



SCOPE OF WORK AND TECHNICAL SPECIFICATION

FOR SERVICING/REPAIR OF NATURAL GAS LINES

AT

UNIVERSITY OF THE WITWATERSRAND

JOHANNESBURG

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Abbreviations

SAGA – Southern Africa Gas Association

EN – European Norm

OEM – Original Equipment Manufacturer

OFMD – Operations and Facilities Management Department

SANS – South African National Standards

OHS – Occupational Health and Safety

1. EXECUTIVE SUMMARY

The purpose of this document is to describe the scope of works required for the Assessment, Maintenance, Validation and Asset Management of

- Natural gas lines

within Wits University's facilities, located within the Braamfontein and Parktown campus.

The objective of the works is multifaceted and may be summarised as follows:

- To verify and maintain the structural integrity of the natural gas pipelines and ensure no leaks exist at the maximum design pressure.
- To establish a structured maintenance framework.
- Continuous asset management program,
- Ensure compliance with applicable standards, and
- Support safe and reliable operation of natural gas lines and equipment through a five-year maintenance plan.

This document must be read in conjunction with the bill of quantities.

The successful Service Provider must ensure that they are able to meet the program schedule of the university including commissioning and hand-over timelines.

2. SCOPE OF WORKS

2.1. Project Objective

The objectives are to:

- To verify and maintain the structural integrity of the natural gas pipelines and ensure no leaks exist at the maximum design pressure.
- Establish a clear and structured maintenance strategy for natural gas lines installed within the university
- Define preventative and corrective maintenance requirements as per relevant standards such as SANS, EN, etc, and OEM maintenance requirements. The Service Provider is to provide a reference standard for the maintenance being performed on a particular piece of equipment.
- Maintain all equipment according to maintenance strategies including decommissioning and replacement where applicable.
- Ensure compliance with applicable health, safety, and operational standards.
- Ensure compliance with relevant standards and OEM maintenance requirements.

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- Provide for validation of equipment.
 - Maintain accurate asset and maintenance records over the contract period and following each intervention.
 - Provide a list of spares to be held by the University, if applicable, per equipment being maintained.

2.2. Project Scope

2.2.1. Scope Inclusions

The Scope of Works includes, but is not limited to, the following activities and equipment:

Equipment Types:

- Natural gas lines

Activities:

- Perform regular, and ongoing maintenance to manage corrosion and leaks, often employing techniques like "sleeving" and data monitoring to maintain pressures between 16 kPa and 25 kPa.
- All maintenance, repairs, and safety of the gas piping and appliances directly after the meter flange.
- Any maintenance, repair, or new installation of internal piping must be performed by a SAGA-registered Service Provider. A valid Certificate of Conformity (CoC) is required.
- Once-off asset assessment and verification of the existing asset register, including the capture and upload of all asset data onto the prescribed asset register template.
- The Service Provider shall obtain all applicable OEM operation, maintenance, and technical manuals for the installed equipment. Copies shall be submitted to the University.
- Preventative routine maintenance in accordance with defined schedules according to OEM maintenance requirements and applicable regulatory and compliance standards. Not completing the OEM recommended maintenance requirements shall place the University at risk of negatively affecting warranties, guarantees and or insurance claims.
- Corrective maintenance, including call-outs and fault-finding, and repairs.
- Validation of equipment at prescribed intervals.
- Continuous asset management, reporting, and record keeping throughout the contract period.

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- Determining if decommissioning of equipment that is deemed unsafe, obsolete, or beyond economical repair is required and providing recommendation to the University.
 - Providing quotations for the replacement parts for equipment, where necessary.
 - Maintenance of newly installed equipment that the University may have introduced during the contract period, only upon written confirmation from the University once the warranty period of the equipment has ended.

2.2.2. Scope Exclusions

The following activities do not form part of this contract unless specifically instructed in writing by the University:

- Installation of new equipment.

2.2.3. Scope Assumptions

- All work required for maintaining the assets listed in the asset register shall be included in the SOW.
- The maintenance scope shall cover all maintenance, repairs, and safety of the gas piping and appliances directly after the meter flange and shall include the equipment and all associated auxiliary components necessary for its safe and intended operation.

