for approval.

9.9 Services

Services shall be installed in accordance with IGE/TD/4 Gas Services.

9.10 Backfill & reinstatement standards

Pipes shall be surrounded, above and below by at least 150 mm of compacted sand.

The space between the sand surround and surface construction material shall be filled with compacted crushed stone.

A marker tape incorporating a wire tracer shall be installed within the backfill.

Existing support material to kerbs, special surfaces shall be replaced to the original specification.

Surfaces shall be replaced to the original specification and reference shall be made to Loughborough University for advice on the appropriate specification.

Pipe protection shall be provided where there is a likelihood of pipeline damage due to vertical loading or ground movement such as at:

- Water crossings
- Railway crossings
- Road crossings where traffic loading is significant
- Soft surfaced areas where there is a likelihood of vehicle movement
- Unstable ground conditions

For selection of the most appropriate pipe protection method reference shall be made to IGE/TD/3.

Reinstatement of landscaped areas (Specific site requirements to be provided by The University)

9.11 Pressure testing

All new polyethylene pipe systems shall be tested in accordance with IGE/TD/3.

The pipe work to be tested shall not be connected to the gas supply system whilst under test and must be restrained where exposed.

Where it is not possible to separate the pipework under test from the existing gas supply system reference shall be made to a Competent Gas Engineer for the preparation of a suitable pressure testing procedure.

While test pressure is being introduced no one should be permitted to enter the test area.

For combined strength and tightness testing a test pressure of 3 barg shall be applied.

Tie in joints shall be left exposed until tightness tested at the operating pressure of the system has been carried out.

Corrections should be made for changes in barometric pressure during the interval of the test unless a test instrument is used which records absolute pressure.

A test certificate should be prepared after successful completion of the tightness test.

For PE pipe, the creep effect may cause a change in pipework volume during the test. Reference should be made to IGE/TD/3 for determination of permissible pressure drops during testing.

9.12 Commissioning and Decommissioning

All new pipe systems should be commissioned or decommissioned in accordance with IGE/TD/3.

A method statement/non-routine operations procedure shall be prepared for all flow intervention operations. The method statement/non-routine operations procedure must be approved by Loughborough University.

For detailed information on commissioning and decommissioning reference shall be made to IGE/SR/22 Purging operations for fuel gases in transmission, distribution and storage.

10 Records

A diagram shall be provided for each addition or alteration to the gas supply system. The diagram shall identify the following:

- Components of the system
- Pressure range
- Situation, above or below ground

A materials list shall be provided with the diagram listing and cross referencing to the diagram all components of the system. The materials list shall include the following information:

- Diagram reference
- Identification number
- Description of component

- Manufacturer
- Reference number of test certificate
- Relevant standard

Installation, maintenance and user manuals shall be provided for all equipment utilised on the project.

11 Pricing schedule

The pricing schedule shall be completed as follows: -

Item	Price (£)
<i>Insert description</i> works described in the Scope of Works – Project Specification	

Table 5: Pricing schedule

Please also supply day work rates for project related manpower and equipment.

12 Declaration

Please complete the following: -

Contractor declaration	
I confirm that I have reviewed this document and associated attachment and agree to comply with their instructions	
I confirm that I will provide all information required by the University project review and auditing process and will facilitate any inspections, as required, at no additional cost	
Signature:	
Date:	
Position in company:	

Table 6: Contractor declaration

GAS NETWORK SAFETY CASE
LU /GAS /15 – Gas Network Roles and Responsibilities
LOUGHBOROUGH UNIVERSITY

Dated 20th August 2021

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This document sets out the roles and responsibilities together with contact details for the persons responsible for administering safety on the gas network.

2 Individual roles and responsibilities

2.1 Vice Chancellor and Chief Operating Officer

The Vice Chancellor (VC) or Chief Operating Officer (COO) is the Statutory Duty Holder and, as the senior persons responsible, have overall accountability for all aspects of the management of health and safety in the University organisation.

2.1.1 Duty holders

Chief Operating Officer
Richard Taylor
Vice Chancellors Office
Email: R.Taylor@lboro.ac.uk
Telephone: 01509 222223

2.2 Director of Estates & Facilities Management

The Director of Estates & Facilities management is appointed by Loughborough University and has managerial authority and responsibility for the control of health and safety legislation within E&FM.

