

Dry scrubber extraction installation at Metlab

No	DESIGNATION	Item code	Qty	Uom	Price	Total Cost	Observation
1	Dry scrubber extractor (Accessories Incl)	-	1	M		\$ -	No Stock item
2	Fume hood cabinet (Accessories Incl)	-	1	EA		\$ -	No Stock item
3	Piping + Elbows and fittings	-	20	M		\$ -	No Stock item
4	Installation, commissioning & training	-	1	AU		\$ -	
4	Critical spares	-	1			\$ -	No Stock item
					TOTAL	\$ -	

1. General Information

Project: Supply and Installation of Chemical Fume Hood

Location: Metallurgical Laboratory

Application: Acid digestion and chemical testwork (HCl, HNO₃, NO_x gases)

2. Dimensions

External width: 1800 mm

Depth: 750–900 mm

Height: 1400–1600 mm (bench type) OR specify if walk-in required

3. Construction Material

Structure: Polypropylene (PP) (preferred) or equivalent corrosion-resistant material

Interior lining: Acid-resistant (PP/PVC)

Worktop:

- . Epoxy resin OR polypropylene
- . Resistant to acids (HCl, HNO₃)

4. Sash System

Type: Vertical sliding sash

Material: Laminated safety glass

Sash opening:

- . Working height: 400–600 mm
- . Full opening: ≥ 700 mm

5. Airflow Requirements

Average face velocity: 0.4 – 0.6 m/s

Estimated airflow: 1,500 – 2,000 m³/h

Airfoil design for smooth airflow

6. Duct Connection

Outlet diameter: 250 – 315 mm (or as required)

Compatible with ducted dry scrubber system

Dry Scrubber System for Metallurgical Laboratory

- Application: Acid digestion and metallurgical testwork
- Gases: HCl fumes, nitric acid vapors (NO_x)
- Airflow: 1,500 m³/h • System type: Ducted dry scrubber with multi-stage filtration

Filtration:

- Pre-filter for particulates
- Impregnated activated carbon suitable for acid gases and NO_x
- Target removal efficiency ≥ 95%

Construction:

- Material: Polypropylene (PP) or equivalent corrosion-resistant
- Fan: Corrosion-resistant centrifugal fan

Monitoring:

- Differential pressure gauge
- Filter saturation indication

Installation:

- Outdoor installation
- Stack discharge ≥ 3 m above roof

Power:

- 380V, 50Hz, 3-phase

Accessories:

- Duct connections
- Access panels for maintenance

PRE-BID RISK ASSESSMENT FORM

Document Reference:	Revision Number	Original Issue Date	Review Date
BGC-CORP-FORM-002	0	January 20, 2025	January 18, 2030

Project Name: (Reference SOW)	Procurement and installation of a laboratory fume extractor
Project Description:	The project involves the procurement, delivery, installation, and commissioning of a new laboratory fume extractor for the Metallurgical Plant Laboratory. The purpose of the project is to improve the extraction and removal of hazardous fumes, dust, and airborne contaminants generated during sample preparation, chemical analysis, and metallurgical testing activities. The scope includes the assessment of the existing ventilation system, removal of the current extractor (if applicable), installation of the new equipment, electrical and ventilation connections, functional testing, and commissioning. The project also includes verification of compliance with site safety, health, environmental, and engineering requirements, as well as training of laboratory personnel on the safe operation and maintenance of the new system. Upon completion, the new fume extractor is expected to enhance laboratory safety, improve air quality, ensure regulatory compliance, and support reliable metallurgical laboratory operations.

Tasks	Hazards	Controls
Electrical isolation (LOTO)	Electric shock; arc flash; unexpected energization	Implement Lock Out Tag Out (LOTO); verify zero energy state; use qualified electricians; obtain required permits
Installation of new extractor	Struck-by objects; hand injuries; equipment instability	Use approved installation procedures; inspect tools and equipment; maintain good housekeeping; use appropriate PPE
Working at height (if required)	Falls from ladders, platforms, or scaffolds	Use certified scaffolding or work platforms; wear fall protection equipment; inspect access equipment before use
Ventilation duct connection	Exposure to dust; cuts from sheet metal; awkward postures	Wear gloves and respiratory protection as required; use proper tools; maintain good ergonomics and work positioning
Electrical connection and testing	Electric shock; short circuits; fire hazards	Electrical work performed by qualified personnel; test before energizing; use