2.3. Site Location

The scope of works applies to the aforementioned equipment across the university's campuses, namely:

- Braamfontein Campus – East and West campus
- Parktown Campus – Health Sciences and Education campus, and

The Service Provider shall make provisions for works across the above listed sites. The physical address of the sites is as follows:

- Braamfontein Campus: 1 Jan Smuts Avenue, Braamfontein 2000, Johannesburg, South Africa.
- Parktown Campus: 27 St. Andrew Road, Parktown, Johannesburg.
- Health Science campus: 7 York Rd, Parktown 2193, Johannesburg, South Africa

3. CODES AND STANDARDS

All works shall be carried out in accordance with applicable local and international standards according to regulations and OEM's requirements, including but not limited to:

- SANS 827: Installation of pipes and appliances for Natural Gas (Natural Gas is methane-rich/Natural Gas).
- SANS 10147: Refrigeration systems and gas safety.
- SANS 329: Industrial thermal processing equipment (relevant for laboratory or large boiler use at WITS).
- SAGA: The Service Provider must be currently registered with the SAGA.
- And other applicable standards according to OEM manuals.

The latest applicable editions of standards shall apply at the time of execution.

4. SYSTEM MAINTENANCE

4.1. Overview

System maintenance shall include the planned preventative maintenance and unplanned corrective maintenance of Natural gas lines and associated auxiliary equipment. The objective of system maintenance is to ensure the safe, reliable, and compliant operation of equipment throughout the contract period.

All maintenance activities shall be carried out by trained, competent, and accredited personnel in accordance with this Scope of Works, applicable regulatory and compliance standards.

4.2. Preventative Maintenance

Preventative maintenance activities shall be planned, proactive, ensure continued compliance and intended to minimise equipment downtime and reduce the likelihood of failure.

Preventative maintenance shall be performed in accordance with applicable regulatory and compliance standards and OEM guidelines. This shall include any inspections, tests, servicing procedures, calibrations, consumables, cleaning or verifications specified by the OEM for the relevant equipment type.

Preventative maintenance schedules for all maintenance categories shall be developed and implemented by Service Provider in accordance with OEM guidelines and applicable regulatory and compliance standards.

The Service Provider shall develop and submit a preventative maintenance schedule to the University after the initial asset assessment has been conducted., detailing the planned dates and scope of maintenance activities for each category across all assets and sites.

4.2.1. Maintenance Frequency Categories

Preventative maintenance shall be categorised as follows:

- Category A – Monthly Maintenance
- Category B – Quarterly Maintenance
- Category C – Bi-Annual Maintenance
- Category D – Annual Maintenance
- Category E – General Weekly Maintenance

All Categories i.e. A to E shall be performed by the Service Provider in accordance with OEM guidelines and applicable regulatory and compliance standards throughout the full contract period.

4.2.2. Category A to D Maintenance

Categories A to D shall be performed by the Service Provider strictly in accordance with OEM maintenance manuals and applicable regulatory and compliance standards.

Preventative maintenance activities shall include, but not be limited to:

Pipework and Reticulation

- **Corrosion Control:** Inspect all surface-mounted pipes for rust. Re-paint with SANS-approved yellow gas-line paint if necessary.
- **Support & Brackets:** Ensure all pipe clamps are secure and spaced according to SANS 827 to prevent vibration or sagging.
- **Sleeving:** Verify that pipes passing through walls are correctly sleeved and sealed with fire-retardant material.
- **Signage:** Ensure "No Smoking" and "No Open Flame" signage is visible at all gas hubs and entry points.

Isolation Valves and Meters

- **Accessibility:** Ensure all emergency shut-off valves are unobstructed and clearly marked.

- **Operation:** Exercise (open/close) valves to ensure they have not "seized" due to lack of use.
- **Meter Integrity:** Check the Natural Gas meter for tampering, physical damage, or excessive moisture buildup.

Leak Detection and Pressure Testing

- **Pressure Drop Test:** Isolate the system and perform a pressure test at the working pressure for at least 15 minutes. No drop in pressure is permitted.
- **Soap Bubble Test:** Apply a certified leak-detection solution to all threaded joints and regulator vents.
- **Electronic Sniffers:** Use calibrated combustible gas detectors in high-risk areas (labs, kitchens).

Appliance and Laboratory Maintenance

- **Flame Supervision:** Test all burners to ensure the Flame Failure Device (FFD) shuts off the gas if the flame goes out.
- **Combustion Air:** Ensure permanent ventilation openings in labs and kitchens are not blocked or covered.
- **Flex-hoses:** Replace any rubber "pigtailed" or flexible hoses that show signs of cracking or have exceeded their expiry date.