2.2.1 Duty holder

Director of Estates & Facilities Management
Graham Howard
Estates & Facilities Management
Email: G.J.Howard@lboro.co.uk
Telephone: 01509 222126
Mobile: 07845055557

2.3 Head of Engineering, Maintenance and Sustainability

The Head of Engineering, Maintenance and sustainability manages a multi-functional management team.

For gas safety, the role is one of general management, i.e. responsible for securing sufficient resources to run and maintain the network, employing sufficient staff with the necessary competency i.e. qualifications, training, knowledge and experience and to ensure those staff are properly focused on gas safety by setting and monitoring appropriate targets and objectives.

2.3.1 Duty holder

Head of Engineering, Maintenance & Sustainability

Rob Sparks

Estates & Facilities Management

Email: R.J.Sparks@lboro.co.uk

Telephone: 01509 228084

Mobile: 07825182725

2.4 Senior Mechanical Engineer/ Gas Duty Authorised Person (DAP)

The Senior Mechanical Engineer performs the role of Gas Duty Authorised Person (DAP). The person employed has the required knowledge, training and experience, appointed by the Designated Person in writing, to take managerial responsibility for the implementation of policy and procedures for a specific area of health and safety legislation. There is a single Gas DAP for the University whose responsibilities include: -

1. Ensuring day to day compliance in regard to Gas Safety
2. Reviewing as necessary the university management plan
3. Assisting and offer advice in regard to Gas Safety across all areas of the University
4. Ensuring the Gas Appliance Asset Register is accurate
5. Perform the role of Network Controller

For natural gas infrastructure the incumbent requires a detailed knowledge of the natural gas network (i.e. the location, materials of construction and the age of the pipe system) and an understanding of specific gas distribution operations, i.e.:-

1. Pressure regulation,
2. Flow stopping and mains cut out procedures,
3. Pressure testing, network purging and re-commissioning,
4. Procedures for reporting, locating and repairing gas leaks.

The incumbent is not expected to write routine or non-routine procedures for network operations or perform the role of Authorising Engineer* but must have an understanding of, and access to, the following Institution of Gas Engineers standards: -

1. IGE/TD/3 – Steel and Polyethylene pipelines for Gas Distribution
2. IGE/TD/4 - Gas Services
3. IGE/TD/13 – Pressure Regulating Installations for Transmission and Distribution
4. IGE/SR/29 – Dealing with Gas Escapes

*The role of Authorising Engineer is performed by a GIRS registered contractor or specialist natural gas industry consultant.

The University has access to all IGEM technical standards via a subscription service to GAS SAFE.

2.4.1 Duty holder

Senior Mechanical Building Services Engineer

Jonathan Cripps

Estates & Facilities Management

Email: J.D.Cripps@lboro.ac.uk

Telephone: 01509 222138

Mobile: 07814288498

2.5 Plumbing/Heating & HVAC Manager

The Plumbing / Heating & HVAC Managers responsibilities are as follows:-

1. The incumbent will act as the Deputy Gas Network Controller for the University's Private Gas Network as required by the Gas Safety (Management) regulations 1996. The incumbent will be responsible for liaison with Estates and Facilities Management project managers, other departments and contractors when other building work or activities are being carried out to ensure these do not have any adverse effect on the safe operation of any gas installation, controls or appliances. The role shall be appointed in writing by the Director of Estates and Facilities Management.
2. Act as responsible person for the gas network and act as signatory when handovers are requested from the supplier.
3. Responsible for the day to day operations of the E&FM Maintenance Gas Safe Engineers and the general management of gas related problems within the University's stock for which they have responsibility.
4. Ensure adequate induction and training is provided to new members of staff on gas safety related matters as appropriate to their roles and responsibilities.
5. Where the situation is outside the competence of the Plumbing/Heating & HVAC Manger, then they should inform the Maintenance Services Manager and procure the services of a competent contractor.
6. Investigate reports of gas escapes & coordinate investigation of Carbon Monoxide spillage/alarms. For Gas escapes, liaise with Cadent Ltd under such circumstances and inform the Gas Duty Authorised Person if there is any escalation in the situation. Record details of the incident for future reporting, follow up on any remedial actions within the Plumbing/Heating & HVAC Manger's remit.
7. Responsible for ensuring the E&FM Maintenance Gas Safe Engineers have the appropriate training certification for the work allocated to them.

