
**INTERNAL AUDIT
FINAL REPORT
OF THE
MACDONALD
CAMPUS
ASBESTOS
INVESTIGATION**



McGill



INTERNAL AUDIT FINAL REPORT OF THE MACDONALD CAMPUS ASBESTOS INVESTIGATION

MR23-03

Submitted to

Maryse Bertrand, Chair of the Board of Governors

Prof. H. Deep Saini, Principal & Vice-Chancellor

McGill University

September 14, 2023



McGill

Internal
Audit

Service d'audit
interne

GUARDING TOMORROW, **TODAY**

McGill University is located on land which has long served as a site of meeting and exchange amongst Indigenous peoples, including the Haudenosaunee and Anishinabeg nations. McGill honours, recognizes and respects these nations as the traditional stewards of the lands and waters on which we meet today.

MEMORANDUM OF TRANSMITTAL



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Internal Service d'audit
Audit interne

Memorandum

From : Pascal Théoret, Executive Director, Internal Audit
To: Maryse Bertrand, Chair of the Board of Governors
Prof. H. Deep Saini, Principal & Vice Chancellor
Date: September 14, 2023
Subject: Memorandum of Transmittal – Internal Audit Final Report
of the **Macdonald Campus Asbestos Investigation**

Ms. Bertrand, Prof. Saini,

At the request of McGill Senior Administration to investigate the Macdonald Campus asbestos incident, please find enclosed the final report outlining the results of our review of events and facts that led up to and followed the incident.

This mandate was conducted to inform the University's highest governance and management instances, as well as the broader McGill community, and designed to provide process improvement recommendations to strengthen current asbestos management practices.

We gratefully acknowledge the contributions of concerned members of the McGill Community, the many external partners, and other key stakeholders alike for their candid insight that enabled our informed and diligent understanding of the incident.

I remain available throughout should you have any questions or concerns.

Respectfully,

Pascal Théoret, CPA, CIA, CRMA
Executive Director, Internal Audit

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GLOSSARY

Air testing	<p>In accordance with the IRSST guidelines (PCM), air testing involves the sampling of air using a cassette and sampling pump that collects fibers and particulates from the air. The cassette is analyzed at an accredited laboratory for number of fibers per cubic centimetre.</p> <p>Air tests are the primary means used by the Government of Québec to monitor workplace safety in construction situations where asbestos may be involved. Québec's Safety Code for the Construction Industry (3.23.16 (12)) mandates that air tests must be under the threshold of 0.01 fibers per cubic centimetres after high-risk asbestos work is done. When McGill performs air tests, it requires that the tests meet this same threshold. Québec's threshold in regular office/classroom situations is significantly higher (0.1 fibers per cubic centimetre), but McGill's self-imposed threshold in all situations, applied as the safety standard across all University buildings, is the more stringent 0.01.</p>
Asbestos	<p>The fibrous form of mineral silicates belonging to rock-forming minerals of the serpentine group, that is, chrysotile, and the amphibole group, that is, actinolite, amosite, anthophyllite, crocidolite, tremolite or any mixture containing one or more of those minerals.</p>
Asbestos abatement	<p>Any work conducted on asbestos containing materials (ACM) to safely remove, encapsulate, enclose, or repair the ACM to prevent exposure to airborne asbestos fibers.</p>
Asbestos Containing Material (ACM)	<p>A material that has been analyzed by an accredited laboratory and has a content greater than 0.1% asbestos.</p>
ASTM	<p>ASTM International, founded as the American Society for Testing and Materials, is a non-profit organization that develops and publishes approximately 12,000 international voluntary consensus standards, covering the procedures for testing and classification of materials of every sort.</p>
Biosafety Cabinet (BSC)	<p>A type of biocontainment equipment used in biological laboratories to provide personnel, environmental, and product protection and to prevent exposure to biohazards.</p>
Bulk sampling	<p>Following the IRSST guidelines (PLM/TEM), a sample of a building material is taken to be analyzed.</p> <p>Many buildings contain asbestos that is safely contained within building materials (e.g. in a closed wall). Asbestos fibers only become a concern if they become loose and airborne. McGill uses bulk sampling to test materials that are in poor condition (e.g. a broken tile) – if the material contains asbestos, it must be checked to ensure that it is intact and that asbestos fibers cannot be released. If it is not intact, it must be repaired or removed. If this cannot happen right away, the area must be sealed off until that work can happen.</p>
Call for Tender (CFT)	<p>Process whereby service contractors and suppliers are invited to make an offer to execute a proposed project.</p>

GLOSSARY

Category 1 Emergency	A minor, localized incident with limited impact on persons, property or the environment and that is unlikely to disrupt University operations or activities. Category 1 emergencies are managed using routine response protocols, procedures, and resources (Source: McGill's Emergency Management Policy).
Category 2 Emergency	A major incident that poses a high risk of serious harm to persons, or of widespread or substantial damage to property or the environment, or that disrupts or has the potential to disrupt University operations or activities. Category 2 emergencies are within the purview of the University Emergency Management Program and require the activation of all or part of the Program's emergency response structure (Source: McGill's Emergency Management Policy).
Canada Foundation for Innovation (CFI)	Non-profit corporation that invests in research infrastructure at Canadian universities, colleges, research hospitals and non-profit research institutions.
Cementitious	Having the properties of cement.
Decontamination	Decontamination includes both sterilization (the complete destruction of all microorganisms, including bacterial spores) and disinfection (the destruction and removal of specific types of microorganisms).
Deferred maintenance (or Asset Maintenance Deficit)	Refers to the postponement of repairs or maintenance. It can include works as diverse as structural maintenance, reconstruction to electrical system upgrades and accessibility infrastructure. Referenced as "Asset maintenance deficit" by the provincial government, the value of deferred maintenance is used to calculate the facility condition index as established by government standards. Deferred maintenance work generally rectifies situations that entail a high level of risk.
Delivery (Project)	The delivery of a space in a context of a construction project involves the return of areas by the General Contractor (GC) to McGill where work has been completed and documentation supports the delivery to McGill.
Dust Sampling	Dust sampling (e.g. see wipe tests ASTM D6480 and microvacuum sampling ASTM D5755) is carried out in order to determine whether asbestos fibers have come loose, and can indicate whether further investigation may be needed.
Emergency	A present or imminent incident or situation that requires prompt coordination of actions to protect the health and safety of people, to limit damage to property or the environment, or to mitigate or minimize disruption of McGill University operations and activities (Source: McGill's Emergency Management Policy).
Emergency Operations Centre (EOC)	McGill's emergency management group, which provides strategic and resource acquisition support and coordination to Incident Command and on-scene responders. EOC also provides capacity for consequence management. EOC is hereby authorized to direct the use of University resources to provide support as needed to Incident Command and for consequence management, including but not limited to providing strategic direction, managing internal and external communications, and addressing business continuity (Source: McGill's Emergency Management Policy).

GLOSSARY

Encapsulation	The treatment of an asbestos-containing material with a sealant that penetrates the material and binds the asbestos fibers together, and the treatment of the surface of the asbestos-containing material with a sealant that creates a membrane on the surface, to prevent the release of asbestos fibers into the air.
f/cm³	Fiber per cubic centimetre.
Friable	Can be pulverized by hand pressure.
General and Complementary Conditions	General and Complementary Conditions are included in McGill's contractual documentation. They consist of rules and directions imposed on the General Contractor to dictate the way in which the work must be conducted on site and to ensure adequate coordination of construction activities.
High Efficiency Particulate Air (HEPA) Filter	Filter which can remove at least 99.97% of dust, pollen, mold, bacteria, asbestos, and any airborne particles with a size of 0.3 microns (µm).
Homogeneous and Non-homogeneous material	<p>Of the same kind; alike. Refers to the condition where the properties of the objects being observed are consistently the same. Conversely, non-homogeneous refers to the condition where the properties are inconsistent or made of different qualities.</p> <p>For example, it is important to personnel involved in asbestos testing activities to differentiate between materials that are uniform in color or texture in order to comply with testing regulations and requirements.</p>
Incident Command (IC)	McGill's on-scene emergency management group. During emergency response, IC is hereby authorized to coordinate activities with emergency responders, direct evacuation, restrict access to buildings or areas of campus deemed hazardous, direct use of University resources, and other actions required to protect the life and safety of the McGill community and ensure other University response priorities (Source: McGill's Emergency Management Policy).
Institut de recherche Robert-Sauvé en santé et en sécurité du travail (IRSST)	Non-profit scientific research organization that conducts and funds research activities aimed at eliminating risks to worker health and safety and at promoting worker rehabilitation.
Materials Likely to Contain Asbestos (MLCA)	MLCA are presumed to contain asbestos, subject to a demonstration to the contrary.
Microvacuum Sampling	Per ASTM D5755-09, this testing method employs a microvacuuming sampling technique to collect dust from various surfaces. The samples are then analyzed by Transmission Electron Microscopy (TEM) to identify asbestos structures.
Negative Pressure	Negative pressure is the condition whereby the air pressure is lower in one space in comparison to an adjoining space. When a room is in negative pressure, it causes air to flow into the room from the surrounding spaces. Negative pressure prevents potentially contaminated air inside the room from flowing into non-contaminated areas.

GLOSSARY

Octagon	The Octagon area is located on the east end of the Raymond building, which was delivered to McGill by the General Contractor under anticipated delivery procedure.
Phase Contrast Microscopy (PCM)	A brightfield light microscopy technique that can be used for counting fibers in particulate samples gathered from air, dust or bulk.
Phytorium	A research facility, located on the first floor of the west end of the Raymond building, which is equipped with controlled-environment cabinets for plant growth and plant tissue culture.
Polarized Light Microscopy (PLM)	A microscopy technique that allows identifying asbestos in bulk and dust samples, using polarized light.
Policy Group (PG)	In all cases of Category 2 emergencies and Category 1 emergencies with potential to escalate to a Category 2, McGill's Policy Group may be called upon to provide high-level strategic support and direction to the EOC, on behalf of the University. The Policy Group also addresses broader issues such as intergovernmental relations, reputational risks to the University, and high-impact decisions such as approval of class cancellations or closing the University.
Silica	Respirable crystalline silica is also known as silica dust. Silica dust is made up of small particles that become airborne during work activities with materials that contain crystalline silica. Materials can include sand, concrete, brick, block, stone, and mortar. Silicosis, an irreversible but preventable lung disease, is caused by inhalation of respirable silica dust. Work exposures to silica dust also cause other serious diseases, including lung cancer.
Transmission Electron Microscopy (TEM)	A technique for identifying asbestos in bulk and dust samples, using a transmission electron microscope.
Wipe test	<p>A test to determine the presence or absence of asbestos in dust on surfaces. Per ASTM 6480, a damp towel is used to wipe a 10 cm by 10 cm square of a non-porous surface. The sample is then put into a sample tube and sent for analysis. Both wipe and tube are provided by the laboratory that does the analysis.</p> <p>Wipe tests can be used to detect the presence or absence of asbestos but cannot indicate whether it exists in a concentration that poses health risks if airborne. A single asbestos fiber in dust collected from surfaces around a room will trigger a positive test result but does not necessarily indicate a safety threat.</p>

ACRONYMS

AES	Faculty of Agricultural and Environmental Sciences
ACM	Asbestos Containing Material
ASTM	American Society for Testing and Materials
BSC	Biosafety Cabinet
cm	Centimetre
CFI	Canada Foundation for Innovation
CFT	Call For Tender
CNESST	Commission des normes, de l'équité, de la santé et de la sécurité au travail
DM	Deferred Maintenance
EHS	Environmental Health and Safety
EOC	Emergency Operations Centre
ERS	Emergency Response Structure
FCC	Facilities Call Centre
FMAS	Facilities Management and Ancillary Services
FOSC	Facilities and Operations Safety Committee
GC	General Contractor
HEPA	High Efficiency Particulate Air
IC	Incident Command
Internal Audit	McGill's Internal Audit
IRSST	Institut de recherche Robert-Sauvé en santé et en sécurité du travail
MLCA	Materials Likely to Contain Asbestos
MS	Macdonald-Stewart
PCM	Phase Contrast Microscopy
PG	Policy Group
PLM	Polarized Light Microscopy
PM	External Project Manager
PMO	McGill's Project Management Office
TEM	Transmission Electron Microscopy
UEMP	University Emergency Management Plan

PROJECT STAKEHOLDERS

STAKEHOLDERS	ROLES AND RESPONSIBILITIES
CNESST Commission des normes, de l'équité, de la santé et de la sécurité au travail	Commission for Standards, Equity, Health and Safety at Work. The organization to which the Government of Quebec has entrusted the promotion of labour rights and obligations. It ensures that they are respected by Quebec workers and employers.
External Project Manager (PM)	External Group under contract with McGill The Project Manager is defined in McGill's General Conditions of its contractual documentation as The Person who, as the Owner's representative, administers the contract. The external PM is a team of people comprised of a senior PM, several PMs, several assistant PMs, estimator(s) and administrative staff.
General Contractor (GC)	The (General) Contractor is defined in McGill's General Conditions as a person, doing business alone under his own name or under another name, or a partnership or company, contracted with the Owner for the execution of the work. The Contractor is the "Principal Contractor" (Maître d'oeuvre) as per the meaning of the Act respecting occupational health and safety by the Government of Quebec.
Industrial Hygiene Consultants	In the context of projects 17-121 and 17-105, industrial hygiene consultants are professionals who are specialized in matters related to hazardous materials such as asbestos, silicas, and lead.
McGill Project Manager (McGill PM)	McGill's PMO Project Manager Person representing McGill's PMO authority on the projects.
McGill Project Management Office (McGill PMO)	Project Management Office (PMO) leads and directs the construction/renovation of projects carried out on McGill property or other McGill facilities, including consultant and contractor tendering, selection, and contract award.
McGill University	Client and Owner of the buildings. In this project context, AES is considered a client, and a user, in a similar manner as the University.
Principal Contractor (Maître d'oeuvre)	As per the CNESST, the owner or person responsible for carrying out all the work on a construction site.
Professionals	The Professionals are defined in McGill's General Conditions as: The architect, engineer or entity responsible for designing the work in whole or in part, coordinating its study or supervising its execution. The expression includes any authorized representative of the Professional. It also includes any specialized consultant mandated by the Owner.
Specialized Subcontractors	Contractors acting as subcontractors to the General Contractor and providing speciality work such as interior systems, masonry, structural, electrical, mechanical, etc.

EXECUTIVE SUMMARY

The **Macdonald Campus Asbestos Investigation** report details the findings of the investigation conducted by McGill Internal Audit (Internal Audit) to assess the events leading up to and following the detection of asbestos at the Macdonald Campus Raymond building.

Upwards of two dozen construction projects were underway across the Macdonald Campus in 2022 that were addressing repairs/renovations of varying scope. Some of the most significant projects were underway at the Raymond building, a key campus facility. Two key projects in the Raymond building that included work managed under asbestos conditions were reviewed as part of the investigation: Project 17-121 – Raymond Deferred Maintenance (DM) Project and Project 17-105 – CFI Geitmann Project.

During the Summer and Fall of 2022, members of the community and McGill staff raised concerns with various stakeholders, complaining that dust, apparently related to ongoing construction in the Raymond building, had spread outside of the construction spaces.

On November 29, 2022, the McGill Environmental Health and Safety (EHS) Unit was formally advised of the presence of dust. On January 31, 2023, EHS reported test results, confirming the presence of asbestos in the settled dust in an area accessible by the McGill community of the Raymond building, to the Senior Director of Campus Public Safety. On the same day, the Emergency Operations Centre (EOC) mobilized. Out of an abundance of caution, and due to the presence of dust, the EOC ordered the immediate closure of the three interconnected buildings: the Raymond, Macdonald-Stewart (MS) and Barton buildings. Following the closure of the three buildings, further testing directed by the EOC also detected asbestos in the MS and Barton buildings.

On February 2, 2023, in response to community and Senior Management concerns, the Vice-Principal, Administration and Finance (VPAF) requested that Internal Audit investigate the events. Internal Audit was mandated to:

- to the extent possible, document the chronology of events and decisions that led to the detection and subsequent management of asbestos present in the Raymond, MS, and Barton buildings;
- assess McGill's asbestos management and project management processes and highlight process improvements to strengthen these processes.

The investigation included an examination of the control processes in effect during the review period. The investigation comprised the following procedures:

- interview of key internal and external stakeholders involved in the construction project;
- consultation with concerned Macdonald community members;
- review of project documentation (contracts and project management information), and
- review of available CNESST reports as relevant to the construction site.

We must first highlight the complexity of the DM construction project as it was carried out. The Raymond building is known to contain asbestos, and its deteriorating condition was assessed in 2015 by an external consulting firm, showing evidence of considerable accumulated DM impacting the potential life of the building. Industrial hygiene consultants produced asbestos characterization reports for the three buildings in October 2020 that identified areas where asbestos and lead coatings were detected. The characterization surveys reported that asbestos was found in conditions ranging from lightly damaged to significantly damaged. Therefore, the DM project was carried out in an environment with the constant presence of asbestos.

In the planning phases, two options were technically possible: either to remove the asbestos in all the places targeted by the project or to contain the asbestos during each stage of the construction work. The project was a DM project with a targeted scope. In other words, it was not designed to address the building spaces in a comprehensive manner. Therefore, the option of containing the asbestos was necessary, which required careful execution and increased monitoring throughout the project.

Another factor contributing to the risk of spreading asbestos and adding to the project complexity was the sharing of common spaces by members of the McGill community and the construction site workers, close to construction activities. All stakeholders were aware of this situation, and the project work was designed accordingly.

As part of their regular health and safety and construction site inspections, CNESST inspectors had previously brought to light procedures that were not followed in the presence of asbestos on the construction site and stopped work twice in specific areas (local interventions). This was first raised at the beginning of the project in November 2021, and a second occurrence with a similar decision to interrupt the work took place in October 2022, just before EHS' intervention in November 2022. During the construction project, a complaint in particular, raised from a community member on November 28, 2022, led to EHS's intervention and the detection of the asbestos and the closure of the three buildings.

Certain events raise sufficient doubts that point to the existence of a single source for the asbestos detected. For example, we note the confirmation that asbestos was detected in debris on the surface of a biosafety cabinet (BSC) after it had been moved from the Raymond to the MS building as well as the potential spread of asbestos from holes inadvertently drilled through the walls of a research laboratory.

The investigation showed that while issues were observed during the construction phase of the project, McGill planned and designed the project with care, aligning with construction project best practices. More particularly: hazardous materials surveys and characterization reports were produced for the Raymond, MS, and Barton buildings; an experienced external project management team was retained; external Industrial Hygiene Consultants were retained to provide on-site asbestos abatement activities oversight, within the scope of their individual contracts.