		insulated tools; follow electrical safety procedures
Commissioning and functional testing	Equipment failure; unexpected startup; noise exposure	Follow approved commissioning procedure; restrict access to authorized personnel; verify all guards and safety devices are installed
Training and handover	Improper operation of equipment	Provide operator training; issue operating procedures and maintenance instructions; obtain user sign-off
Routine operation after installation	Exposure to hazardous fumes due to poor extraction performance	Verify airflow and extraction efficiency; conduct preventive maintenance; perform periodic inspections and monitoring
	Click or tap here to enter text.	Click or tap here to enter text.
	Click or tap here to enter text.	Click or tap here to enter text.
	Click or tap here to enter text.	Click or tap here to enter text.
	Click or tap here to enter text.	Click or tap here to enter text.
	Click or tap here to enter text.	Click or tap here to enter text.
	Click or tap here to enter text.	Click or tap here to enter text.
	Click or tap here to enter text.	Click or tap here to enter text.
	Click or tap here to enter text.	Click or tap here to enter text.
	Click or tap here to enter text.	Click or tap here to enter text.
	Click or tap here to enter text.	Click or tap here to enter text.
	Click or tap here to enter text.	Click or tap here to enter text.
Select all the Fatal Risks present:		
☒ Stored Energy	☒ Falling from Heights	☒ Lifting
☐ Confined Spaces	☒ Mobile Equipment	☐ Fall of Ground
	☐ Blasting and Explosives	☒ Hazardous Substances and Chemicals
		☐ Rotating Equipment
		☒ Fire

Control Effectiveness:	The proposed controls are assessed as Highly Effective in managing the project's critical risks. Key measures such as LOTO, certified lifting procedures, fall protection, traffic management, and ventilation controls significantly reduce the likelihood of serious incidents. The project can proceed safely provided all critical controls are implemented, verified, and continuously monitored throughout execution.		
Additional actions needed before job start:	• Verify and approve the risk assessment and method statement. • Confirm contractor competency and required certifications. • Review and approve lifting and installation plans. • Verify LOTO and permit-to-work requirements. • Inspect tools, lifting equipment, and PPE. • Conduct a pre-job safety briefing (Toolbox Talk). • Confirm emergency response arrangements and communication protocols. • Ensure all critical controls are in place and verified before work begins.		
Identified Risk Level:	☐ Low ☒ Medium ☐ High ☐ Very High		

Responsible	Name	Signature	Date
Technical Representative	Serge Bukasa / Teddy Kapotwe		Click or tap to enter a date.
Safety Representative	Click or tap here to enter text.		Click or tap to enter a date.

Appendix

<

Consequence Criteria: Consequence levels will be chosen from the table below based on the expected impact on Barrick, choosing the worst case of the consequence types that are pertinent. This should reflect the assessment of the existing controls and their effectiveness.						
Level	Financial (Operating cash flow)	Shareholder Value (NPV/Market cap)	Health and Safety	Environment	Society (Community, NGO, Government, Media)	Legal
5	>\$250m	>\$1b	Multiple fatalities or significant loss of quality of life to multiple people.	Severe regional impact resulting in permanent long-term impact to the environment. Immediately reportable to Government or State	Significant loss of trust by affected, national and/or government threatening the continued viability of the operation. International and national government, NGO and media condemnation. Systemic pattern of gross human rights violations affecting multiple people.	Prolonged litigation likely. Potential jail terms and/or high fines for executives and directors. Potential very high fines for the company.
4	>\$100m<\$250m	>\$500m<\$1b	Single fatality or critical injury with a permanent negative impact to quality of life for one person	Significant impact with medium to long-term impairment and residual ecosystem effects. Regulatory agency mandated remediation and/ or monitoring over a long-term period to determine extent of adverse environmental impact. Immediately reportable to Government or State.	Community unrest and/or protest requiring intervention and substantial management attention. National and/or regional media coverage over several days and/or NGO condemnation. Individual gross human rights violation or systemic negative human rights impacts.	Prosecution of individuals and/or significant fines for individuals and/or the company.
3	>\$20m<\$100m	>\$50m<\$500m	Serious injury to one or more persons resulting in temporary negative impact to quality of life. (RDI & LTI)	Moderate impact resulting in medium – term impacts to the environment. Remediation completed in compliance with regulations over a medium-term period without any anticipated residual adverse environmental impacts. Potentially reportable to State or government, but not immediately.	Persistent community grievances, complaints, unrest or protests. National and/ or regional media coverage and/ or NGO scrutiny. Systemic or severe individual negative impacts on human rights.	Significant legislation or permit non-compliance or litigation likely resulting in settlement costs and/or fines.
2	>\$1m<\$20m	>\$10m<\$50m	Reversible injury to one person, (no lost time to work performance) but requiring medical treatment. (MTI)	Localized, minor impact within the current or planned disturbance area (or isolated offsite impacts.) Limited remediation, and/ or controls required to meet regulatory standards. Potentially reportable to State or Government but not immediately.	Persistent complaints and grievances, unrest or protests. Local Media coverage. Isolated negative impacts on human rights	Legislation or permit non-compliance or litigation likely resulting in need for legal engagement.
1	<\$1m	<\$10m	Minor injury not affecting work performance and requiring only a single first aid treatment.	Environmental incident with an area already distributed by operations, with short-term impacts. Remediation carried out as part of routine processes. Not reportable to the government.	Minor complaints and grievances from local communities. No impact on human rights.	Minor non-compliance with legislation or permits.