8. Responsible for dissemination of information and updates from Gas Safe to all the E&FM Maintenance Gas Safe Engineers and to inform the Maintenance Services Manager of any compliance related issues requiring action.
9. Responsible for checking qualifications, risk assessments and method statements of approved contractors who are directly employed by the Plumbing/Heating & HVAC Manager.
10. Responsible for auditing performance of E&FM Maintenance Gas Safe Engineers to ensure compliance with the Loughborough University Gas Safety Management Policy and the Gas Safety (Installations & Use Regulations) 1998.
11. Provide evidence of toolbox talks in relation to dissemination of information relating to gas legislation, technical bulletins and HSE guidance.
12. Control the access for the planned programme of works and deal with responsive repairs. Respond to any warning notices raised, confirm and close out any remedial actions, check corrective actions raised by contractors as a result of unsafe situations.
13. Responsible for creating work requests on Archibus relating to planned gas works and disseminating these work requests to the Maintenance Gas Safe Engineers or suitable contractor in a timely manner.

2.5.1 Duty holder

Plumbing/Heating & HVAC Manager
Matthew Polkey
Estates & Facilities Management
Email: M.Polkey@lboro.ac.uk
Telephone:
Mobile:

2.6 Maintenance Services Manager

The Maintenance Services Managers responsibilities are as follows:-

1. Responsible for the responsibilities detailed within the Plumbing/Heating & HVAC Manager role when they are not available on site during times of leave.

2.6.1 Duty holder

Maintenance Services Manager
Adey Bonser
Estates & Facilities Management
Email: A.S.Bonser@lboro.ac.uk
Telephone: 01509 222131
Mobile: 07969919639

2.7 Gas Safe Engineers

The Gas Safe Engineers responsibilities are as follows:-

1. Responsibilities include adherence to the Loughborough University Gas Safety Management Policy and requirements as a duty holder under the Gas Safety (Installation and Use) Regulations 1998.
2. Ensure that they hold appropriate current gas qualifications for the areas of work they are employed to undertake.
3. They will comply with all safe working practices and install, service and maintain in a safe condition all gas equipment in accordance with the requirements of the Gas Safety (Installation and Use) Regulations 1998 and any relevant manufacturers' instruction and current standards in force. They shall complete gas safety reports or other documentation relevant to the work undertaken and issue any warning notices in accordance with the industry Unsafe Situations Procedure (Gas Safe Technical Bulletin 001).
4. They will respond to a report of fumes or CO detector sensor alarm activation, attend on site and make safe. Also to cooperate with any subsequent investigations.
5. Responsibility for compliance with Emergency Procedure LU/Gas/6 of the Gas Safety Case, Section 5.

Note – Any Hospitalisation or fatality where Carbon Monoxide Release is suspected MUST be reported to the HSE as a reportable incident under RIDDOR and the scene must NOT be disturbed by E&FM staff or contractors.

2.7.1 Duty holders

Peter Miller	mobile 07895331890	P.Miller@lboro.ac.uk
Andy Moss	mobile 07749434085	A.Moss@lboro.ac.uk

2.8 Contracts Manager

The Contracts Managers responsibilities are as follows:-

1. Responsible for planning recurrent works, inspections and servicing of gas appliances, safety checks and monitoring in line with the requirements of the Gas Safety (Installation and Use) Regulations 1998 utilising the Estates and Development Q5 planning database and assets registers at the request of Estates and Development staff responsible for Gas Safety and from information supplied via project managers and the handover documentation "Project Handover Checklist".
2. Responsible for providing reports detailing overdue Gas Safety Inspections and Servicing works to the Gas Duty Appointed Person for inclusion within the monthly Gas Compliance meeting.

3. Responsible for the retention and storage of certification relating to Gas Safety Inspections.
4. Assist in the formulation and upkeep of asset management systems.

2.8.1 Duty holder

Contracts Manager
David Clayton
Estates & Facilities Management
Email: D.N.Clayton@lboro.ac.uk
Telephone: 01509 228086
Mobile: 07875241969

2.9 Catering

Catering responsibilities are as follows:-

1. Responsible for ensuring that all fixed gas appliances within catering establishments at Loughborough University are installed correctly using advice from the Plumbing/Heating & HVAC Manager and the Maintenance Gas Safe Engineers, and are provided with the necessary certification and asset details being provided to the Estates Facilities Manager Contracts Manager.
2. Responsible for ensuring that any mobile catering equipment are fit for purpose and are correctly certified and procedures are in place to check installations prior to use and to follow the requirements in **Section 14** of the Gas Safety Management Policy.
3. Responsible to ensure that there is an effective day to day cleaning regime in place to ensure equipment, including all ventilation, can work effectively.

