From: "Gordon Webb"
Sent: Tue, 9 Feb 2021 14:50:46 +1100
To: "Troy Subotic" <TSubotic@wollongong.nsw.gov.au>
Cc: "Peter Kellaway" <pkellaway@wollongong.nsw.gov.au>
Subject: FW: Helensburgh Community Centre - floor structure replacement, subfloor drainage and subfloor ventilation improvements - UPDATE!!!
Attachments: Helensburgh Community Centre (2).pdf, Australian_Mould_Guidelines_2005-1.pdf, 20-12361-01-OH.pdf

Hi Troy,

To be brief we are dealing with latent conditions at HB CC.

I was not made aware of the full extent of asbestos and/or extensive mould in the sub floor area at this site, this soon became apparent on exposure of the sub floor area. Quadracon were engaged via Vendor Panel to complete this project, they requested to cut a small hatch in the floor late last year, it was immediately apparent that there was extensive mould in situ and asbestos fragments. As a matter of due diligence I had the sub floor area professionally tested which identified microbial contamination and asbestos requiring professional removal, the floor was then sealed back up again. Quadracon have been working on a safe solution as per the Clearsafe recommendations and Council direction, as such from me to Quadracon;

I appreciate your patience with this challenging project.

As you are well aware I requested a hygienist inspect the site prior to opening up the floor area, this was to investigate some potential issues. Thank you for organising a hygienist inspection and report, Council have received the Clearsafe report and I have consulted with the major stakeholders within WCC. Approximately 90% of the report mentions conditions and solutions of which Council is aware of, have considered and/or in the process of resolving, Council has confirmed a way forward for this project. To be brief, Council are committed to completing the original SOWs, the entire floor area will not be replaced within this project. Council and Quadracon need to manage this project in a step process to ensure safety and practicality for all.

- Site Access - The main hall must be isolated from the staff and public for the duration of the works – please ensure all doorways and access points are secured and NO ACCESS signage is in situ (most of this is already done).
- PPE – all personnel must use PPE as required in regard to asbestos removal, mould guidelines, confined spaces and Safework NSW.
- Confined space access – confined space Australian Standards and protocols must be adhered to as per Quadracon's confined space safety documentation.
- Asbestos removal and treatment – it looks like less that 10sq/m - asbestos removal Australian Standards and protocols must be adhered to, include continuous air monitoring, hen peck sub floor area, colour spray glue bearer/joist packers in sub floor area, asbestos disposal (receipts for Council), clearance certificate to Council.

- Flooring work “hold point” – open up floor area to allow inspection by Council to determine if a change of scope is required and also to examine other damaged areas. Inspection required by Council structural engineer, Geotech engineer and building coordinator.
- Flooring work and sub floor work – once Council approves the recommencement of work, business as usual and the works can recommence as per the SOWs (and potential change of scope).

At your earliest convenience please forward to Council any impact this may have on the program schedule.

Call me if you need further clarification.

I have a site meeting tomorrow with Quadracon, the hygienist and the demolition contractor to determine a way forward with this project, after tomorrow’s meeting Quadracon will be providing me with a variation in regards to the latent conditions and managing the site and the project safely. I have had various meetings with all the stakeholders, I have kept everyone in the loop, being my supervisor Peter Kellaway, ISP, structural engineer, Geotech engineer and Community Facilities, they are all aware of the situation and the subsequent delays.

I hope this brief helps explain the latest with this challenging project.

wollongong
city of innovation

Gordon Webb
Coordinator Building Construction + Maintenance
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Our Values Sustainable Courage Respect Integrity One Team

From: Gordon Webb
Sent: Wednesday, 23 December 2020 12:56 PM
To: Jeff Hunt <jeff.hunt@quadracon.com.au>
Cc: Andrew McKenzie <andrew.mckenzie@quadracon.com.au>; Leeca Horsman <LHorsman@wollongong.nsw.gov.au>; Jan Noble <JNoble@wollongong.nsw.gov.au>; Peter Kellaway <pkellaway@wollongong.nsw.gov.au>
Subject: FW: Helensburgh Community Centre - floor structure replacement, subfloor drainage and subfloor ventilation improvements - UPDATE!!!

Hi Jeff,

Thanking you, it is looking like we should block out the user groups until April 2021 atm. Once you have compiled the costing submission please forward that through to me asap.

Just to let you know that I will be on leave from 26/12 to 4/1 during the Council Xmas shut down period. During this time if you need any assistance please contact either Trent Doering on 0401743698 or Daniel Cappetta on 0447003465. Irrelevant really but just in case….

Have a good Xmas to all at Quadracon!!!!

regards

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Our Values SUSTAINABLE COURAGE RESPECT INTEGRITY ONE TEAM

From: Jeff Hunt <jeff.hunt@quadracon.com.au>
Sent: Wednesday, 23 December 2020 12:13 PM
To: Gordon Webb <GWebb@wollongong.nsw.gov.au>
Cc: Andrew McKenzie <andrew.mckenzie@quadracon.com.au>; Murray Finch <murray.finch@quadracon.com.au>; Leeca Horsman <LHorsman@wollongong.nsw.gov.au>
Subject: RE: Helensburgh Community Centre - floor structure replacement, subfloor drainage and subfloor ventilation improvements - UPDATE!!!

Hi Gordon

Please see our attached updated Program, to include the latest additional steps required for the mould/asbestos removal, hold points, Council Engineer inspections date.
We have allowed an estimated timeframe of 1 x week for any additional works which may eventuate from the Engineers inspection. The Engineer inspection date is noted at Monday February the 7th.

We are also putting together a costing submission that will occur due to the need to comply with:

- Recommendations set out in Item 9/ page 16 of Clearsafes report (attached)
- Australian Mould guide lines (attached)

Happy to discuss further, and please advise of contact details for your colleague who will be covering you over the break.

Kind Regards

Jeff Hunt, Operations Manager NSW
Quadracon Building **M:** 0421 055 224
W: www.quadracon.com.au **T:** 1800 845 101
NSW Office: 18/17 Cemetery Rd, Helensburgh NSW 2508

From: Gordon Webb <GWebb@wollongong.nsw.gov.au>
Sent: Tuesday, 22 December 2020 7:27 AM
To: Andrew McKenzie <andrew.mckenzie@quadracon.com.au>
Cc: Jeff Hunt <jeff.hunt@quadracon.com.au>; Leeca Horsman <LHorsman@wollongong.nsw.gov.au>
Subject: RE: Helensburgh Community Centre - floor structure replacement, subfloor drainage and subfloor ventilation improvements - UPDATE!!!

Hi Andrew,

I am fielding a few questions in regard to this project and Council require some feedback so Council can shuffle about the user groups if needed.

At your earliest convenience please forward to Council any impact this (below email details) may have on the program schedule, an answer by COB Wednesday would be much appreciated.

P.S. I will be on leave 11/1 to 22/1 and need to brief another coordinator asap.

regards

Gordon Webb
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From: Gordon Webb
Sent: Wednesday, 16 December 2020 10:58 AM
To: Andrew McKenzie <andrew.mckenzie@quadracon.com.au>
Cc: Jeff Hunt <jeff.hunt@quadracon.com.au>
Subject: Helensburgh Community Centre - floor structure replacement, subfloor drainage and subfloor ventilation improvements - UPDATE!!!

Hi Andrew (Quadracon),

I appreciate your patience with this challenging project.

As you are well aware I requested a hygienist inspect the site prior to opening up the floor area, this was to investigate some potential issues. Thank you for organising a hygienist inspection and report, Council have received the Clearsafe report and I have consulted with the major stakeholders within WCC. Approximately 90% of the report mentions conditions and solutions of which Council is aware of, have considered and/or in the process of resolving, Council has confirmed a way forward for this project. To be brief, Council are committed to completing the original SOWs, the entire floor area will not be replaced within this project. Council and Quadracon need to manage this project in a step process to ensure safety and practicality for all.

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regards

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Helensburgh Community Centre

smartsheet

	Task Name	Jan 24							Jan 31							Feb 7							Feb 14							Feb 21							Feb 28							Mar 7							Mar 14							Mar 21						
		S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
1	General Site Establishment																																																													
2	Establish safe work area in relation to mould compliance																																																													
3	Demolition of Flooring																																																												
4	Demolition of Bearers and joists																																																												
5	Decontamination of Site in relation to mould compliance																																																												
6	Hold Point- Council Sub floor Site Inspection (Engineers)																																																												
7	Timber delivery																																																												
8	Installation of Agg Line drainage																																																											
9	Installation of Ventilation Shaft sensors																																																											
10	Installation of Ventilation Fans and wiring to switch board																																																											
11	Receive Council engineer recommendation for sub floor																																																										
12	Carry out any additional works from council Engineers																																																										
13	Bearers and joists installation																																																										
14	Plywood install																																																										
15	Lay flooring																																																										
16	Install Louvered flooring																																																										
17	Floor sanding and sealer																																																										
18	Line marking																																																										
19	Clear coats to floor																																																										
20	Site clean up																																																										
21	Handover																																																										

AUSTRALIAN MOULD GUIDELINE

AMG-2005-1

Editors
Dr Peter Kemp &
Dr Heike Neumeister-Kemp

First Edition March 2005

Those working in the Mould Industry should read this document in conjunction with the ACMR / ACMI Reference Manual for Australian Certified Mould Remediators and Investigators.