CONCLUSION

As a result of the documents reviewed, information collected, and interviews conducted during the investigation, Internal Audit concludes that the reasons that led to the closure of the buildings cannot be attributed to a single cause. We noted several contributing factors that could explain the release of airborne asbestos fibers, as well as several control processes that should be strengthened to mitigate the potential risks/events associated with any similar future project. They are presented in more detail in the report and can be summarized as follows:

- Potential causes and contributing factors that were highlighted during the investigation:
 - On certain occasions, lack of good working practices by the General Contractor (GC) and/or subcontractors, such as non-compliance with technical specifications and regulatory obligations to carry out work in asbestos condition;
 - Cohabitation of Faculty members and students with construction workers, including the shared use and travel by construction workers from the Raymond building to the loading dock and elevator located in the MS building, resulting in movement between construction sites, McGill-occupied areas and shared spaces;
 - Potential inconsistent air pressure and air flows in the buildings;
 - Limited effectiveness of communication mechanisms and escalation protocols used to raise and address users' concerns with dust in occupied spaces;
 - The laboratory fume hoods that had been moved to room R1-038, as planned, which were drawing in a lot of air and possibly drawing dust as well;
 - Relocation of a BSC, which was possibly not adequately protected during construction, from the Raymond building to the MS building.
- Proposed process improvements that could potentially mitigate the risk of similar situations from reoccurring:
 - Facilities Management and Ancillary Services (FMAS) processes:
 - Communication lines - Integration of the communication silos
 - Incident Response Protocol and Complaints Management
 - Faculty processes:
 - Protocol for moving of specialized equipment
 - Project Management (PM) and Project Management Office (PMO) processes:
 - GC oversight
 - Project oversight
 - Project risk management
 - Industrial hygiene consultants' supervision and mandate
 - EHS processes:
 - EHS mandate and authority, including the review of the Asbestos Policy

- Asbestos management operations, plan and registry - Comprehensive compliance monitoring plan
- EHS capacity and backup for key roles
- Asbestos training and awareness
- Health and safety culture at McGill
- Proposed process improvements that could potentially mitigate the risk of similar incident management situations from reoccurring:
 - EOC processes:
 - Roles and responsibilities clarification
 - Policy Group (PG) activation criteria
 - Frequency and delivery of the communication

Considering the contributing factors and preventive control measures that could have averted these incidents, Internal Audit is recommending a set of process improvements aimed at enhancing McGill's control processes. To prevent similar situations from reoccurring, we suggest several areas of improvement which should be addressed accordingly over periods ranging from short- to long-term. While we acknowledge that every project has unique circumstances, and we do not attribute fault to any single factor, implementing these improvements should help reduce the risk of such incidents from reoccurring in the future.

Management should promptly conduct a thorough review of the asbestos monitoring mechanisms within current construction and renovation projects involving the potential presence of asbestos such that lessons learned from this incident are applied to any active projects involving the potential presence of asbestos. Furthermore, Management should communicate results of the review and its corrective actions to reassure the McGill Community that measures are being applied to mitigate the risk that the above-mentioned projects do not comply with asbestos management regulations, policy, and procedures.

**1 // INTERNAL
AUDIT
INVESTIGATION**

1.1 / Objectives

The investigation objectives include specifically:

- To inventory the actions taken, roles and responsibilities, and control processes relating to asbestos detection and management during the period of review;
- To verify that asbestos management processes and controls exist and are adequate to ensure compliance with McGill policies and procedures, as well as provincial standards and regulations.

1.2 / Scope

The scope of the investigation includes the following (but not limited to):

- To the extent possible, document the chronology of events and decisions that led to the detection and subsequent management of asbestos present in the Raymond, MS, and Barton buildings;
- Assess McGill's asbestos management and project management processes and highlight process improvements to strengthen these processes.

Scope considerations with regards to provincial standards and regulations: The investigation relied on the subject matter experts, such as the industrial hygiene consultant's use of third-party laboratories for testing analysis as well as the CNESST's expertise and assurance in their area of expertise.

1.3 / Period of review

Our investigation primarily focused on the events that occurred between November 25, 2022, and January 31, 2023, although we did take into account relevant facts that led up to and followed the incident.

1.4 / Investigation Procedures

- 1/ Internal stakeholder interviews:
 - a. Faculty of Agricultural and Environmental Sciences (AES)
 - b. Facilities Management and Ancillary Services (FMAS):
 - i. Project Management Office (PMO)
 - ii. Campus Public Safety - Environmental Health and Safety (EHS)
 - iii. Building Operations: Satellite Facilities and Installations
 - c. Emergency Operations Centre (EOC)
- 2/ External stakeholder interviews:
 - a. General Contractor (GC)
 - b. External Project Manager (PM)
 - c. Industrial Hygiene Consultants
 - d. Architects
 - e. Mechanical-Electrical Engineers
 - f. Commission des normes, de l'équité, de la santé et de la sécurité du travail (CNESST)
- 3/ Information gathering on:
 - a. The construction projects
 - b. McGill's regulations (policies and procedures)
 - c. Asbestos management protocols and procedures
 - d. Emergency management
- 4/ Documentation and validation of the information gathered
- 5/ Reporting of investigation results

2 // INTRODUCTION

The **Macdonald Campus Asbestos Investigation** report details the findings of the investigation conducted by McGill Internal Audit (Internal Audit) to assess the events leading up to and following the detection of asbestos at the Macdonald Campus Raymond building. Upwards of two dozen construction projects were underway across the Macdonald Campus in 2022 that were addressing repairs/renovations of varying scope. Some of the most significant projects were underway at the Raymond building, a key campus facility.

Two key projects in the Raymond building that included work managed under asbestos conditions were reviewed as part of the investigation: Project 17-121 – Raymond Deferred Maintenance (DM) Project and Project 17-105 – CFI Geitmann Project. See Section 2.7 for a description of the projects.

During the Summer and Fall of 2022, members of the community and McGill staff raised concerns with various stakeholders, complaining that dust, apparently related to ongoing construction in the Raymond building, had spread outside of the construction spaces (as outlined in the timeline of key events section). The investigation primarily focused on the events that occurred between November 25, 2022, and January 31, 2023, although it did take into account relevant facts that led up to and followed the incident.

On November 29, 2022, the McGill EHS Unit was notified of dust related to ongoing construction in the Raymond building. EHS conducted an air quality test and reported on the occupant site conditions to AES and EHS internally on December 7, 2022. On January 19, 2023, EHS collected samples for testing from damaged building materials at the site and from dust in several areas of the Raymond building. (Please consult the glossary entries for air testing, bulk sampling and dust sampling for explanations of the various tests conducted.)

On January 31, 2023, EHS reported test results confirming the presence of asbestos in the dust in the Raymond building: one wipe test in room R1-038 was positive for chrysotile asbestos, and three bulk sample tests taken from building materials that were in poor condition and friable, in rooms R1-038, R3-048 and R4-Hall1 were also positive for chrysotile asbestos. Of note, no asbestos was detected in the other samples, namely one wipe test in room R3-048 and eleven bulk samples from rooms R1-037, R3-048 and R4-Hall1.

It should be noted that room R1-038 is located in the construction site in the Raymond building and that McGill equipment (namely fume hoods) had been relocated there to allow researchers to proceed with their research activities. The positive wipe test indicates that, at one point in time, the dust was airborne. While the positive bulk tests do not indicate that the material had been airborne, they confirm the presence of asbestos in loose material in the Raymond building.

On the day that the test results were reported (January 31, 2023), the EOC mobilized and ordered the immediate closure of the Raymond, MS and Barton buildings. The EOC further ordered initial air tests and dust tests, as well as visual inspections to be carried out throughout the MS and Barton buildings. It also ordered:

- isolation of the Raymond building from the two other buildings;
- access restriction to the three buildings to essential activities with mandatory use of P100 masks; and
- teaching activities to be held online or relocated wherever possible (classes were cancelled if they could neither be held online nor relocated).

A subsequent extensive testing program (air testing and dust testing) took place in February throughout the three buildings. The air tests indicated that air quality was in conformity with regulatory thresholds and McGill's own (more stringent) threshold. Despite these results, some of the dust samples came back positive for asbestos in certain locations of the Raymond, MS and Barton buildings.

2.1 / Asbestos¹

The word 'asbestos' refers to various minerals composed of fibers. These minerals are found in their natural state in rock formations all over the world, including in Canada. Asbestos fibers are flexible and strong, resistant to high temperatures and can be used as insulation to reduce heat or noise. Due to these characteristics, asbestos was previously used in construction and renovation. In Québec, products and materials containing asbestos were mainly used between 1930 and 1990.

Asbestos fibers in the air are a health hazard for those exposed to them. Materials containing asbestos may be hazardous to health when fibers are released into the air. This may happen when these materials are in bad condition or friable, which means they can be crumbled or reduced to powder, including when sawed, drilled, cut, sanded or broken. Materials containing asbestos that are in good condition, i.e. that are not friable and that are not handled, do not pose health risks.

There are different types of testing methods used to detect and measure the presence of asbestos, such as bulk sampling, dust sampling and air testing.

The handling of asbestos containing materials (ACM) during renovation or demolition work is governed by provincial law². Thus, before undertaking any work likely to emit dust in any building or civil engineering work, the presence and condition of asbestos needs to be assessed and the required work must be planned and executed according to appropriate rules and procedures.

1 Source: The Government of Québec has information on its website about the effects of asbestos on health - www.quebec.ca/en/health/advice-and-prevention/health-and-environment/effects-of-asbestos-on-health

2 Source: Section 3.23 of the Safety Code for the Construction Industry (S-2.1, r. 4) and section IX.1 of the Regulation respecting occupational health and safety

2.2 / High-, Moderate- and Low-Risk Asbestos Work Conditions

Asbestos work is categorized according to a combination of factors such as material friability, working method, the volume of debris generated and the type of asbestos. Work procedures are adjusted accordingly.

Under high-risk conditions, dedicated enclosures are mandatory, complete with air testing until the end of the decontamination procedure. It must be noted that low- and moderate-risk conditions also require strict protection procedures and skilled workmanship.

McGill has taken the approach that all high-risk asbestos projects must be done by an external firm trained to perform high risk asbestos work³. McGill facilities Building Operations staff must not perform asbestos work in high-risk conditions.

³ Source: Asbestos Risk Assessment Tree | Environmental Health and Safety - McGill University
www.mcgill.ca/ehs/programs-and-services/facilities-safety/asbestos/asbestos-risk-assessment-tree

2.3 / Asbestos Studies and Characterization of the Buildings

McGill contracted a firm specialized in Industrial Hygiene in October 2020 to perform surveys and characterization of ACM, materials likely to contain asbestos (MLCA) and paint coatings in the Raymond, Barton, and MS buildings.

The Industrial hygiene consultants produced final reports that identified areas where asbestos and lead coatings were detected. It is noteworthy that the characterization surveys reported that asbestos was found in a range of lightly damaged to importantly damaged conditions.

The reports were used to develop technical specifications that were included in subsequent calls for tender for the GC, outlining the specific nature of the asbestos removal work to be performed.

Consequently, the industrial hygiene consultants wrote comprehensive specifications that describe precautions and work procedures for work in high-, moderate-, and low-risk conditions that were meant to ensure that any work at the Raymond building involving these materials would be carried out by the GC and subcontractors in accordance with the Regulation respecting occupational health and safety, the Safety Code for the Construction Industry and to the satisfaction of the CNESST. Project 17-121 – Raymond DM Project included work in each asbestos risk work condition.

In the Raymond, MS, and Barton buildings, the components that include asbestos (and silica) and those likely to include asbestos (and silica) are mainly:

- Homogeneous material such as piping insulation, joint compound, gypsum board, floor and ceiling tiles;
- Non-homogeneous materials such as plaster, cement material, decorative finishes covering walls and ceilings.

The characterization reports of the industrial hygiene consultants reference that, in Quebec, no one is required to remove materials containing asbestos present in a building as long as these materials do not represent an immediate risk to the health of the occupants. That is, occupants would have no direct exposure to asbestos fibers (i.e. from damaged materials) and if asbestos fibers are present in the ambient air, these would be below or within the standards prescribed by the Regulation respecting occupational health and safety.

2.4 / Asbestos Management in Construction Projects at McGill

The PMO contracts with and oversees GCs, industrial hygiene consultants, professionals, and asbestos abatement subcontractors.

These third parties manage all phases of dangerous materials management, from asbestos characterization studies to abatement. In this manner, the PMO oversees the most significant portion of the University asbestos management activities. The PMO also coordinates with the McGill community on an ongoing basis to ensure positive outcomes and to comply with legislative requirements.

Internal Audit was informed that of the approximately 320 renovation and construction projects at both the downtown and Macdonald campuses active as of August 2023, approximately 60 of these have contracted industrial hygiene consultants for the purpose of assessing and managing potentially dangerous materials present in buildings.

The PMO has project management staff in support of these efforts but has two staff positions dedicated to construction safety: a Construction Safety Manager and a Construction Safety Officer. These positions are assigned the responsibility to monitor general safety controls in coordination with contracted third parties active on McGill's construction sites. While the PMO Construction Safety Manager and the PMO Construction Safety Officer positions were both vacant at the time of the incident, McGill had retained the services of an external firm in replacement.

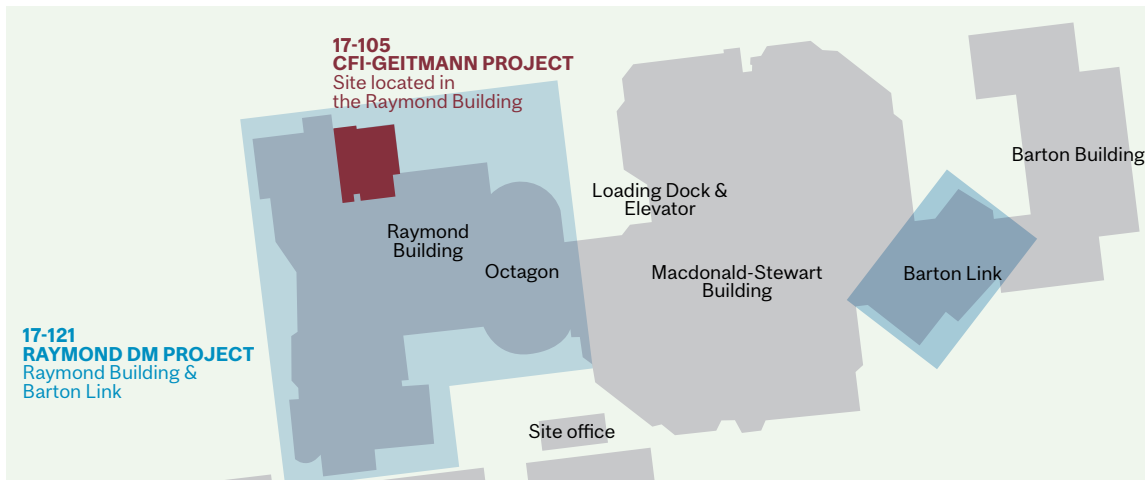
EHS does not perform testing in construction project sites as these are under the responsibility of the GC (in its capacity as Principal Contractor). On the other hand, the third-party industrial hygiene consultants ensure site supervision according to their mandates. However, outside of these construction project sites, EHS performs regular building inspections and prioritizes testing to support stakeholder requests and to comply with regulatory reporting requirements. Internal Audit observed that EHS establishes priorities and reports on these through various mechanisms including via the University Health and Safety Committee annual reporting.

2.5 / Site Map and Description⁴ of the Buildings

The Macdonald-Stewart (MS) Complex consists of three interconnected buildings, namely the Raymond, the MS and the Barton.



The following figure represents a map of the MS Complex, highlighting namely the 17-121 Raymond DM and the 17-105 CFI-Geitmann Projects.



4 Source: Scope Report for Projects 17-081, 17-121, 17-125, from the Architectural Firm, dated March 5, 2020

RAYMOND BUILDING

Built in 1905, the Raymond building was originally known as the Agriculture building. The Raymond building has four stories with the basement on the west end of the three-building complex and is accessible from Lakeshore Road. Today, the Raymond building hosts the Department of Plant Science laboratory spaces, including the Phytorium, classrooms, and administrative and academic offices. Laboratory spaces are concentrated on the first and second floors, while classrooms are predominantly on the third and fourth floors. Two mechanical rooms are located under the sloped roof next to the two amphitheaters on the fourth floor.

BARTON BUILDING

The Barton building is a three-story pavilion on the east end of the complex, accessible from the pedestrian path leading to Cluster Cottages road. Initially built as a barn in 1905, the building primarily houses the campus library. The second and third floors are characterized by open spaces extending throughout most of the floor area, containing library space bookshelves and tables. The first floor houses two mechanical rooms, archives, and offices.

MACDONALD-STEWART BUILDING

The MS building is a three-story pavilion with a basement. It was added in 1978 linking the existing Barton and Raymond buildings and functionally complementing them. It is largest in surface area and represents the nerve centre of the Macdonald Campus. One-third of the basement surface hosts the mechanical room and the remainder comprises laboratory space. The loading dock is located on the first floor, on the northern side of the MS building, accessible from Poultry Cottage St. The second and third floors include wet laboratories, active learning laboratories, academic and administrative offices and the only elevator of the three buildings.

Links between the three buildings connect on the MS building's first floor and the second floor ensuring fluid movement of users. On the west side of the third floor, the MS building connects with the Raymond building.

2.6 / History and Condition of the Buildings

The Macdonald Campus includes approximately 90 buildings, where the facilities asset maintenance deficit (also known as DM) is considerable.

As defined by the Government of Québec, asset maintenance deficit refers to the:

*Asset maintenance work that should have been performed before the inspection and that stem from the observation of a defect or loss of performance. In general, this work rectifies situations that entail a high level of risk.*⁵

An external review of McGill Macdonald Campus buildings was conducted in 2015 that detailed a list of DM accumulated over the years.

In 2018, McGill launched a number of renovation projects at Macdonald Campus which were mainly focused on DM to be carried out and which represented approximately 22 projects. The aggregated estimated value of these projects was approximately \$60.4M⁶.

Among this list was a series of renovation projects to be carried out specifically in the three buildings of the MS Complex.

5 Source: Development and Implementation Guide -

www.tresor.gouv.qc.ca/fileadmin/PDF/infrastructures_publiques/Guide_elaboration_mise_en_oeuvre_VA.pdf

6 Source: Call for tender (CFT) C0001259

2.7 / Description of Ongoing Projects

ASBESTOS CONDITION

The Raymond DM and CFI Geitmann projects involved a larger scope than asbestos abatement. Internal Audit was informed by facilities staff that DM projects are planned to consolidate varied needs that can include asbestos removal or containment. The varied needs are consolidated to minimize impacts, such as reducing the effect of disruptions to the community.

On January 31, 2023, at the beginning of the incident, the Raymond building saw mixed space usage: construction sites for two major renovation projects, which were under the control of the Principal Contractor; McGill-occupied spaces; and shared spaces used both by construction site workers as well as the Macdonald Campus community.

Two key projects in the Raymond building that included work managed under asbestos conditions were reviewed as part of the investigation:

I/ PROJECT 17-121 - RAYMOND DEFERRED MAINTENANCE PROJECT

Project 17-121 addresses prioritized items from a previously assembled list of recommended DM repairs for the Raymond building. Essentially, most of the work is related to the Raymond building, with some interventions in the Barton Link.

The work planned under this project included the installation of sprinklers, emergency showers and eyewash stations; replacement of HVAC systems and related equipment; replacement of all fume hoods, ductwork and air extraction systems; replacement of roofs with; repairs to foundation and installation of French drains; and installation of chilled water loop and heat recovery systems. These activities involved work in the presence of hazardous materials such as asbestos, silicas, and lead coatings.