Control Effectiveness: A relative assessment of the degree of modification that is currently present and effective compared with that which is reasonably achievable for a particular risk.	Descriptor	Guide
	Fully Effective	Controls are as good as realistically possible, both well-designed and implemented as well as they can be.
	Substantially Effective	Controls are generally well-designed and well implemented but some improvement is possible in their design or implementation.
	Partially Effective	Controls are well-designed but are not implemented that well. OR While the implementation is diligent, it is clear that better controls could be devised.
	Largely Ineffective	There are significant gaps in the design or in the effective implementation of controls – much more could be done.
	Totally Ineffective	Virtually no credible controls relative to what could be done.

Fatal Risk	Critical Controls
Stored Energy	De-energize: Identify sources of energy and ensure they are zero-state
	LOTOTO: Remember to always lock out – tag out – try out
	Guards, Barriers, and Barricades: Ensure they are in position and effective
	Lock-out Device: Use the appropriate lock out device to isolate the energy source
	Personal Lock and Tag: Have your OWN lock and tag, with unique key
Falling from Heights	Rescue Plan: Ensure a rescue plan is in place before starting work above 1.8m.
	Fall Equipment: Inspect and wear the correct fall-restraint or arrest equipment when working above 1.8m.
	Tie Off: Stay 100% tied off at all times on approved anchor points.
	Elevated Platforms: Only work from certified elevated platforms.
	Barriers: Ensure barriers are in place to prevent people or objects from falling over edge; ensure exclusion zones are demarcated.
Lifting	Lift Plan: Determine how the lift will be carried out with input from all persons involved.
	Equipment and Rigging: Ensure all lifting equipment is inspected, certified, and load is secured and controlled.
	Calculate and Confirm: Analyze the weight of the load and all associated equipment parameters.
	Drop Zone: Erect barricades and exclusion zones to restrict access to the area under a suspended load or within a drop zone.
	Communication: Positive communication from a single person to operator.
Blasting & Explosives	Communication: Scheduled and effective blast notification to all site personnel.
	Blast Design: Compliance with the approved drill and blast design.
	Transport Equipment: Safely transport explosives using approved, certified, and maintained explosives-transport equipment.
	Exclusion Zones: Establish and restrict access of personnel and equipment to blast exclusion zones with barricades.
	Access Control: Lock out – tag out on stinger and blast tag boards, to ensure all individuals are accounted for.
Hazardous Substances and Chemicals	PPE: Wear correct hazardous-materials PPE in line with Safety Data Sheet (SDS)
	Access: Restrict access to authorized personnel only
	Emergency Response: Containment: and exposure measures must be on hand and working according to SDS guidance
	Detection and Alarm Systems: Correct detection devices and alarms are in place and fully functional.
	Handling and Transfer: Protection protocols are in place when handling and transferring chemicals based on SDS.
Confined Space	Rescue Plan: Formulate a rescue plan and ensure that a spotter is in place at all times.
	Permit: Ensure you have a signed and complete permit to access entry point.
	Energy Isolation: All possible energy sources have been identified and controlled per lock out – tag out – try out (LOTOTO)
	Access Control: Work area to be demarcated and access control to be managed by a spotter at all entry points.
	Atmosphere: Test and confirm atmosphere is life-sustaining and continue monitoring.