2.9.1 Duty holder

Head of Catering, Domestic and Residential Services
Gagan Kapoor
Estates & Facilities Management
Email: G.Kapoor@Lboro.ac.uk
Telephone: 01509 228585

2.10 Campus Services

Campus services responsibilities are as follows:-

1. Responsible for agreeing, following advice from the Gas Duty Appointed Person or engineers, the service level and scope of servicing and certification for housing stock, required by the Gas Safety (Installation and Use) Regulations 1998.
2. To manage an asset register of properties and inform the Contracts Manager of any changes that affect the planning schedule of appliances' safety checks and servicing requirements.

3. To facilitate access arrangements to properties with the Accommodation Services area of control for servicing repairs and upgrades.

2.10.1 Duty holder

Domestic & Residential Services Manager

Phil Oldershaw

Estates & Facilities Management

Email: P.Oldershaw@Lboro.ac.uk

Telephone: 01509 223823

2.11 E&FM Helpdesk

E&FM help desk responsibilities are as follows:-

1. Responsible for following Emergency Procedure within the Gas Safety Case Emergency Procedure **LU/Gas/6** advising the person reporting any smell of gas or suspected CO incident.
2. Responsible for raising appropriate works request on Archibus for internal recording and distributing the work request to the Plumbing/Heating & HVAC Manager.
3. To compile information utilising the Gas Reporting Form **(GE1)** when suspected escapes are reported and to pass on a record of this document to the Gas Responsible Person.

2.11.1 Duty holder

E&FM Helpdesk

Email: FMHelp@Lboro.ac.uk

Telephone: 01509 222121

2.12 Security

Security responsibilities are as follows:-

1. Site Security operate on a 24/7 basis and are responsible for actioning the emergency procedure **LU/Gas/6 section 2**.
2. To compile information utilising the Gas Reporting Form **(GE1)** when suspected escapes are reported and to pass on a record of this document to the Gas Responsible Person.

2.12.1 Duty holder

Security Control Room

Email: Security@Lboro.ac.uk

Telephone: 01509 222141

2.13 Project Development & Technical Services

Project Development and Technical Services responsibilities are as follows:-

1. Responsible for ensuring that all new/altered gas installations adhere to Loughborough University's Engineering Specification
2. Responsible for the asset management of removed or newly installed equipment as per LU Asset management policy.

2.13.1 Duty holder

Individuals as nominated on a project basis by the University

2.14 University Compliance Engineer

University Compliance Engineer responsibilities are as follows:-

1. Responsible for checking certification/qualifications of internal Gas Safe Engineers and External Service Providers, and providing certification to external auditors at least 2 weeks prior.
2. Responsible for assisting the Gas Duty Appointed Person with the internal audits on gas compliance and adherence to the Gas Safety Management Policy.

2.14.1 Duty holder

University Compliance Engineer

Paul Walker

Health & Safety Services

Email: P.Walker@Lboro.ac.uk

Telephone: 01509 228074

Mobile: 07977004528

GAS NETWORK SAFETY CASE
LU /GAS /16 – Procedure for contractor selection

LOUGHBOROUGH UNIVERSITY

Dated 17th February 2021

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1 Context

The University gas network conveys gas from the primary source of gas supply (Cadent) to buildings and plant rooms located on the University campus.

The downstream boundary between the gas network and a gas installation is the designated Additional Emergency Control Valve located within a building or plant room.

The principle standards applicable to the gas network are listed as follows: -

2 Gas mains

IGEM/TD/3 Edition 5 – Steel and PE pipelines for gas distribution

IGE/SR/22 - Purging operations for fuel gases in transmission, distribution and storage

IGE/SR/23 - Venting of Natural Gas

IGEM/SR/28 Edition 2 - Trenchless techniques

IGEM/SR/29 - Dealing with gas escapes

3 Gas services

IGE/TD/4 Edition 4 - PE and steel gas services and service pipework

IGEM/G/5 Edition 2 - Gas in multi-occupancy buildings

4 Pressure regulating installations

IGEM/TD/13 Edition 2 - Pressure regulating installations for Natural Gas, Liquefied Petroleum Gas and Liquefied Petroleum Gas/Air

IGEM/SR/25 Edition 2 - Hazardous area classification of Natural Gas installations

The University prepared a Gas Safety Case which is approved and audited by the Health and Safety Executive.