II/ PROJECT 17-105 - CFI GEITMANN PROJECT

Project 17-105 includes the renovation of laboratory space to create a state-of-the-art research laboratory. The project is located in the northwest sector of the first floor of the Raymond building and is funded by the Canada Foundation for Innovation (CFI). These activities also involved work in the presence of hazardous materials such as asbestos, silicas and lead coatings.

2.8 / Project Stakeholder Oversight Structure

The Executive Committee of the Board of Governors (BoG) approved Project 17-121 (Raymond DM) and 17-105 (CFI Geitmann) on September 8, 2021, with construction planned to start in October 2021.

As the work required to proceed with project 17-105 is dependent upon the work in project 17-121, the two projects had been grouped together at the call for tender (CFT) stage.

As a result, these two projects take place in two distinct construction areas each designed and supervised by different groups of architects, engineers and industrial hygiene consultants, but are grouped into one construction site within the Raymond building.

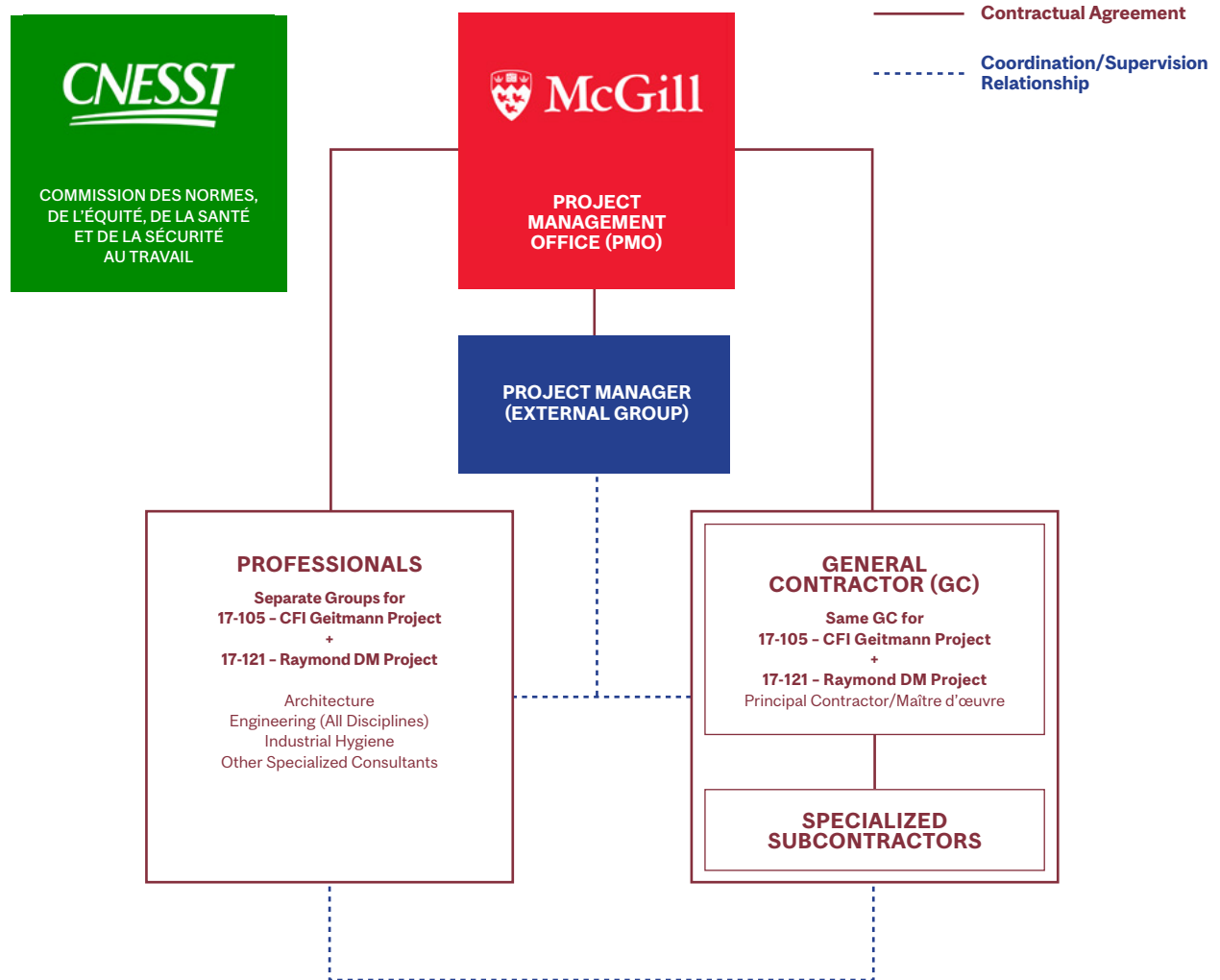
While the external PM, hired by McGill's PMO, was involved throughout all development phases of project 17-121, they only stepped in at the construction stage for project 17-105.

One GC was contracted in October 2021 to perform work on both of these projects and consequently acted as the Principal Contractor (*Maître d'oeuvre*). It is to be noted that work was also being carried out for a separate project at the Raymond greenhouse, which is outside of, but adjacent to the Raymond building.

As the work on the two sites progressed, the nature of the work being carried on the Raymond building and the Raymond greenhouse construction sites resulted in increased encroachments (lack of site separation). At this point, during a February 2023 inspection by CNESST, the inspector noted that the two GCs did not have authority over all the work being carried out, or over all the people who accessed their respective construction sites.

Therefore, CNESST deemed that these two construction sites (Raymond building and Raymond greenhouse) consisted of a single construction site. Consequently, on February 10, 2023, the CNESST inspector declared McGill as the Principal Contractor in lieu of the respective GCs.

The following chart demonstrates the contractual and coordination/supervision relationships between the different stakeholders involved in projects 17-121 and 17-105 (please see the Project Stakeholders section for descriptions of the various stakeholders involved):



**3 // TIMELINE
AND
KEY HIGHLIGHTS**

3.1 / Timeline of Main Events

The table below summarises the timeline of main events relating to the asbestos incident at Macdonald Campus.

(Please see Appendix 2 for floor plans of the Raymond and MS buildings for the location of the rooms mentioned in the table below.)

DATE	MAIN EVENT	BUILDING(S)
October 2020	Industrial hygiene consultants produced final reports on the surveys and characterization of MLCA and paint coatings of Raymond, MS, and Barton.	Raymond, MS, Barton
October 12, 2021	DM project (17-121) construction phase in the Raymond building and Barton Link scheduled to begin.	Raymond, Barton Link
November 15, 2021	Following a regular inspection, CNESST halted demolition work of the ventilation ducts in Raymond as the inspector determined there was danger to the health, safety or physical well-being of workers due to MLCA, among others.	Raymond
August 25, 2022	A biosafety cabinet (BSC) was moved from Raymond (R1-029) to MS (MS1-067) during construction without being decontaminated (chemicals removed) or adequately cleaned prior to the move.	Raymond, MS
August 29, 2022	In accordance with anticipated delivery procedures, McGill took early possession of some spaces in Raymond, including the Octagon.	Raymond
September 01, 2022	In accordance with anticipated delivery procedures, McGill took early possession of some spaces in Raymond and Barton Link.	Raymond, Barton Link
September 15, 2022	Several times between September 15, 2022 and November 25, 2022, the Faculty verbally raised concerns about dust in room R1-033 to the PM.	Raymond
September 22, 2022	EHS inspected fume hoods located in R1-038 and observed that one of the fume hoods' back and side interior panels were deteriorating and in friable condition and were highly likely to contain asbestos due to its age and construction. EHS reported the observations to the Faculty, through its Renovations Logistics Specialist, and recommended to stop using the fume hood and leave it running to prevent release of suspected asbestos fibers in the room.	Raymond
September 26, 2022	EHS took sample from construction debris on the fume hood in R1-038.	Raymond

DATE	MAIN EVENT	BUILDING(S)
October 05, 2022	Test result for sample taken from construction debris on the fume hood in R1-038 positive for asbestos.	Raymond
October 17, 2022	Following a regular inspection, CNESST halted work inside the Phytorium in Raymond, until a complete cleaning of all surfaces was carried out due to the significant amount of dust that could contain silica fibers, potentially exposing workers to health and safety issues.	Raymond
November 04, 2022	Faculty Safety Committee issued a survey regarding concerns for air quality and dust. Complaints received for Raymond and MS.	Raymond, MS, Barton
November 25, 2022	Faculty verbally raised concerns to the PM about dust in room R1-033A, where the CT-Scanner is located, and in rooms R1-031A and R1-033, which are used by the laboratory which runs the CT-Scanner.	Raymond
November 28, 2022	Student expressed concerns about air quality (high carbon dioxide, formaldehyde, and dust levels) in the Octagon to her professor.	Raymond
November 29, 2022	Faculty informed EHS of student's concerns about air quality in the Octagon. A service request ticket was created for indoor air quality complaint.	Raymond
December 01, 2022	Thick smoke, resulting from roofing work of the ECP3-BSL3 laboratory in Raymond, was rushing into the first floor of Raymond and MS for over four hours, indicating that MS was potentially in negative pressure compared to Raymond.	Raymond, MS
December 07, 2022	EHS tested indoor air quality parameters (carbon dioxide, humidity and temperature) in the Octagon. The EHS staff member performing tests that day was not equipped or qualified to perform dust tests. All air quality parameters are within Quebec regulatory standards and the presence of dust was reiterated as the main concern to EHS.	Raymond
December 08, 2022	EHS submitted its report of the December 07, 2022 inspection to the Faculty and highlighted dust concerns.	Raymond
January 16, 2023	EHS is notified that the BSC had been moved from Raymond to MS on August 25, 2022, when the high efficiency particulate air (HEPA) filter certification company conducting the annual certification could not find the BSC in Raymond.	MS
January 19, 2023	Following the EHS inspection report submitted to the Faculty on December 08, 2022, EHS took two wipe test samples from R1-038 and R3-048 and fourteen bulk samples from R1-037, R1-038, R3-048 and R4-Hall1. EHS informs internal PM that tests are taking place.	Raymond

DATE	MAIN EVENT	BUILDING(S)
January 24, 2023	EHS is notified that HEPA filter certification company cannot certify the BSC, that was moved from Raymond to MS on August 25, 2022, due to debris found on top of the BSC.	MS
January 25, 2023	Test results for three bulk samples taken from R1-038, R3-048 and R4-Hall1 positive for asbestos.	Raymond
January 26, 2023	EHS took bulk sample from debris on top of the BSC, that was moved from Raymond to MS on August 25, 2022.	MS
January 31, 2023	Test result for wipe sample taken from R1-038 positive for asbestos. EHS communicated test results to the Senior Director of Campus Public Safety, who was also the EOC Director.	Raymond
January 31, 2023	EOC activated by the EOC Director and closure of Raymond, MS and Barton.	Raymond, MS, Barton
February 01, 2023	Test result for bulk sample taken by EHS from debris on top of the BSC, that was moved from Raymond to MS on August 25, 2022, positive for asbestos.	MS
February 01, 2023	As mandated by the EOC, industrial hygiene consultants began taking air samples.	Raymond, MS, Barton
February 02, 2023	CNESST visited the Raymond construction site with a specific mandate related to asbestos investigation to verify why three buildings were closed while construction work was ongoing in only one building, as well as to investigate the Principal Contractship (<i>Maîtrise d'oeuvre</i>) of the construction site.	Raymond
February 03, 2023	As mandated by the EOC, industrial hygiene consultants began taking dust samples in McGill-occupied areas of Raymond and areas of MS close to Raymond.	Raymond, MS
February 03, 2023	Industrial hygiene consultants took bulk sample from debris on top of the BSC, that was moved from Raymond to MS on August 25, 2022.	MS
February 06, 2023	Upon receipt of the results of the initial dust tests, 10 out of 41 showed the presence of chrysotile asbestos, the EOC ordered the testing of dust in all rooms of MS and Barton as well as all McGill-occupied areas in Raymond.	Raymond, MS, Barton
February 07, 2023	Test result for bulk sample taken by the industrial hygiene consultants from debris on top of the BSC, that was moved from Raymond to MS on August 25, 2022, negative for asbestos.	MS
February 10, 2023	CNESST declared McGill as the Principal Contractor (<i>Maître d'oeuvre</i>) as the inspector determined that work in the main Raymond building and in the Raymond greenhouse consisted of only one construction site.	Raymond

DATE	MAIN EVENT	BUILDING(S)
February 14, 2023	CNESST halted work on the construction site in Raymond as the inspector determined there was danger to the health, safety or physical well-being of workers due to, amongst several reasons, the accumulations of dust and the friable state of certain materials likely to contain asbestos.	Raymond
February 17, 2023	The EOC presented an interim situation update on the air and dust testing and on the actions taken for the safe re-opening of the buildings to the Macdonald Campus community.	Raymond, MS, Barton
February 28, 2023	External cleaning company began cleaning areas which tested positive and McGill's Operations team began cleaning areas which tested negative.	Raymond, MS, Barton
March 14, 2023	Re-opening of MS and Barton.	MS, Barton
March 14, 2023	EOC held a Town Hall for the Macdonald Campus community to provide updates on the air and dust testing and on the actions taken for the safe re-opening of the buildings, to answer questions raised by the community and to hear any concerns the community had.	Raymond, MS, Barton
March 29, 2023	With most spaces of the three buildings open, or about to re-open, the EOC and IC were de-activated. The FMAS Incident Management Team took over to manage the re-opening of the remaining spaces and the progress of construction in Raymond, in coordination with the Dean and Faculty leadership.	Raymond, MS, Barton
March 31, 2023	Re-opening of a significant part of the McGill-occupied areas of Raymond.	Raymond
April 24, 2023	Reports from the testing done just before and during the closure of the buildings shared online with the McGill community.	Raymond, MS, Barton

3.2 / Key Highlights

3.2.1 / Concerns with the Quality of the Environment

Internal Audit received communications and documentation spanning several years that reflected user concerns over dust, mold, air quality and similar issues. The Faculty communicated these concerns amongst their staff and with project management stakeholders verbally and by email.

On several occasions between September 15 and November 25, 2022, Faculty members verbally raised concerns about dust in the CT-Scanner room (R1-033A), and rooms used by the laboratory operating the CT Scanner (rooms R1-031A and R1-033). On November 04, 2022, the Faculty Safety Committee issued a survey regarding concerns for air quality and dust, whereby research community member complaints were received for the Raymond and MS buildings.

During some of the stakeholder interviews, we were informed that staff complained regarding health and safety concerns directly to the PM team. From these interviews, it was not clear whether the PM and GC were involved early enough with health and safety concerns as they were raised. However, the PM was aware of the imperative to control dust from the onset of the project and of specific dust issues as they were recorded in the September 20, 2022 Phytorium coordination meeting minutes.

On November 28, 2022, an AES student complained about the air quality and dust in the Octagon to her professor. She had made her complaint referencing that her personal air quality monitoring device indicated high carbon dioxide and formaldehyde levels. The professor reported the complaint the following day to the Renovations Logistics Specialist (part of the Macdonald Campus Administrative Services Unit). The Specialist escalated the student's concerns to EHS on the same day.

3.2.2 / EHS Intervention and Asbestos Incident Response Protocol

This section outlines the course of events in a narrative recounting key events in EHS' triage and service request response.

EHS staff opened a ticket to process the student's air quality complaint on November 29, 2022. An EHS staff member began to investigate the issue as of November 30, 2022 and a visit was arranged for December 7, 2022 for testing and inspection. In the meantime, another air quality concern related to roofing work in the CFI Geitmann construction project was raised by the Faculty in an email to EHS on December 1, 2022. While this concern was not formally recorded as a complaint in the EHS system, EHS promptly followed up on the email on December 1, 2022.

An EHS staff member inspected the site on December 7, 2022 to test the air quality. According to the staff member, "The temperature, relative humidity and carbon dioxide levels were within Quebec regulatory standards or indoor air quality guidelines." Because air quality is not linked to asbestos in the reporting options in EHS ticketing system, the original service request did not include the need to test for dust. Consequently, he was not qualified or adequately equipped to address the dust testing/complaint.

Therefore, while dust issues were observed, these were not addressed during the visit. Dust concerns were highlighted in his inspection report submitted on December 8, 2022 to numerous people, including the Dean, several AES researchers, Building Director and Renovations Logistics Specialist, EHS operations manager, EHS manager, and EHS staff.

Internal Audit was informed that the EHS staff member who was qualified to perform the required wipe tests was scheduled on other tasks and had an approved leave scheduled as of December 9, 2022 that extended into the new year. Another EHS staff member hired a few months prior had not received the necessary training to perform the wipe tests or training on how to submit these to the laboratory for testing. EHS resources were further limited as the EHS Operations Manager was not available due to a medical leave. Consequently, due to the winter holiday break and these limitations, EHS staff followed-up the dust complaint on January 19, 2023.

On January 19, 2023, the EHS staff member took two wipe tests of settled dust and fourteen bulk samples within the Raymond building and sent these for laboratory analysis to validate the presence of asbestos.

Asbestos positive bulk sample test results were received on January 25, 2023. Asbestos positive wipe test results were received on January 31, 2023 indicating that at one point the asbestos had become airborne. These results were escalated to the Senior Director of Campus Public Safety the same day for follow up actions.

The EOC was activated on January 31, 2023 and EHS remained involved throughout to lead and coordinate the asbestos sampling and testing process.

The University's Asbestos Incident Response Protocol, published on the EHS website, requires certain actions to unfold if dust is found in the workplace (i.e. contacting the Facilities Call Centre (FCC), keeping people out of the area, and waiting for responders outside the area).

However, the protocol was not followed, demonstrating a limited awareness or understanding by the parties involved in the following respects: FCC was not contacted to send responders to the area, and the spaces where dust from suspected ACM was discovered and subsequently tested, were not closed off to keep everyone out of the area.

In addition to the test samples taken from the Raymond building, EHS also reported to Internal Audit that it performed a positive bulk sampling test in the MS building. On August 25, 2022, a Faculty member requested that McGill transport services relocate a BSC from the Raymond building (R1-029) to the MS building (MS1-067). The BSC was moved without it being decontaminated (i.e. removal of any potential contaminated materials) and without EHS's knowledge.

EHS was only notified of the move on January 16, 2023 when the HEPA filter certification company could not find the BSC in the Raymond for its annual certification. On January 24, 2023, the HEPA filter certification company notified EHS that it could not certify the BSC due to debris found on top of the BSC. It is not possible to know if the BSC was properly protected during construction, or if the debris came from an earlier project.

While the University Asbestos Incident Response Protocol requires that a room be restricted after the detection of dust suspected of containing asbestos, EHS indicated that access to the BSC was not restricted. However, the Faculty ensured that the BSC was not used. On January 26, 2023, EHS took bulk samples of debris found on top of the BSC and on February 1, 2023, test results from the samples were received that were positive for asbestos.

Following the activation of the EOC and the closure of the three buildings, EOC asked the industrial hygiene consultants to test the debris found on top of the BSC on February 3, 2023. On February 7, 2023, the test results were received and indicated that the material was negative for asbestos. No conclusion has been reached on the difference in the test results from the samples taken by EHS and the samples taken by the industrial hygiene consultants.

3.2.3 / CNESST Asbestos-Related Interventions

During the period between November 2021 and October 2022, CNESST's inspector regularly visited the construction site. During these visits, observations were made, leading to infractions, correction notices, and decisions regarding the work. This section outlines information related to asbestos detection incidents, in chronological order.