Where any component is identified during preventative maintenance as likely to fail before the next scheduled maintenance cycle, the Service Provider shall notify the University in writing and recommend early replacement in order to minimise downtime and ensure continued safe operation of the equipment.

The Service Provider shall verify all tasks against the applicable OEM maintenance manuals for the specific equipment models installed on site and shall update the schedule accordingly once the asset register has been verified. Where OEM requirements or applicable standards prescribe additional or different tasks, those requirements shall take precedence and be implemented. Any material deviations from the indicative schedule, including the time and cost implications, shall be submitted to the University for review and acceptance.

The Service Provider shall complete inspection sheets for each maintenance visit.

4.2.3. Category E- General Weekly Maintenance

Category E encompasses basic visual and operational checks that can reasonably be performed by trained, non-specialist maintenance personnel without the use of specialised tools, calibration instruments or technical testing equipment.

All Category E activities shall be performed by the Service Provider. During this period, the Service Provider shall carry out the Category E tasks.

Category E activities shall be limited to the following types of works:

- Visual inspection of overall equipment condition
- Inspection of seals, and accessible mechanical components for visible wear or damage.
- Basic cleaning

Category E activities shall not include any tasks requiring technical judgement, instruments, or interaction with internal components. Any defect or concern identified during a Category E inspection shall be reported and shall not be rectified by university personnel.

The Service Provider shall review these tasks against the applicable OEM maintenance manuals for the specific equipment models on site and shall update the Category E inspection sheets accordingly. Tasks requiring technical expertise, instruments, or specialist knowledge shall not be introduced into the Category E schedule.

4.2.4. Maintenance Intervals and activities table

Frequency	Action Item	Responsibility
Weekly	Visual inspection of external pipes and meter locations.	Registered Practitioner
Monthly	Check for "rotten egg" odour; inspect ventilation in gas rooms.	Registered Practitioner
Bi-Annually	Leak detection spray test on all exposed joints and valves.	Registered Practitioner
Annually	Full system service, pressure testing, and appliance calibration.	Registered Practitioner
5 Years	Comprehensive inspection and issuance of a new CoC .	Registered Practitioner

4.3. Inspection Sheets and Reporting

4.3.1. Inspection Sheets

The Service Provider shall develop and provide standardised inspection sheets and maintenance checklists for all preventative maintenance categories defined in this contract (Categories A–E). These inspection sheets shall be aligned with the applicable OEM guidelines, maintenance procedures, and regulatory and compliance standards for the relevant equipment.

Inspection sheets shall clearly record the following as a minimum:

- Date of inspection and equipment identification
- Required maintenance tasks with completion confirmation
- Observations, faults, or defects identified
- Name and signature of the person performing the activity

Hard copies of the completed Category E inspection sheets shall be retained on site and copies shall be submitted to the University via email on a weekly basis. The University shall review all completed sheets, follow up on any reported observations.

4.3.2. Monthly maintenance inspection log sheets

The monthly inspection log is designed for the **WITS University Facilities Team** to ensure the safety of the **Natural Gas** reticulation system between the property boundary and individual campus buildings.

Below is a monthly inspection checklist that must be performed and kept in the maintenance file.

Monthly Gas Infrastructure Inspection Log

Campus/Building: _____ | Date: __ / __ / 20__

Inspector Name: _____

Item	Inspection description	Status (Pass/Fail)	Notes Action Required /
1.0	External Pipework & Meter Hubs		
1.1	Are meter boxes locked, accessible, and free of debris?		
1.2	Is there any smell of gas near the meter or main lines?		
1.3	Are pipe supports and brackets secure and free of rust?		
1.4	Is the yellow high-visibility paint intact on all exposed pipes?		
2.0	Safety & Signage		
2.1	Are "No Smoking/Open Flame" signs clearly visible at gas hubs?		
2.2	Are emergency shut-off valves unobstructed and clearly marked?		
2.3	Are ventilation openings in gas plant rooms clear of blockages?		
3.0	Emergency Isolation & Controls		

3.1	Check that main isolation valves can be turned by hand (if safe).		
3.2	Are fire extinguishers near gas hubs serviced and within date?		
3.3	Verify that gas detection alarms (if installed) show "Power On".		
4.0	Appliance & Connection Check (Sampled)		
4.1	Visually check flexible hoses for cracks or perishing.		
4.2	Ensure "Flame Failure Devices" on lab burners are functional.		