5 Competence

A key requirement of the University Gas Safety Case is ensuring the competence of companies /organisations employed on the design, construction and maintenance of the gas network assets.

To ensure competence, work shall only be undertaken by the current University approved organisations for: -

1. Designing network assets
2. Constructing / installing network assets

3. Commissioning and maintaining gas governors and meters

University selection of approved organisations has been made following a review of the following (All elements carry equal weighting):

1. Applicable experience on working on similar assets
2. Applicable experience on working on University assets
3. Relevant company accreditations
4. Experience and qualifications of individuals nominated for a specific task

6 Current approved competent organisations

GAS NETWORK CONSTRUCTION

Mercian Utilities

Scott Hanson.

Managing Director.



scott@mercianutilities.co.uk

www.mercianutilities.co.uk

07716307191

Unit 3

Masons Place Business Park

Nottingham Road

Derby DE21 6YZ

GBH Utilities

Trevor Davies

Tel: 01709 578578

Mobile: 07747 476926



Warmex Buildings

Church Street

Mexborough

S64 0HH

Stor Power Utilities

Steph Marvin AIGEM (previously Roach)

Gas Connections Manager

Mobile: +44 (0)7425 863 095 | **Switchboard:** +44 (0)1278 72 71 80

Email: Steph.Marvin@storpower.co.uk | **Website:** storpowerutilities.co.uk

STOR POWER UTiLiTiES Ltd: Suite 2, The Lawns Business Centre, Hinckley, Leicestershire, LE10 1DY

Company Registration No. 11554317



GOVERNOR AND METER MAINTENANCE

PENSPEN LIMITED

Registered Office:

3 Water Lane,

Richmond,

Surrey,

TW9 1TJ

GAS COMPLIANCE CONSULTANCY

Wilcock Consulting

Trinity Enterprise Centre,

Furness Business Park,

Barrow-in-Furness,

Cumbria,

LA14 2PN

7 Procedure and provision of information.

The University is required to provide information to the HSE of any material change or alteration to the University gas supply network to comply with the conditions set out in its Safety Case. To ensure compliance with this requirement the following process and time line shall be adopted.

For all works on the University gas network the company responsible for undertaking the works shall provide the following information for review and approval by the Universities Competent Authority for the gas network: -

Information to be provided by the Company	
Design documents detailing: - <ul style="list-style-type: none">• Pipe routing• Pipe materials and sizes• Network analysis where appropriate• Governor installation GA's and P&ID's including kiosk• Technical data sheets for all materials and equipment	
Project drawings	

Method statements	
Routine and Non-Routine Operations procedures as appropriate	
Risk assessments	
Construction phase plan as required by Regulation 12 of the CDM regulations	
Information required by the University Health and Safety information to contractors	
Qualifications and accreditations of all persons to be employed on the project	
Company accreditation certificates such as GIRS registration, Gas SAFE registration, ISO 9001, ISO 14001 etc.	
Company history for relevant projects	

Table 1: Company information

8 Project time line

To ensure enabling works on the University gas network are carried out seamlessly provision of information shall be in accordance with the following time line: -

Project completion (Gas On date) - 2 month in advance

Qualifications and accreditations of all persons to be employed on the project
Company accreditation certificates such as GIRS registration, Gas SAFE registration ISO 9001, ISO 14001 etc.
Company history for relevant projects

Table 2: Requirements 2 month in advance

Project completion (Gas On date) - 1 month in advance

Design documents detailing: - <ul style="list-style-type: none"> • Pipe routing • Pipe materials and sizes • Network analysis where appropriate 	
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<ul style="list-style-type: none"> • Governor installation GA's and P&ID's including kiosk • Technical data sheets for all materials and equipment 	
Project drawings	

Table 3: Requirements 1 month in advance

Project completion (Gas On date) – 1 week in advance

Method statements	
Routine and Non-Routine Operations procedures as appropriate	
Risk assessments	