I/ NOVEMBER 15, 2021 - STOPPAGE OF WORK TO DISMANTLE VENTILATION DUCTS ON THE THIRD FLOOR

The CNESST inspector noted the presence of plaster debris on the corridor floor and, in several places, the presence of cementitious plaster that was in a friable state. The CNESST inspector also observed the presence of paint likely to contain lead near ventilation ducts that had been removed. After reviewing the industrial hygiene consultants' September 2021 report, "Works in the presence of hazardous materials," CNESST noted that the third-floor surveys indicate the presence of asbestos and paint containing lead. As a consequence, the CNESST's inspector stopped the demolition work of these ventilation ducts and indicated that the CNESST's approval was necessary to resume works.

II/ OCTOBER 17, 2022 - STOPPAGE OF WORK IN THE PHYTORIUM ON THE FIRST FLOOR AND REQUEST FOR COMPLETE CLEANING

The CNESST inspector noticed the presence of dust on the ground, on piping, electrical conduits, equipment, and even on the walls. At the time, two electricians were working in this room, potentially exposed to dust likely to contain silica fibers, which seemingly originated from stonework joint repairs. The CNESST infraction notice mentions that methods and techniques aimed at identifying, eliminating, and controlling the risks of exposure to crystalline silica dust were not in place. As a result of these observations, the CNESST inspector halted work inside the Phytorium until a complete cleaning of all surfaces was carried out.

III/ FEBRUARY 14, 2023 - CNESST INTERVENTION LEADING TO CONSTRUCTION SITE CLOSURE

During a CNESST visit on February 2, 2023, the CNESST inspector was informed that students had noticed an accumulation of dust on fume hoods in room R1-038 (the location was the origin of the dust samples that EHS had tested and which returned positive for asbestos).

The GC informed the CNESST that room R1-038 was still part of the construction site and that it had not been officially delivered to McGill, in effect remaining in the GC's responsibility.

The GC also informed the CNESST inspector that students accessed into the construction site without the GC being able to control their access and that it was not a unique situation.

McGill University representatives from EHS and the PMO, also informed the CNESST of the closure of the Barton, MS and Raymond buildings as a result of the January 31, 2023 EOC decision.

On all four floors visited in the Raymond building, the CNESST inspector noted that several holes and openings were present in the plaster walls and ceilings. In some places, the plaster around these holes and openings was encapsulated. However, the plaster was disintegrating in several other places and was in a friable state.

Considering all of these observations and information obtained, the CNESST inspector noted that in the absence of evidence that surface sampling was negative for asbestos, the dust spread on the construction site was deemed to contain asbestos. Any work on the construction site was likely to resuspend this dust into the air. McGill representatives were also of the opinion that asbestos would be detected if the construction site surfaces were sampled.

McGill also informed the CNESST inspector that ambient air and surface dust sampling was in progress in the Barton and MS buildings and would afterwards be carried out in the Raymond building.

As a result of these observations, the CNESST inspector determined there was danger to the health, safety or physical well-being of workers due to MLCA, the key reason amongst several reasons given, and halted work on the construction site in the Raymond building.

3.2.4 / Emergency Management

Under its Emergency Management Policy, McGill University recognizes the importance of emergency management and is committed to establish and maintain a comprehensive, all-hazards emergency management program to protect its community. The University Emergency Management Plan (UEMP) provides a framework for preventing, mitigating, preparing for, responding to, and recovering from emergencies at McGill, to ensure that incidents are managed in a timely and effective manner and that any impact to the University and its community is minimized. The UEMP establishes a temporary and distinct management structure and emergency chain of command, including defined roles and responsibilities, that coordinate response from on-site activities (Incident Command) to University-level coordination (Emergency Operations Centre), to senior administration (Policy Group).

I/ ACTIVATION OF THE EMERGENCY RESPONSE STRUCTURE

The Emergency Response Structure (ERS) is applied for major incidents that cannot be handled with Standard Operating Procedures (SOPs), i.e., Category 2 emergencies or Category 1 emergencies with potential to escalate to Category 2. The ERS allows responders from various departments to work together cohesively towards common emergency response goals.

The asbestos incident at Macdonald Campus was categorized as a Category 2 emergency and, in addition to activating Incident Command (IC), the EOC was also activated on January 31, 2023 in order to build capacity for site support and consequence management.

The EOC was activated upon EHS reporting that one wipe test in the Raymond building (room R1-038) was positive for chrysotile asbestos. On the same day, the EOC ordered the immediate closure of the Raymond, MS and Barton buildings, to conduct extensive air and dust testing. In addition to the positive wipe test, the Raymond building was closed due to positive bulk samples of friable materials in various locations and concerns observed by EHS during the site visit (both McGill-occupied areas and construction site).

The MS and Barton buildings, which were not under construction, were also closed, out of an abundance of caution, due to the connectedness of the three buildings and reports of dust in these two buildings.

II/ EMERGENCY RESPONSE

The EOC's mandate was to provide a response during the emergency period to ensure the community's safety and business continuity, starting from the closure of the Raymond, MS and Barton buildings (January 31, 2023) up to the re-opening of the MS and Barton buildings (March 14, 2023), or when a finalized plan is in place to resume teaching and research activities in the McGill-occupied areas of the Raymond building (March 29, 2023), whichever occurs later.

The main actions taken by the EOC, in collaboration with IC were as follows:

A/ MANAGE EMERGENCY ACCESS TO THE BUILDINGS WITH APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT (PPE)

Immediately following the building closures, emergency access protocols were implemented, requiring anyone who needed to enter the buildings to be fit tested for P100 masks, which has the highest filter efficiency for masks and filters at least 99.97% of airborne particles. The P100 masks requirement was maintained until all air tests were acceptable.

Building access was strictly restricted to research personnel carrying out essential research activities, namely, maintaining care of animals, plants and live cell cultures. To ensure business continuity, all academic, administrative and support staff were required to work from home while all classes were held online, relocated, or cancelled.

B/ CONDUCT AIR AND DUST TESTING IN THE BUILDINGS

Immediately following the building closures, McGill mandated the same firm of industrial hygiene consultants that was retained for project 17-121, to perform ambient air tests and to test samples of dust deposited on surfaces in the three buildings, as well as to advise McGill on the safe re-opening of the buildings.

To test the air quality, ambient air samples and the analysis by phase contrast microscopy (PCM) were carried out according to method 243-1, of the Institut de Recherche Robert-Sauvé en Santé et en Sécurité du Travail (IRSST), which is the analytical method used in Québec. The industrial hygiene consultants started the ambient air tests the day after the building closures (i.e. on February 1, 2023), prioritizing the MS and Barton buildings and then the McGill-occupied areas in the Raymond building.

All air tests were below the safety threshold of 0.01 f/cm³ per the Safety Code for the Construction Industry.

To test the deposited dust for asbestos, dust samples were taken by vacuuming dusty surfaces such as desks, tops of shelves, chairs and windowsills, using a pump with a flow rate of 3 L/min and a cassette fitted with a particle filter. The samples were analyzed by transmission electron microscopy (TEM) according to the qualitative analysis method, Microvacuum Sampling (ASTM D5755-09).

The industrial hygiene consultants started taking dust samples on February 3, 2023, in areas of the MS close to the Raymond building and in areas where users had reported substantial amounts of dust in McGill-occupied areas of the Raymond building. Out of the 41 results received on February 6, 2023, 10 showed the presence of chrysotile asbestos in the dust samples.

Following these results, the EOC ordered the testing of dust in all rooms of the MS and Barton buildings as well as all McGill-occupied areas in the Raymond building. The results of the updated dust testing for the three buildings reported at the March 14, 2023 Town Hall are as follows:

BUILDING	NUMBER OF AREAS SAMPLED FOR DUST	NUMBER OF DUST SAMPLES WHICH TESTED POSITIVE FOR ASBESTOS	% DUST SAMPLES WHICH TESTED POSITIVE FOR ASBESTOS
Raymond (McGill-occupied areas)	41	8	20%
MS	377	33	9%
Barton	51	4	8%

C/ CLEANING OF THE BUILDINGS

The industrial hygiene consultants provided recommendations and cleaning procedures for the areas which tested positive for asbestos in the February 6, 2023 dust sample test results.

McGill mandated an external cleaning company to clean all the areas with positive test results, and the cleaning was performed under moderate-risk work conditions as per asbestos safety protocols. The industrial hygiene consultants monitored the cleaning work, which began on February 28, 2023, to ensure completeness and appropriateness of the cleaning.

All public areas, such as hallways and staircases, were cleaned prior to the re-opening of the buildings. For areas that tested positive, the cleaning of public areas was prioritized over closed rooms, and this cleaning was begun only after all the rooms that tested positive were sealed. The areas that tested negative underwent regular cleaning by McGill's Operations team. Rooms that tested positive and were not able to be cleaned

prior to the re-opening, remained sealed until they underwent cleaning under moderate-risk work conditions as per asbestos safety protocols.

Following the completion of the cleaning work in areas which tested positive, the industrial hygiene consultants performed final air tests. All tests were within the safety threshold of 0.01 f/cm³ per the Safety Code for the Construction Industry.

D/ IMPLEMENT ENHANCED SAFETY MEASURES

EOC identified additional safety measures to allow safe re-entry to the buildings and to mitigate the risk of a similar incident re-occurring.

The main safety measures implemented during the emergency period are as follows:

- Sealed off areas which tested positive from areas that tested negative until cleaning was completed;
- Sealed off the Raymond building from the MS and Barton buildings;
- Ensured the Raymond building was under negative pressure, causing air to flow into the Raymond building and preventing air from inside the Raymond building from flowing into the adjoining MS Complex;
- Sealed off McGill-occupied areas in the Raymond building (such as the Octagon and the Phytorium) from the construction site;
- Ensured all damaged walls or ceilings were tarped or repaired or that missing tiles were replaced;
- Ensured procedures, on the removal of items from the Raymond building, were provided to IC and to any personnel who were removing items from the building, whose access was strictly restricted and controlled;
- Redefined the emergency egress with the approval of Fire Prevention;
- Streamlined the process for reporting concerns (such as reports of new dust accumulation or damaged building materials) through the FCC, which performs an initial assessment, and ensures the appropriate teams are mobilized for response;
- Improved coordination within FMAS teams to respond to user-reported concerns and to coordinate any work involving materials that may contain asbestos.

It is to be noted that the industrial hygiene consultants ensured that the seals put in place were sufficiently tight to prevent any potential contamination and also advised on the negative pressure setup.

As part of the additional safety measures implemented since the re-opening of the buildings, a different firm of industrial hygiene consultants was mandated to perform weekly air tests throughout the three buildings. If any test result falls short of McGill's standards, the areas in question will be assessed, closed, cleaned and re-tested.

Furthermore, additional safety measures to be implemented when construction in the Raymond building resumed were as follows:

- Full-time Safety Officer added to the construction site;
- Increased inspections from the industrial hygiene consultants to ensure ACMs are encapsulated and proper seals are maintained at the construction site.

E/ COMMUNICATION DURING THE EMERGENCY PERIOD

Since the closure of the buildings until its de-activation, the EOC issued written communications on a dedicated webpage to provide updates on the status of the building closures. The written communications were also sent by email to the Macdonald Campus community through their dedicated emailing lists for faculty, administrative and support staff and students. The student list was updated during the mobilization period to include students taking courses at Macdonald Campus who were not registered in the Faculty.

During the emergency period, an interim situation update was presented on February 17, 2023, and a Town Hall was held by the EOC on March 14, 2023, to provide updates on the air and dust testing and on actions taken for the safe re-opening of the buildings. The Town Hall also allowed the EOC to answer questions raised by the community and to hear any concerns the community had.

The EOC developed a FAQ webpage, categorised by topic (such as, health and safety, testing, academics and research, etc.), to provide information on frequently asked questions.

F/ DEACTIVATION OF THE EMERGENCY RESPONSE STRUCTURE

Upon sufficient resolution of the incident for the purpose of which they were activated and after advising or seeking concurrence of the Policy Group (PG), as needed, the EOC Director is authorized to demobilize EOC and IC, or to adapt their composition and range of interventions in order to efficiently engage in recovery activities or post-incident management.

With the MS and Barton buildings being re-opened since March 14, 2023 and a significant part of the McGill-occupied areas in the Raymond building being ready to be re-opened on March 31, 2023, the EOC and IC were de-activated on March 29, 2023. A team from the FMAS unit took over to manage the re-opening of the remaining spaces and the progress of construction in the Raymond building, in coordination with the Dean and Faculty leadership.

Prior to the de-activation of the EOC, a demobilization plan was initiated to ensure the ongoing activities were properly handed over to the appropriate lead in the FMAS Incident Management Team (IMT), which include FMAS Operations, Security Services, FMAS Project Management, FMAS Communications, EHS, Faculty, and Legal.

4 // PROPOSED PROCESS IMPROVEMENTS

Regulatory bodies, as well as the University, have implemented controls that are designed to manage asbestos and to mitigate the risk of exposure to airborne asbestos fibers in its environments that would be above the regulated per cubic centimeters threshold. Amongst these processes is the role that McGill, McGill community stakeholders, and external parties, perform in following established safety laws, protocols, and standards. Despite these designed processes, the risk remains that building materials containing asbestos deteriorate to a point where airborne asbestos fibers are released or that actions performed by personnel inadvertently bring about the presence of airborne asbestos fibers into the environment above the regulated per cubic centimeters threshold.

We present in this section the main process improvements we consider will mitigate the risk of re-occurrence of these incidents, based on the factors that could have contributed to the release of airborne asbestos fibers. **We recognize that each project is unique with distinctive challenges and that McGill has safely completed projects involving asbestos in the past.** Hence, the proposed process improvements should be applied to projects where relevant.

FACTORS CONTRIBUTING TO THE RELEASE OF AIRBORNE ASBESTOS FIBERS

The release of airborne asbestos fibers in the MS Complex environment can be attributed to several direct and indirect contributing factors.

These include direct factors such as:

- The age of the buildings makes it more likely that asbestos that is present in construction materials could become uncontained over time, resulting in airborne asbestos fibers being released;
- Conducting infrequent or poor asbestos surveys or inspections can directly contribute to the non-detection of situations that could lead to airborne asbestos fibers being released. Regular inspections can help identify the presence, condition, and location of ACMs, allowing for appropriate management and control measures to be implemented in a timely manner;
- Inadequate maintenance practices or the lack of timely repairs, which can lead to the deterioration of ACMs, resulting in the release of asbestos fibers into the air;
- Renovation or construction work where proper precautions are not taken and where damaging or disturbing ACMs can release asbestos fibers into the air.

These include indirect factors such as:

- Inadequate asbestos management plans as well as the ineffective implementation of the plan can indirectly lead to the release of asbestos fibers into the air;
- Lack of awareness and training, which would be part of best practices in asbestos management plan, where insufficient knowledge can lead to improper handling of materials and an increased risk of release of asbestos fibers into the air.

Internal Audit met with Faculty members, architects, industrial hygiene consultants, GC, internal and external PMs, operations managers, engineers, and McGill safety officer assigned to the two projects (17-121 and 17-105) as well as the CNESST inspector who issued the February 14, 2023 inspection report. During these interviews, we inquired about the potential causes of asbestos disturbance within these specific construction sites. Given their experience and understanding of the projects, the following **potential causes and contributing factors** were highlighted.

- On certain occasions, lack of good working practices by the GC and/or subcontractors, such as non-compliance with technical specifications and regulatory obligations to carry out work in asbestos condition. For instance, unprotected cement-like materials and uncontrolled drillings and openings for wiring, conduits, etc., resulting in dust; doors left opened resulting in increased air circulation and thus increased the risk that asbestos fibers released into the air travel to areas where no construction work was being carried out;
- Cohabitation of Faculty members and students with construction workers, including the shared use and travel by construction workers from the Raymond building to the loading dock and elevator located in the MS building, resulting in movement between construction sites, McGill-occupied areas and shared spaces;
- Potential inconsistent air pressure and air flows in the buildings;
- Limited effectiveness of communication mechanisms and escalation protocols used to raise and address users' concerns with dust in occupied spaces;
- The laboratory fume hoods that had been moved to room R1-038, as planned, which were drawing in a lot of air and possibly drawing dust as well;
- Relocation of a BSC, which was possibly not adequately protected during construction, from the Raymond building to the MS building.

4.1 / Facilities Management and Ancillary Services Processes

4.1.1 / Communication Lines

Communication lines between University users and the project management team (both McGill's PMO and external PM) were established at the onset by the project team by defining project stakeholders and responsible parties.

However, Internal Audit received comments from Faculty users and facilities operations staff that certain GC actions were taken without proper coordination. Similarly, Internal Audit was provided emails where these groups described concerns that were raised with limited feedback on actions taken.

Coordination meetings specifically for the Phytorium were initiated in the Fall of 2022 to allow for a better flow of information between the users and the PM, but these meetings were not attended by other parties (either operations groups or McGill's internal PM), resulting in a siloed approach in addressing concerns.

In addition, the Faculty representative stated that their participation at these meetings became unproductive as they were asked by the PM to submit documented issues whereas an original Faculty concern was that AES emails were not responded to fully as stated above.

The communication issues deteriorated to the point where the external project management firm adjusted the composition of its team and assigned a new PM to improve the communication lines and relationship between the parties.

Internal Audit learned that AES communicated concerns amongst colleagues via email before these were escalated to the PM or PM assistant.

Whereas the project communications lines could be considered as siloed, the EHS unit has in place a ticketing system which allows for the intake and management of service requests. The ticketing system has considerable functionality which allows the unit to track the lifecycle of a request and report on incidents across the University.

PROCESS IMPROVEMENT FMAS-01

- **Integration of the communication silos:** Communication processes between all stakeholders should be reviewed and improved when relating to construction projects involving hazardous substances (such as asbestos). The role and responsibility of each stakeholder, including FMAS Units (internal PM, PMO, EHS, Building Operations), the PM and users in these situations, should be formally established, agreed upon and shared amongst the parties at the beginning of each project phase, to facilitate an effective communication and escalation process.

4.1.2 / Incident Response Protocol and Complaints Management Process

The asbestos incident response protocol was designed to address different situations where there is a risk that a McGill community member encounters uncontained asbestos fibers during daily activities.

The initial complaint was not directed to the FCC, as the protocol defines, which performs service request intake and triage. The original student's air quality and dust complaint was directed to EHS given that the space in which the dust was observed was outside the construction project perimeter.

We did not observe that measures were taken to ensure that access to the areas was restricted, at the time of the initial complaint, nor when EHS staff visited the campus for air quality testing and noted the excessive dust in various locations. The response protocol indicates that where dust is discovered in the workplace, individuals are to be kept out of the area.

EHS commented during the investigation that they recommended the Faculty's Renovations Logistics Specialist to contact the project PM given that EHS considered the source of the dust was the construction project and that the complaint was therefore outside of its jurisdiction.

While the Faculty and the PM met on several occasions to address air quality and dust concerns around the time of the complaint, there is no evidence that the PM was notified by EHS or the Faculty of this particular complaint and testing to be conducted. The EHS staff member notified the McGill PM on January 19, 2023, the same day EHS visited the campus to perform tests.