Please note that this is not and Australian Standard as published by Standards Australia. This document is currently a guideline and is intended to become an industry based standard.

This document is in review and its contents will be subject to change.

Positions on the review panel are open for application. Please contact the editors if you feel you can participate by either revising or by contributing further material to this document.

First Edition
Published March 2005

Editors: Dr Peter Kemp and Dr Heike Neumeister-Kemp

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Printed in Australia

DISCLAIMER

All mould workers who are using this document must keep in mind that developments in the mould industry are advancing rapidly. It is critical to keep ahead of these developments and modify your practices accordingly. Commonsense, experience and professional judgment should be used at all times to determine that correct levels of PPE, containment and hazard communication are used.

The authors have not personally independently tested and verified all the suggested practices and assessment or judgment strategies described in this document.

This document includes the experience and knowledge of local mould professionals and material and information from a review of current international guidelines and standards on dealing with mould contamination. The reference documents used in the writing of this standard are listed in the bibliography. In cases where information may appear to be similar to that found in other documents, it should be kept in mind that the Authors of this document have participated in the writing of many of these documents. There are basic hazard requirements when dealing with mould that are universal.

While other international standards and guidelines are referred to in this document, this document can be used as a guide that has been tailored to Australian conditions by Australian Professionals and Academics.

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TABLE OF CONTENTS

1 PRESCRIBED ILLNESSES & DUTY OF CARE

It is recommended that any area undergoing mould remediation be unoccupied during cleaning or remediation works.

In most cases it should not be necessary to evacuate people from adjacent areas as long as correct containment procedures are adhered too.

However, it is highly recommended that the people with the following health categories should be advised that temporary relocation would be in their best interests:

1. Infants less that 12 months old, and children less than 2 years old
2. People with compromised immune systems
3. People with chronic inflammatory lung disease such as:
   a. Asthma
   b. Hypersensitivity pneumonitis, and
   c. Sever allergies
4. People recovery from recent surgery

Failure to inform or evacuate people in these conditions may lead to a serious breach of your duty of care. The immune system of children less than 2 years old may not be fully developed and there is evidence that Kawasaki syndrome is related to wet cleaning methods on carpets.

1.1 BIOHAZARD COMMUNICATION STRATEGY

When the remediation work involves a Grade 4 Building, then the building's owner, manager or the employer should notify occupants in the affected areas that mould growth requiring remediation has been detected. This should include a description of the basic results from testing and analysis, the type of remedial works that will be performed, and a schedule for completion.

It may be useful to conduct groups meetings to communicate these matters and to allow open discussion with the affected occupants.

Individuals that may have health problems associated with exposure to mould should be advised to seek medical advice from qualified practitioners in occupational or environmental medicine or related disciplines that are knowledgeable about mould health hazards. Any individual that requires medical assessment should be provided with a copy of all inspection and sampling results and interpretations to take with them to their medical practitioners.

1.2 HEALTH SYMPTOMS AND COMPLAINTS RELATED TO MOULD DAMAGE

This section has been provided as a guide to understanding when complaints of odours or health symptoms reported by either occupants or mould remediation workers that may be due to the presence of mould growth. This is particularly useful for Grade 5 Buildings where there is little obvious evidence of mould damage. If any of the following symptoms appear to be related to time spent in the building then they should be duly noted and recorded.

1. Discomfort
2. Eye irritation
3. Runny nose
4. Sneezing
5. Coughing
6. Nausea / Diarrhoea
7. Headaches
8. Fatigue
5. Inability to concentrate
6. Constriction of air passages
7. Skin irritations
8. Congestion
9. Shortness of breath
10. Wheezing
11. Aggravation of asthma

2 MOULD AND INDOOR AIR QUALITY

Normally, our everyday exposure to airborne fungi in the outdoor air presents little or no risk to our health. However, the airborne fungi in the artificial environments of our buildings and dwellings have an altered composition, which can create an environment with the potential to greatly affect human health. This has led to the understanding that fungi can be a major cause of both illness and the severity of general symptoms, such as sick building syndrome (SBS), which are related to the amount of time spent indoors.

All fungi are initially microscopic in size with most spores ranging in size from 2 to 20 µm (microns). There are an enormous number of fungi with over 6000 genera and only 69,000 species have been described out of an estimated total of around 1.5 million species.

Many of the visible manifestations of fungi are commonly known and include yeasts, mould growth, mildew, large mushrooms, puffballs and bracket fungi. These are all the result of the convergence of millions of individual fungal units coming together to create larger structures.

The terms mould and fungi are used interchangeably. However that is more to do with their common usage. Normally moulds only refer to those fungi with a mycelial (filamentous) type of growth.

Fungi are eukaryotic organisms and share many basic characteristics of genetic makeup with humans. This is why chemical treatment to control fungal contamination should be very carefully considered before their widespread application is considered.

The study of fungi is called Mycology. A mycologist is one who can identify fungal species and has and understanding of fungal ecology. The two main branches of mycology are Medical mycology and Environmental Mycology. Only an Environmental Mycologist should be consulted for identifying indoor and outdoor fungal species and for understanding the ecology of mould contamination in buildings.

3 IDENTIFYING MOULD GROWTH INDOORS

A methodical approach should be taken towards mould work for reasons include ensuring personal safety, duty of care, and legal requirements. The first step is to gather information from the client and background information on the situation being investigated. Second step will be a site visit and inspection. The third step is to establish what procedures will be required to successfully deal with any moisture or mould damage problems identified.

3.1 GATHERING INFORMATION

The nature of the initial contact will determine the type of the job at hand and will depend on your abilities, experience and your ethics. The profession that was called first will greatly affect the direction and outcomes of the project. It is important to establish at the outset who is legally responsible for the situation at hand.

3.1.1 Health Complaints

In situations where there is a Building of Grade 3, 4 or 5 and the client or occupants complain of health symptoms, a medical assessment or contract the services of an Indoor Air Quality Professional for an indoor environmental assessment (IEA).

3.2 ASSESSING MOULD DAMAGE

The initial inspection will include gathering information, making a visual inspection, and taking moisture readings. From this you will then need to determine which Building Grade of Mould damage is present.

3.2.1 Information Gathering Questionnaire Checklists

To help gather appropriate information and thereby judge the level of a mould situation, it can be useful to use a questionnaire checklist. The essential elements of the questionnaire include property details; use of other professions or services; background information; mouldy odours or visible mould growth; complaints or health symptoms; and major illnesses of occupants. See the reference guideline for a detailed list of information.

3.2.2 Initial Risk Assessment

Anyone dealing with mould on a daily basis needs to tackle each job in a manner. Failure t o professional and methodical approach to mould work can result in injury to workers, inspectors and occupant from exposure to mould allergens or toxins. The initial contact with any job is critical in ensuring a safe work environment.

The information you gather from the questionnaire checklist will determine the Building Grade, sampling strategy and OHS issues (PPE and containment). In situations of Building Grade 4 or 5, or where there are sever health symptoms or people at risk, then all work should be directed by an experienced mould inspector or IAQ assessor. Individuals with mould related illnesses may be directed to be evacuated from the building.

3.2.3 PPE for Initial Inspection

An appropriate level of PPE should always be worn by those undertaking inspections or remediation work. This includes guests invited to inspect the damage or remediation works such as building owners or managers etc.

3.2.4 Visual Inspection

An on-site visual inspection is the most important step to identify mould problems and for determining a remediation strategy. Important surfaces to inspect include porous materials. It is important to inspect for hidden growth behind furnishings or in building cavities. Any mechanical ventilation system should be inspected for moisture or mould damage.

Evidence of damaged that should be recognisable during a visual inspection should include visible mould growth; surface condensation; flooding events & accidental spills; and High humidity. In situations where it is not possible to perform extensive inspection there may be "discovery" of hidden mould damage. All parties with vested interests should be made aware that additional inspection may be required. Discover of hidden damage should be documented.

3.2.5 Mould Sampling as Part of an Assessment

There are a number of situations where it would be normal to consider taking mould samples as part of the initial assessment. These include wide spread mould growth; mould odours; wet or damp materials that were not dried within 48 hours; health or symptoms or complaints; for quality control; for health risk assessment; and for species identification.

3.2.6 Basic Sampling Techniques and Principles

Sampling is not always required. Where a situation is driven by medical or legal reasons then mould sampling can be used to establish either exposure or baseline contamination.

Moisture measurements should be the first type of measurements taken. Mould sampling should begin with relatively simple surface samples and can include bulk samples and air samples on larger jobs. All sampling should be done in conjunction with a mycological laboratory as they will have specific handling and shipping requirements.

3.2.7 Taking Moisture Readings

Only a person trained in moisture measuring techniques should determine the moisture content or moisture profile of a situation. The aim of taking moisture measurement is to establish the extent of moisture damage; to provide an indicator of hidden mould damage; and for quality control.

3.2.8 Surface Sampling

Only a person trained in mycological sampling techniques should perform surface sampling. Surface samples are the next level of testing after moisture readings. They can aid in identifying fungal species especially in cases where spores might be surface bound (not detected by air samples). The basic types of surface samples include Surface Swab samples; RODAC Plate samples; and Tape Lift-off Samples.

Other surface sampling methods may be available through a mycological laboratory. A mycological laboratory should be consulted for specific sampling and delivery instructions.

