

PURCELL

Project address:           The Horniman Museum and Gardens  
Chiller Replacement Works

## Pre Construction Information

Project number	239287
Date	18 July 2018
Client	The Horniman Museum and Gardens

**PRE CONSTRUCTION INFORMATION**

**FOR**

**Chiller Replacement Works**

**ON BEHALF OF**

**The Horniman Museum and Gardens**

Prepared in accordance with the requirements of Regulation 4(4) and Appendix 2 of the

CONSTRUCTION (DESIGN & MANAGEMENT) REGULATIONS 2015

and for no other purpose

**ISSUE LOG**

Prepared by: Cameron Miller Date: 18 July 2018 Issue: 002

Minor revisions following client review and comment

Prepared by: Cameron Miller Date: 13 July 2018 Issue: 001

# **Chiller Replacement Works**

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## Chiller Replacement Works PRE CONSTRUCTION INFORMATION

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### I Description of Project

#### I.1 Project description

The works to be carried out are the replacement of existing redundant chillers and re-use of a single chiller. Reconfiguration of the chillers to provide a single supply arrangement to the Aquarium systems including chiller, pipework, ancillaries and controls as well as electrics and the provision of the designed plant enclosure.

I.2 Planned start date to be agreed

I.3 Planned completion date to be agreed

I.4 Time planned for mobilisation two weeks

#### CDM Duty Holders

I.5 Client Tim Hopkins

Head of Estates  
Horniman Museum  
100 London Road  
Forest Hill  
London SE23 PQ

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Vox Studios – V305  
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I.8 Principal Contractor to be advised

#### HSE Notification

I.9 The project may not be considered notifiable under the CDM regulations.

#### Other Parties

I.10 Not applicable

### **Workplace Regulations**

- 1.11 The project is for a structure that shall be used as a workplace within the meaning of the Workplace (Health, Safety & Welfare) Regulations.

### **Existing Records**

- 1.12 A Refurbishment Survey report for asbestos containing materials shall be provided for the areas affected by the works. The Asbestos Management Plan is appended.
- 1.13 All other records are available from the Estates Manager

## **2 Client's Considerations and Management Requirements**

### **2.1 Planning for and Managing the Construction Work**

The work shall be managed by the Principal Contractor.

The health and safety objective is to carry out the construction works with due regard to the health, safety and welfare of all operatives engaged on the project and members of the public without putting anybody's health and safety at risk.

The Principal Contractor will name a point of contact to liaise with the Contract Administrator and Client for management issues.

### **2.2 Health and Safety Goals for the Project**

The overall goal is to complete the project with zero lost time or reportable injuries, diseases or dangerous occurrences affecting those involved in the construction work, members of the general public or others and to ensure that no long term health effects are brought about or exacerbated by activities involved in the project.

The aim is also to provide a safe and secure interface throughout the project between work areas and those occupied by staff and visitors.

The Principal Contractor is to specify within the Construction Phase Plan the initiatives which are to be followed to meet this goal, e.g. induction, supervision, tool box talks, training, monitoring, welfare etc.

### **2.3 Communication and Liaison between Client and Others**

Part of the Principal Contractor's role is to ensure that all operatives have received appropriate health and safety training.

The Principal Contractor shall ensure that daily consultation takes place between all contractors and others affected to discuss risk controls and safety procedures and to ensure that necessary information is with those who need it. This will be the responsibility of the Principal Contractor's site manager.

#### 2.4 Construction Phase Design

The Principal Contractor shall cooperate with the Principal Designer in liaising with Designers carrying out design work during the Construction Phase, including temporary works Designers.

The Principal Contractor shall advise the Principal Designer of how they are proposing to plan, manage, monitor and coordinate the design works.

The Principal Contractor shall keep a project directory up to date, so that it is clear who is responsible for which design works.

The Principal Contractor shall advise the Principal Designer of contact details for all Designers, including temporary works Designers, along with a note of the works each is designing.

The Principal Contractor shall provide a programme showing proposed dates and durations of Designer appointments.

The Principal Contractor shall provide the Principal Designer with minutes of design team meetings and copies of other communications to allow monitoring of design coordination. The Principal Designer may attend meetings.

#### 2.5 Security of the Site

The Principal Contractor is to secure the site area to deter entry by unauthorized persons.

#### 2.6 Working Hours

Working hours are restricted by agreement with the client. Noisy operations may be further restricted. Note that the museum opens to visitors at 10:00 and activities outside the direct works area may be restricted after then.

#### 2.7 Welfare Arrangements

The client has made welfare facilities available. The Principal Contractor shall maintain the welfare facilities for site personnel in accordance with the appropriate standard laid down in the CDM Regulations 2015 and HSE information sheets, provision of welfare facilities at construction sites (see Appendix B). The facilities are to be located within the contractor's parking area.

Arrangements for maintaining welfare facilities and first aid provision shall be detailed in the Construction Phase Plan.

Requirements relating to the health and safety of the client's employees or visitors or those involved in the project

2.8 Site Hoarding

The Principal Contractor shall make suitable arrangements for securing the site to exclude all non authorized personnel from entry to any area under his control.

2.9 Site Transport Arrangements and Vehicle Movement Restrictions

The Principal Contractor shall carefully manage any interaction of neighbours and members of the public with site traffic etc. to avoid risk to pedestrians and vehicles.

Materials deliveries shall be via the Horniman Drive gate, which is open from 07:00 hours. This route is through gardens to which the public have access. Vehicles are restricted to 5 mph with hazard lights on. Banksmen must be in attendance if needed for safe movement.

Note that members of the public using the gardens are not expecting traffic and relax their perception of hazards; children may not be under close supervision. Whilst the museum requires all deliveries to be completed and vehicles off site by 10:00 hours, this should be regarded as exceptional. Every effort should be made to ensure vehicles are off site by 08:30, after which time children are more likely to be present.

No parking is permitted on site and parking restrictions apply locally; parking on footpaths is not permitted.

For materials and equipment deliveries, arrangements should be made with the client for short term parking for the duration of off loading.

2.10 Non Working Hours

Note that the client's security staff may need access to the site during non working hours. Such staff may be unfamiliar with construction sites and may not be wearing personal protective equipment appropriate to construction sites.

At the end of each working day, leave the site in a tidy condition free from hazards. If hazards remain which cannot be made safe, provide written notice each day to the client.

## 2.11 Client Rules and Restrictions

The Museum Rules for Visiting Contractors are appended. The following shall also apply.

All work will be planned in advance and agreed with all relevant parties with permits being issued by the Principal Contractor as and when required.