Mobile Equipment	Pre-Use Inspection: Confirm functionality of braking, steering, and safety devices.
	Parking: Follow safe, secure, and stable parking practices in designated parking areas.
	Traffic Management Plan: Adhere to road designs, rules, signage, and segregation of equipment and pedestrians.
	Berms and Windrows: Ensure that berms and windrows are installed to standard and maintained.
	Communication: Ensure positive communication is maintained at all times.
Fall of Ground	Mobile Devices: Do not use phones, smart watches, or tablets when driving.
	Workplace Inspection: Inspected, properly scaled down, and made safe.
	Geotechnical Inspection: Ensure that inspections are completed, and workplaces are continuously monitored.
	Ground Control Management Plan: Ensure that the plan is implemented and communicated.
	Barricading and Exclusion Zones: Ensure exclusion zones have been identified and maintained.
Rotating Equipment	Water Management: Establish a water management plan.
	Guards, Barriers, and Barricades: Ensure these are effective, in place, and maintained.
	Safety Devices: Ensure safety devices and interlocks have been tested and are in working condition.
	Energy Isolation: All possible energy sources have been identified and controlled per lock out – tag out (LOTOTO) _
	Combustible Materials Storage: Store combustible/flammable materials separately and safely.
Fire	Ventilation: Ensure adequate ventilation in working areas and that systems are functioning and maintained.
	Fire Detection, Alarm, and Suppression: Ensure fixed and mobile equipment has functional fire detection and suppression system.
	Evacuation Plan: Be prepared and know your emergency plan, egress, refuse chamber, self-rescuer, and muster point.
	Hot Work Permit: Obtain a permit and implement the associated controls before starting work.

Low Risk Scope of Work Form

Document Reference:	Revision Number	Original Issue Date	Review Date
BGC-CORP-FORM-003	0	January 20, 2025	January 18, 2030

Project Name	Met Lab dry scrubber extractor and fume hood cabinet Design, Installation and Commissioning
Site Location:	Kibali Gold Mine / Processing Plant
Risk Rating of SOW: (Based on Pre-Bid Risk Assessment)	☐ Low ☒ Medium (Check one)

Approver	Name	Signature	Date
Technical Representative	Serge Bukasa & Teddy Kapotwe		25 May 2026
Safety Only Required for medium risk projects	John Banza		25 May 2026

1. PROJECT OVERVIEW

Outline the specific deliverables, objectives and boundaries of the project.

The scope of this project covers the engineering design, procurement, installation, and commissioning of a dry scrubber-based extraction system, including a laboratory fume hood, for the Kibali Metallurgical Laboratory.

The system shall be designed to integrate with the existing facilities, including connection to the furnace exhaust gas line.

All components of the extraction system shall be constructed from materials suitable for exposure to acidic fumes and corrosive chemical agents, ensuring durability and operational reliability.

The primary objective is to implement a fit-for-purpose gas extraction solution capable of safely managing emissions generated during laboratory test work involving chemical gas release, while maintaining compliance with safety and environmental standards.

2. GENERAL DESCRIPTION OF WORK**2.1. DELIVERABLES (KPI'S)**

2.2. PROJECT LOCATION

Provide an address and describe the specific location of the scope of work.

Kibali Gold Mine, Watsa District / Haut Uele / DRC
Processing Plant / Metallurgical laboratory

Work area details :

- Metallurgical laboratory

2.3. EQUIPMENT AND TOOLS REQUIRED

List all equipment and tools required to perform the Job.

Items supplied by Contractor

- Scrubbing system & related instruments
- Installation tools
- Correct PPEs
- Safety equipments
- Qualified Technicians

Items supplied by Barrick

- Site & Plant access
- Site Accommodation, Transport from Camp to the Process Plant
- Access to electrical power
- Laydown
- Emergency Response Support & first aid facilities

-	Emergency	Equipment:
Eyewash stations and safety showers must be accessible and fully operational near all work areas involving chemical substances		
-	Access	Control:
Restrict access to authorized and trained personnel only during hazardous operations.		
-	Communication & Incident	Reporting:
Clear communication protocols and immediate reporting of any safety incidents or near misses		

3.2 HEALTH AND SAFETY PROCEDURES

List all applicable Health and Safety operational procedures.

As per Barrick Standards

4. ENVIRONMENTAL REQUIREMENTS

The Contractor shall apply all the requirements established in Barrick's Environmental Guidelines for Contractors, comply with Barrick's Environmental Policy, and meet all other applicable environmental requirements, procedures or standards to present the specific environmental management plan for the project if applicable.

4.1 ENVIRONMENTAL SPECIFIC REQUIREMENTS

List the specific Environmental requirements associated with the job/work and all applicable procedures.

- Barrick Social Performance Policy compliance
- Local procurement of materials and accessories if possible
- The related works must not affect the safety of the community
- The related works must not affect the health and the security of the community
- Promote local employment

5.2 SOCIAL PROCEDURES

List all applicable Social operational procedures.

As per Barrick Standards

8.3. APPENDIX

Documents:

Drag and drop documents from your files here...

Images/drawings:

Drag and drop images from your files here...