3.2.9 Bulk Dust and Material Sampling

Only a person trained in mycological sampling techniques should perform bulk sampling. Bulk sampling can be useful in detecting a wide range of fungal species. This method is typically performed either using a vacuum cleaner on carpets and textile surfaces, or to simply scrape off surface material. Small pieces of material can also be removed for analysis. However, local area containment procedures should be followed when removing material from known or suspected mouldy surfaces.

Other bulk sampling methods may be available through your mycological laboratory. They should also be consulted for specific sampling and delivery instructions.

3.2.10 Airborne Sampling

Only a person properly trained in advanced mycological sampling techniques should perform airborne mould sampling. Airborne sampling for mould is not part of a routine assessment. A qualified Mould Inspector or IAQ Assessor should be consulted in situations where health symptoms are related to mould or to time spend in a building.

The reasons for conducting airborne sampling include when the health symptoms are related to either mould exposure or to time spent in a building; as part of a detailed risk assessment; where mouldy odours are present but no apparent visible growth; as a part of clearance testing after remediation works.

Indoor air samples for mould should be conducted together with an outdoor air sample as a reference location. The comparison of species between the indoors and the outdoors is used to determine the source of fungal contamination. The type of fungal contamination whether hydrophilic or xerophilic can also be determined. Other air sampling methods may be available through your mycological laboratory. They should also be consulted for specific sampling and delivery or shipping instructions.

3.2.11 The Importance of Species Identification

The identification of mould species is critical as different species impact on both human health and building infrastructure in different ways and to different degrees. In general, the species in the indoor air should be similar to that in the outdoor air. When the indoors presents a mixture of fungal species that is fundamentally different from the outdoor air, then this represents an altered exposure to fungi and the presence of an interior source of fungi.

3.2.12 Analysis of Mould Samples

Mould samples should only be analyzed for fungal species by an experienced mycologist or microbiologist with training in environmental mycology. A laboratory should have a person that is qualified to analyse fungi; should have quality control data on hand and a written quality assurance plan; and should provide a thorough explanation of the analytical interpretation and results.

4 THE FUNDAMENTALS OF MOULD REMEDIATION

In all situations concerning mould growth indoors that requires remediation, the underlying cause of moisture that is supporting the growth must be repaired or fungal growth will re-occur. There should be an emphasis in the remediation works for the cause of moisture damage to be permanently repaired so that water damage does no re-occur.

It should be kept in mind that the goal of mould remediation is not to sterilise surfaces, but to return surfaces to their normal state before contamination. It should be kept in mind that the containment, PPE, hazard communication, and cleaning guidelines in this document are not definitive. Each remediation job needs to be assessed on its own merits and the persons performing the remediation works should ensure that adequate protection measures are taken.

5 CONTAINMENT PROCEDURES TO PREVENT CROSS CONTAMINATION

The remediation area should not be occupied. Except for large jobs (building Grade 4/5) it should not be necessary to evacuate people from adjacent areas if containment procedures are correctly applied. However it is recommended that persons with Prescribed Illnesses listed on page 6 should be informed or removed from adjacent areas.

5.1 REMOVAL OF CONTAMINATED MATERIALS

Caution to prevent cross contamination is required when handling contaminated materials that are being removed for disposal or for decontamination off-site. Materials should be wrapped in plastic and seal with tape.

Materials and items that are to be retained but require remediation should be transported to an off-site facility wrapped in plastic. The items or materials should then be immediately removed from the plastic wrapping and the plastic discarded in normal waste disposal. Remediation should begin immediately according to the material type being remediated.

Materials and items that are to be disposed should be placed gently in a covered disposal unit / bin. Contaminated materials should never be thrown from a distance into a disposal unit.

Disposal units and bins should not be located close to openings such as windows or doors including those of neighbouring properties. There are no requirements for specialised type of disposal unit for mouldy materials.

5.2 REMOVAL OF BUILDING CONTENTS

5.2.1 Assessment

Whether contaminated contents can be restored depends on their condition; material type; the cost of remediation; financial value or cost of replacement; and other types of value such as sentimental, legal, cultural, artistic, or historical etc.

Restore items that can be cleaned and returned to the client. Dispose items that will not be cleaned. Preserve with risk Assignment items that are irreplaceable but cannot be remediate completely.

All those with vested interests should be involved in the decision as to whether contents should be restore or disposed of.

5.2.2 Removal of Contents from Affected Areas

Avoid cross contamination when moving contents. Contaminated contents must be decontaminated or appropriately packaged when moved in or through uncontaminated areas. Contents should never be stored in plastic or sealed containers.

5.2.3 Inventory, Packing, Transport and Storage

A detailed inventory should be made of the contents before removal. Storage conditions should be dry and otherwise minimize conditions favourable to mould growth. Remediation should proceed as soon as practical to avoid further damage and mould growth. The clean contents should not be returned to a contaminated area.

6 MOULD CLEANING PROCEDURES

The goal of mould cleaning is to bring items and materials back to normal (before contamination) conditions. The purpose is not to sterilize an item or necessarily improve its appearance.

6.1 Cleaning Location

On-site cleaning eliminates the cost of packing, transport and storage but may extend the remediation period and has an increased risk of cross-contamination. In-plant cleaning minimizes the time before structural drying work can start, which can drastically reduce the time required to reinstate the property back to conditions prior to the mould contamination.

6.2 Outdoors versus Multi-chamber Cleaning

When cleaning contents outdoors without containment enough distance must be provided to any adjacent buildings, air intakes or unprotected people. Remediation workers must wear appropriate PPE.

6.3 Mould Cleaning & Removal Strategies

A cleaning method should be chosen with the aim of producing the least amount of dust possible to limit workers exposure. More than one method may be necessary. Old buildings potential contain lead based paints and only should be properly assessed and remediate by specially trained personnel in hazardous material handling.

6.3.1 Air-Based Methods (recommended)

Air based methods physically remove contamination by vacuuming off or blasting off with air to dislodge contaminants and include HEPA filter vacuum cleaning; air washing; laminar-flow; and down draft cleaning tables.

6.3.2 Liquid-Based Methods (recommended)

Liquid-Based Methods use water combined with the mechanical action of cleaning and include damp-wiping with a detergent, vinegar solution or 70% alcohol solution; ultrasonic cleaning; steam cleaning; low pressure flushing, and high-pressure washing.

6.3.3 Chemical Based Methods (not recommended)

The use of surface chemical treatments is not recommended as they appear to have limited effect and introduce further chemical pollution into the indoor environment. Chemical Based Methods rely on toxic substances to kill the fungal growth and do not by themselves remove the contamination. These include: anti fungal / microbial agents; gaseous, vapour phase or aerosolized biocides; Ozone, Bleach, Alcohol (100%), quaternary ammonia, formaldehyde etc; and pH changing acidic or alkaloid treatments.

The use of gaseous, vapour phase or aerosolised biocides is not recommended. Using chemicals in this manner can cause adverse health effects in individuals returning to a site and occupants in adjacent areas. The benefits of this treatment are unproven.

6.3.4 Abrasive Methods (not recommended)

These rely on the use of a medium to physically dislodge contaminants. These methods are not recommended in general due to the potential for damaging surface structure, which can aide in degrading the material and thereby aid future fungal attack. Old buildings potential contain lead based paints and only should be remediated by specially trained personnel in hazardous material handling.

6.3.5 Appearance Enhancement (not recommended)

These are not cleaning methods and are not recommended and include polishing, waxing and buffing.

6.3.6 Encapsulation (not recommended)

These are not cleaning methods and are not recommended and include application of coating over porous or semi-porous material; and lamination of irreplaceable documents or photos.

6.4 Remediating Materials

6.4.1 Non Porous and Semi-Porous Materials

Non porous materials and semi porous materials that are visibly mould should be able to be cleaned and reused.

6.4.2 Porous Materials

Porous materials with mould damage to more than a small area (>1 m^2) should be removed and discarded. Materials that can be cleaned can be remediate if necessary, but should be discarded if possible. Porous materials with mould growth to more than a small area should only be remediate by a professional restoration consultant. All porous materials that are remediate and returned to site should be dry and free of visible contamination and odours and should be periodically inspected to ensure the restoration was successful.

6.4.3 Odour Control

If ozone treatment is to be used for odour control, then the item must first undergo restoration by drying and removing the mould growth with the recommended cleaning methods. The use of gaseous, vapour phase or aerosolised deodorants is not recommended. Using chemicals in this manner can cause adverse health effects in individuals returning to a site and occupants in adjacent areas.

6.5 Verification of Remediation Effectiveness

The effectiveness of restoration to contents and remediation works to any larger sized job (Building Grade 3 or 4) should be verified by independent mould testing and analysis. In particular, large jobs that require high levels of containment and PPE should not be re-occupied until mycological testing has verified that the area is fit for re-habitation.

7 MOULD DAMAGE CLASSIFICATION SYSTEM

The following classification system is to be used as a guide for mould remediators to help judge whether or not they are competent in managing the full extent of a remediation job. The building classification system includes the following types of mould damage:

1. BUILDING CLASS 1 - Normal
2. BUILDING CLASS 2 - Local Area Less Than 1 m^2 (Cleaning to Remove Mould)
3. BUILDING CLASS 3 - Limited Visible Mould Growth to Less Than 10 m^2 (Small Jobs)
4. BUILDING CLASS 4 - Extensive Visible Growth Greater Than 10m^2 (Large Jobs)
5. BUILDING CLASS 5 - Strong Indication of Mould Contamination but no Visible Evidence
6. BUILDING CLASS 6 - Cross Contamination
7. BUILDING CLASS 7 - Clean Room

7.1 BUILDING CLASS 1 - Normal

Normal situation in most houses and buildings without mould damage. All fungi detected indoors would originally be from the outdoors as no indoor sources of mould should be present. Building Grade 1 situations can be entered using Level 1 PPE.