Verification

Inspector Signature: _____

Supervisor Review: _____

4.3.2.1 Immediate Action Protocol

If a **FAIL** is recorded for a gas leak or safety risk:

1. **Isolate:** Close the nearest isolation valve immediately.
2. **Ventilate:** Open all windows in the affected area.
3. **Report:** Call the **Natural Gas Emergency Line** at 011 726 4702 and notify the WITS OHSE Department.

4.3.3. Reporting

The Service Provider shall maintain a two-tier reporting structure consisting of a service report per maintenance intervention and a monthly summary report.

Service Report (Per Intervention)

All maintenance must be documented. A maintenance file for each University campus building must be kept on site.

Following each preventative or corrective maintenance intervention performed by the Service Provider, a service report shall be generated and submitted to the OFMD within 24 hours of attendance. The service report shall include, but not be limited to:

- A Maintenance report detailing parts replaced.
- Pressure Test Certificates.
- An updated Certificate of Conformity (CoC) if any modifications were made.
- Equipment identification and location.
- Date and time of attendance.
- Description of maintenance activities performed.
- Test results or verification checks where applicable.
- Details of any faults identified.
- Components replaced or repaired, including part numbers.
- Recommendations for corrective actions where required.

Monthly Summary report

The Service Provider shall compile and submit a monthly maintenance report to the OFMD summarising all maintenance and validation activities carried out during the reporting period. This shall be submitted no later than the fifth (5th) working day of the following month. The monthly report shall include, but not be limited to:

- Summary of preventative maintenance performed (by category and site).
- Summary of corrective maintenance interventions, including status (resolved or pending).
- Equipment currently out of service or awaiting parts, with estimated resolution dates.
- Outstanding recommendations requiring University decision/approval.
- Confirmation of any non-conformances or compliance concerns identified during the reporting period.
- Quotations shall be included in the monthly reports where necessary, detailing the reason for repairs and spare parts.
- Copies of Inspection sheets.

4.4. Corrective Maintenance

4.4.1. Scope of Corrective Maintenance

Corrective maintenance shall be carried out in accordance with applicable regulatory and compliance standards and OEM requirements.

Corrective maintenance shall be undertaken on an as-required basis in response to:

- Equipment failures.
- Performance issues identified by the Service Provider or reported by the University.
- Faults identified during preventative maintenance.
- University-reported malfunctions.
- Defects identified during the initial asset assessment.

Corrective maintenance shall aim to restore the equipment to its original operational and safety performance standards. The scope shall include, but not be limited to:

- Call-Out attendance and fault-finding
- Repairs and replacement of defective or failed components.
- Cleaning where required as part of fault rectification.
- Obtaining written University approval before removal of any equipment or parts.

Where maintenance identifies defects that cannot be corrected immediately, the Service Provider shall:

- Record the defect
- Report to the University
- Track the item until resolved

No item shall be considered complete until the defect is closed out or formally accepted by the University.

4.4.2. Initial Restoration Phase

Following the completion of the asset register verification, any corrective maintenance identified during the initial assessment shall be scheduled and executed to restore all equipment to full operational condition.

The Service Provider shall submit a consolidated defect list to the University upon completion of the asset assessment, detailing all pre-existing defects identified per asset.

4.4.3. Spare Parts and Lead Times

Certain equipment within the scope may require imported or specialist spare parts, which may result in extended lead times. The Service Provider shall be aware of the university's service level requirements relating to response times and shall communicate anticipated delays to the University.

Where equipment is awaiting spare parts, and cannot be operated safely, such equipment may be placed out of service in accordance with the university's procedures. The asset status will be updated accordingly, and the University shall be notified in writing.

The contractor shall maintain a documented parts tracking log for all outstanding orders, recording the date of order placement, expected delivery date, and status. This log shall be included as part of the monthly maintenance report where applicable.

All replacement components and spare parts used for corrective maintenance shall be new, undamaged, fit for purpose, and compatible with the existing equipment. Where OEM parts are mandatory, these shall be procured accordingly. Spare parts shall not be procured or installed without prior written approval from the University. The Service Provider shall provide a quotation to the University for each spare part prior to procurement, and proof of purchase shall be submitted to the University upon delivery. Quotations shall be included in the monthly reports where necessary, detailing the reason for repairs and spare parts. Payment for spare parts shall be certified at the approved markup as defined in the Bill of Quantities.