The Principal Contractor's site rules shall include the following:

- All people entering site shall report to the site manager upon arrival and sign the site register upon entering and leaving the site.
- Noise shall be kept to a minimum.
- Operatives shall dress appropriately.
- No offensive language, swearing, singing or shouting is permitted.
- No one under the influence of alcohol or drugs shall be permitted on site.
- The site is to be kept tidy and rubbish removed promptly.
- Burning of rubbish on site is not permitted.
- Plant and materials may only be stored within the site compound.

## 2.12 Fire Precautions

The Principal Contractor shall put in place precautions to prevent fire. Note that acetylene is not permitted on site. All personnel shall be familiar with the emergency procedures to follow in case of fire. The Principal Contractor shall provide appropriate firefighting appliances.

A permit to work system is required for all hot works. Hot works must be agreed in advance with the client, who shall issue a Permit to Work.

Whenever possible, hot works are to be avoided or undertaken off site.

## 2.13 Emergency Procedures and Means of Escape

A suitable means of escape from site in the event of fire or other emergency shall be maintained.

The alternative means of escape from the south boiler room is through the plant room courtyard; ensure this route is clear upon each occasion of starting work.

2.14 Fire Hydrants and Warning Notices

Do not obstruct fire hydrants or warning notices.

2.15 Restricted Access

Access shall be restricted to those areas occupied by the client or required for staff or visitor access.

Access to the works area shall be from the London Road entrance and through staff areas. Note that there is a staircase to the boiler room. Plant and equipment should be delivered in sizes suitable for handling.

2.16 Confined Spaces

No areas have been designated as confined spaces, however be aware that some work activities may cause the work location to become a confined space. Monitor planned work activities and take precautions if required.

HSE guidance on Safe Work in Confined Spaces is appended.

2.17 Work at Height

A permit to work system is required for all work at height. Work at height must be agreed in advance with the client, who shall issue a Permit to Work.

Whenever possible, work at height is to be avoided.

2.18 Emergency Escapes

Ensure that emergency escape routes from adjacent premises are maintained.

2.19 Smoking

Smoking is not permitted on the site.

2.20 Reportable Occurrences

Any reportable incident prescribed under the 'Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 is to be reported to the Health and Safety Executive within the required notice period for that event and the Client, Contract Administrator and the Principal Designer are to be notified immediately.

2.21 HSE and Local Authority Notices

Notify the Client, Contract Administrator and the Principal Designer of any notices (improvement or prohibition) or summons received from the Health and Safety Executive or Local Authority.

### 3 Environmental Restrictions and Existing On Site Risks

#### Safety hazards

#### 3.1 Site Boundary

The site boundary shall be agreed. The site is set within the Horniman Museum and Gardens, which are bounded by residential properties and public gardens. The Contractor may be required to erect fencing to boundaries.

#### 3.2 Restrictions on Waste Collection or Storage

There are no specific restrictions on waste collection, however busy times are best avoided. Agree the strategy for waste removal with the client.

Waste is to be removed from site on a daily basis as far as is practicable.

#### 3.3 Adjacent Land Uses

The site is set within the Horniman Museum and Gardens. Other contractors may be employed (eg exhibition fit out). Communicate, cooperate and coordinate activities with other contractors.

Note that some of the work requires working within public areas of the museum and a live aquarium environment.

#### 3.4 Existing Storage of Hazardous Materials

No storage of hazardous materials is known on site which shall affect the works.

#### 3.5 Location of Existing Services

The Principal Contractor shall undertake suitable precautions to identify and protect existing services.

Care shall be taken not to break or disrupt existing drainage pipes/conduits running across the site. When undertaking this work the Principal Contractor is required to survey the site to ascertain the position of all services including drainage, electrical power supply lines, gas pipes etc running through the site.

#### 3.6 Ground Conditions, Underground Structures or Water Courses

Not applicable

#### 3.7 Information about Existing Structures

Use with caution when removing existing plant and moving new plant into place; ensure temporary supports are placed to prevent damage to existing structure.

#### 3.8 Previous Structural Modifications

None known.

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#### 3.9 Fire Damage, Ground Shrinkage, Movement, Poor Maintenance

None known.

#### 3.10 Existing Plant and Equipment

Decommission and remove as specified.

#### 3.11 Existing Health and Safety Information

No Health and Safety File exists relevant to the works.

No other information is available.

#### **Health hazards**

#### 3.12 Asbestos

The Asbestos Management Plan is appended. A Refurbishment Survey is to be undertaken for the boiler room and a copy of the report shall be provided.

Note that asbestos containing materials may be encountered which have not been identified in the surveys. If suspect material is uncovered, cease work, prevent exposure of workers and others to suspect material and seek instruction from the Contract Administrator. Ensure that all operatives have asbestos awareness training which is up to date.

#### 3.13 Existing Storage of Hazardous Materials

None known.

#### 3.14 Contaminated Land

There are no reports of contaminated land. Based on the history of the site, contamination is not expected.

#### 3.15 Existing Structures containing Hazardous Materials

No hazardous materials have been identified.

#### 3.16 Health Risks arising from Client's Activities

There is a bee hive within the museum, the bees within it exit the building via a pipe along the east elevation at height.

No other risks are known and the boiler rooms shall be unoccupied for the duration of the works.

#### **4 Significant Design and Construction Hazards**

##### 4.1 Design Assumptions and Control Measures

No significant hazards have been identified, over ordinary site hazards that fall within the expertise of a competent contractor.

Significant hazards are defined as those which are unusual, unexpected or difficult to manage.

##### 4.2 Arrangements for Coordination of Ongoing Design Work

Regular site meetings are to be held throughout the programme of works.

##### 4.3 Significant Risks Identified During Design

No significant risks have been identified during the design.

##### 4.4 Materials Requiring Particular Precautions.

None has been identified.

**5 The Health and Safety File**

The Principal Designer shall be responsible for preparing the Health and Safety File. The Principal Contractor and Designers are required to provide the information necessary for inclusion in the File.