7.2 BUILDING CLASS 2 - Local Area Less Than 1 m² (Cleaning to Remove Mould)

This level of building class refers to the initial inspection and sample taking process and to very small areas of visible mould growth that can be effectively cleaned using relatively simple methods. In particular this refers to either a small area of visible growth less than $1m^2$ in area, or the conditions normally experienced during an initial site assessment on small jobs when taking samples or drilling inspection holes for borescope etc.

Building Grade 2 situations should only be entered using Level 2 PPE. Containment of the entire work area should not be necessary. The work area should not be occupied during inspections, cleaning or removal of contents or materials. It should not be necessary to evacuate people in adjacent areas except those with prescribed illness listed on page 6. Local areas for cleaning or removal can be sealed in plastic where required.

Remediation can be performed by normal building maintenance personnel that have been trained in Mould Hazard Awareness, PPE, and effective methods for cleaning mould. The entrance and exit locations used by the remediation / cleaning personnel should be cleaned with a HEPA vacuum cleaner and damp wiped with a cloth and vinegar solution. All areas should be left dry and free from visible mould contamination and debris. No final mould clearance testing would normally be necessary.

7.3 BUILDING CLASS 3 - Limited Visible Mould Growth to Less Than 10 m² (Small Jobs)

This classification concerns an indoor environment that has sustained serious mould damage over a period of time. The visible mould growth would be clearly visible on less than 25% of all surfaces or nor greater than 10 m^2.

Building Grade 3 situations should only be entered using Level 3 PPE. The work area should not be occupied during cleaning or the removal of contents or materials or during inspections. It should not be necessary to evacuate people in adjacent areas except those with prescribed illness listed on page 6.

Containment of the entire work area should be performed before remediation commences. This will include covering the work area with plastic sheeting and sealing the edges with tape to contain dust and remediation debris. Dust suppression methods should be applied to any material before it is disturbed. The waste should be carefully collected and wrapped in plastic and disposed of off-site.

Remediation can be performed by building maintenance personnel that have been trained in Mould Hazard Awareness, PPE, and effective methods for cleaning mould and remediating building materials. The entrance and exit locations used by the remediation / cleaning personnel should be cleaned with a HEPA vacuum cleaner and damp wiped with a cloth and vinegar solution. All areas should be left dry and free from visible mould contamination and debris. Final mould clearance sampling is highly recommended and should include several air and surface sample. Occupants should be cautioned not to return to the remediate area until after mycological analysis has determined that target species have been controlled or eliminated.

7.4 BUILDING CLASS 4 - Extensive Visible Growth Greater Than 10m2 (Large Jobs)

This classification concerns an indoor environment that has sustained severe mould damage that has affected the structural integrity of building materials such as wall and ceiling linings. Visible mould growth occurs on greater than 25% or more than 10 m^2 on interior surfaces. Structural materials most likely have high moisture contents and will require specific drying.

Building Grade 4 situations should only be performed using Level 4 PPE. The work area should be clearly marked with as sign stating "Biohazard Do Not Enter" during the entire remediation period. A list of remediation works and a completion schedule should be posted near the Biohazard sign. Hazard communication measures listed in page 6 should be made available to all people in adjacent areas.

Containment of the entire work area should be performed before remediation commences. This will include covering the work area and immediate adjacent areas with plastic sheeting and sealing the edges with tape to contain dust and remediation debris. HVAC, ventilation and exhaust ducts should be sealed with plastic and the edges taped to prevent remediation dust from further contaminating them.

The area should be placed under negative pressure by using an exhaust fan with a HEPA filter. Air scrubbers can be used as an area dust and spore suppression method. The entrance to the work area should be controlled through and air lock and decontamination room. These can be constructed from plastic sheeting over a demountable frame. All edges should be sealed with tape.

The work area should not be occupied during cleaning, removal of contents or materials or during inspections. It may be necessary to evacuate people in adjacent areas especially those with prescribed illness listed on page 6.

Any materials or contents that cannot be cleaned should be removed by wrapping in plastic bags. The outside of the plastic bags should be HEAP vacuum cleaned in the decontamination chamber before transporting through uncontaminated areas for disposing off-site in normal rubbish disposal. Dust suppression methods should be applied to any material before it is disturbed.

Remediation should be performed by personnel that have been trained in handling hazardous materials. The remediation area and the air lock and decontamination chamber and their immediate surrounds should be left dry and free from visible mould contamination and debris.

Extensive air and surface monitoring should be conducted in the remediate area. Occupants should only be allowed to return to the remediate area until after mycological analysis has determined that the area is fit to re-occupy.

7.5 BUILDING CLASS 5 - Strong Indication of Mould but no Visible Evidence

Remediation should not commence until the building has been properly assessed. This class of mould damage might be characterised by any of the following situations:

1. Complaints of health symptoms with no visible growth,
2. Complaints of obnoxious mouldy odours with no visible growth,
3. Signs of structural weakness such as visible destruction to timber or dry rot,
4. Evidence of previous moisture damage that was dried but there are complaints of odours or symptoms but no visible growth
5. Other consultants have measured high concentrations of parameters such as MVOCs or VOCs without any obvious source.

The source for symptoms in this situation needs to be thoroughly investigated.

The level of PPE required to enter a Building Grade 5 for investigation will vary according the situation at hand.

- Level 2 PPE should be used where there is little evidence of widespread damage and no health complaints,
- Level 3 PPE should be used where there have been some health symptoms reported by individuals or mouldy odours etc.
- Level 4 PPE should be used if there have been serious symptoms or strong odours reported or where the investigator is to remain in the building for more than 30 minutes.

The work area should not be occupied during inspections. It may be necessary to warn people in adjacent areas of the potential hazards especially those with prescribed illness listed on page 6.

No remediation should proceed until the building has been thoroughly assessed by a qualified Mould Inspector or IAQ Assessor.

7.6 BUILDING CLASS 6 - CROSS CONTAMINATION

This classification concerns an indoor environment that was Building Grade 1, but has been contaminated by spores and dust that originated from a Building Grade 2, 3 or 4. This can occur where remediation has been performed to adjacent areas and the containment procedures have not been followed, or where containment barriers have failed.

This may include small areas of visible growth (colonies less than 1mm diameter) that have occurred from the recent settling of spores, which have encountered sufficient moisture to begin growth.

This situation can only be returned to Building Grade 1 if the cross contamination is dealt with in a timely manner. If this situation is left for a period greater than 48 hours, or when widespread visible mould growth occurs, then the remediation works will need to be conducted as either Building Grade 2, 3 or 4 depending on the extent of the damage.

Building Grade 6 situations should only be remediate according to the level of contamination:

- Level 2 PPE should be used where there is minor evidence such as low concentrations of target species detected on surface or airborne samples.
- Level 3 PPE should be used if there is moderate or high evidence such as high levels of target species from the adjacent remediation area in surface and/or airborne samples.

The work area should not be occupied during remediation. In cases of high evidence of cross contamination, it may be necessary to warn or evacuate people in adjacent areas due to potential hazards especially those with prescribed illness listed on page 6.

Large areas with high concentrations of target species should be sealed with plastic and taped at the edges to prevent further cross contamination during cleaning. All cleaning should be thorough or meticulous with a high efficiency vacuum cleaner with a HEPA filter and a damp cloth and vinegar solution.

Remediation should be a thorough or meticulous cleaning with a high efficiency vacuum cleaner with a HEPA filter and a damp cloth and vinegar solution on all surfaces to removed settled spores and dust.

The entrance and exit locations used by the remediation / cleaning personnel should be thoroughly or meticulous cleaned with a high efficiency vacuum cleaner with a HEPA filter and a damp cloth and vinegar solution.

7.7 BUILDING CLASS 7 HVAC Systems

This section is in review and will be available soon. In principle the remeditaion should be performed according to the amount of fungal contamination as described in Building Grades 1 through 6. Extra PPE requirements may be required if workers are to be working in confined spaces.

7.8 BUILDING CLASS 7 - CLEAN ROOM

This classification is for absolute sterilised clean room environments such as those used in pharmaceuticals and computer component manufacture. Only highly qualified and experienced Engineers and IAQ experts should only be consulted in these situations.

Protocols for handling Building Grade 4 Remediation work should be followed.

8 PPE CLASSIFICATION SYSTEM

This classification system details the personal protection equipment (PPE) required to minimise exposure to fungal spores and/or fungal gaseous by-products during inspections and remediation works.

The person performing an inspection or in charge of remediation works should use their judgment and increase their level of PPE to suit the conditions at hand.

8.1 PPE LEVEL 1

This level of PPE is intended for initial inspections or sampling regimes in Grade 1 buildings where there is no visible mould growth; health complaints; mould odours; cross contamination; or any known or obvious moisture damage. A breathing mask should not be required. No protective clothing should be required.