Table 4: Requirements 1 week in advance

GAS NETWORK SAFETY CASE
LU /GAS /17 – Gas Safe Control of Operations
LOUGHBOROUGH UNIVERSITY

Dated 10th August 2021

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1 Scope

These safe control of operations procedures for the gas system will be adhered to by the University appointed GIRS registered contractor who will be responsible for writing a procedure to an industry approved template as developed and applied by the UK gas networks. To ensure the safe control of operations either a Routine (RO) or a Non-Routine Operations procedure (NRO) as defined in IGEM/GL/6 will be prepared for the following activities: -

- Live work on the network, including service and mains connections. These are controlled by either
- Maintenance activities, when required by the Gas Duty Authorised Person
- Access to housings containing large primary meters and large university PRIs
- Any work which might affect the upstream gas transporter or meter asset manager
- Any work which might affect the interruption of a gas supply to a priority consumer
- Any work activity that presents an unacceptable risk to personnel or others

2 Application of RO's and NRO's

A RO/NRO is not required for:

- Dead main laying
- The installation, testing and abandonment small diameter (up to 50mm/63mm) LP and MP services

2.1 Non-routine operations (NROs)

NRO's are applicable to:-

1. Flow-stopping (including valve closure) on:

- LP mains or services of nominal diameter exceeding 355 mm PE / 12" metallic
- MP mains or services of any diameter

2. Connections and/or commissioning operations:

- on LP metallic pipes larger than 300 mm nominal diameter and PE pipes above 355 mm (not required for service tees up to 63 mm)
- on MP mains of all diameters (not required for service tees up to 63 mm)
- on IP mains of all diameters involving live welding

3. Any activity which could adversely affect a significant part of a network, including an upstream or downstream network

4. Wherever considered necessary by the Gas Duty Authorised Person

2.2 Routine operations (ROs)

RO's are applicable to flow-stopping operations, connections and commissioning operations not covered by NRO's as detailed in [Section 2.1](#) or any activity at the discretion of the Gas Duty Authorised Person.

2.3 Permits to work

Additionally, all works shall comply with all current University permit to works systems.

3 RO's and NRO process

3.1 Format and Content

The construction contractor will utilise a standard industry RO or NRO form, in the format developed by UK Gas Networks and will include the following:

- A site plan
- Schematic sketches showing the gas network layout before, during and after the operation, valves to be operated, etc.
- A detailed step by step procedure of the operation, referenced clearly to the schematic sketches.
- For NROs, contingency plans for possible failures, incidents, etc.

3.2 Responsible Engineer/Network controller

The Responsible Engineer / Network Controller for RO and NRO purposes is the Gas Duty Authorised Person as stated in the safety case. The RO and NRO duties of the Gas Duty Authorised Person may be delegated as appropriate. The Network Controller will be supported by a nominated gas consultant with sufficient knowledge in managing gas distribution operations to enable review and recommendation for approval of RO's and NRO's.

3.3 Network Designer

The university's appointed Network Designer carries out pressure, flow and sizing checks as required, on behalf of the Gas Duty Authorised Person. This role may reside with the Universities nominated gas consultant or appropriately registered GIRS contractor depending on the complexity of the works required

3.4 Authorising Engineer

The GIRS contractor carrying out the RO or the NRO will provide an Authorising Engineer who will review documents created by the Competent Person and approve as appropriate.

3.5 Competent Person

The GIRS contractor carrying out the RO or the NRO will appoint a Competent Person to supervise each RO or the NRO. The RO or the NRO will be created by the GIRS contractor's Competent Person before being reviewed and approved by the GIRS contractor's Authorising Engineer. The Competent Person will liaise with the Network Controller or the Universities nominated gas consultant for identification of critical valves or any other matters required for the procedure and/or its contingency plans(s)

3.6 The Process

The RO or the NRO will be submitted to the university's Network Controller (Gas Duty Authorised Person) and copied to the Network Designer and or support consultant for comment and design-related approval. Where applicable, the proposed RO or the NRO will be submitted to the upstream gas transporter for comment.

Once any amendments required by the Network Controller, or the upstream gas transporter have been made, the RO or the NRO will be signed off by the Network Controller and returned to the Competent Person.

Communications prior to, during and after the RO or NRO will be made as stipulated in the RO or NRO.

Submitted ROs and NROs will be kept in the network files by the Network Controller (Gas Duty Authorised Person) and retained for three years following completion of the NRO.