The Contractor shall provide the following information to the Principal Designer for inclusion in the Health and Safety File:

- A brief description of the project
- Project directory listing contractors for the main elements of the works and suppliers of specialist equipment
- Hazards that have not been eliminated through the design and construction processes and how they have been addressed
- Key structural principals
- Hazardous materials used
- Information regarding the removal or dismantling of installed plant and equipment
- Health and safety information about equipment provided for cleaning or maintaining the structure
- The nature, location and markings of significant services, including underground cables, gas supply equipment, fire fighting services and the like
- Information and as built drawings of the building, plant and equipment

**APPENDIX A**  
**CONSTRUCTION PHASE PLAN CONTENT**

## **1.0 DESCRIPTION OF PROJECT**

1.1 Programme details including key dates

1.2 Key members of project team

Client

Principal Designer

Designers

Principal Contractor

## **2.0 MANAGEMENT OF THE WORK**

2.1 Management structure and responsibilities

2.2 Health and safety aims for the project

2.3 Arrangements to ensure cooperation between project team members and coordination of their work

2.4 Arrangements for involving workers

2.5 Site induction

2.6 Welfare facilities

2.7 Fire and emergency procedures

## **3.0 CONTROL OF SCHEDULE 3 RISKS**

3.1 Work which puts workers at risk of burial under earth falls, engulfment in swamp land or falling from height, where the risk is particularly aggravated by the nature of the work or processes used or by the environment at the place of work or site.

3.2 Work which puts workers at risk from chemical or biological substances constituting a particular danger to the safety or health of workers or involving a legal requirement for health monitoring.

3.3 Work with ionising radiation requiring the designation of controlled or supervised areas under Regulation 16 of the Ionising Regulations 1999.

3.4 Work near high voltage power lines.

3.5 Work exposing workers to the risk of drowning.

3.6 Work on wells, underground earthworks and tunnels.

3.7 Work carried out by divers having a system of air supply.

3.8 Work carried out by workers in caissons with a compressed air atmosphere.

3.9 Work involving the use of explosives.

3.10 Work involving the assembly or dismantling of heavy prefabricated components.

**APPENDIX B**  
**WELFARE FACILITIES**

# Provision of welfare facilities during construction work

HSE information sheet

Construction Information Sheet No 59



## Introduction

This information sheet is for dutyholders involved in construction work. It replaces previous guidance contained in *Provision of welfare facilities at transient construction sites* and in *Provision of welfare facilities at fixed construction sites*. It gives guidance on the **minimum** welfare facilities that must be provided or made available to workers on construction sites.

Construction workers need adequate toilet and washing facilities, a place to warm up and eat their food and somewhere to store clothing. However, these basic requirements are often neglected. A cold water tap and chemical toilet on their own are not adequate facilities. Good facilities can positively benefit health and well-being and can help to prevent dermatitis.

## General duties (Construction (Design and Management) Regulations 2007)<sup>1</sup>

### Clients

If you are a client (but not a domestic client, ie you or your family live in the building under construction) then you must ensure that your contractors have arrangements to provide adequate welfare facilities for construction workers. This does not mean that you have to provide the facilities yourself. If the work is notifiable (that is lasts more than 30 days or will involve more than 500 person days of work) then you must ensure that construction work (including demolition) does not start until suitable welfare facilities are in place.

### **CDM coordinators**

You should give suitable and sufficient advice to the client on the measures needed to ensure that suitable welfare is provided during the construction phase.

### **Principal contractors**

You should make sure that suitable welfare facilities are provided from the start and are maintained throughout the construction phase.

### **Contractors (including the self-employed)**

In all cases you should ensure that there are adequate welfare facilities for workers under your control.

## **Planning**

The availability of welfare facilities, their location on site and regular maintenance must be considered at the planning and preparation stages of every construction project, before construction work (including demolition) starts.

When planning welfare provision, consider:

- the nature of the work to be carried out and the health risks associated with it. For example, consider the provision of showers if the project involves hazardous substances or very dirty work, eg sewer maintenance, dusty demolition activities, work with contaminated land or concrete pouring;
- the distance workers will have to travel to the welfare facilities;
- the duration of the work and number of different locations;
- the numbers of people who will use them;
- the cleaning and maintenance of the welfare facilities;
- whether they need to be relocated during the construction phase.

### **Installing and removing from site**

You need to plan how welfare units will be moved from delivery vehicles into position. It is preferable to mechanically move these units; if manual handling cannot be avoided then you should manage the risk effectively. Your plans should cover safe lifting practices and ensure proper protection of workers from falls from vehicles or portable units.

### **Positioning on site**

You should site welfare units and manage traffic effectively to ensure adequate segregation of pedestrians and vehicles.

### **Toilets**

So far as is reasonably practicable you need to provide flushing toilets and running water, connected to mains water and drainage systems. If this is not possible, facilities with a built-in water supply and drainage tanks should be used. Portable chemical toilets are acceptable only if it is not reasonably practicable to make other adequate provision.

Toilets must be adequately ventilated, lit and maintained in a clean condition. The frequency of cleaning will depend on usage. Basic daily cleaning may not always be sufficient.

Provide an adequate number of toilets. The number needed will depend on the number of workers on site and the type of facilities provided. Portable toilets have a limited capacity and will need emptying. The number of portable toilets needed depends on the number of persons and the frequency of emptying. BS6465-1:2006 recommends a ratio of 1 toilet to 7 persons where portable toilets are emptied once a week.

Men and women may use the same toilet, if it is in a lockable room and partitioned from any urinals. Otherwise provide separate toilets. Adequate supplies of toilet paper should always be available.

Sanitary waste disposal should be provided in facilities used by female workers.

### **Washing facilities**

Provide washing facilities next to both toilets **and** changing areas. Consider placing them next to rest areas if these are far from toilets or changing areas. They should include:

- a supply of clean hot and cold, or warm, water (which should be running water so far as is reasonably practicable);
- soap or other suitable means of cleaning;
- towels or other suitable means of drying;
- sufficient ventilation and lighting;
- sinks large enough to wash face, hands and forearms.

Men and women can share sinks used for washing hands, face and arms. Unisex shower facilities can be provided if they are in a separate, lockable room, which can be used by one person at a time.

Showers used for particularly dirty work, or when workers are exposed to especially hazardous substances (eg development of contaminated land, or demolition of old industrial buildings which are contaminated with toxic substances etc), will need to be separate from the main facilities.

Specialist facilities are needed for certain activities, eg working with lead or asbestos or tunnelling in compressed air.

### **Drinking water**

A supply of wholesome drinking water should be readily available. Where possible, it should be supplied direct from the mains. If water is stored, protect it from possible contamination and make sure it is changed often enough to prevent it from becoming stale or contaminated. Where necessary, clearly mark the drinking water supply to prevent it being confused with hazardous liquids or water which is not fit to drink. Provide cups or other drinking vessels at the outlet, unless the water is supplied in an upward jet, which can be drunk easily (eg a drinking fountain).

### **Changing rooms and lockers**

Every site should have arrangements for securely storing personal clothing not worn on site and for protective clothing needed for site work. Men and women should be able to change separately. Separate lockers might be needed, although on smaller sites the site office may be a suitable storage area provided it is kept secure. Where there is a risk of protective site clothing contaminating everyday clothing, items should be stored separately.