8.2 PPE LEVEL 2

This level of PPE is intended for initial inspections or sampling regimes where mould growth is suspected due to known water damage or limited visible growth. There should be no serious health complaints related to mould or time spent in the building. A minimum of a half face respirator mask with disposable HEPA filters is recommended for extended periods. Where there are strong or obnoxious odours, then an activated carbon or organic vapour filter should be used in addition to the HEPA filter. No protective clothing such as overalls should be required. Breathing mask and gloves should be taken off outdoors.

8.3 PPE LEVEL 3

This level of PPE is for small fungal contamination that relates to Building Grade 3 mould damage. The objective of this level of PPE is to limit exposure to fungal spores and gaseous by-products. A half face respirator mask with HEPA filters and splash goggles should be worn at all times. Where there are strong or obnoxious odours, then a full face mask should be used with an activated carbon or organic vapour filter in addition to the HEPA

filter. PPE should include disposable overalls and gloves.

8.4 PPE LEVEL 4

This level of PPE is for a maximum of 2 hour exposure to large area of fungal contamination that relates to Building Grade 4 mould damage. This level of PPE should eliminate exposure to fungal spores and gaseous by-products. PPE should include disposable overalls, gloves and shoe protectors. All joins at ankles and wrists where gloves and shoe protectors meet the disposable overalls should be sealed with tape. Full face respirator mask with HEPA filtration with an activated carbon or organic vapour filter should be used at all times.

9 GLOSSARY

µg	micrograms
µm	micrometers or microns
µg/m³	micrograms per cubic metre
AC	air conditioner
agar	an extract of the cell walls of certain red algae that produces a jelly when dissolved in hot water
AIHA	American Industrial Hygiene Association
ASHRAE	American Society Of Heating Refrigerating And Air-conditioning Engineers
a_w	water activity
Bulk Sample	taking a material samples from a surface either by scraping a hard surface or by vacuuming carpets or textiles
CBS	Centraalbureau voor Schimmelcultures
CFU	colony forming unit
CFU/m²	colony forming units per square metre
CFU/m³	colony forming units per cubic metre
chlamydospore	resting spores that are formed from parts of vegetative hyphae
CIH	Certified Industrial Hygienist
cm	centimetre
CO^2	carbon dioxide
colony	a consistent mycelium (mould) or a mass of cells (yeasts) that are of one origin
conidia	An exclusive form of reproduction only found in fungi that is not produced by cytoplasmic cleavage or free cell formation, commonly referred to as spores.
contamination	fungal growth that is considered detrimental to materials or human health
CzD	Czapek-Dox agar
DG 18	dichloran-18% glycerol agar, often misquoted as a xerophilic agar
DNA	deoxyribonucleic acid
DRBC	dichloran rose Bengal chloramphenicol agar
Fungi	any microorganisms belonging to the Kingdom Fungi including mould and yeast, commonly referred to as mould, though mould only refers to mycelial growing fungi
g	grams
Genera	part of the taxonomic description of a group of fungi
HEPA	High Efficiency Particulate Filtration: 99% efficiency of particles larger than 0.3 microns
HEPA vacuum	A high efficiency vacuum cleaner with a HEPA filter, check that the HEPA filter holder is well designed sealed and does not allow bypass.
Hg	mercury
HVAC	heating ventilation and air conditioning system
hyphae	a part of filamentous growing fungi that is able to elongate
IA	indoor air
IAP	Indoor air pollution
IAQ	indoor air quality
IAQ Assessor	An air quality or indoor environmental professional with training and extensive experience with indoor air quality (IAQ), sick building syndrome (SBS) and building related illness (BRI), may include and IAQ consultant, Industrial Hygienist, Occupational hygienist, or similar.
IEA	indoor environmental assessment
IEQ	indoor environment Quality
IICRC	Institute Of Inspection Cleaning And Remediation Certification
MEA	malt extract agar
MEA+40	malt extract agar + 40% Sucrose, a true xerophilic agar
mg	milligram
MLA	Mycologia Australia Pty Ltd
mm	millimetre
Mould	Common description of visible fungal colonies with mycelial growth form
Mould Inspector	A qualified Mycologist with special training or experience in diagnosing building related mould problems.
MSDS	manufacturer safety data sheet

MVOC	microbial volatile organic compound
mycelia	a single fungal hyphae
mycelium	a mat of many individual hyphae woven together, often visible
Mycologist	A person who works with fungi, similar to a microbiologist (who work mainly with bacteria)
Mycology	The study of fungi
mycotoxin	A secondary metabolite produced by fungi as a normal part of respiration.
n	sample number
NIOSH	National Institute Of Occupation Safety And Health
nutrient media	an agar with nutrients added to promote fungal growth and sporulation
NYC DOHMH	New York City Department of Health and Mental Hygiene
OA	outdoor air
°C	degrees Celsius
PCR	polymerase chain reaction
PM_{10}	particulate matter with an effective aerodynamic diameter of 10 microns or smaller
PPE	personal protective equipment
ppm	parts per million
RH	relative humidity
RODAC	A type of surface sampling where a modified agar plate is overfilled with nutrient agar so that the agar is sits proud and can be contacted with a surface and fungal spores.
RSP	respirable particulate matter
SBS	sick building syndrome
SNA	synthetic low-nutrient agar
sp.	Several species belonging to that genus.
spec.	A single fungal species was differentiated but not identified.
Species	the specific taxonomic description of a fungus
Spore	A general term referring to all fungal reproductive structures including the spores from sexual reproduction and conidia from asexual reproduction and resting sclerota.
sporulation	the process where a fungus produces spores or conidia
sterile mycelia	A fungal colony containing fungi growing in a vegetative state.
substrate	the space in which a fungus grows and the material filling this space that provides nutrients for the fungus
Surface Swab	Usually a sterile cotton tip swab dipped in sterile water and rubbed on a surface to pick up fungal spores and then transferred them to a nutrient agar.
Taxa	A term used in the systematic categorisation of fungal genera and species.
TSP	total suspended particulates
UV	ultra violet
VC	vacuum cleaner
vegetative state	mycelium that have no reproductive structures
VOC	volatile organic compound
WME	Wood Moisture Equivalent
Yeast	Fungi that produce distinct cells and that reproduce by budding or dividing cells
µ	micro
µm	micrometre

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MICROBIAL ASSESSMENT

HELENSBURGH COMMUNITY CENTRE

26 WALKER STREET HELENSBURGH NSW 2508

Client:
Quadracon Building Pty Ltd
PO Box 249
Moss Vale NSW 2577

Reference:	Revision:	Date of Report:	Prepared By:	Authorised By:
20-12361-01-OH	Revision 0	8/12/2020	Luke Parkins	Michael Fernandez

Clearsafe Environmental Solutions Pty Ltd ABN: 31 146 947 766
W: www.clearsafe.com.au E: info@clearsafe.com.au T: 1300 042 962

Executive Summary

Clearsafe Environmental Solutions Pty Ltd (Clearsafe) was requested by Quadracon Building to undertake a limited assessment with regard to microbial levels within the subfloor space beneath the basketball court at the Helensburgh Community Centre, 26 Walker Street, Helensburgh NSW 2508. The investigation was commissioned following the identification of visible mould and broken timber joists within the subfloor of the Community centre during renovation works. Concerns were subsequently raised about the structural integrity of the timber floorboards and joists and any possible risk that the microbial impacts may present to any of the occupants within the immediate area during renovation.

Moisture level results for all of the measured timber building materials were above 10%, at the time of inspection. Moisture levels for timber surfaces above 10% are considered a trigger level for treatment/further assessment. It is noted that at the time of the inspection, water was visibly observed dripping from the timber joists/bearers throughout several locations within the subfloor and also on inspected brick wall surfaces within the subfloor (northern and western). The need for remediation and/or further investigation is recommended.

Surface swab analysis results indicate that all sampled locations returned detectable microbial concentrations at levels that suggest significant viable mould and bacteria. Samples 5 and 6 were unable to give accurate detectable yeast concentrations due to overgrown mould. However, all sample locations exhibited concentrations above double that of the reference sample, suggesting the need for further testing and/or remedial works. The mould count reported to the field blank sample is likely due to cross contamination and does not invalidate the results.

In conclusion, moisture readings in conjunction with surface swab analysis suggests that there is an underlying moisture ingress/microbial growth issue which appears to be present within the entirety of the basketball court subfloor. A visual inspection of the subfloor identified several timber bearers and timber joists that were either partially broken or had completely detached from their former position due to rot. Water was visually observed dripping from several of the timber joists within the subfloor and was also observed on the northern and western brick walls of the subfloor, coupled with what appeared to be a white powdery substance, which the inspecting consultant is of the belief is most likely efflorescence. Ground surfaces of the subfloor displayed evidence of dampness and trenches which appeared to be pathways for water ingress. A musty/damp odour was also present within the subfloor at the time of the inspection. Clearsafe recommends appropriate remediation as part of renovation.

The following recommendations apply to the microbial remediation works:

- Remediation work should be carried out by professional contractors in accordance with relevant guidelines and in consideration of the following points.

- The work area should not be occupied during cleaning processes.

- Conduct a building inspection by a professional building inspector to investigate the source of the water ingress within the subfloor, particular attention should be paid to the northern and western sides of the basketball court where the drainage extends from the exterior through the brick wall into the subfloor. Given the compromised structural integrity of the timber bearers and joists within the subfloor, Clearsafe recommends that access within it is restricted/limited.