4.5. Decommissioning

If, during the course of maintenance, any equipment is determined to be beyond economical repair or incapable of being restored to safe and compliant operating condition due to asset age, failure mode status and risk exposure, the Service Provider shall:

- Provide a written technical assessment outlining the reasons for such determination
- Submit a formal recommendation for decommissioning to the University
- Obtain written approval from the University prior to undertaking any decommissioning activity.
- Decommissioning shall include safe isolation ONLY. The Service Provider is not to remove the asset from the university premises.
- The asset register shall be updated accordingly, including the reason for decommissioning and reports and supporting documentation shall be submitted to the University.

Once formally decommissioned and recorded in the asset register, the equipment shall be removed from the active maintenance schedule. The Service Provider shall adjust maintenance planning and associated cost provisions accordingly, with no additional charge to the University for assets no longer in service.

5. VALIDATION

Validation shall be undertaken to confirm that equipment operates safely and in compliance with applicable compliance standards and regulatory requirements.

The Service Provider shall carry out validation procedures for the natural gas lines in accordance with the requirements of this Scope of Works.

The Service Provider is responsible for monitoring certification due dates and planning certification activities to ensure continuous compliance.

5.1. Validation Requirements and Frequency

Validation shall be carried out at the following minimum frequencies, unless otherwise required by applicable standards or OEM guidelines:

- Natural gas lines - annually

Where manufacturer manuals or applicable regulatory and compliance standards prescribe specific validation procedures, test methods, or validation intervals, such requirements shall take precedence and be strictly followed.

5.2. Validation Procedures

Validation procedures shall be carried out by trained, competent, and accredited personnel using appropriate methods and equipment.

Where applicable, validation shall be performed in accordance with OEM guidelines, as well as relevant SANS, and EN standards etc. Equipment shall only be deemed compliant where test results meet the measurable acceptance criteria defined in, but not limited to applicable SANS requirements, or OEM performance specifications.

Calibration performed as part of compliance testing for validation purposes shall form part of validation activities.

5.3. Validation Records and Reporting

Upon completion of validation activities, the Service Provider shall issue validation records and update the University's asset register to reflect the validation status of each item of equipment. The Service Provider is to issue validation labels for the equipment.

Validation records shall include, as a minimum:

- Date of validation

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- Equipment identification details
 - Outcome of validation
 - Any limitations, non-compliances, or recommendations identified
 - Proof of accreditation and calibration certificates of testing instruments shall be provided upon request.
 - Where applicable, a SANAS accredited certificate must be issued for Validation purposes.

6. MANDATORY MINIMUM REQUIREMENTS

6.1. Accredited personnel

All maintenance, validation, calibration, and related services under this contract shall be performed by trained and competent personnel.

For the purposes of this contract, trained and competent personnel shall be defined as individuals who:

- Have received formal training relevant to the specific equipment type.
- Possess demonstrable experience in maintenance, validation, calibration and troubleshooting of laboratory containment equipment.
- Hold any required accreditation, validation, or competency registration applicable to SAGA.

The Service Provider shall ensure that all personnel remain appropriately qualified and accredited for the full duration of the five (5) year contract period. Qualifications, accreditations, and certifications shall be reviewed and renewed annually, and proof of renewal submitted to the University.

6.2. Service Provider Requirements

Site assessments shall include but not be limited to the following:

- a) Conduct a detailed inspection of natural gas lines, including cylinders, valves, discharge nozzles, control panels, detectors, manifolds, gauges, colour coding, etc.
- b) Identify any damaged, faulty, or non-compliant components.

6.2.1. Documentation and Record Keeping

All documentation generated during corrective maintenance shall be submitted to the University and captured in the prescribed asset register template within 24 hours of completion of each intervention. Documentation shall include, but not be limited to:

- Service reports
- Calibration certificates
- Validation records and compliance certificates
- Proof of authorisation used for the intervention
- Parts replaced, including OEM part numbers and proof of purchase.

The Service Provider shall maintain a complete record of all specialist and OEM interventions for the duration of the contract period. All such records shall be made available to the University upon request. Upon expiry or termination of the contact, the Service Provider shall hand over the full set of records to the University, including all service reports, calibration certificates, validation records, inspection sheets, and asset register documentation accumulated during the contract period. Handover shall be completed no later than the final day of the contact.

The Service Provider shall obtain all applicable OEM operation, maintenance, and technical manuals for the installed equipment. Copies shall be submitted to the University.

6.3. Response Time and Performance Requirements

The Service Provider shall respond to reported failures in a timeous and professional manner.