The response protocol addresses both construction project and non-construction project situations and requires that all stakeholders be aware of its procedures to maximize positive outcomes.

PROCESS IMPROVEMENT FMAS-02

- **Asbestos incident response protocol:** Given that the treatment of the dust concerns differed from the expected protocol, the asbestos incident response protocol should be reviewed to improve coordination between parties, address how triage can be better performed, improve response times, and increase awareness of the asbestos incident response protocol by responsible parties in all cases, but in particular where shared spaces and construction projects are involved.

4.2 / Faculty Processes

4.2.1 / Protocol for Moving of Specialized Equipment

As documented in section 3.2.2, construction debris found on top of a BSC which was moved from the Raymond building to the MS building tested positive for asbestos. The BSC was not decontaminated by a certified company before being relocated and EHS was not informed of the relocation, hence bypassing EHS processes.

PROCESS IMPROVEMENT AES-01

- **Moving of specialized equipment:** Prior to moving any specialized equipment from construction areas that may involve MLCA, the Faculty Safety Chairs should ensure that a process is implemented such that the Faculty members are made aware of the internal procedures relating to decommissioning and decontamination so that the latter, through an appropriate role, such as the Building Director or Renovations Logistics Specialist, can coordinate with EHS accordingly.

4.3 / Project Management Office Processes

4.3.1 / General Contractor Oversight

A GC was retained in October 2021 for both projects 17-105 and 17-121. The GC's obligations are governed by contractual documents which include the obligations to:

- Provide the materials, tools and labour necessary for the execution of the work as defined by the contractual documents and to perform all work which, although not specifically mentioned, could be required;
- Respect all mentioned deadlines, which form part of the essence of the contract;
- Act as the Principal Contractor (*Maître d'oeuvre*) within the meaning of Quebec's Act respecting occupational health and safety.

As such, it is the GC's responsibility to ensure full execution of the work in accordance with the construction documents and in full compliance with the applicable codes and regulations.

General Conditions and Complementary General Conditions included in McGill's contractual documentation consist of rules and directions imposed on the GC to dictate the way in which the work must be conducted on site and to ensure adequate coordination of construction activities. For instance, they provide the contractors with directions regarding additional precautions to take when carrying out work in construction areas that are adjacent to McGill-occupied areas, as well as instructions regarding McGill's infrastructure and equipment.

Furthermore, additional precautions are included in the specifications and General Conditions for circumstances where users are in locations (such as classrooms or research spaces) that are not far from the construction site.

4.3.1.1 / General Contractor and Subcontractor Working Practices

The GC, in its capacity as Principal Contractor, plays a crucial role in ensuring compliance with safety regulations and creating a safe work environment. As outlined below, the GC must coordinate the work activities of all contractors, subcontractors, and workers on the construction site. This involves ensuring that each party adheres to all contractual documents including the safety plan, complies with applicable regulations, and maintains a safe working environment.

Internal Audit noted that Macdonald Campus operations staff, who worked closely with the project, raised concerns with the PM with respect to the GC's compliance with McGill's general conditions.

The GC is responsible for overseeing and supervising all the work activities on the construction site. This includes regularly inspecting the site to identify and address any potential hazards or unsafe conditions promptly.

McGill's General Conditions clauses are explicit with regards to the requirements to comply with the safety codes as follows:

23.6: The Contractor undertakes to comply with and to ensure compliance by his employees, agents, subcontractors and any person having access to the worksite, with the provisions of the prevention program as well as those of any law or regulation relating to occupational health and safety, in particular, but without limiting the generality of the foregoing, the Act respecting occupational health and safety and the Safety Code for the Construction Industry, and to meet all of their requirements.

REGULATORY REQUIREMENT RELATING TO ASBESTOS PROCESSES ON A CONSTRUCTION SITE

The Safety Code for the Construction Industry includes an entire section dedicated to guidelines relating to work liable to produce asbestos dust emissions (Subdivision 3.23). It provides comprehensive instructions with respect to adequate actions to undertake when working under asbestos conditions such as, appropriate training and information program, site organization, protective equipment, signage, working procedures for proper execution of work, cleaning and testing.

The specifications prepared by the industrial hygiene consultants also provide clear instructions on procedures to follow when working in the presence of asbestos.

The CNESST inspector visited the Raymond building construction site to provide oversight assurance for construction site health and safety matters. It has come to our attention that the CNESST makes these reports available exclusively to the GC and that the GC had no obligation to, nor did the GC, share these reports with McGill stakeholders.

Internal Audit reviewed 12 CNESST inspection reports that were issued between October 2021 and February 2023, while all reports may not have been made available by the GC. We observed that the GC was cited on three occasions, which were deemed significant enough to stop work, including the closure of the construction site on February 14, 2023, where site workers were not respecting methods and procedures related to asbestos work conditions.

These details are taken from CNESST reports and described below:

I/ STOPPAGE OF WORK BY CNESST ON NOVEMBER 15, 2021

The CNESST inspector concluded that there was a danger to the health, safety, or physical well-being of a worker, and noted the following reasons:

- MLCA, such as joint compound and cementitious plaster are present in the workplace;
- The materials are in a friable state;
- The paint on the walls contains lead;
- Workers are demolishing ventilation ducts;
- Demolition work is likely to generate dust containing asbestos and lead;
- The results of the sampling report dated September 27, 2021 showed the presence of asbestos and lead in the following materials: joint compound, cementitious plaster, paint;
- No decontamination procedure in accordance with subsection 3.23 of the Safety Code for the Construction Industry is planned or applied;
- The workers on site have no training in asbestos;
- Asbestos is a proven human carcinogen that can cause occupational injuries such as asbestosis, mesothelioma and lung cancer.

II/ STOPPAGE OF WORK BY CNESST ON OCTOBER 17, 2022

- The CNESST inspector demanded that there be no further work inside the Phytorium until a complete cleaning of all surfaces was carried out;
- During the visit, the CNESST inspector also noticed the presence of waste lying around on the first floor. Consequently, CNESST also required that the first floor be cleaned extensively (waste removal, HEPA vacuum).

While these may be isolated incidents, the CNESST inspector reviewed the GC's corrective action and work resumed thereafter. We were informed by the GC, that the interactions with the CNESST were not unusual for him such that the GC took steps to address the issues raised in a timely manner (when these were not contested).

III/ CONSTRUCTION SITE CLOSURE BY CNESST ON FEBRUARY 14, 2023

Under his powers conferred by the Act respecting occupational health and safety, section 186, the CNESST inspector also stopped work and closed the construction sites located in the Raymond building, noting the following reasons:

- MLCA, such as plaster, are present in the workplace;
- In various places, work, recent and previous, has been carried out on the plaster, leaving it in a friable state;
- Some plaster components are crumbling;
- There is an accumulation of dust in various places;
- The results recorded in the sampling report dated October 2020 carried out by the industrial hygiene consultants demonstrated the presence of asbestos in the plaster of the Raymond building;
- A surface sample taken from dust accumulated on furniture in room R1-038 and analyzed on January 30, 2023 (sample taken by EHS on January 19, 2023 and results received on January 31, 2023) identified the presence of chrysotile-type asbestos;
- Any work carried out on the site is likely to generate dust containing asbestos;
- Asbestos is a proven human carcinogen that can cause occupational injuries such as asbestosis, mesothelioma, and lung cancer.

PROTECTION OF EQUIPMENT ON A CONSTRUCTION SITE

As documented in section 3.2.2, construction debris found on top of a BSC which was moved from the Raymond building to the MS building tested positive for asbestos. While there is no certainty on how the debris landed on the BSC, it is highly likely that the BSC was not properly protected during construction in the Raymond building before being moved to the MS building.

PROCESS IMPROVEMENT PMO-01

- **Enforcing health and safety controls on the construction site:** The PMO must ensure that further adequate oversight controls are in place to emphasize that the primary responsibility for compliance with the obligations relating to a construction site rests with the GC. Despite the constraints encountered and the complexity of the context, it is imperative that the GC ensures appropriate health and safety mechanisms are maintained. These must be in accordance with the contractual documentation and the Safety Code for the Construction Industry, both of which include many clauses dictat-

ing obligations regarding dust control and regular cleaning of construction sites, as well as adequate protection of the surrounding equipment and furniture from construction dust/debris.

PROCESS IMPROVEMENT PMO-02

- **Communication of CNESST reports:** In coordination with McGill Legal Services, Management should implement a control process such that CNESST inspection reports be promptly communicated to McGill to enable the PM and PMO to proactively address significant concerns raised by CNESST. This proactive approach will facilitate timely corrective actions and ensure the adherence to necessary safety measures throughout the project lifecycle. If infractions are not addressed in a timely manner, the PM must escalate the issue and notify the PMO for further actions where warranted.

REGULATORY REQUIREMENT FOR SAFETY OFFICER ON A CONSTRUCTION SITE

The Safety Code for the Construction Industry in Quebec requires that a safety officer be present on construction sites where the total cost of the work exceeds \$8,000,000 to ensure compliance with safety regulations and to prevent accidents.

The GC had not retained the services of a safety officer for the project claiming a labour shortage and had hired a safety counsellor instead. Of note, safety officers hold valid certificates for having successfully completed the Construction Site Safety Officer course offered at Collège Ahuntsic, or its equivalent⁷, while safety counsellors are not certified. While the CNESST identified this issue as an infraction (on October 13, 2021), it was not deemed significant enough to stop work.

The presence on site of a safety counsellor instead of a safety officer was not addressed during the entire course of the project. The lack of qualified safety personnel may not adequately address the needs of a project of this magnitude. The resulting potential impacts such as increased accidents, insurance costs, legal liability, work closures, and reputational risk must be addressed.

PROCESS IMPROVEMENT PMO-03

- **Safety officer:** The PMO must ensure that the GC complies with regulatory compliance requirements to hire a safety officer for the construction site in order to mitigate risks, such as increased accidents, insurance costs, legal liability and work closures as well as reputational risk.

⁷ Source: Agent de sécurité sur les chantiers de construction - www.cnesst.gouv.qc.ca/fr/prevention-securite/identifier-corriger-risques/liste-informations-prevention/agent-securite-sur-chantiers-construction

4.3.1.2 / Managing and Monitoring Air Circulation

One of the many process controls when working in high-risk asbestos conditions on the Raymond building construction site was to put the airflows under negative pressure in the area containing asbestos. In addition to components such as engineering controls, protective enclosures and protective personal equipment, air monitoring helps control dust and to prevent it from leaving the area and thus avoids contamination. This method of controlling air pressure is a good practice that is used on construction sites where occupied spaces are adjacent to the construction site.

Professionals stated that the ventilation systems in the Raymond building construction site at the time of the student complaint on November 28, 2022, were not in operation except for in the Octagon area, which had been delivered by the GC to McGill in September 2022. The Octagon was being serviced by a temporary ventilation system designed by the mechanical engineers and operated by the GC. Filters were said to be kept in good condition.

Professionals also stated that the three buildings have separate ventilation systems that are not connected. Therefore, dust did not travel through the ventilation systems to contaminate previously non-contaminated areas.

The users and professionals noted inconsistent air pressure and air flows in the buildings throughout the construction project. An incident that occurred on December 1, 2022 indicated that the MS building was potentially in negative pressure compared to the Raymond building, raising concerns that dust could be coming from the construction site to the MS building. ECP3-BSL3 laboratory roofing work was taking place in the Raymond without closing the doors, which resulted in thick smoke rushing into the first floor of the Raymond and MS buildings for more than four hours.

Concerning this latter incident, an email from a Faculty member reported the PM's explanation that it was 'normal' to get smoke because the MS building was in negative pressure compared to the Raymond and because some doors were left opened by the contractor.

PROCESS IMPROVEMENT PMO-04

- **Air circulation and ventilation systems:** It is acknowledged that the management of air flows and ventilation systems is inherent to all construction projects and is one process control amongst many when managing asbestos work conditions. In environments with the presence of asbestos, and when adjacent to occupied spaces with users, additional air monitoring measures should be implemented to ensure continuous adequate air pressure within the construction site and the surrounding occupied areas. This will maintain optimal air conditions and prevent the dispersion of asbestos fibers beyond the designated construction site, hence minimizing the risk of asbestos contamination.

4.3.1.3 / Construction Site Logistics

Contrary to Project 17-121 architectural specifications, the GC confirmed using the MS building's loading dock and elevator for reception/expedition of materials and equipment, as well as to remove some construction debris. General conditions article 14.0 regarding the delivery of materials and disposal of waste reads:

“The loading dock may under no circumstances be used by the Contractor. The Contractor shall under no circumstances obstruct traffic and access to this area.”

The GC reported having requested and obtained informal permission from the PM to use the loading dock and the elevator, in coordination with the PM for access and for the delivery of materials.

Workers used a corridor from the MS building loading dock area to the Raymond building to move these products in and out of the construction site.

Thus, the Octagon was used to access the construction site and the same corridor was shared by the users and the workers.

Internal Audit notes that it was possible to create dedicated access for the purposes of the GC to the Raymond construction site as well as the means for handling and lifting materials and equipment. As was confirmed by the project team, including the GC, alternative access and means could have been implemented.

PROCESS IMPROVEMENT PMO-05

- **Construction site logistics:** McGill must prioritize at all times, and to the extent possible, construction site logistics that favor segregating construction activities from user activities, including the means and methods designed for the delivery and handling of construction materials, and for the disposal of construction waste to and from points of service, in place of overlapping with occupied spaces, to minimize the risk of contamination.

4.3.1.4 / Shared/Common Spaces

The need to carry on with academic activities during the construction period as well as several decisions regarding construction logistics generated situations in which several areas were shared between the construction workers and McGill's community.

Consequently, both construction workers and McGill users occupied some of these spaces simultaneously during certain periods to allow for uninterrupted research activities. For instance, the Faculty requested access to the Phytorium, the CT Scanner and room R1-038:

- **Phytorium (R1-003 and R1-011; Raymond First Floor)**

A portion of the Phytorium needed to be operational and accessible to McGill's users while construction was ongoing. Minutes from the Phytorium coordination meetings had recorded concerns regarding air quality. These meetings were held frequently in Fall 2022 with the expectation that the PM would address issues required to keep portions of the Phytorium operating during the construction phase. The dust issue, plus the inadequate/faulty placement of the dust protective (membrane) was regularly communicated in these meetings:

"McGill is still requesting extra zippered protection for walk-in growth chamber to help with protection from dust.

*McGill reiterated that a major concern remained dust entering the operating chambers in R1-003 and the walk-in chamber in R1-011."*⁸

It should be noted that meeting minutes were issued following each meeting for the benefit and accountability of all parties, including the GC, PM, AES as well as all the attendees.

The CNESST's intervention on October 17, 2022 (see Section 4.3.1.1 (ii)) specifically deals with the Phytorium area.

- **CT Scanner Room (R1-033A; Raymond First Floor)**

Rooms R1-033A, R1-031A and R1-033 also remained open and accessible to research teams during the construction phase to permit research activity related to a state-of-the-art CT scanner. Dust concerns were raised to the PM and the GC several times between September 15, 2022 and November 25, 2022 after contractor workers had drilled holes (mistakenly according to the GC) from an adjacent room into the CT scanner room. Users had also raised concerns during the site construction meeting, to indicate that this work had been done without previously notifying users and without protecting the equipment.

8 Source: Minutes of the Phytorium Coordination Meeting dated October 13, 2022

Due to the history of the Raymond building, the presence of asbestos should have been suspected, therefore cleaning, encapsulating, and testing were required. However, the PM presented no testing results.

- **Room R1-038 (Raymond First Floor)**

Three fume hoods were relocated to room R1-038 to allow for research to continue. R1-038 is the room in which a wipe sample taken by McGill's EHS came back positive for chrysotile asbestos in January 2023.

During their inspection on September 22, 2022, EHS observed that the back and side walls of one of the fume hoods were deteriorating, in friable condition, and were highly likely to contain asbestos due to the date when they were manufactured. EHS made the recommendation to the Faculty's Renovations Logistics Specialist that the fume hood should not be used but should be left running to prevent a release of suspected asbestos fibers into the room. On September 26, 2022, EHS took a sample from the fume hood material and received test results which were positive for asbestos on October 5, 2022. The fume hood was sealed and will be disposed as asbestos waste when the room is renovated.

Room R1-038 was part of the construction site and was shared by construction workers and McGill personnel. The operation of the fume hoods created strong air pressure movements that would not function effectively without enough air. To adjust for this imbalance, a window through the room's door adjacent to the construction site had been left open to let additional air enter. The additional airflow also contributed to pulling dust into the area.

- **Other Areas: corridors, hallways, entrances, exits**

Given that the GC regularly used the loading dock and elevator in the adjacent MS building (as described in section 4.3.1.3), and moved between the Barton and Raymond buildings, there were many instances where workers and students shared the spaces in the proximity, such as the corridors, hallways, stairs, entrances and exits.

While the project phasing is a key element that had been agreed to by all parties, certain project stakeholders expressed the opinion that researchers and academic staff requests were given a disproportionate weight. Academics were consulted to identify potential spaces in which to relocate their activities before construction was to begin. However, accommodations were not possible due to a lack of available swing spaces and because the process to identify adequate swing space was conducted too close to the start of the project.

Comments received from the project stakeholders indicate that neither McGill's PM, the PM, the architects, nor the GC had much authority over McGill academics and researchers in this regard. Despite the pressure from the academic stakeholders, it is the project team's responsibility to ensure that the execution of the construction and agreed-upon phasing is safe and respects all regulations and best practices.

In their opinion, McGill should be able to refuse certain requests that may not be realistic to accommodate or that may significantly raise risks to user safety, ongoing disturbances, and/or impair project objectives.

For example, arrangements to ease researcher access to the Phytorium resulted in loosened access controls to the construction site in general for all users.

Despite signage in various locations, the GC informed us that members of the McGill community were also seen 'entering' into the construction site (even to climb scaffolding). This indicates that oversight, supervision, and/or access restrictions the GC had implemented were not sufficient to secure access to the construction site.

PROCESS IMPROVEMENT PMO-06

- **Shared spaces:** Entry into construction areas should be limited or prohibited, where warranted, to those who are not involved in the project process or construction activities. When projects require shared spaces, safety measures must be implemented. These can include clearly defined boundaries to separate construction site from user-occupied areas, and restricting access to authorized personnel. In order to prevent exposure to hazardous materials, it is important to seal off and segregate construction sites from all non-construction operations. In high-risk projects that include shared spaces, heightened monitoring controls should be implemented to ensure proper user safety. Project planning must realistically address these challenges and constraints at the earliest stage possible while monitoring the projects' risks and complexity. Such planning is necessary to avoid last minute decisions/solutions involving many stakeholders.

4.3.1.5 / Anticipated Delivery

The project construction plan was developed to allow for the delivery of certain spaces in phases before the end of the project. The phasing was necessary as it was technically and logistically very complex to move some of the research equipment from the Raymond building and because of the acute lack of swing space (spaces that can be temporarily used for relocated laboratory work or equipment) at the Macdonald Campus and generally, at the University. From the different options proposed by the project team, McGill chose to allow researchers to take possession of certain premises while construction was ongoing and before the end of the project

Specific GC contract clauses provide conditions under which McGill may take over spaces before all the project work is deemed substantially completed.⁹ The GC contract also contains clauses providing for conditions of occupation by the users of existing and adjacent installations not included in the work area. Similarly, McGill's General Conditions mention that:

“When the GC’s contract is partially completed, the Owner may decide to take possession of one or more completed parts of the works, these parts of the works are then subject to the procedures for the provisional and final acceptance of the works.