- Clearsafe recommends that access to the basketball court by external parties (outside of companies working on behalf of the current scope of works) is completely restricted due to safety concerns posed by the structural integrity of the basketball court.

- Clearsafe is of the understanding that as a part of the original remediation works, Quadracon was engaged to remove a nominated section of the timber hardwood floors within the basketball court. Cleasafe suggests that the original scope of works is reassessed and extended to include the entirety of the timber hardwood floors due to the uniform nature of damage observed throughout the subfloor during the inspection. It is also suggested that further consideration be undertaken in regards to the replacement of the timber bearers and joists within the subfloor.

- As per the Australian Mould Guidelines, mould damage is classified into a class system based on the extent and visible microbial impacts observed. As the mould damage was visible throughout the entirety of the subfloor beneath the basketball court and is compromising the structural integrity of the timber hardwood floor, the remedial works would be classified as a ***Building Class 4 - Extensive Visible Growth Greater Than 10m2 (Large Job)***. As per these guidelines the area should be restricted and clearly signposted, ground surfaces within the subfloor covered in plastic sheets and HVAC, ventilation and exhaust ducts adequately sealed. A decontamination unit installed at one of the entrances to the basketball court and all other access points adequately sealed and placed under negative air pressure by using an exhaust fan with a HEPA filter. All timber materials to be disposed of should be wrapped in plastic bags and the external of the bags HEPA vacuumed in the decontamination unit prior to removal from the enclosure. PPE should include disposable overalls, gloves, shoe protectors and a full face respirator mask with HEPA filtration with an activated carbon or organic vapour filter.

- Throughout the course of the inspection fibrous cement fragments suspected of containing asbestos were observed sporadically scattered throughout the subfloor ground surfaces. Clearsafe recommends an emu pick of the ground surfaces, with

consideration given to conducting a scrape of 50-100mm of soils within the subfloor due to the incredibly damp and most likely microbial impacted nature of the soils. If any material suspected of containing asbestos is identified in the future (outside of that already identified), stop work immediately, restrict access to the impacted area and contact Clearsafe for further advice.

- Clearsafe is of the understanding that the western wall of the basketball court is also being replaced and new ventilation is being installed, it is recommended that the northern wall of the basketball court is also removed and replaced and adequate ventilation installed to allow for air flow within the subfloor.

- Post mould remediation works reduce the humidity within the basketball court subfloor by natural or artificial means (desiccant, dehumidifiers, increasing air flow).

- Post mould remediation works, increase natural light levels and ventilation within the basketball court subfloor.

- An Occupational Hygiene consultant should be contacted to conduct a final inspection and clearance testing following remediation work.

Table of Contents

1 Introduction and Scope

Clearsafe Environmental Solutions Pty Ltd (Clearsafe) was requested by Quadracon Building to undertake a limited assessment with regard to microbial levels within the subfloor space beneath the basketball court at the Helensburgh Community Centre, 26 Walker Street, Helensburgh NSW 2508. The investigation was commissioned following the identification of visible mould and broken timber joists within the subfloor of the Community centre during renovation works. Concerns were subsequently raised about the structural integrity of the timber floorboards and joists and any possible risk that the microbial impacts may present to any of the occupants within the immediate area during renovation.

The agreed Scope of Work is summarised below:

- Moisture level spot checks in several locations throughout the subfloor using a hand-held moisture meter.
- Surficial microbial sampling (yeast, mould and bacteria) in eight (8) locations using sterilised swabs (Including a blank and reference sample)
- Visual inspection of the Helensburgh Community centre basketball court subfloor for visible evidence of water ingress and mould growth.
- Recommendations on the treatment of the mould and the surfaces affected.
- Preparation of a professional report summarising the findings of the investigation.

2 Limitations

All work is conducted in a conscientious and professional manner, with due diligence and appropriate care. However due to the disproportionate cost of potential damages or liability relative to the cost of our services, Clearsafe cannot offer any guarantee that all hazards have been identified. Subsequently, Clearsafe's liability to the client or any other party resulting from the performance or non-performance of the service, whether under contract law, tort law or otherwise, is limited to a maximum of up to five (5) times the total fee excluding expenses.

Clearsafe reports are not to be reproduced or reviewed except in full. All reports are prepared for a particular client's objective, and therefore should not be used by any third party as a basis for future decision-making.

Clearsafe relies on the accuracy of information provided by the client.

Any Party that uses or relies on this document, in doing so acknowledges, on behalf of themselves and all other legal entities that they represent, the unequivocal approval, acceptance and endorsement of the limitations and exclusions stated within this document, else this document should not be used or relied upon for any purpose.

3 Sampling Details

A site inspection and sampling was undertaken on the 27th of November 2020.

A TechCheck Plus (SN 13960) hand held moisture meter was used to undertake spot checks and measure relative moisture levels within representative building materials such as walls/ceiling surfaces and timber within a limited number of representative areas within the building.

Microbial samples were collected onto sterile, sealed and pre-packaged transport swabs/growth media using standard Clearsafe sampling procedures. The samples were transported in an iced insulated box and arrived at the nominated testing laboratory within 24hrs subsequent to the sampling.

Samples were collected from locations which were considered to be representative of the general conditions at the time of sampling.

The microbial sampling program was limited to surficial viable microorganisms in selected locations and during a specific period in time. Viable microorganism concentrations are known to vary markedly with differing meteorological and seasonal conditions.

4 Adopted Standards

Viable micro-organisms are common on urban surfaces and within indoor air. Microbial levels are relevant to indoor air quality as they can cause allergies and infections and may also negatively impact on an area's aesthetics by affecting surface coatings and releasing odorous volatile organic compounds.

The human body is well adapted to cope with most micro-organisms that are regularly encountered. As such it has not been possible for the scientific community to reproducibly establish levels of micro-organisms (on surfaces or in air) that are considered to be 'safe' or 'unsafe'.

The established methodology for assessing microbial levels is to collect samples from both affected and non-affected locations and make comparisons. It is common for there to be large variations detected between locations and therefore Clearsafe, in line with the industry accepted standard, uses the following triggers to indicate a need for remediation or further investigation:

- Evident mould growth as observed by a trained and experienced consultant.
- Microbial sample results greater than double (x2) the reference sample.

5 Observations

The site consists of the Helensburgh Community Centre located at 26 Walker Street Helensburgh. The primary area of concern for this report is within the subfloor of the Helensburgh Community Centre basketball court.

Clearsafe was advised the following information from the client:

- The timber floorboards of the western section (approximately ⅓) of the basketball courts were scheduled to be removed and replaced. A small section of the timber floorboards were removed (approximately 1m x 1.5m) and the client noticed the deteriorated condition of the timber joists and what appeared to be visible mould growth
- New ventilation is to be installed along the western wall of the basketball court
- The basketball court is hired out to external parties for use
- Mouldy/musty olfactory sensations had been reported within the subfloor of the basketball court

The following observations were noted during the inspection:

- A mouldy/musty odour was present within the subfloor of the basketball court at the time of the inspection
- The western section of the basketball court had been fenced off to restrict access
- Visible microbial growth was observed on the underside of the floorboards and on structural timber joists within the subfloor (refer to photos in Appendix A)
- The ground surfaces and timber joists/bearers within the subfloor were visibly damp in multiple locations, the timber bearers/joists were dripping with water at the time of the inspection
- A white growth was observed on the western and northern brick walls of the subfloor, both of which were also considerably wet
- Several timber joists and timber bearers within the subfloor had completely broken off and/or were significantly damaged compromising the timber floors structural integrity
- Viewed from above, several spots on the basketball court were visibly uneven
- Several fibrous cement fragments (presumed to be asbestos-containing) were found within the subfloor at the time of the inspection

- Pipes were observed along the western brick wall of the subfloor that extend from the outside of the building to within the subfloor (believed to be the source of the water ingress)

6 Moisture Level Spot Checks

Method:

A Tech Check Plus hand held moisture meter was used to measure moisture within timber surfaces in several locations.

Results:

Table 1: Moisture level of timber surfaces

Location	Timber Surfaces (%)
Internal, basketball court (western section), subfloor timber bearer immediately adjacent exposed entry	**Above instrument threshold (Tech Check Plus reading displayed as HIGH)**
Internal, basketball court (western section), subfloor timber joist immediately adjacent exposed entry	**Above instrument threshold (Tech Check Plus reading displayed as HIGH)**
Internal, basketball court (western section), timber hardwood floor immediately adjacent exposed entry	**12.7%**
Internal, basketball court (central section), underside of timber joist	**17.1%**
Internal, basketball court (eastern section), underside of timber bearer	**15.6%**

Discussion:

Moisture level results for all of the measured timber building materials were above 10%, at the time of inspection. Moisture levels for timber surfaces above 10% are considered a trigger level for treatment/further assessment. It is noted that at the time of the inspection, water was visibly observed dripping from the timber joists/bearers throughout several locations within the subfloor and also on inspected brick wall surfaces within the subfloor (northern and western). The need for remediation and/or further investigation is recommended.

7 Surficial Microbial Sampling

Method:

Surficial microbial sampling was undertaken in eight (8) locations using swabs (Including a blank and reference sample). The swabs are used to collect microbial spores from direct contact with surfaces and are then placed onto growth media and incubated in a controlled environment, before being analysed for viable colony forming units (CFU). The results are then compared with control samples collected from a similar non-affected location nearby.