Response times shall take into consideration:

- The safety risk posed by the failure
- The availability of hazardous materials within the affected equipment
- The University's operational requirements

All corrective maintenance requests shall be formally logged and issued by the OFMD, who shall assign the applicable priority level.

6.3.1. Priority Levels

Table 1 classifies the priority levels. All response times shall be measured from the time of formal notification by the University. The priority level will be assigned by the OFMD upon formal notification.

Where required, the Service Provider shall attend outside of normal working hours, including weekends and public holidays, for Priority Level 1 incidents.

Table 1: Priority Levels

Priority Level	Description	Response Time
Priority Level 1 – Emergency	Failures that present an immediate safety, containment, or regulatory compliance risk, or that result in total equipment failure.	1 hour on site from time of formal notification.
Priority Level 2 – Safety Critical	Failures that do not present immediate danger but may affect safe operation, or compliance if not addressed promptly.	Within 3 hours on site from time of formal notification.
Priority Level 3 – Planned / Non-Critical Breakdown	Non-urgent failures or operational issues that do not pose an immediate safety or compliance risk.	Within 6 hours on site from time of formal notification.

Where required, the Service Provider shall attend outside of normal working hours, including weekends and public holidays, for Priority Level 1 incidents.

6.3.2. Performance requirements

The Service Provider shall, in terms of performance requirements:

- Minimise equipment downtime
- Ensure that preventative maintenance is completed within scheduled windows
- Service reports shall be submitted within 24 hours of attendance.
- Maintain accurate and up-to-date asset records following each intervention.

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- Ensure that certified equipment remains compliant with applicable standards at all times

6.3.3. Working Hours

Standard working hours shall be Monday to Friday, 7am to 5pm, excluding public holidays. Work outside these hours shall be treated as emergency call-out unless otherwise agreed to in writing. All after-hours access to be approved by the University's Operations and Facilities Management Department (OFMD) **PRIOR** to the work being carried out. All access is to be approved by OFMD.

6.4. Site Safety and emergency procedures

Key Safety Measures and Emergency Procedures:

- **Leak Detection:** Signs of a leak include a rotten egg smell, hazy mist, dead vegetation, or hissing sounds.
- **Emergency Actions:** If a leak is detected, immediately close the supply valve (if accessible), open doors/windows for ventilation, avoid using electricity or flames, and contact the supplier, Natural Gas.
- **Prohibited Actions:** Do not use a cell phone in the vicinity of a suspected gas leak.

In the event of a detected leak during maintenance:

1. **Immediate Isolation:** Close the main Natural Gas supply valve.
2. **Ventilation:** Open all windows and doors. Do not operate electrical switches.
3. **Evacuation:** Evacuate the immediate area.
4. **Reporting:** Contact Natural Gas Emergency on **011 726 4702**.

The Service Provider shall compile, maintain and work in accordance with a Safety File for the duration of the contract in compliance with the Occupational Health and Safety Act (Act 85 of 1993) and all regulations promulgated thereunder. The Safety File shall be made available to the University upon request and updated throughout the contract period to reflect current site conditions, risk assessments, and method statements.

The Service Provider shall comply with all applicable site health and safety requirements, University natural gas procedures, and any permit-to-work, decontamination requirements or access control requirements in force at the time of each visit.

The Service Provider shall provide, maintain, and correctly use all personal protective equipment (PPE) appropriate to the hazards associated with natural gas.

6.5. Site Coordination and Access

The Service Provider shall coordinate all maintenance, validation, corrective works, and planned shutdowns with the OFMD.

No work affecting building services, access, or operations shall proceed without prior notification and approval from OFMD where required.

All corrective maintenance call-outs shall be formally initiated and authorised by OFMD. The Service Provider shall not respond to direct requests from maintenance personnel or other departments. All requests are to be officially logged and approved through OFMD.

7. ASSET MANAGEMENT

7.1. Asset Assessment and Register Verification

A once-off assessment of all equipment within the scope shall be undertaken to verify the provided asset register. This shall include, but not be limited to:

- Verification of asset existence and location
- Confirmation of operational status
- Verification of model numbers, serial numbers and asset tags
- Identification of missing, obsolete, or decommissioned equipment
- decom
- Tagging of assets to indicate verification has been completed.

Verified asset data shall be captured in the prescribed template by the Service Provider

Currently, the asset register lists the following equipment:

- Natural gas outlets within the university

7.2. Asset Register

Verified asset information shall be captured in the prescribed asset register template.