Provision should be made to allow wet clothing to be dried. As a general rule clothing should not be placed directly on heaters due to the risk of fire. If electrical heaters are used, they should be properly ventilated and, if possible, fitted with a high temperature cut-out device.

### **Rest facilities**

Rest facilities should provide shelter from wind and rain. The rest facilities should have adequate numbers of tables, seating with backs, a means for heating water for drinks and for warming up food (eg a gas or electrical heating ring or microwave oven) and be adequately heated. Rest areas are not to be used to store plant, equipment or materials.

### **Smoking**

Smoking is prohibited in enclosed public places and workplaces such as construction sites or work vehicles. Further information is available at

[www.smokefreeengland.co.uk](http://www.smokefreeengland.co.uk),  
[www.clearingtheairsotland.com](http://www.clearingtheairsotland.com) and  
[www.smokingbanwales.co.uk](http://www.smokingbanwales.co.uk).

### **Heating**

Rest facilities will normally require heating. Using properly maintained electrical equipment can eliminate the risks associated with LPG heaters. Inadequately ventilated LPG cookers and heaters can produce carbon monoxide, with potentially fatal results. Flammable gas may escape from leaking cylinders, which have not been properly turned off. If LPG is used reduce the risks by:

- using and storing the cylinders in safe, well-ventilated places outside the accommodation (including overnight) or in purpose-built ventilated storage areas;
- ensuring that the appliances have been properly installed, checked and maintained by a competent person;
- providing adequate combustion ventilation (provide fixed grilles at high and low level);
- checking that the ventilation provided is not blocked, eg fixed grilles blocked by newspaper or rags in cold weather to 'stop draughts';
- checking that cylinders are properly turned off when not in use;
- using wall or ceiling-mounted carbon monoxide detectors.

### **Use of alternative facilities for transient construction sites**

For the purpose of this information sheet, a transient construction site is either where short duration work (up to a week) is carried out at one or many locations, or is of a longer duration carried out while moving over a continuous geographical area, eg major roadworks, cable laying contracts etc.

In such cases, it may be appropriate to make arrangements to use facilities provided by the owner of existing premises, in which the work is being done, local public facilities or the facilities of local businesses. Clear agreement should be made with the provider of the facilities; it should not be assumed that local commercial premises can be used without their agreement. In all cases the standards above must be provided or made available. Facilities must be readily accessible to the worksite, open at all relevant times, be at no cost to the workers, be of an acceptable standard in terms of cleanliness and have hand-washing facilities. Workers need to be made aware of the arrangements to use them and be informed of their location.

Table 1 gives an indication of the options available, in order of preference, for providing welfare facilities for transient construction sites.

**Table 1** Welfare facilities: the options

Type of installation	Additional notes
1a Fixed installation: connected to mains drainage and water.	Order of preference: ■ on site; ■ at a base location; ■ at a satellite compound.  NB This may include the pre-arranged use of private facilities. Permission, preferably in writing, should be obtained from the proprietor in advance of the work starting. The use of public toilets is acceptable only where it is impractical to provide or make available other facilities.
1b Portable water flushing units with water bowser supplies and waste storage tanks.	
2 Portable installation on site.	Consisting of chemical toilet(s), washing facilities and sufficient tables and seating.
3 Suitably designed vehicle.	Consisting of chemical toilet(s), washing facilities and sufficient tables and seating.
4 Facilities which are conveniently accessible to the worksite (includes public toilets).	Use of public toilets is acceptable only where it is impractical to provide or make available other facilities.
5 Portable installation near site.	Incorporating a chemical toilet, washing facilities and sufficient tables and seating.

## References

1 *Managing health and safety in construction. Construction (Design and Management) Regulations 2007. Approved Code of Practice L144* HSE Books 2007 ISBN 978 0 7176 6223 4

While every effort has been made to ensure the accuracy of the references listed in this publication, their future availability cannot be guaranteed.

## Further reading

*Health and safety in construction* HSG150 (Third edition) HSE Books 2006 ISBN 978 0 7176 6182 4  
*Fire safety in construction work* HSG168 HSE Books 2010 ISBN 978 0 7176 6345 3

BS 6465-1: 2006 *Sanitary installations. Code of practice for the design of sanitary facilities and scales of provision of sanitary and associated appliances*

## Further information

Visit [www.hse.gov.uk/construction](http://www.hse.gov.uk/construction) for more specific information on CDM 2007 and health and safety in the construction industry, including a link to additional guidance for CDM dutyholders developed by the construction industry.

HSE priced and free publications can be viewed online or ordered from [www.hse.gov.uk](http://www.hse.gov.uk) or contact HSE Books, PO Box 1999, Sudbury, Suffolk CO10 2WA Tel: 01787 881165 Fax: 01787 313995. HSE priced publications are also available from bookshops.

For information about health and safety, or to report inconsistencies or inaccuracies in this guidance, ring HSE's Infoline Tel: 0845 345 0055 Fax: 0845 408 9566 Textphone: 0845 408 9577 e-mail: [hse.infoline@connaught.plc.uk](mailto:hse.infoline@connaught.plc.uk) or write to HSE Information Services, Caerphilly Business Park, Caerphilly CF83 3GG.

**This information sheet contains notes on good practice which are not compulsory but which you may find helpful in considering what you need to do.**

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**APPENDIX C**  
**ASBESTOS MANAGEMENT PLAN**



Asbestos Division

Date: 01/12/2011

Ref: A-1785

Mr Tony Walker  
(Facilities Manager)  
Horniman Museum  
100 London Road  
Forest Hill  
London  
SE23 3PQ

**Kershaw Contracting Services Ltd**  
Broad Lane, Cottenham, Cambridge CB4 4SW  
Telephone 01322 336917  
01954 250155

E-mail [sales.office@kershaw-grp.co.uk](mailto:sales.office@kershaw-grp.co.uk)  
Web [www.kershawcontracting.co.uk](http://www.kershawcontracting.co.uk)

Dear Sir

**Re: Asbestos works**  
**Site address: Horniman Museum, 100 London Road, Forest Hill, London, SE23**

We thank you for your recent valued enquiry and have pleasure in submitting our quotation based on the information provided within your documentation & during my recent site meeting..

We have inspected the site and understand the scope of works as shown below:

- Removal of thermal insulation to specified areas within the south boiler room under fully controlled conditions.

Areas include: Steel column adjacent the boiler supply (<1m<sup>2</sup>), steel girder above door on ledge (<1m<sup>2</sup>), above door (pipe entry point in corner) (<1m<sup>2</sup>) & steel column in corner adjacent the wall with plant room (<1m<sup>2</sup>).