The Contractor must, however, give his consent and ensure free and safe access to the parts of the works put into service. This agreement is materialized by the bilateral signature of a certificate of early possession as provided for in Appendix CG-12 hereof.”

In such a case, McGill would then ensure maintenance and allow access to the GC under certain conditions, whereas the GC would give secure access to said area to McGill.

Internal Audit notes that Room R1-038 was part of a group of spaces, mostly located in the Octagon area, that were identified to be delivered back to McGill at the end of August 2022 to allow teaching activities. At an August 23, 2022 meeting, the GC specifically requested that the anticipated delivery procedure¹⁰ be completed for these spaces, including room R1-038. However, it appears that site directives were needed to complete additional work in room R1-038.

As of the building closure on January 31, 2023, R1-038 had not been officially delivered to McGill as per the anticipated delivery procedure. From mid-September 2022 until the closure of the building, the GC and sub-contractors used room R1-038 for storage activities and AES users also had to access the room for their activities. It is not clear which party (if any) took care of the maintenance, including cleaning, after an initial cleaning was performed in September 2022.

⁹ Source: Anticipated delivery procedure per McGill's General Condition 58

¹⁰ Source: Minutes from the construction site meeting 44 dated August 23, 2022

PROCESS IMPROVEMENT PMO-07

- **Anticipated delivery:** The PM, in coordination with project professionals and GC, must ensure that the anticipated delivery procedure and relevant documentation is officially completed before the faculty users are allowed to occupy a room, as well as notifying construction workers not to use these spaces. This will ensure clear boundaries as well as clear responsibility in terms of the maintenance and cleaning of the delivered room, hence minimizing the risks of contamination and dust accumulation.

4.3.2 / Project Oversight

4.3.2.1 / Project Management (External)

The PM is defined in McGill's general conditions as *The Person who, as the Owner's representative, administers the contract.*

The role of the PM is an important one and McGill has high expectations regarding the services to be performed by firms contracted in this role, as indicated in the terms of reference contained in the CFT documentation and further integrated in subsequent contractual agreements.

McGill retained the services of a Project Management firm to carry out the numerous DM projects at the Macdonald Campus. A public CFT was issued in December 2018 and subsequently, a Project Management firm was contracted in April 2019.

Essentially, the responsibility of the contracted Project Management firm consists in representing the Owner (McGill) and ensuring that any given project is managed according to industry best practices. McGill recognizes the best practices enacted by the Project Management Institute (PMI) and has its own internal Project Management process methodology for each project phase, which was annexed to the CFT for Project Management services. The objective of the PM is to ensure that the project's many parameters, including budget, schedule, and quality requirements, are managed in an optimal manner.

The estimated costs and scale of the projects increased significantly as these projects were nearing the construction phase. In the 2018 CFT for the PM contract, a list of 22 projects for Macdonald Campus was provided and estimated at \$60.4M, as confirmed by an addenda issued in January 2019. According to the terms of reference, the selected firm would be allocated projects from the list with each project having an estimated cost between \$300K and \$12M.

These estimates increased considerably as the projects became a reality. In December 2021, the value of the initial 22 projects had reached a revised cost of \$134.3M and eight projects, estimated at \$17.9M, were added to the original scope, totaling \$152.2M. In February 2022, the aggregate project cost was estimated at \$200.05M by the PM. Limited precision of early-stage estimates, a significant increase in the scope of work, higher inflation, and other administrative factors related to the complexity of the projects were used to explain the increased costs, extended contract duration, and additional efforts required from the PM's team.

To further define the extent of the PM's role and responsibilities, the Project Management contract includes comprehensive lists of obligations, scope of mandate and specific requirements related to expected tasks, thereby highlighting the importance that McGill places on ensuring a thorough and complete coverage of project coordination activities, including the convenient flow of design and construction activities.

PROCESS IMPROVEMENT PMO-08

- **Rigorous project monitoring:** It is in the PM's mandate to represent McGill, to act in its best interests, and thus to ensure that the project is professionally managed according to the best industry practices and McGill's framework and requirements. One of the PM's important tasks is to ensure quality control on all activities from all parties and stakeholders in the construction process so that McGill's General and Complementary Conditions and the Professionals' specifications be respected and applied on the construction site by the GC. Based on various sources of information, it appears that tighter project management on the construction site could have prevented certain situations from occurring. PMs (internal or external to McGill) should reinforce their vigilance and make sure that the GC always follows contractual General and Complementary Conditions and professional specifications applicable to the construction site and the project's context.

PROCESS IMPROVEMENT PMO-09

- **Formally review PM's capacity to deliver on mandate when important changes in scope:** The scale and number of projects under the PM's oversight increased very significantly without evidence of a PMO review of the PM's capacity to deliver the mandate. Due to the large size and complexity of the Macdonald Campus DM Projects, along with the addition of eight new projects that were not originally listed, it would have been beneficial for the PMO to define a specific plan to review and consider mechanisms for updating and identifying the necessary resources and actions needed to accommodate the increased workload. This would have resulted in a well-documented revision of the project planning.

4.3.2.2 / McGill's Project Management Office (PMO)

McGill provides a structured approach to the planning and management of a construction project whether a project is managed by an internal McGill PM or by an external PM. As the PMO website states:

The PMO leads and directs construction and renovation projects carried out on McGill property or in McGill facilities.

The PMO ensures that projects conform to McGill's building codes and zoning regulations; that the appropriate processes are followed for consultant and contractor tendering, selection, and contract award; that McGill's design and construction standards are respected; and that a quality product is delivered on time, on budget, and as per the client/unit's requirements.

Per the 2018 CFT for the external PM contract, McGill's PMO must provide instructions about the projects' parameters, including expected cost and schedule, and provide the PM with all the information and data pertaining to the projects that are necessary for the PM to complete their work.

McGill's PMO also has the obligation to provide prompt instructions to the PM and to inform decisions in a timely manner so as to enable the PM's effective delivery of services.

Projects 17-121 and 17-105 were assigned one internal senior PM and contracted with an external firm for a senior PM. The contracted external PM held the primary role and managed all aspects of daily activities, while the internal PM is responsible for overseeing and supporting the PM. The project governance structure included a Project Director who provides oversight of both internal and external PM activities; however, the nature of the project did not include a steering committee.

PROCESS IMPROVEMENT PMO-10

- **Monitoring of the projects and PMs:** As the leader and director of construction and renovation projects on McGill properties and facilities, the PMO is responsible for the tendering, selection, and awarding of contracts to consultants and contractors. However, due to limited delivery capacity, PMO had outsourced the project management role to a professional external firm. To ensure the PM's performance is monitored effectively, PMO uses various management tools and activities. For important and riskier projects, PMO should adopt a tighter approach on external PM oversight. It should require comprehensive periodic (i.e. monthly) reports prepared by the external PM to provide more detailed project progress assessments. For the scale of the projects currently reviewed, although occasional remarks about the projects were recorded in the 'Needs and Efforts Status' updates, a more comprehensive monthly report covering key aspects of project management should have been considered. While weekly meetings were held with the PMO during certain periods, these meetings covered multiple projects. We believe that fully documented monthly reports should be produced to effectively support project monitoring.

4.3.3 / Project Risk Management

RISK ASSESSMENT AND PROVISION FOR RISK

The risk analysis summary for projects 17-121 and 17-105 identified risk categories and descriptions. One of the risk items is directly related to unforeseen presence of asbestos and mold in the building. However, the same table also shows that no risk contingency was allocated for any of the specific risk items listed. This is in part due to the approach used to establish a global project risk contingency. However, it is possible that project risk is understated as Internal Audit was informed that the project includes a risk contingency established by default as 10% of the construction expenses that McGill applies broadly to all projects.

One comment received from the architects was that the overall project contingency was too low, considering the age of the building, the existing conditions, and the complexity of the work.

PROCESS IMPROVEMENT PMO-11

- **Formalizing the project risk management process:** Management should formalize and strengthen the project risk management process, including defining criteria to prioritize projects requiring a more robust approach when dangerous materials such as asbestos are involved. The process must include the risk assessment, identification and formalization of key risk mitigation plans, risk monitoring, and updating the risk assessment throughout the project, as well as the establishment of a risk contingency that is managed throughout the delivery of the project.

PROCESS IMPROVEMENT PMO-12

- **Risk contingency additional to the 10% construction contingency:** Projects encompass different types of contingencies that may need to be accessed during different phases of the project, such as for design and construction phases. During the management of the execution of the project, these alternative types of contingencies should be considered, particularly when there is a substantial presence of dangerous or hazardous substances (such as asbestos). Therefore, Management should review the project contingency allocation and implement a risk management process that establishes a risk contingency allocation that will track the evolution of pertinent risks as appropriate on a project-by-project basis.

4.3.4 / Industrial Hygiene Consultants' Supervision

McGill contracted specialized industrial hygiene consultant firms for projects 17-105 and 17-121 for various works:

- to write specifications adapted to the site conditions;
- to follow-up on activities during the subsequent CFT;
- to provide site supervision services to monitor work under asbestos conditions;
- to carry out the regulatory air sampling on certain construction sites; and
- to offer supervision and coordination services in the context of this monitoring according to the terms of their contracts.

The effectiveness of asbestos-related work supervision is largely dependent on the scope of work of the industrial hygiene consultants' mandates. Both industrial hygiene consultants (projects 17-105 and 17-121) were present during asbestos abatement activities involving high-risk conditions. However, industrial hygiene consultants stated that during subsequent construction activities that involved high-, moderate- and low-risk asbestos work conditions, their supervision mandate was limited to high-risk work conditions on project 17-121, and that they were not retained for the supervision of any asbestos work conditions on project 17-105.

However, in the case of project 17-121, an examination of their original contract does not adequately address this statement. The contract clearly mentions that supervision is to be provided for work in asbestos conditions. The contract does not explicitly single out that supervision should only be provided for work under high-risk conditions.

The industrial hygiene consultants for project 17-121 produced supervision reporting mostly limited to when the project performed high-risk asbestos removal. Through the review of approximately 55 supervision reports, the investigation gained an appreciation for the observations and any recommendations made and found that no major issues were identified.

According to the industrial hygiene consultants for project 17-121, their mandate is typical for these types of construction sites. Since they are projects taking place over a long duration, the Client does not necessarily want the industrial hygiene consultants to be present full-time nor to be present for the low- and moderate-risk condition work.

The industrial hygiene consultants involved during the asbestos abatement activities for project 17-105 highlighted that no supervision on their part leads to a less rigorous monitoring of work.

Following the incident that led to the closure of the buildings, the industrial hygiene consultants for both projects made a revised offer for an increased presence and supervision of asbestos-related work on the construction sites.

During the investigation, auditees, including the Faculty, the PM and the industrial hygiene consultants, commented that more supervision would have been appropriate. An indication of this was seen from the fact that CNESST mandated the suspension of mechanical duct removal works on the third floor of the Raymond building as early as November 2021 because these works were not done properly under asbestos low- and moderate-risk conditions. A similar occurrence of CNESST stopping works due to possible workers exposure to silica also took place in October 2022.

The Safety Code for the Construction Industry calls for air testing inside of high-risk asbestos removal zones but does not require air testing for low- to moderate-risk work conditions. McGill's PMO and EHS have guidance on additional measures, beyond those specified in the Safety Code for the Construction Industry, to provide greater assurance to the community in close proximity to the high-risk zones. These measures involve conducting routine air testing in adjacent areas outside of high-risk asbestos abatement zones.

Air tests required by the Safety Code for the Construction Industry were performed and reported no issues for both projects; however, the additional air testing measures recommended by McGill were only performed for project 17-105 and not for project 17-121.

In all cases, the GC remains responsible for always keeping the construction site clean and applying work methods that prioritize dust control at the source, such as performing work under enclosure when necessary. Technical specifications include the obligation to adopt working practices that prevent the spread of dust. The industrial hygiene consultants highlighted that the mere existence of specifications is not a guarantee of the quality of work that will be carried out.

While all procedures and requirements are documented in the specifications, it is the responsibility of the GC to ensure that all subcontractors follow them and to be available to answer questions and provide clarifications to their subcontractors. Furthermore, in the event the construction site encounters unforeseen asbestos-related conditions, the GC should request the industrial hygiene consultants to intervene in terms of providing supervision and recommendations.

PROCESS IMPROVEMENT PMO-13

- **Additional supervision by industrial hygiene consultants and clarification of their mandate:** The industrial hygiene consultants' site supervision must reflect and correspond to the project's context and risk conditions when related to the management of asbestos. Consequently, Management must revise the contracts of industrial hygiene consultants to ensure that site supervision during construction activities provides adequate coverage of the full scope of work, including asbestos work in moderate- and low-risk conditions when needed.

4.4 / Environmental Health and Safety Processes

Past internal audits related to EHS and the asbestos management processes were reviewed.

These include the following:

- An audit of the EHS unit in 2017 included a broad governance and operational scope, and given a rating of “needing improvement”. The report highlighted, amongst other topics, the need for greater coordination with key stakeholders, requirements for improved application systems in supporting operations, the need for improvements in certain processes such as incident management, strengthening EHS’ governance and adequate resourcing for continuity of operations.
- Similarly, a 2019 audit targeting the asbestos management process was also rated as “needs improvement” and included key areas for improvement such as strengthening compliance with regulatory requirements, the reliability of the asbestos register, asbestos management roles and responsibilities, formalizing operating procedures including communication protocols, inspection and testing guidelines and asbestos activity oversight.

4.4.1 / EHS Mandate and Authority

EHS is a sub-unit of the University’s Campus Public Safety group which reports up into the FMAS unit.

As per the EHS’s website, its mission statement is described as follows:

The Environmental Health and Safety (EHS) unit supports the continuous improvement of a safety culture at the University by providing advice, guidance, training, and technical support to the McGill community. The safety culture encompasses a healthy and safe environment achieved through everyone’s understanding of their related responsibilities and compliance with all regulatory requirements and University safety policies.

The oversight of asbestos management at the University involves several FMAS units, with the PMO and EHS being the most important. EHS performs key activities related to asbestos management as it establishes the University asbestos policy, the asbestos incident response protocol, training and awareness programs, as well as administering the asbestos registry.

It is important to note that EHS’s mandate is limited to a support role in construction projects. EHS does not perform testing in construction project areas as these are the responsibility of the GC and the third-party industrial hygiene consultants. EHS is reliant on these stakeholders to provide the asbestos-related data necessary to update the asbestos register in a timely manner. Outside of these projects, EHS performs facilities inspections and material testing to support trades when performing renovation or repair work and to comply with the provincial government’s asbestos reporting regulations.

The EHS unit's authority vis-à-vis the PMO and other FMAS units is not formally defined. EHS informed us that the unit does not have the necessary authority to ensure effective coordination with and compliance by key University stakeholders. Clearly defined authority and roles are relevant in coordinating asbestos management processes when these are performed by McGill stakeholders (such as the PMO, Building Services, Building Operations, IT/Network and Communications Services).

Specifically, lack of coordination and of clearly established policies and procedures could result in inconsistent implementation across the institution.

An additional concern regarding EHS' authority concerns the observation that the EHS asbestos policy is approved by the Facilities and Operations Safety Committee (FOSC) which is chaired by the FMAS Associate Vice-Principal, and not by the Board of Governors. While EHS' Internal Responsibility System outlines a comprehensive accountability framework that assigns responsibilities to the Board of Governors for adequate resources, the policy oversight mechanisms may not be sufficiently clear to define roles and responsibilities between the operational stakeholders.

PROCESS IMPROVEMENT EHS-01

- **Proper authority and establishing clear accountability measures:**
 - Senior administration and management must review EHS's mandate vis-à-vis other McGill stakeholders involved with asbestos management to clearly define and formalize the necessary authority to the responsible units and personnel. The clear lines of authority will enable the responsible units to ensure consistency in the implementation of process controls across the institution. The review of EHS's mandate must include what role they must have in construction projects.
 - Management must establish clear accountability measures for McGill stakeholders to ensure that everyone is aware of their responsibilities and the consequences of non-compliance to policies and procedures. This can be achieved through the development of performance metrics and other monitoring tools.

PROCESS IMPROVEMENT EHS-02

- **Review and approval of the Asbestos Policy:** Management must ensure that operational, senior administration, and governance stakeholders review the current asbestos policy and submit it for approval in a timely manner to the appropriate governance instance within the University's institutional policy framework to provide the authority required to achieve its mandate.

4.4.2 / Asbestos Management Operations, Plan and Registry

EHS is the custodian of the University asbestos registry as required by the Quebec's Regulation respecting occupational health and safety (article 69.16). The register reports the instances of asbestos samples tested across University buildings and constitutes a source of information available to the McGill community. The register is updated with results from inspections performed by EHS and the PMO.

EHS staff conduct periodic inspections of buildings known to contain asbestos to verify the condition of these spaces. The PMO, via the third parties it hires, also performs characterizations and inspections. McGill in-house facilities staff perform a small portion of the asbestos abatement work, when it can take place under moderate- or low-risk asbestos work conditions. McGill contracts with recognized firms to characterize and perform asbestos abatement work that is more resource intensive and is performed in high-risk conditions.

However, the asbestos-related policy and procedures currently published on the EHS website are not up-to-date (we were informed these will be updated once the asbestos management plan is adopted). Also of note, while a comprehensive asbestos management plan has been in development for several years, it remains to be deployed.

In recent CNESST inspections (March 28, 2023), the inspector reported two deficiencies regarding McGill's asbestos registry:

1/ Regarding the asbestos information completeness contained in the registry:

The employer does not ensure that the asbestos register contains [all of the] dates and results of inspections. The CNESST inspector reviewed registry records (a record is an registry entry of a sample to be tested) for the MS building and noted incomplete records (four records did not indicate the dates when the samples were tested, and the results obtained).

Internal Audit confirmed that four registry records for the three Macdonald Campus buildings were incomplete (MS 4 of 27, Raymond 0 of 6, and no records were entered for Barton).

2/ Regarding accessibility of the registry information:

The employer does not ensure that the asbestos registry is available to workers and their representatives.

The CNESST inspector noted that the asbestos registry was not available to workers without a McGill email address (the registry is currently available to the McGill community via an intranet or upon request).

The requirements of the Regulation respecting occupational health and safety¹¹ are clear that the registry must be made available to contracted workers and their representatives. Currently, should third parties working on McGill premises need to consult the registry, reports are requested and obtained from McGill PMO or EHS.

Internal Audit observed that while asbestos characterization data for the three buildings served to guide asbestos removal work, the data is part of a backlog of entries that remains to be entered into the register.

PROCESS IMPROVEMENT EHS-03

- **Comprehensive compliance monitoring plan:** Management must develop a comprehensive plan for monitoring compliance with established asbestos management process controls. The plan must include regular institutional policies and procedures reviews, as well as ongoing communication and training to ensure that all stakeholders (PMO and EHS) are aware of, and fulfill, their responsibilities.