Results:

Table 2: Surficial Microbial Counts Using Swabs

Sample No.	Location	Bacteria Count (CFU/plate)	Yeast Count (CFU/plate)	Mould Count (CFU/plate)
20-12361/ Blank	Field Blank	10 est.	<10	**1100**
20-12361/ Ref	Internal, basketball court, on fire hose reel box immediately adjacent southern entry	<10	<10	10 est.
20-12361/ S1	Subfloor (beneath basketball court), on broken timber joist directly below western subfloor access point	**5000**	<10	**1900**
20-12361/ S2	Subfloor (beneath basketball court), on western brick wall	**56000 est.**	<10	**400**
20-12361/ S3	Subfloor (beneath basketball court), on broken timber bearer immediately adjacent subfloor access point	**5500**	<10	**2200**
20-12361/ S4	Subfloor (beneath basketball court), on northern brick wall	**350**	<10	**500**

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Version: 1, Version Date: 11/02/2021

20-12361/ S5	Subfloor (beneath basketball court), centrally located, on underside of timber floorboards	**11000**	Unable to determine Yeast count due to TNTC mould	**>3000 est.**
20-12361/ S6	Subfloor (beneath basketball court), on top surface of PVC pipe immediately adjacent eastern subfloor entry	**7200**	Unable to determine Yeast count due to TNTC mould	**>3000 est.**

Note: est. = Estimated

Discussion:

With reference to Table 2, above, results indicate that all sampled locations returned detectable microbial concentrations at levels that suggest significant viable mould and bacteria. Samples 5 and 6 were unable to give accurate detectable yeast concentrations due to overgrown mould. However, all sample locations exhibited concentrations above double that of the reference sample, suggesting the need for further testing and/or remedial works. The mould count reported to the field blank sample is likely due to cross contamination and does not invalidate the results.

8 Conclusion

Clearsafe Environmental Solutions Pty Ltd (Clearsafe) was requested by Quadracon Building to undertake a limited assessment with regard to microbial levels within the subfloor space beneath the basketball court at the Helensburgh Community Centre, 26 Walker Street, Helensburgh NSW 2508. The investigation was commissioned following the identification of visible mould and broken timber joists within the subfloor of the Community centre during renovation works. Concerns were subsequently raised about the structural integrity of the timber floorboards and joists and any possible risk that the microbial impacts may present to any of the occupants within the immediate area during renovation.

Moisture level results for all of the measured timber building materials were above 10%, at the time of inspection. Moisture levels for timber surfaces above 10% are considered a trigger level for treatment/further assessment. It is noted that at the time of the inspection, water was visibly observed dripping from the timber joists/bearers throughout several locations within the subfloor and also on inspected brick wall surfaces within the subfloor (northern and western). The need for remediation and/or further investigation is recommended.

Surface swab analysis results indicate that all sampled locations returned detectable microbial concentrations at levels that suggest significant viable mould and bacteria. Samples 5 and 6 were unable to give accurate detectable yeast concentrations due to overgrown mould. However, all sample locations exhibited concentrations above double that of the reference sample, suggesting the need for further testing and/or remedial works. The mould count reported to the field blank sample is likely due to cross contamination and does not invalidate the results.

In conclusion, moisture readings in conjunction with surface swab analysis suggests that there is an underlying moisture ingress/microbial growth issue which appears to be present within the entirety of the basketball court subfloor. A visual inspection of the subfloor identified several timber bearers and timber joists that were either partially broken or had completely detached from their former position due to rot. Water was visually observed dripping from several of the timber joists within the subfloor and was also observed on the northern and western brick walls of the subfloor, coupled with what appeared to be a white powdery substance, which the inspecting consultant is of the belief is most likely efflorescence. Ground surfaces of the subfloor displayed evidence of dampness and trenches which appeared to be pathways for water ingress. A musty/damp odour was also present within the subfloor at the time of the inspection. Clearsafe recommends appropriate remediation as part of renovation.

As per the Australian Mould Guidelines, mould damage is classified into a class system based on the extent and visible microbial impacts observed. As the mould damage was visible throughout the entirety of the subfloor beneath the basketball court and is compromising the structural integrity of the timber hardwood floor, the remedial works would

be classified as a ***Building Class 4 - Extensive Visible Growth Greater Than 10m2 (Large Job)***.

9 Recommendations

The following recommendations apply to the microbial remediation works:

- Remediation work should be carried out by professional contractors in accordance with relevant guidelines and in consideration of the following points.

- The work area should not be occupied during cleaning processes.

- Conduct a building inspection by a professional building inspector to investigate the source of the water ingress within the subfloor, particular attention should be paid to the northern and western sides of the basketball court where the drainage extends from the exterior through the brick wall into the subfloor. Given the compromised structural integrity of the timber bearers and joists within the subfloor, Clearsafe recommends that access within it is restricted/limited.

- Clearsafe recommends that access to the basketball court by external parties (outside of companies working on behalf of the current scope of works) is completely restricted due to safety concerns posed by the structural integrity of the basketball court.

- Clearsafe is of the understanding that as a part of the original remediation works, Quadracon was engaged to remove a nominated section of the timber hardwood floors within the basketball court. Cleasafe suggests that the original scope of works is reassessed and extended to include the entirety of the timber hardwood floors due to the uniform nature of damage observed throughout the subfloor during the inspection. It is also suggested that further consideration be undertaken in regards to the replacement of the timber bearers and joists within the subfloor.

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- Throughout the course of the inspection fibrous cement fragments suspected of containing asbestos were observed sporadically scattered throughout the subfloor ground surfaces. Clearsafe recommends an emu pick of the ground surfaces, with consideration given to conducting a scrape of 50-100mm of soils within the subfloor due to the incredibly damp and most likely microbial impacted nature of the soils. If any material suspected of containing asbestos is identified in the future (outside of that already identified), stop work immediately, restrict access to the impacted area and contact Clearsafe for further advice.

- Clearsafe is of the understanding that the western wall of the basketball court is also being replaced and new ventilation is being installed, it is recommended that the northern wall of the basketball court is also removed and replaced and adequate ventilation installed to allow for air flow within the subfloor.

- Post mould remediation works reduce the humidity within the basketball court subfloor by natural or artificial means (desiccant, dehumidifiers, increasing air flow).

- Post mould remediation works, increase natural light levels and ventilation within the basketball court subfloor.

- An Occupational Hygiene consultant should be contacted to conduct a final inspection and clearance testing following remediation work.

10 Closure and Contact Information

For any queries relating to this report, please contact Clearsafe on 1300 042 962 or info@clearsafe.com.au.

Clearsafe is pleased to provide our consulting services for this commission.

Kind Regards,

Luke Parkins
Project Consultant

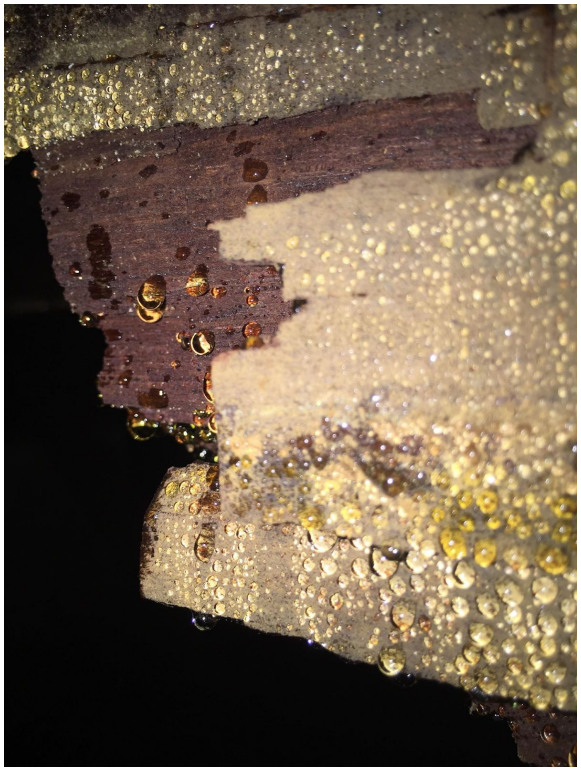
Michael Fernandez
Regional Manager

APPENDIX A

SITE PHOTOGRAPHS

Photo	Location
	Representative photograph of the basketball court (including the western ‘restricted’ section)
	Representative photograph of the western access point into the subfloor

	Representative photograph of one of the pipes along the western wall of the subfloor
	Representative photograph of several floor timber joists that have partially broken and are coated with moisture

	Representative photograph of one (of many) of the floor timber joists
	Representative photograph of a broken floor timber joist within the subfloor

	Representative photograph of a fractured floor timber bearer
	Representative photograph of remnant fibrous cement sheeting within the subfloor

	Representative photograph of fibrous cement packers supporting the timber bearers
	Representative photograph of the northern brick wall within the subfloor

	Representative photograph of a floor timber bearer immediately adjacent the northern brick wall

APPENDIX B

LABORATORY REPORTS

SILLIKER AUSTRALIA
SYDNEY LABORATORY
Unit C2, 391 Park Road
Regents Park, NSW 2143
02 8718 6888 Fax 02 8718 6899

CERTIFICATE OF ANALYSIS

COA No:	SYD-51514163-0
Supersedes:	None
COA Date:	07/12/2020
Page 1 of 5	

TO:
Clearsafe Environmental Solutions
Clearsafe Environmental Solutions
PO Box 337
UNANDERRA, NSW 2526