The Service Provider shall be responsible for ensuring that asset information provided by the University is accurate, complete, and aligned with the physical equipment installed on site. Service Provider to update and capture details on prescribed asset register template where necessary with the correct information.

The Service Provider shall be responsible for updating the prescribed asset register template following each maintenance, repair, validation, or corrective intervention over the contract period of 5 years.

Prescribed asset register template updates shall include, but not be limited to:

- Date of intervention
- Type of work performed (preventative, corrective, validation)
- Description of work carried out
- Parts replaced or installed (including part numbers where applicable)
- Changes in operational status
- Name and details of service provider

The Service Provider shall update the asset register template and submit the relevant maintenance records within 24 hours of completion of any maintenance, repair, validation, inspection, or decommissioning activity. The work shall not be regarded as complete until the records have been submitted.

7.3. Decommissioning of Assets

Where equipment is decommissioned, the Service Provider shall perform the following duties, but not limited to:

- Update the asset register template to reflect the decommissioned status
- Record the reason for decommissioning
- Record the date for decommissioning
- Identify whether the equipment is removed, isolated or retained
- University approval before decommissioning

7.4. Introduction of New Equipment

Where new or replacement equipment is installed by the University, such equipment shall only be incorporated into the maintenance programme following expiry of the manufacturer's warranty period and upon written agreement between the Service

Provider and the University. The Service Provider shall have no obligation to maintain, service, or validate equipment that remains under active manufacturer's or installer's warranty unless specifically instructed to do so in writing by the University.

8. SUBCONTRACTING

The University prefers to contract directly with all Service Providers, and the Service Provider must not subcontract any of its responsibilities or obligations.

9. DELIVERY AND STORAGE OF SPARE PARTS

- The Service Provider shall be responsible for the supply, delivery and management of all spare parts required for all maintenance activities.
- Spare parts shall not be procured or installed without prior written approval from the University.
- All spare parts supplied shall be new, fit for purpose, compatible with the existing equipment, and compliant with applicable safety and compliance standards and OEM requirements.
- Where OEM-specific parts are mandatory, these shall be supplied accordingly.
- Service Provider to provide a quotation to the University for each spare part.
- For generic or non-proprietary parts, the Service Provider shall obtain a minimum of three (3) competitive quotations prior to procurement and submit these to the University for approval. The University reserves the right to select the preferred supplier.
- Where OEM-specific or proprietary parts are required, the Service Provider shall clearly identify this in the quotation and provide the applicable OEM part number and recommended supplier. Substitution of OEM parts with non-OEM equivalents shall not be permitted without prior written approval from the University.
- All spare parts shall be supplied at cost plus the approved markup rate as tendered in the Bill of Quantities.

10. ANNUAL MAINTENANCE STANDARD OPERATING PROCEDURE

This Standard Operating Procedure (SOP) outlines the annual pressure testing for Natural Gas (NG) reticulation systems at WITS University. All testing must be conducted by a **SAGA** registered Service Provider in accordance with the **Pressure Equipment Regulations (PER)** and **SANS 827**.

10.1 Scope & Objective

- **Scope:** Applied to all gas piping from the property boundary (meter flange) to the appliance isolation valves.
- **Objective:** To verify the structural integrity of the pipeline and ensure no leaks exist at the maximum design pressure.

10.2 Pre-Test Requirements

- **Practitioner Verification:** Confirm the Service Provider holds a valid **SAGA registration** for Natural Gas/Industrial applications.
- **Equipment Calibration:** Ensure pressure gauges are calibrated within the last 12 months and register zero before use.
- **Site Safety:**
 - Cordon off the test area with red safety tape and post "Danger: High-Pressure Testing" signs.
 - Notify all building occupants of the gas shutdown.

10.3 Pressure Testing Procedure

1. **System Isolation:** Close the main Natural Gas supply valve and all appliance isolation valves. Ensure no section is tested against a closed internal valve if it can be bypassed.
2. **Purging:** Safely purge any residual gas from the system into a well-ventilated area.
3. **Pressurisation:**
 1. Connect a suitable test pump (pneumatic or manual) to the system.
 2. Gradually increase pressure in steps to **1.5 x the design pressure**.