- Encapsulation of AIB cladding (approximately 18m<sup>2</sup>) to beams above non asbestos ceiling tiles & grid-work to security control room under localised conditions.
- Removal of AIB debris (<0.25m<sup>2</sup>) to base of riser to 'Bothy' boiler room under localised conditions.
- Encapsulation of AIB ceiling (10m<sup>2</sup>) to 'Bothy' store room under localised conditions. The ceiling will be repaired with 'Supalux' boarding (approximately 0.1m x 0.1m) & mastic applied to seal.

**Price £6,100.00**  
**(SIX THOUSAND, ONE HUNDRED POUNDS)**

All prices are exclusive of VAT, which is currently charged at 20%.

The works will be undertaken in accordance with the Health & Safety at Work Act 1974 and the Control of Asbestos at Work Regulations 2006.

Prior to works commencing we will provide a comprehensive method statement / risk assessment. The documentation will be provided upon receipt of an official order.



Membership No:  
18649-1



General quotation terms

As discussed on site the boiler room could remain operation whilst our asbestos removal works are in progress, however whilst our works are in progress the room is strictly restricted to asbestos personnel only.

The boiler room ambient temperature at the time of our site meeting was within our working limit, it must remain that temperature whilst our works are in progress.

All non essential power supplies must be isolated prior to our works commencing.

**Prior to our asbestos works commencing all moveable room contents must be removed, any non-moveable items will be sheeted over within each room prior to asbestos removal works commencing.**

The transit route to & from the working area will include the movement of site personnel to & from the working areas to where our site decontamination unit will be sited.

The encapsulation to the security store will be undertaken once the ceiling tiles have been removed, leaving the associated grid-work in place. We will be as careful as possible with regard to removing the tiles, however due to the material the tiles are made from there may be slight damage to these items.

Again above the suspended ceiling there are various cables, when removing the tiles we will endeavour to cable tie the cables out of our way.

Down time on-site will be charged at £200.00 per man, per day.

Payment terms

If our quotation is acceptable our payment terms are strictly 30 days from invoice.  
All items removed will remain the ownership of the client until full payment has been made.

Our submitted price excludes main contractor's discounts.  
No allowance has been made for retention being held as part of this agreement.

Site requirements

We shall require an electricity and water supply for our plant and equipment for the duration of work, free of charge.

Provision must be made prior to our attendance for parking spaces for a van and decontamination unit on site as near to the south boiler room as reasonably possible.

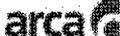
Programme

We will work in unison with the client to develop a programme of work. For the purposes of our quotation we have based our prices on a continuous uninterrupted working within normal working hours during Monday-Friday.

Air monitoring

This quotation includes for x4 statutory 4 stage air tests upon completion of the removal works to the boiler room location.

Additional air testing can be supplied at an additional cost of £250.00 per site visit.



Membership No. 18849-1



Waste

All contaminated waste generated by the works will be disposed off to a licensed landfill site. All documentation/consignment notes will be forwarded to the Environment Agency all in accordance with the Hazardous Waste Regulations 2005.

Client instruction

Prior to the commencement, all works require a written instruction, with exact invoicing details. Where an order number is required, this must be included.

Works will not be allowed to commence until the correct documentation is in place. Any further information or documentation received after our quotation date will be perceived as additional works.

We trust that we have interpreted your requirements correctly and assure you of our best attention at all times.

Yours faithfully,  
For and on behalf of the Kershaw Group

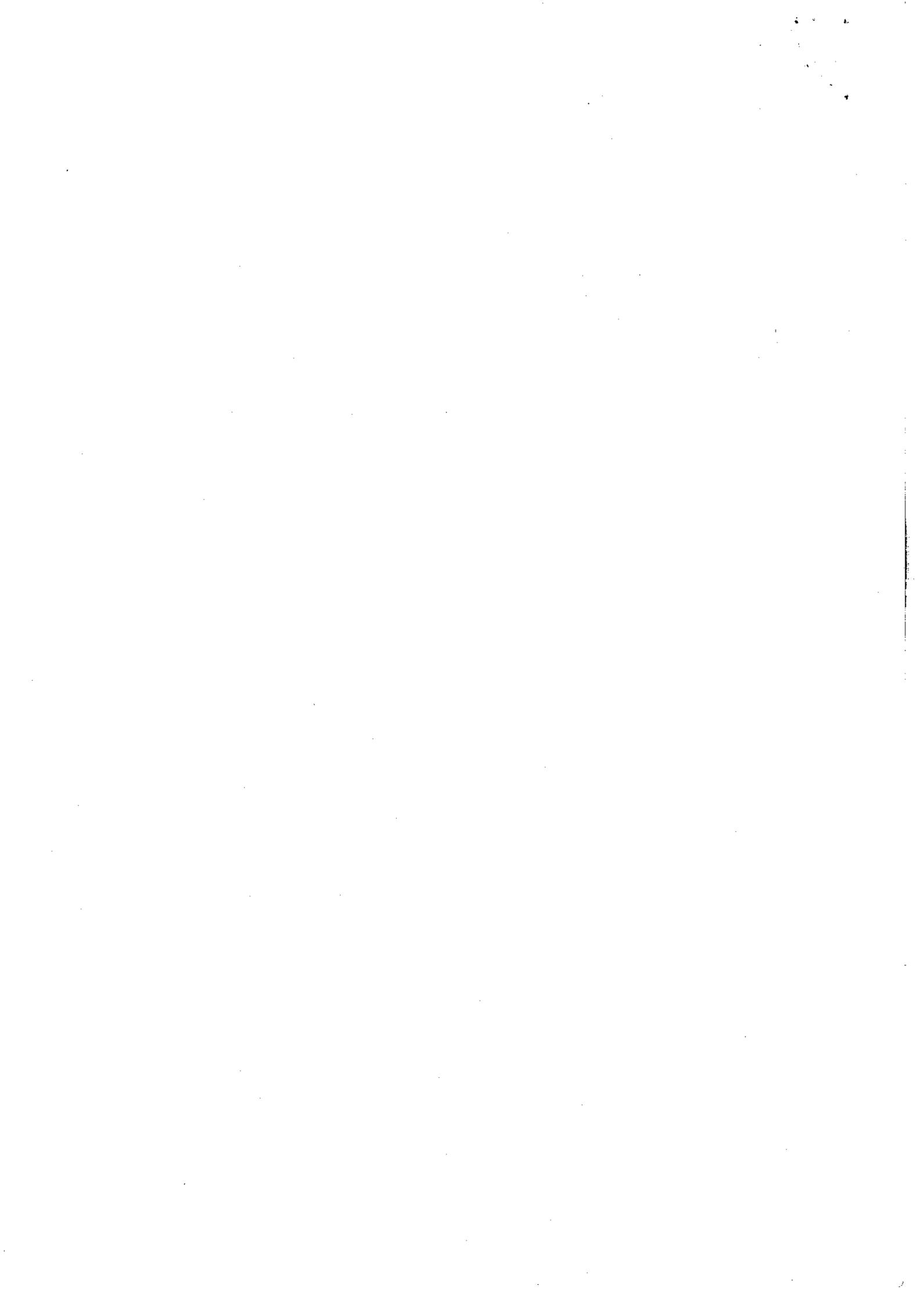
Jim Grant  
Business Development Manager  
Kershaw Asbestos Division