Received From:	Unanderra, NSW
Received Date:	27/11/2020

Location of Test: (except where noted)
Regents Park, NSW

Analytical Results

Desc. 1: ^ 20-12361/Blank

Sample Number: 456455852
Condition Rec'd: NORMAL
Temp Rec'd (°C): 18.0
Date Started: 27/11/2020

Results apply only to the sample as received

Analyte	Result	Units	Method Reference	Result Date	Loc.
Total Bacterial Count	10 est.	CFU/swab	M17.2	30/11/2020	
Total Mould Count	1100	CFU/swab	M17.2	02/12/2020	
Total Yeast Count	<10	CFU/swab	M17.2	02/12/2020	

Desc. 1: ^ 20-12361/Ref

Sample Number: 456455854
Condition Rec'd: NORMAL
Temp Rec'd (°C): 18.0
Date Started: 27/11/2020

Results apply only to the sample as received

Analyte	Result	Units	Method Reference	Result Date	Loc.
Total Bacterial Count	<10	CFU/swab	M17.2	30/11/2020	
Total Mould Count	10 est.	CFU/swab	M17.2	02/12/2020	
Total Yeast Count	<10	CFU/swab	M17.2	02/12/2020	

Accredited for compliance with ISO/IEC 17025 - Testing
NATA Corporate Accreditation Number: 2020
Melbourne Microbiology Site No: 2013
Sydney Microbiology Site No: 2759 Chemistry Site No: 2135
Perth Microbiology Site No: 10635
Brisbane Microbiology Site No: 15147

^ Customer supplied information

The data pertains solely to the analytical and sampling procedure(s) used and the condition and homogeneity of the sample(s). The data therefore may not be representative of the lot or batch or other samples.

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Measurement Uncertainty (MU) can be found by logging in to MyMXNS

TGA Licence No: MI-04072005-LI-000664-2

AU-COA-33 v8

SILLIKER AUSTRALIA
SYDNEY LABORATORY
Unit C2, 391 Park Road
Regents Park, NSW 2143
02 8718 6888 Fax 02 8718 6899

CERTIFICATE OF ANALYSIS

COA No:	SYD-51514163-0
Supersedes:	None
COA Date:	07/12/2020
Page 2 of 5	

TO:
Clearsafe Environmental Solutions
Clearsafe Environmental Solutions
PO Box 337
UNANDERRA, NSW 2526

Received From:	Unanderra, NSW
Received Date:	27/11/2020

Location of Test: (except where noted)
Regents Park, NSW

Analytical Results

Desc. 1: ^ 20-12361/S1

Sample Number: 456455855
Condition Rec'd: NORMAL
Temp Rec'd (°C): 18.0
Date Started: 27/11/2020
Results apply only to the sample as received

Analyte	Result	Units	Method Reference	Result Date	Loc.
Total Bacterial Count	5000	CFU/swab	M17.2	30/11/2020	
Total Mould Count	1900	CFU/swab	M17.2	02/12/2020	
Total Yeast Count	<10	CFU/swab	M17.2	02/12/2020	

Desc. 1: ^ 20-12361/S2

Sample Number: 456455856
Condition Rec'd: NORMAL
Temp Rec'd (°C): 18.0
Date Started: 27/11/2020
Results apply only to the sample as received

Analyte	Result	Units	Method Reference	Result Date	Loc.
Total Bacterial Count	56000 est.	CFU/swab	M17.2	30/11/2020	
Total Mould Count	400	CFU/swab	M17.2	02/12/2020	
Total Yeast Count	<10	CFU/swab	M17.2	02/12/2020	

Accredited for compliance with ISO/IEC 17025 - Testing
NATA Corporate Accreditation Number: 2020
Melbourne Microbiology Site No: 2013
Sydney Microbiology Site No: 2759 Chemistry Site No: 2135
Perth Microbiology Site No: 10635
Brisbane Microbiology Site No: 15147

^ Customer supplied information

The data pertains solely to the analytical and sampling procedure(s) used and the condition and homogeneity of the sample(s). The data therefore may not be representative of the lot or batch or other samples.

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Measurement Uncertainty (MU) can be found by logging in to MyMXNS

TGA Licence No: MI-04072005-LI-000664-2

AU-COA-33 v8

MERIEUX NutriSciences

SILLIKER AUSTRALIA
SYDNEY LABORATORY
Unit C2, 391 Park Road
Regents Park, NSW 2143
02 8718 6888 Fax 02 8718 6899

CERTIFICATE OF ANALYSIS

COA No:	SYD-51514163-0
Supersedes:	None
COA Date:	07/12/2020
Page 3 of 5	

TO:
Clearsafe Environmental Solutions
Clearsafe Environmental Solutions
PO Box 337
UNANDERRA, NSW 2526

Received From:	Unanderra, NSW
Received Date:	27/11/2020

Location of Test: (except where noted)
Regents Park, NSW

Analytical Results

Desc. 1: ^ 20-12361/S3

Sample Number: 456455857
Condition Rec'd: NORMAL
Temp Rec'd (°C): 18.0
Date Started: 27/11/2020

Results apply only to the sample as received

Analyte	Result	Units	Method Reference	Result Date	Loc.
Total Bacterial Count	5500	CFU/swab	M17.2	30/11/2020	
Total Mould Count	2200	CFU/swab	M17.2	02/12/2020	
Total Yeast Count	<10	CFU/swab	M17.2	02/12/2020	

Desc. 1: ^ 20-12361/S4

Sample Number: 456455858
Condition Rec'd: NORMAL
Temp Rec'd (°C): 18.0
Date Started: 27/11/2020

Results apply only to the sample as received

Analyte	Result	Units	Method Reference	Result Date	Loc.
Total Bacterial Count	350	CFU/swab	M17.2	30/11/2020	
Total Mould Count	500	CFU/swab	M17.2	02/12/2020	
Total Yeast Count	<10	CFU/swab	M17.2	02/12/2020	

NATA WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing
NATA Corporate Accreditation Number: 2020
Melbourne Microbiology Site No: 2013
Sydney Microbiology Site No: 2759 Chemistry Site No: 2135
Perth Microbiology Site No: 10635
Brisbane Microbiology Site No: 15147

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TGA Licence No: MI-04072005-LI-000664-2

SILLIKER AUSTRALIA
SYDNEY LABORATORY
Unit C2, 391 Park Road
Regents Park, NSW 2143
02 8718 6888 Fax 02 8718 6899

CERTIFICATE OF ANALYSIS

COA No:	SYD-51514163-0
Supersedes:	None
COA Date:	07/12/2020
Page 4 of 5	

TO:
Clearsafe Environmental Solutions
Clearsafe Environmental Solutions
PO Box 337
UNANDERRA, NSW 2526

Received From:	Unanderra, NSW
Received Date:	27/11/2020

Location of Test: (except where noted)
Regents Park, NSW

Analytical Results

Desc. 1: ^ 20-12361/S5

Sample Number: 456455859
Condition Rec'd: NORMAL
Temp Rec'd (°C): 18.0
Date Started: 27/11/2020

Results apply only to the sample as received

Analyte	Result	Units	Method Reference	Result Date	Loc.
Total Bacterial Count	11000	CFU/swab	M17.2	30/11/2020	
Total Mould Count	>3000 est.	CFU/swab	M17.2	07/12/2020	
Total Yeast Count	Unable to determine the Yeast Count due to TNTC mould.	CFU/swab	M17.2	07/12/2020	

Desc. 1: ^ 20-12361/S6

Sample Number: 456455860
Condition Rec'd: NORMAL
Temp Rec'd (°C): 18.0
Date Started: 27/11/2020

Results apply only to the sample as received

Analyte	Result	Units	Method Reference	Result Date	Loc.
Total Bacterial Count	7200	CFU/swab	M17.2	30/11/2020	
Total Mould Count	>3000 est.	CFU/swab	M17.2	07/12/2020	
Total Yeast Count	Unable to determine Yeast Count due to TNTC mould.	CFU/swab	M17.2	07/12/2020	

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NATA Corporate Accreditation Number: 2020
Melbourne Microbiology Site No: 2013
Sydney Microbiology Site No: 2759 Chemistry Site No: 2135
Perth Microbiology Site No: 10635
Brisbane Microbiology Site No: 15147

^ Customer supplied information

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CERTIFICATE OF ANALYSIS

COA No:	SYD-51514163-0
Supersedes:	None
COA Date:	07/12/2020
Page 5 of 5	

TO:
Clearsafe Environmental Solutions
Clearsafe Environmental Solutions
PO Box 337
UNANDERRA, NSW 2526

Received From:	Unanderra, NSW
Received Date:	27/11/2020

Location of Test: (except where noted)
Regents Park, NSW

Analytical Results

GEORGE GEORGAS
LABORATORY MANAGER

MXNS Abbreviations/Definitions:
| <: Less Than | >: Greater Than | CFU: Colony Forming Units | D: Detected | ND: Not Detected | MPN: Most Probable Number | LOR: Level of Reporting | LOD: Level of Detection |
| LOQ: Limit of Quantification | est. : Estimate |

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NATA Corporate Accreditation Number: 2020
Melbourne Microbiology Site No: 2013
Sydney Microbiology Site No: 2759 Chemistry Site No: 2135
Perth Microbiology Site No: 10635
Brisbane Microbiology Site No: 15147
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