3. **Caution:** Do not exceed the maximum allowable pressure of any single component (e.g., regulators).
4. **Stabilisation & Monitoring:**
 1. Allow the pressure to stabilise for at least 15 minutes to account for temperature changes.
 2. **Hold Time:** Maintain full test pressure for a minimum of **60 minutes** (for large university reticulation, 4 hours is recommended).
5. **Acceptance Criteria:**
 1. **Zero Leakage:** No visible or audible leaks.
 2. **Zero Pressure Drop:** The gauge must show no drop in pressure for the duration of the hold time.

10.4 Post-Test & Re-Commissioning

1. **Controlled Bleed:** Slowly release the test pressure until it reaches atmospheric levels.
2. **Leak Check:** Re-open supply valves and perform a final leak check on all joints using a certified liquid leak-detection solution.
3. **Appliance Re-Ignition:** Purge air from the lines at each appliance and verify correct burner operation and flame supervision.

10.5 Documentation

The practitioner must issue a **Pressure Test Certificate** and a Certificate of Conformity (CoC). This document is legally required for WITS's insurance and OHSE compliance under the Occupational Health and Safety Act.

11. RESPONSIBILITIES AND MAINTENANCE REQUIREMENTS

- **Natural Gas Responsibilities:** Natural Gas maintains the main pipeline network from the street to the meter flange at the boundary of the customer's property. Natural Gas perform regular, and ongoing maintenance to manage corrosion and leaks, often employing techniques like "sleeving" and data monitoring to maintain pressures between 16 kPa and 25 kPa.
- **Contractor Responsibilities:** Contractors are responsible for all maintenance, repairs, and safety of the gas piping and appliances directly after the meter flange.
- **Safety Compliance (CoC):** Any maintenance, repair, or new installation of internal piping must be performed by a SAQCC (Gas) registered practitioner. A valid Certificate of Conformity (CoC) is required to ensure the installation complies with SANS 10087-1 (2024 Edition).
- **Annual Maintenance:** It is recommended that **WITS University** have their gas appliances and internal piping serviced annually to ensure safe, continuous operation.
- **Pipeline Safety and Wayleaves:** When working near Natural Gas pipelines, **WITS University** must adhere to wayleave procedures and give at least 5 days' notice for Natural Gas to locate and mark pipes, preventing damage to the network.

12. Appendix A – Natural gas outlets (Main Egoli gas line) Asset Register

Table 1: Existing Asset Register

NATURAL GAS OUTLETS (MAIN EGOLI GAS LINE)		
CAMPUS	BUILDING	SUPPLY AREA
WEST	Wits Science stadium	023 AEC Chemistry Lab
WEST		211 Physics Lab 1
WEST		300 Biology Lab
WEST	Hall 29	CoGen
WEST	Hall 29 Main	David Webstar(Roof)
WEST		Bernato(Boiler)
WEST		Convocation Dining(Kitchen)
WEST	Sturrock	Kitchen
EAST	Oppenheimer Life Sciences	LAB 2036
EAST		LAB G016
EAST		LAB 1029
EAST	Sunnyside (Back)	Boiler Room
EAST	Sunnyside (Front)	Boiler Room
EAST	Rugby	Boiler Room
EAST	COLLEGE HOUSE	Boiler Room
EAST	COLLEGE HOUSE	Boiler Room
EAST	International House	Boiler Room
EAST	Dalrymple House	Boiler Room
EAST	Old Mutual (Gym)	Boiler Room
EAST	PDH Cafe	Kitchen
EAST	Senate House	Boiler Room
EAST	Rugby Field	Boiler Room
EAST	Jubilee Hall	Kitchen
PARKTOWN	WEC	Boiler Room
PARKTOWN		Co-gen
PARKTOWN		Boiler Room
PARKTOWN	Health Science (Animal Unit)	LAB IL16
PARKTOWN		LAB IL13
PARKTOWN		LAB IL12
PARKTOWN		LAB 1L09
PARKTOWN		LAB 1L08
PARKTOWN		LAB 1L06
PARKTOWN		LAB 1L02
PARKTOWN	Health Science	Lab 3N27
PARKTOWN	Health Science	HS506 Phantom Heads Lab
PARKTOWN	Health Science	HS507 Skills Lab
PARKTOWN	Health Science	HS508 Prosthodontics Lab
PARKTOWN	Health Science	8001 WADPP Lab 01
PARKTOWN	Health Science	8N01 Pharmaceutical Lab

PARKTOWN	Health Science	9CO9 Biochemistry Lab
PARKTOWN	Health Science	9C05
PARKTOWN	Health Science	8003 WADPP Lab 2
PARKTOWN	Health Science	Defating Room