Tel: +44 (0) 1322 336917  
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Membership No:  
18848-1

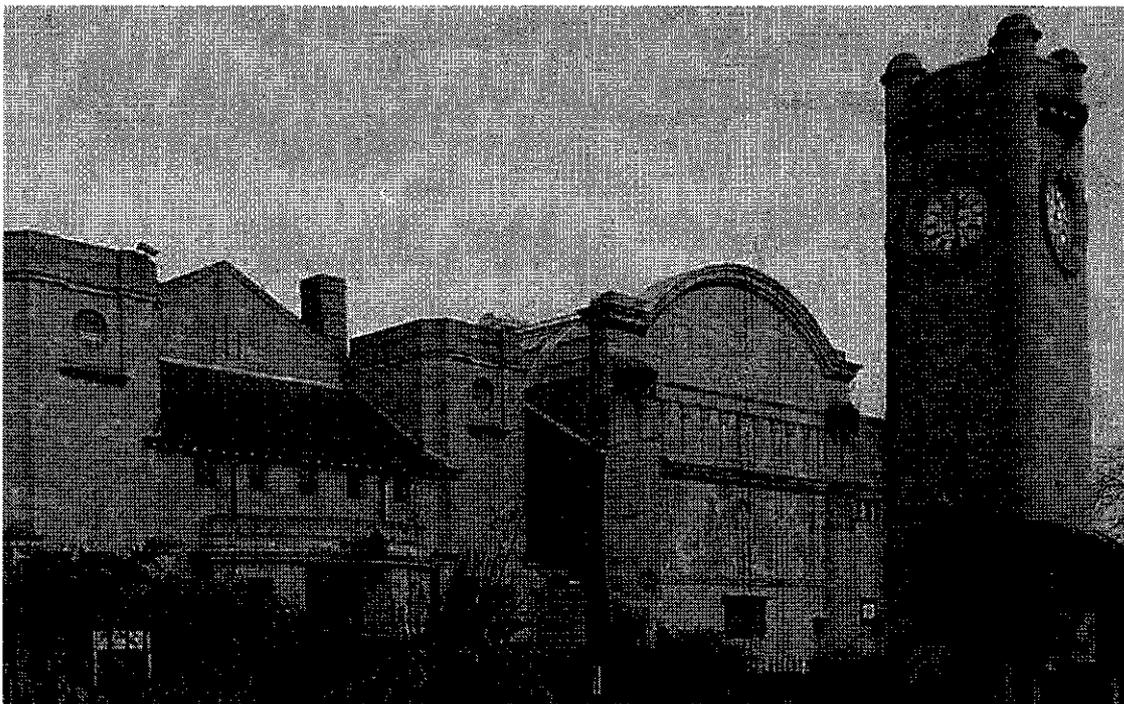






Report of a Management Survey  
for asbestos containing materials at:

**The Horniman Museum  
100, London Road,  
Forest Hill,  
London  
SE23 3PQ**



DATE OF SURVEY 12<sup>TH</sup> & 13<sup>TH</sup> SEPTEMBER, 2011

DATE OF REPORT 17TH OCTOBER, 2011

SURVEYOR CHECKED:  .....

PROJECT-REPORT NUMBER: 5881 - S02

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1

## INTRODUCTION

## BUILDING SUMMARY

&

## AREAS ACCESSED

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## 1. INTRODUCTION

- 1.1 This report contains the findings of a Management Survey for asbestos containing materials carried out by R F McGiff of Kershaw Contracting Services Ltd. at The Horniman Museum, 100 London Road, Forest Hill, London SE23 3PQ between 12<sup>th</sup> and 13th September, 2011.
- 1.2 The report is to be used to produce a management plan to, as far as reasonably practicable, minimise the risk of asbestos exposure to the occupants, maintenance staff and members of the public as required in current legislation and codes of practice.
- 1.3 The information in this report details the findings of a Management Survey for asbestos containing materials in accordance with HSG 264.

### **Building Summary**

- 1.4 The museum was founded by Frederick John Horniman, a tea trader who began collecting natural history specimens and cultural artefacts from around the World in the 1860s. Horniman initially opened part of his family home to the public so they could view the riches he had collected, but as the collections increased they outgrew the house and in 1898 Horniman commissioned a new Museum. The Museum opened in 1901 and was dedicated with the surrounding land as a free gift to the people of London by Frederick Horniman forever for their recreation instruction and enjoyment. The Horniman Museum has three main collections, anthropology, natural history and musical instruments, as well as a small aquarium and a 'handling collection'.

Since its opening, the museum has been extended and the following buildings were included as part of the survey:-

The Cue Building – an eco-structure erected c2000

The Bothy Building – a mid 1960s detached property, now converted to offices.

The Dutch Barn – a timber structure

Machinery Shed

Pump Room

Conservatory

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## 1.5 Areas Accessed

The following areas were accessed during the course of the survey:-

### **Basement**

South Boiler Room  
Passage  
Electrical Intake Room  
Plant Room 8  
Plant Room 9  
Corridor  
Stairwell  
Locker Room  
Staff Room  
Kitchen  
WCs off Staff Room  
Aquarium  
Aquarium Office  
Dive Shower  
Aquarium Food Prep Room  
Lift Lobby adj Aquarium  
Aquarium Dry Stores  
Aquarium Electric Cupboards  
Aquarium Plant Rooms  
Aquarium Cleaners Cupboard  
Stairs from Aquarium  
External Plant Area adj South Boiler Room

### **Lower Ground Floor**

Aquarium Research Area  
North Boiler Room  
Electrical Intake Area adj North Boiler Room  
Plant Room 1  
Understair Plant Area  
Lift Lobbies  
Stairs  
Atrium  
Centenary Gallery  
Plant Room off Centenary Gallery  
Rear Lobby off Centenary Gallery  
I.T. Office  
Stairs  
Understair Cupboards  
Music Gallery  
African Worlds Gallery  
Security Office  
Security Locker Room  
Security Shower Room  
WCs off Security Office  
Security Video Room  
Security Switch Room  
Security Reception Area  
Temporary Gallery  
Plant Room off Temporary Gallery  
Staff Entrance Lobby