4.4.3 / EHS Capacity

There was only one EHS staff member who was qualified to perform the required asbestos tests in December 2022 and the latter was fully booked during the period leading up to previously approved vacation until the new year. In addition to the EHS Operations Manager being on medical leave, the EHS staff's backup was not yet trained on asbestos testing. As a result, the asbestos testing was only performed in January 2023.

PROCESS IMPROVEMENT EHS-04

- **EHS capacity and backup for key roles:** Considering that EHS services must be seen as essential, management must review EHS's staff capacity and availability at the Macdonald Campus to respond to the needs when time-sensitive requests are received. In a broader sense, the capacity must be aligned with their reviewed mandate (refer to Process Improvement EHS-01). Management should consider additional backup options to fill potential gaps and support key roles and/or critical tasks, such as contracting with external firms for additional support where the availability of internal staff is unable to provide a timely response within the protocol. Specifically relating to the Macdonald Campus, management should consider appointing a dedicated EHS resource to address all occupational health and safety matters arising at the campus.

¹¹ Source: Articles 69.16 and 69.17 of the Regulation respecting occupational health and safety

4.4.4 / Asbestos Training and Awareness

EHS has developed asbestos training programs since 2001 and provides these presentations broadly to the McGill community. McGill's internal requirement is to provide staff with initial training, followed by renewal of knowledge every three years to ensure users are up to date with the information. We observed that asbestos training is tailored to groups that require it most, such as contractors, network cabling technicians, and FMAS staff (i.e. trades, Building Operations, PMO, Building Services, and Security personnel).

EHS updated the asbestos presentation in September 2022 and actively communicated it to a select portion of the McGill community. It was noted however that student groups did not receive a notification of the September 2022 updated awareness and training program, though it was available online.

The process to identify persons who require initial training as well as renewal training every three years remains largely manual and challenging to monitor. Furthermore, training is not mandatory, creating knowledge gaps at key positions. For example, the AES Renovations Logistics Specialist whose role was to liaise between the projects and the faculty users had not received training prior to taking on the position and had a rudimentary awareness of asbestos related matters.

Health and Safety Training to workers on construction sites is administered by the GC, although it is McGill's responsibility to ensure compliance.

PROCESS IMPROVEMENT EHS-05

- **Awareness:** Management should review the current coordination and communications tools to ensure that awareness campaigns to stakeholders, particularly construction workers and students, achieve their intended outcomes.

4.4.5 / Health and Safety Culture at McGill

McGill has University-wide safety committees such as the University Health and Safety Committee, the University Laboratory Safety Committee, the FOSC, as well as local Faculty and Departmental safety committees that provide broad oversight over EHS matters.

The committees have advisory and/or operational roles that support policy development and provide operational activities oversight. While the EHS Unit is a member and participates in each of these committees in varying capacities, it does not chair any of these committees. The mandate of the FOSC follows:

The role of the Facilities and Operations Safety Committee (FOSC) is to promote and support the continuous improvement of health and safety practices in all McGill University facilities, with the aim of providing excellent infrastructure services, by placing the highest importance on protecting the well-being of all University community members. From a health and safety standpoint, the goal is to develop a safety culture whereby both union and management representatives are proactive and participate collaboratively in the prevention, reporting, recording, and correction of hazards. (Quebec Act & Regulation Respecting Occupational Health & Safety).

PROCESS IMPROVEMENT EHS-06

- **Enhancing health and safety culture:** The University has a strong governance and operational foundation from which to further promote health and safety. Improving the culture of health and safety in the University setting requires a comprehensive and multi-faceted approach that involves all stakeholders. The following are some means the University should adopt to promote health and safety culture:
 - Demonstrate a visible and consistent commitment to health and safety;
 - Establish and communicate clear comprehensive principles and guidance (i.e. policies, programs, operating procedures) specific to the wide range of areas present at the University;
 - Ensure adequate resources are available to provide awareness and training and safety programs for all members of the University community, including students, faculty and staff, as well as contractors;
 - Foster effective communication channels to promote health and safety information, updates and awareness campaigns;
 - Encourage reporting and investigations;
 - Engage stakeholders in health and safety initiatives;
 - Regularly review operations to promote continuous improvement.

4.5 / Emergency Operations Centre Processes

4.5.1 / Roles and Responsibilities

It was reported that information gathered by the EOC was either incomplete, inaccurate or not shared on a timely basis, which resulted in suboptimal flow of information and decision-making.

In addition, it was reported that the EOC did not get the full picture of the incident as information about the construction site and CNESST interactions during the emergency period, as well as actions taken in the pre-emergency period, were not integrated in EOC discussions. The general lack of appropriate information is indicative of a lack of clarity in the responders' understanding of the role of the EOC and its objectives, as well as of their individual roles and responsibilities and of the reporting lines within the EOC.

PROCESS IMPROVEMENT EOC-01

- **Roles and responsibilities:** To allow for increased success in emergency responses, EOC leadership should clarify the reporting lines and the roles and responsibilities of each responder, including subject matter experts, and set clear expectations at the beginning of the EOC activation. In addition, new EOC responders, especially subject matter experts, should be brought up to speed on the role of the EOC so that all responders are aligned and work towards the same objectives and priorities.

4.5.2 / Policy Group

The role of the PG, which is made up of members from McGill's senior administration, is to provide high-level strategic support and direction to the EOC. The PG was not activated in response to the emergency at Macdonald Campus.

The PG could have guided the EOC on strategic decisions, especially given that the emergency occurred at the Macdonald Campus, which operates somewhat differently than the downtown campus, and given the fact that the emergency management involved high-impact decisions such as closure of buildings and class cancellations. It was further reported in the debrief of this EOC that the PG could have changed perception of priorities, hence impacting the overall efficiency and effectiveness of the emergency response.

PROCESS IMPROVEMENT EOC-02

- **Policy Group:** Management should review under which criteria the PG should be activated to ensure the EOC is provided with appropriate consistent high-level strategic support and direction to manage an emergency.

4.5.3 / Communication

The Macdonald Campus community raised concerns about the lack of immediacy and frequency of updates and the method of communication during the emergency period, highlighting that communication should have been more frequent and should have included interactive in-person or virtual meetings. The limited communication from the EOC stemmed from the challenges faced by the EOC to gather accurate and complete information on a timely basis.

It was also reported that the limited communication from Faculty leadership and the fact that initial written communications were being sent by someone they did not know (Senior Director of Campus Public Safety, on behalf of the EOC) was demoralizing to the Macdonald Campus community, who was already experiencing a feeling of disconnection from the downtown campus in general.

In terms of emergency notification system, the Macdonald Campus community reported that the initial communication should have been sent as an emergency alert on the cell phone, in addition to the email communication.

Furthermore, the written communications were mainly restricted to updates on the buildings' re-opening timelines. Although the results of the air and dust testing were shared with the community once available, the laboratory test results supporting these reports were not shared with the community until April 24, 2023, almost a month after the EOC was de-activated, which could be seen as insufficient transparency from the EOC.

PROCESS IMPROVEMENT EOC-03

- **Communication:** The EOC should review its overall emergency communication approach by reviewing the frequency of communication and method of communication delivery (online written communications and in-person/virtual meetings) to provide ongoing and optimal reassurance and prevent the impacted community from feeling isolated during the emergency period, in collaboration with local leadership of the impacted community. EOC leadership should brief all responders on the basics of emergency communication to ensure accurate and complete information is gathered on a timely basis which will in turn facilitate an efficient and effective ongoing communication process with the impacted community and mitigate the existing feeling of disconnection between the Macdonald Campus and the downtown campus. In addition, the EOC should consider using the emergency notification system, where warranted, by sending emergency alert messages on cell phones so that the impacted community is instantly notified of the emergency updates, especially for the initial communication. Furthermore, the EOC should review the type of information being communicated and provide any reports or other supporting documents deemed to be of importance to the impacted community on a timely basis, to ensure continuous transparency of information.

5 // APPENDICES

Appendix 1: Summary of Process Improvement Recommendations

INTERNAL AUDIT – MR23-03 ASBESTOS INVESTIGATION REPORT – RECOMMENDATION TABLE (AUGUST 2023)

REFERENCE	RECOMMENDATION	TITLE	DESCRIPTION
FACILITIES MANAGEMENT AND ANCILLARY SERVICES (FMAS)			
IA.01	Process Improvement FMAS-01	Integration of the communication silos	Communication processes between all stakeholders should be reviewed and improved when relating to construction projects involving hazardous substances (such as asbestos). The role and responsibility of each stakeholder, including FMAS Units (internal PM, PMO, EHS, Building Operations), the PM and users in these situations should be formally established, agreed and shared amongst the parties at the beginning of each project phase, to facilitate an effective communication and escalation process.
IA.02	Process Improvement FMAS-02	Asbestos incident response protocol	Given that the treatment of the dust concerns differed from the expected protocol, the asbestos incident response protocol should be reviewed to improve coordination between parties, address how triage can be better performed, improve response times, and increase awareness of the asbestos incident response protocol by responsible parties in all cases, but in particular where shared spaces and construction projects are involved.
FACULTY OF AGRICULTURAL AND ENVIRONMENTAL SCIENCES (AES)			
IA.03	Process Improvement AES-01	Moving of specialized equipment	Prior to moving any specialized equipment from construction areas that may involve MLCA, the Faculty Safety Chairs should ensure that a process is implemented such that the Faculty members are made aware of the internal procedures relating to decommissioning and decontamination so that the latter, through an appropriate role, such as the Building Director or Renovations Logistics Specialist, can coordinate with EHS accordingly.
PROJECT MANAGEMENT OFFICE (PMO)			
IA.04	Process Improvement PMO-01	Enforcing health and safety controls on the construction site	The PMO must ensure that further adequate oversight controls are in place to emphasize that the primary responsibility for compliance with the obligations relating to a construction site rests with the GC. Despite the constraints encountered and the complexity of the context, it is imperative that the GC ensures appropriate health and safety mechanisms are maintained. These must be in accordance with the contractual documentation and the Safety Code for the Construction Industry, both of which include many clauses dictating obligations regarding dust control and regular cleaning of construction sites, as well as adequate protection of the surrounding equipment and furniture from construction dust/debris.
IA.05	Process Improvement PMO-02	Communication of CNESST reports	In coordination with McGill Legal Services, Management should implement a control process such that CNESST inspection reports be promptly communicated to McGill to enable the PM and PMO to proactively address significant concerns raised by CNESST. This proactive approach will facilitate timely corrective actions and ensure the adherence to necessary safety measures throughout the project lifecycle. If infractions are not addressed in a timely manner, the PM must escalate the issue and notify the PMO for further actions where warranted.
IA.06	Process Improvement PMO-03	Safety officer	The PMO must ensure that the GC complies with regulatory compliance requirements to hire a safety officer for the construction site in order to mitigate risks, such as increased accidents, insurance costs, legal liability and work closures as well as reputational risk.
IA.07	Process Improvement PMO-04	Air circulation and ventilation systems	It is acknowledged that the management of air flows and ventilation systems is inherent to all construction projects and is one process control amongst many when managing asbestos work conditions. In environments with the presence of asbestos, and when adjacent to occupied spaces with users, additional air monitoring measures should be implemented to ensure continuous adequate air pressure within the construction site and the surrounding occupied areas. This will maintain optimal air conditions and prevent the dispersion of asbestos fibers beyond the designated construction site, hence minimizing the risk of asbestos contamination.
IA.08	Process Improvement PMO-05	Construction site logistics	McGill must prioritize at all times, and to the extent possible, construction site logistics that favor segregating construction activities from user activities, including the means and methods designed for the delivery and handling of construction materials, and for the disposal of construction waste to and from points of service, in place of overlapping with occupied spaces, to minimize the risk of contamination.

Appendix 1: Summary of Process Improvement Recommendations

REFERENCE	RECOMMENDATION	TITLE	DESCRIPTION
IA.09	Process Improvement PMO-06	Shared spaces	Entry into construction areas should be limited or prohibited, where warranted, to those who are not involved in the project process or construction activities. When projects require shared spaces, safety measures must be implemented. These can include clearly defined boundaries to separate construction site from user-occupied areas, and restricting access to authorized personnel. In order to prevent exposure to hazardous materials, it is important to seal off and segregate construction site from all non-construction operations. In high-risk projects that include shared spaces, heightened monitoring controls should be implemented to ensure proper user safety. Project planning must realistically address these challenges and constraints at the earliest stage possible while monitoring the projects' risks and complexity. Such planning is necessary to avoid last minute decisions/ solutions involving many stakeholders.
IA.10	Process Improvement PMO-07	Anticipated delivery	The PM, in coordination with project professionals and GC, must ensure that the anticipated delivery procedure and relevant documentation is officially completed before the faculty users are allowed to occupy a room, as well as notifying construction workers not to use these spaces. This will ensure clear boundaries as well as clear responsibility in terms of the maintenance and cleaning of the delivered room, hence minimizing the risks of contamination and dust accumulation.
IA.11	Process Improvement PMO-08	Rigorous project monitoring	It is in the PM's mandate to represent McGill, to act in its best interests and thus to ensure that the project is professionally managed, on behalf of McGill, according to the best industry practices and McGill's framework and requirements. One of the PM's important tasks is to ensure quality control on all activities from all parties and stakeholders in the construction process so that McGill's General and Complementary Conditions and the Professionals' specifications be respected and applied on the construction site by the GC. Based on various sources of information, it appears that tighter project management on the construction site could have prevented certain situations from occurring. PMs (internal or external to McGill) should reinforce their vigilance and make sure that the GC always follows contractual General and Complementary Conditions and professional specifications applicable to the construction site and the project's context.
IA.12	Process Improvement PMO-09	Formally review PM's capacity to deliver on mandate when important changes in scope	The scale and number of projects under the PM's oversight increased very significantly without evidence of a PMO review of the PM's capacity to deliver the mandate. Due to the large size and complexity of the Macdonald Campus DM Projects, along with the addition of eight new projects that were not originally listed, it would have been beneficial for the PMO to define a specific plan to review and consider mechanisms for updating and identifying the necessary resources and actions needed to accommodate the increased workload. This would have resulted in a well-documented revision of the project planning.
IA.13	Process Improvement PMO-10	Monitoring of the projects and PMs	As the leader and director of construction and renovation projects on McGill properties and facilities, the PMO is responsible for the tendering, selection, and awarding of contracts to consultants and contractors. However, due to limited delivery capacity, PMO had outsourced the project management role to a professional external firm. To ensure the PM's performance is monitored effectively, PMO uses various management tools and activities. For important and riskier projects, PMO should adopt a tighter approach on external PM oversight. It should require comprehensive periodic (i.e. monthly) reports prepared by the external PM to provide more detailed project progress assessments. For the scale of the projects currently reviewed, although occasional remarks about the projects were recorded in the 'Needs and Efforts Status' updates, a more comprehensive monthly report covering key aspects of project management should have been considered. While weekly meetings were held with the PMO during certain periods, these meetings covered multiple projects. We believe that fully documented monthly reports should be produced to effectively support project monitoring.
IA.14	Process Improvement PMO-11	Formalizing the project risk management process	Management should formalize and strengthen the project risk management process, including defining criteria to prioritize projects requiring a more robust approach when dangerous materials such as asbestos are involved. The process must include the risk assessment, identification and formalization of key risk mitigation plans, risk monitoring, and updating the risk assessment throughout the project, as well as the establishment of a risk contingency that is managed throughout the delivery of the project.

Appendix 1: Summary of Process Improvement Recommendations

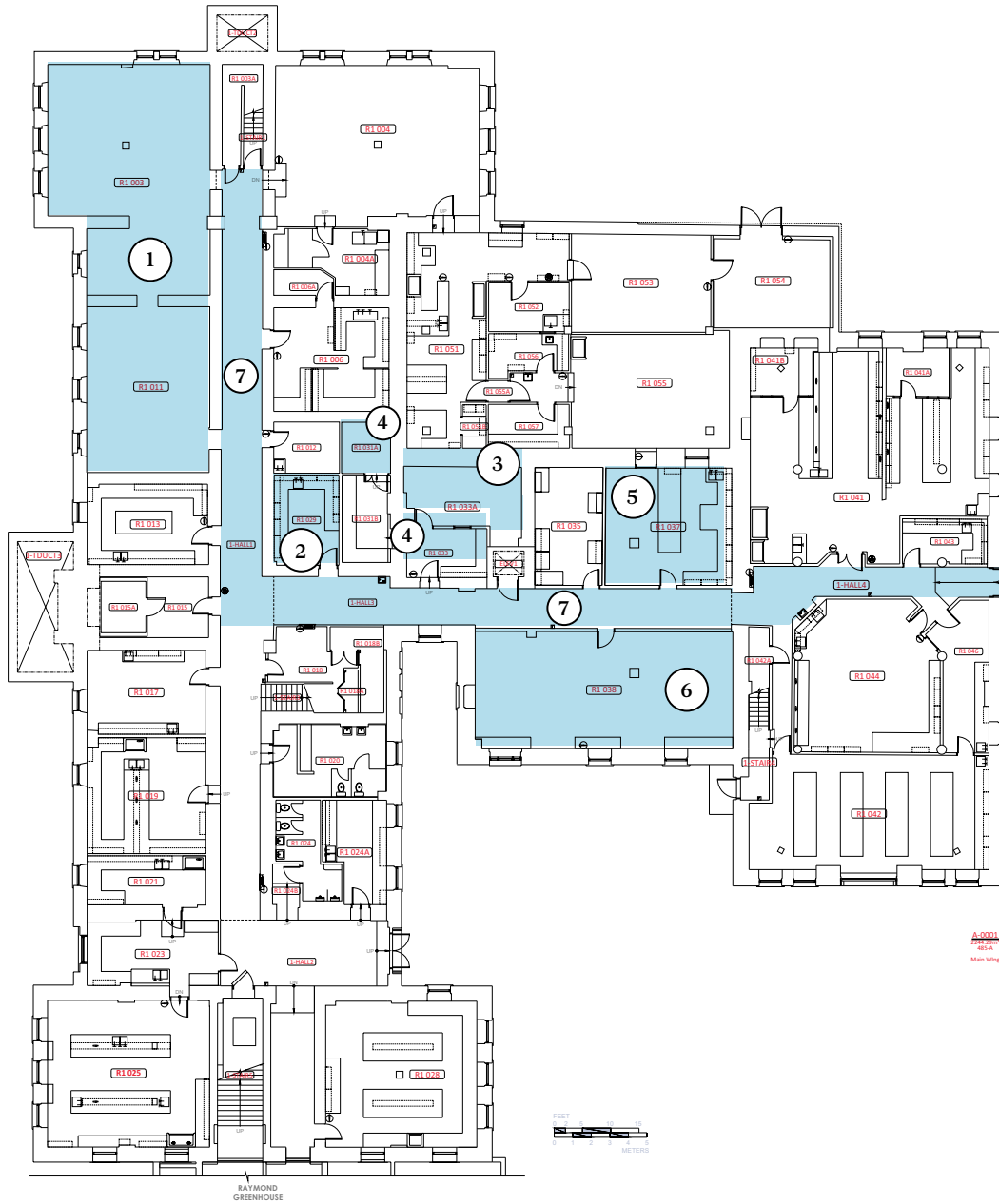
REFERENCE	RECOMMENDATION	TITLE	DESCRIPTION
IA.15	Process Improvement PMO-12	Risk contingency additional to the 10% construction contingency	Projects encompass different types of contingencies that may need to be accessed during different phases of the project, such as for design and construction phases. During the management of the execution of the project, these alternative types of contingencies should be considered, particularly when there is a substantial presence of dangerous or hazardous substances (such as asbestos). Therefore, Management should review the project contingency allocation and implement a risk management process that establishes a risk contingency allocation that will track the evolution of pertinent risks as appropriate on a project-by-project basis.
IA.16	Process Improvement PMO-13	Additional supervision by industrial hygiene consultants and clarification of their mandate	The industrial hygiene consultants' site supervision must reflect and correspond to the project's context and risk conditions when related to the management of asbestos. Consequently, Management must revise the contracts of industrial hygiene consultants to ensure that site supervision during construction activities provides adequate coverage of the full scope of work, including asbestos work in moderate- and low-risk conditions when needed.
ENVIRONMENTAL HEALTH AND SAFETY (EHS)			
IA.17	Process Improvement EHS-01	Proper authority and establishing clear accountability measures	<ul style="list-style-type: none"> - Senior administration and management must review EHS's mandate vis-à-vis other McGill stakeholders involved with asbestos management to clearly define and formalize the necessary authority to the responsible units and personnel. The clear lines of authority will enable the responsible units to ensure consistency in the implementation of process controls across the institution. The review of EHS's mandate must include what role they must have in construction projects. - Management must establish clear accountability measures for McGill stakeholders to ensure that everyone is aware of their responsibilities and the consequences of non-compliance to policies and procedures. This can be achieved through the development of performance metrics and other monitoring tools.
IA.18	Process Improvement EHS-02	Review and approval of the Asbestos Policy	Management must ensure that operational, senior administration, and governance stakeholders review the current asbestos policy and submit it for approval in a timely manner to the appropriate governance instance within the University's institutional policy framework to provide the authority required to achieve its mandate.
IA.19	Process Improvement EHS-03	Comprehensive compliance monitoring plan	Management must develop a comprehensive plan for monitoring compliance with established asbestos management process controls. The plan must include regular institutional policies and procedures reviews, as well as ongoing communication and training to ensure that all stakeholders (PMO and EHS) are aware of, and fulfill, their responsibilities.
IA.20	Process Improvement EHS-04	EHS capacity and backup for key roles	Considering that EHS services must be seen as essential, management must review EHS's staff capacity and availability at the Macdonald Campus to respond to the needs when time-sensitive requests are received. In a broader sense, the capacity must be aligned with their reviewed mandate (refer to Process Improvement EHS-01). Management should consider additional backup options to fill potential gaps and support key roles and/or critical tasks, such as contracting with external firms for additional support where the availability of internal staff is unable to provide a timely response within the protocol. Specifically relating to the Macdonald Campus, management should consider appointing a dedicated EHS resource to address all occupational health and safety matters arising at the campus.
IA.21	Process Improvement EHS-05	Awareness	Management should review the current coordination and communications tools to ensure that awareness campaigns to stakeholders, particularly construction workers and students, achieve their intended outcomes.