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**Ground Floor**

Entrance Lobby  
Gift Shop  
Cafe  
WCs adj Cafe  
Cafe Kitchens  
Education Centre  
WCs in Education Centre  
Stairs to Education Centre Offices  
Education Centre Offices  
The Balcony  
Hands On Base  
Store Room off Hands On Base  
Understair Plant Cupboard off Hands On Base  
Natural History Gallery  
Nature Base  
The Art of Harmony  
Cleaners Cupboard off Natural History Gallery  
Offices adj The Art of Harmony  
Tower Room  
Storage Area adj Natural History  
WCs off Natural History

**1st Floor**

Natural History Balcony  
Offices off Natural History Balcony

**Bothy Building - Ground**

Garden Office  
Office  
Boiler Room  
Volunteer Co-Ordinators Office  
Female Washroom  
Male Washroom  
Lobbies  
Tool Store  
Kitchen  
Staff Room  
Store (Former Garage)

**Bothy Building – 1st**

Terrace  
Entrance Lobby  
Corridor  
Tea Room  
WC  
Offices  
Store Cupboards  
Meeting Room

**Other**

Pump Room  
Machinery Shed  
Conservatory  
Cue Building  
Dutch Barn

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1.5 **Areas Not Accessed**

The following areas were not accessed during the course of the survey:-

Basement – Electricity Sub-Station	-	UK Power Networks access only
Main Building – Roof Areas	-	Arrest Equipment Required
Bothy Building – above Ground Floor Ceilings	-	Fixed Ceilings

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## EXCLUSIONS RELATING TO INSPECTION & SAMPLING

PROJECT-REPORT NUMBER: 6881 – S02

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## 2. EXCLUSIONS RELATING TO INSPECTION & SAMPLING

- 2.1 The information in this report details the findings of a Management Survey for asbestos containing materials in accordance with HSG 264.

The report must be read and used wholly in conjunction with all elements of its content. Most sections of this report relate directly to other sections. Kershaw Contracting Services Ltd. can accept no liability or responsibility for the cost of removal of asbestos or other materials or delays etc caused by the inappropriate use of this report or for errors or omissions within the report. Should interpretation be taken incorrectly without consulting Kershaw Contracting Services Ltd. in the first instance then no liability will be associated.

Kershaw Contracting Services Ltd. cannot be held responsible for any damage caused during the course of this survey. Due to the nature and necessity of sampling for asbestos, some minor damage is unavoidable and will be limited to just that necessary for the taking of samples. Any minor damage so caused has been repaired to the best of our ability.

### 2.2 Exclusions relating to Inspection

- 2.2.1 The findings of this report are limited to areas accessed at the time of the survey.
- 2.2.2 Flues, ducts, voids or any similarly enclosed areas (such as air vents), the access to which necessitated the use of specialist equipment or tools, or which would have caused damage to floors, decoration, fixtures, fittings or the structure have not been inspected unless specific information to the contrary has been provided. Asbestos may well be hidden as part of the structure to a building and not visible until the structure is dismantled at a later date.
- 2.2.3 Any areas or surfaces that would require the removal or relocation of carpets, furniture, fixed blinds/curtains, fixtures or fittings have not been subject to inspection unless specifically instructed and mentioned elsewhere in this report. This is mainly related to occupied properties wherein accessing these areas would disrupt normal working activity.
- 2.2.4 Any part requiring specialist access equipment other than stepladders has not been inspected e.g. internal / external high-level parts, internal elements to boilers / plant. Any requirement for specialist access equipment has been specifically excluded unless otherwise stated or previously instructed.
- 2.2.5 No report has been made upon concealed spaces, which may exist within the fabric of the building, where the extent and presence of these is not evident due to inaccessibility or insufficient knowledge of the structure at the time of the survey.
- 2.2.6 Lift Shafts have not been inspected as no qualified lift engineer was in attendance.
- 2.2.7 No responsibility is accepted for the presence of asbestos in voids (underfloor, floor, wall or ceiling) other than those opened up during the investigation.
- 2.2.8 Inspection of Pipework has been restricted primarily to the insulation visible. Where it is evident comment will be made on any underlying debris which may be present.

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### **2.3 Exclusions relating to Sampling**

- 2.3.1 Samples have not been taken where the act of sampling would endanger the surveyor or affect or hinder the functional integrity of the item concerned. For example; fuses within electrical boxes, gaskets, fire doors and ropes associated with heating, glazing or power plant etc.
- 2.3.2 Whilst every effort will have been made to identify the true nature and extent of the asbestos material present in the building surveyed, no responsibility has been accepted for the presence of asbestos in materials other than those sampled at the requisite density.
- 2.3.3 Bulk samples have been taken from all materials which upon visual inspection appeared likely to contain asbestos with the exception of items of bitumen, plastic, resin or rubber which contain asbestos, the thermal and acoustic properties of which are incidental to their main purpose which falls outside the scope of the approved Code of Practice for Work with Materials containing Asbestos (CAR 2006).
- 2.3.4 Materials have been referred to as Asbestos Insulating Board or Asbestos Cement based upon their asbestos content and visual appearance alone. Density checks on materials have not been carried out unless stated otherwise.

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## EXECUTIVE SUMMARY

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### 3. EXECUTIVE SUMMARY

During the course of the survey a number of samples were taken of materials which were suspected to contain asbestos. The asbestos registers list these materials and makes recommendations as to their future management. Those materials found to contain asbestos are listed below:-

#### Basement – South Boiler Room

Steel Column adj Air Handling Unit	-	Thermal Insulation Debris
Steel Girder above Door	-	Thermal Insulation Debris
Pipe Entry Point above Door	-	Thermal Insulation Debris
Steel Column adj Wall with Plant Room	-	Thermal Insulation Debris

#### Lower Ground Floor – Security Areas

Cladding to Beam above Ceilings	-	Insulating Board
---------------------------------	---	------------------

#### Ground Floor – Cleaners Room

Door Panels	-	Cement Sheet
-------------	---	--------------

#### Bothy Building - Externals

Top of Chimney	-	Cement Flue Cap
Gable End Roof Edge Undercloaks	-	Cement Sheet
Soffits	-	Insulating Board

#### Bothy Building – Boiler Room

Floor inside Riser	-	Insulating Board Debris
Inside Chimney	-	Cement Flue (extends to Roof)

#### Bothy Building – Ground Floor

Store Room - Ceiling	-	Insulating Board
Above Plastered Ceilings	-	Insulating Board (PRESUMED)

The Insulating Board above the ceilings to the ground floor was identified during a previous asbestos survey. As it was not possible to gain access above these fixed ceilings, it must be presumed that this material is still in-situ.