Appendix 1: Summary of Process Improvement Recommendations

REFERENCE	RECOMMENDATION	TITLE	DESCRIPTION
IA.22	Process Improvement EHS-06	Enhancing health and safety culture	<p>The University has a strong governance and operational foundation from which to further promote health and safety. Improving the culture of health and safety in the University setting requires a comprehensive and multi-faceted approach that involves all stakeholders. The following are some means the University should adopt to promote health and safety culture:</p> <ul style="list-style-type: none"> - Demonstrate a visible and consistent commitment to health and safety; - Establish and communicate clear comprehensive principles and guidance (i.e. policies, programs, operating procedures) specific to the wide range of areas present at the University; - Ensure adequate resources are available to provide awareness and training and safety programs for all members of the University community, including students, faculty and staff, as well as contractors; - Foster effective communication channels to promote health and safety information, updates and awareness campaigns; - Encourage reporting and investigations; - Engage stakeholders in health and safety initiatives; - Regularly review operations to promote continuous improvement.
EMERGENCY OPERATIONS CENTRE (EOC)			
IA.23	Process Improvement EOC-01	Roles and responsibilities	To allow for increased success in emergency responses, EOC leadership should clarify the reporting lines and the roles and responsibilities of each responder, including subject matter experts, and set clear expectations at the beginning of the EOC activation. In addition, new EOC responders, especially subject matter experts, should be brought up to speed on the role of the EOC so that all responders are aligned and work towards the same objectives and priorities.
IA.24	Process Improvement EOC-02	Policy Group	Management should review under which criteria the PG should be activated to ensure the EOC is provided with appropriate consistent high-level strategic support and direction to manage an emergency.
IA.25	Process Improvement EOC-03	Communication	The EOC should review its overall emergency communication approach by reviewing the frequency of communication and method of communication delivery (online written communications and in-person/virtual meetings) to provide ongoing and optimal reassurance and prevent the impacted community from feeling isolated during the emergency period, in collaboration with local leadership of the impacted community. EOC leadership should brief all responders on the basics of emergency communication to ensure accurate and complete information is gathered on a timely basis which will in turn facilitate an efficient and effective ongoing communication process with the impacted community and mitigate the existing feeling of disconnection between the Macdonald Campus and the downtown campus. In addition, the EOC should consider using the emergency notification system, where warranted, by sending emergency alert messages on cell phones so that the impacted community is instantly notified of the emergency updates, especially for the initial communication. Furthermore, the EOC should review the type of information being communicated and provide any reports or other supporting documents deemed to be of importance to the impacted community on a timely basis, to ensure continuous transparency of information.

Appendix 2: Building Floor Plans with Room Descriptions

RAYMOND BUILDING – LEVEL 1



Appendix 2: Building Floor Plans with Room Descriptions

1/ R1-003 AND R1-011

Phytorium. Shared space used by both construction workers and McGill users.

- **October 17, 2022**

The CNESST inspector stopped work inside the Phytorium until a complete cleaning of all surfaces was carried out.

2/ R1-029

- **August 25, 2022:**

BSC moved from this location to MS1-067 during construction without being decontaminated.

- **January 26, 2023:**

EHS took bulk sample from debris on top of the BSC; tests positive.

- **February 3, 2023:**

Industrial hygiene consultants took sample from debris on top of the BSC; tests negative.

3/ R1-033A

Location of CT-Scanner. Complaints of dust in this location as well as R1-031A and R1-033. Shared space used by both construction workers and McGill users.

4/ R1-031A AND R1-033

Used by the laboratory that runs the CT-Scanner.

5/ R1-037

- **January 19, 2023:**

Bulk sample taken; tests negative.

6/ R1-038

Fume hoods, which drew in a lot of air and possibly dust, were moved here. Shared space used by both construction workers and McGill users.

- **September 26, 2022:**

Sample taken from construction debris on fume hood, which tests positive.

- **January 19, 2023:**

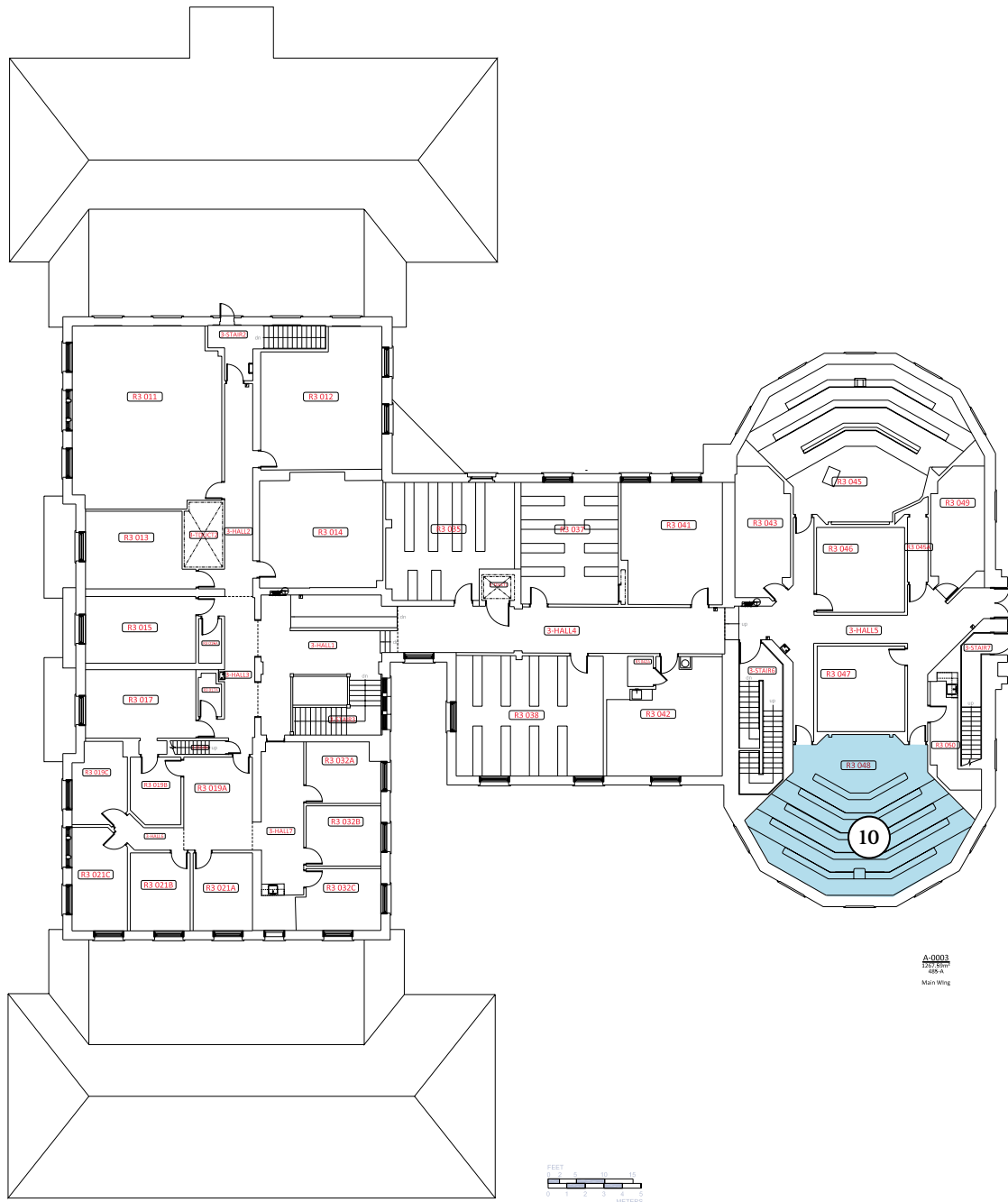
Bulk sample and wipe sample taken. Both test positive.

7/ R1-HALL1, R1-HALL3 AND R1-HALL4

Location of corridors, hallways, entrances and exits. Shared space used by both construction workers and McGill users.

Appendix 2: Building Floor Plans with Room Descriptions

RAYMOND BUILDING – LEVEL 3

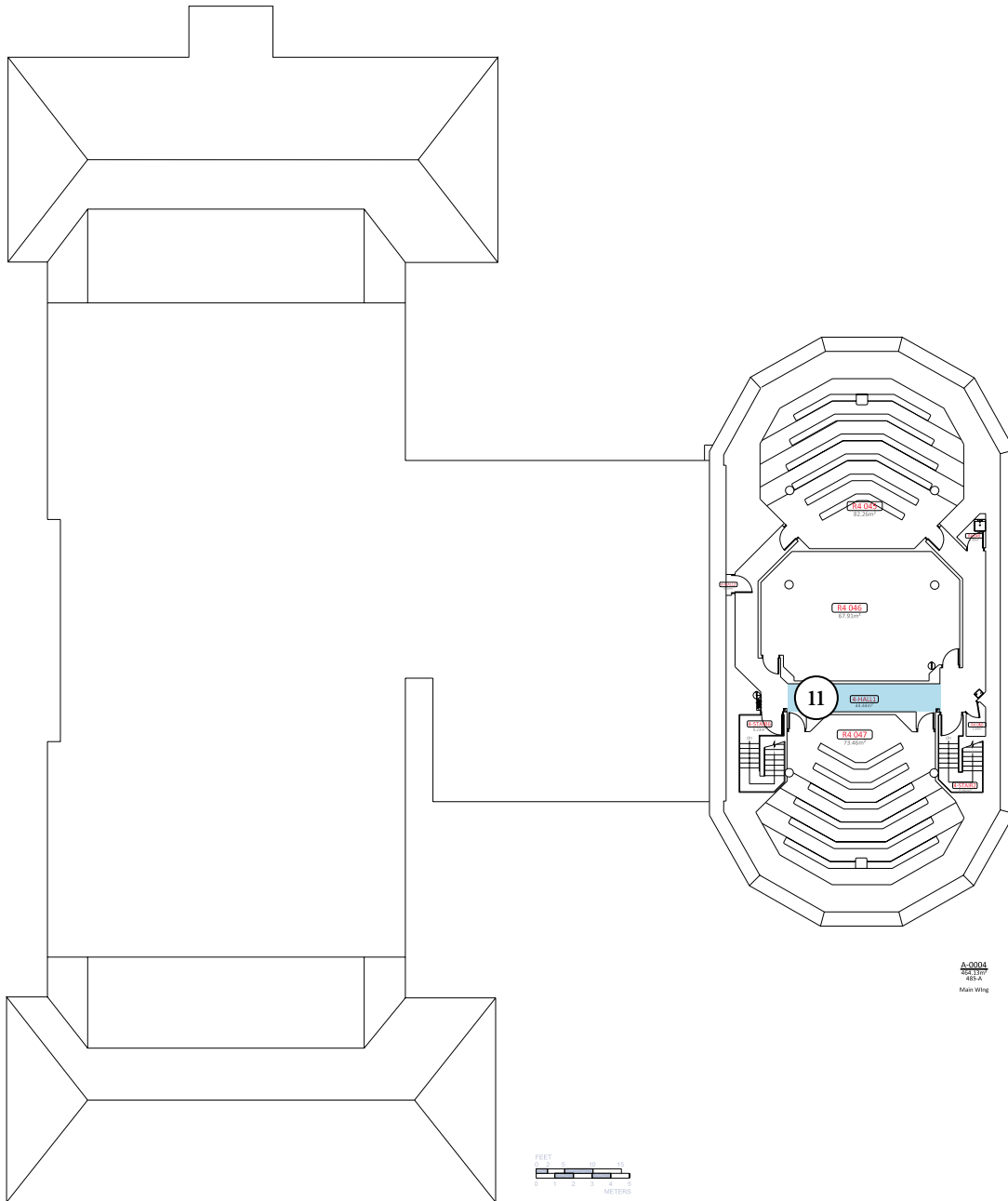


10/ R3-048

- **January 19, 2023:**
Bulk sample and wipe sample taken from R3-048. Bulk sample tests positive; wipe sample tests negative.

Appendix 2: Building Floor Plans with Room Descriptions

RAYMOND BUILDING – LEVEL 4

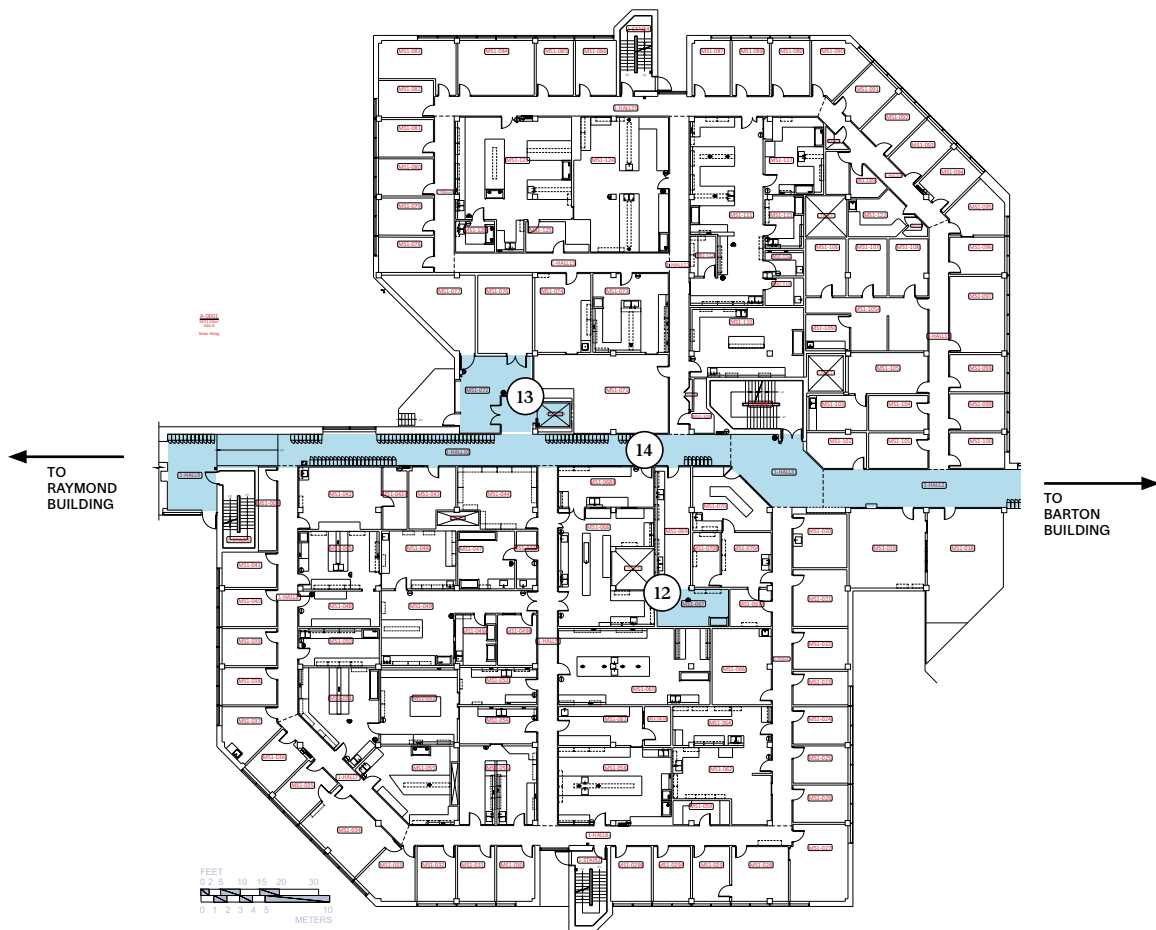


11/ R4-HALL1

- **January 19, 2023:**
Bulk sample taken from R4-Hall1; tests positive.

Appendix 2: Building Floor Plans with Room Descriptions

MACDONALD-STEWART BUILDING – LEVEL 1



12/ MS1-067

- **August 25, 2022:**
BSC moved from R1-029 to this location during construction without being decontaminated.
- **January 26, 2023:**
EHS took bulk sample from debris on top of the BSC; tests positive.
- **February 3, 2023:**
Industrial hygiene consultants took sample from debris on top of the BSC; tests negative.

Location of loading dock and elevator.
Shared space used by both construction workers and McGill users.

14/ MS1-HALL9, MS1-HALL10, MS1-HALL3 AND MS1-HALL2

Location of corridors, hallways, entrances and exits. Shared space used by both construction workers and McGill users.

13/ MS1-072 AND MS1-TDUCT109