#### Machinery Shed

Roof	-	Cement Sheet
------	---	--------------

#### Dutch Barn

Roof	-	Cement Tiles
------	---	--------------

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## RECOMMENDATIONS

PROJECT-REPORT NUMBER: 5831 – S02

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#### 4. RECOMMENDATIONS

Legislation states as a requirement that any building controller must manage the asbestos materials in their building(s) to prevent risk of exposure to its employees or tenants from asbestos and to prevent the spread of asbestos. Predominately this will involve identification, assessment and management measures. This survey document identifies and assesses the asbestos highlighted and this section is tailored to advise as to how the management of the materials present is ensured.

- 4.1 Recommendations made in this report are made in relation to items or findings identified on site during the course of the inspection and are made in line with the algorithm and the surveyor's recommendation. Recommendations made are based on current guidance issued by the Department of the Environment, Transport and the Regions and the Health and Safety Executive.
- 4.2 A quantified risk assessment of fibre release has been made using an algorithm, which takes into account factors relevant to the item. Further details are provided in *Appendix A*. Recommended actions will normally involve one or more of the actions described below.
- i. **Removal.** Items vulnerable to damage or in such poor condition that removal is the only practicable option, or where refurbishment or demolition works are planned that will disturb the materials.
  - ii. **Enclosure or encapsulation (Sealing) and / or repair.** Where the material is in poor condition, vulnerable to damage or unpainted and the risk of fibre release requires one or more of these actions.
  - iii. **Manage.** Management of asbestos materials where these are not in poor condition / vulnerable to damage. Consider labelling, registering and periodic inspection. Restrict access as necessary. Such management should be undertaken to comply with the employers' duty of care, required by the Health and Safety at Work Act 1974 and Control of Asbestos Regulations.

#### 4.3 Specific Recommendations.

- 4.3.1 The Asbestos Thermal Insulation debris identified to two columns, on the steel beam above the door and inside the pipe entry, also above the door, should be removed and the areas decontaminated.
- 4.3.2 The Asbestos Insulating Board, which is used as cladding to the beam above the ceilings in the Security Areas on the Lower Ground Floor, is unpainted and we therefore recommend that this material is encapsulated.
- 4.3.3 The Asbestos Insulating Board ceiling in the Store Room (Former Garage) in the Bothy Building is damaged and we therefore recommend that the damaged areas are repaired and the material encapsulated.
- 4.3.4 The Asbestos Insulating Board debris to the floor of the riser in the Boiler Room of the Bothy Building should be removed and the area decontaminated.

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#### **4.4 Asbestos Remediation**

##### **4.4.1 Asbestos Thermal Insulation / Asbestos Insulating Board**

These works should be carried out under controlled conditions by a contractor licensed to work with asbestos. It should be noted that licensed asbestos contractors, under the terms of their license, have to notify the relevant authority of their intention to remove such items by utilising the required ASB-5 notification certificate.

Notification of such works is normally subject to a 14-day period, except if the works by nature of their duration from start to finish will take less than one hour to complete and the works will not exceed and action level and for unusual or exceptional circumstances when the enforcing authority (either the Health and Safety Executive or local Environmental Health Department) may grant a waiver if there is immediate risk to health, i.e. an accident, risk of exposure. The client then has to formally write to the enforcing authority stating the reasons for requesting said waiver.

##### **4.4.2 Asbestos Cement Products**

Works on or removal of such asbestos products should be carried out using precautions in accordance with the guidelines within the Health and Safety Executive guidance note HSG 189/2 'Working with Asbestos Cement', with regard to floor tiles and formed gaskets similar methods are adopted but an assessment should be made. These guidelines outline basic precautions that should be used to prevent fibre release during works, such as wetting of the materials before removal and preventing unauthorised persons from entering the work area. Using these guidelines, it is expected that asbestos fibre levels would be low. A contractor prior to carrying out this work will require an adequate assessment.

Whilst there is no requirement for these works to be undertaken by a contractor licensed to work with asbestos, in practice it is unlikely that an unlicensed contractor will possess the necessary expertise to undertake such works properly.

##### **4.4.3 Asbestos Waste**

All waste generated by any asbestos remedial works is to be disposed of as asbestos (special) waste with the required waste consignment note for retention.

##### **4.4.4 Asbestos Supervision / Air Monitoring**

It is recommended and a requirement for clearance air testing that all asbestos works should be inspected and tested by an independent UKAS accredited company, appointed by the client or their management / representative consultant.

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**NOTES ON APPENDICES**

**PROJECT-REPORT NUMBER: 5881 – S02**

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## NOTES ON APPENDICES

Within the Appendices of this report are the following documents, where applicable, in the order indicated below:

1. Registers & Photographic Registers (Appendix A)
2. Bulk Sample Reports (Appendix B)
3. Plans (Appendix C)

### Register

The register details the location, approximate extent, risk assessment and required remedial action, with respect to each suspected asbestos containing material sampled or identified at the time of survey. Not all materials detailed on the register have been sampled. The register also contains representative images of asbestos containing materials. Details on the risk assessment algorithm are also given.

### Bulk Sample Report

Details items sampled, the type and approximate composition of asbestos within.

### Building Plans

Plans of the property annotated to show the locations of asbestos containing materials identified during the survey.

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## **APPENDIX A**

### **METHOD OF RISK ASSESSMENT AND REGISTERS**

**(9 pages to follow)**

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## METHOD OF RISK ASSESSMENT

### Introduction

The system of material risk assessment adopted is that outlined in HSG 264

The algorithm sets out the factors, which are most relevant in assessment of the potential release of fibres. These factors have been assigned quantifiable numerical values. The algorithm produces a single numerical value for each asbestos item, which may then be used as a priority rating for remedial work. Recommended actions should be implemented in accordance with the company's management policy / plan for asbestos containing materials

The individual scores under each heading are shown on the asbestos register, as is the total score, the potential for fibre release and a recommendation as to the future management of the material or any remedial action deemed necessary.

Sample variable	Score	Examples of scores
Product type (or debris from product)	1	Asbestos-reinforced composites (plastics, resins, mastics, roofing felts, vinyl floor tiles, semi-rigid paints or decorative finishes, asbestos cement etc).
	2	AIB, millboards, other low density insulation boards, asbestos textiles, gaskets, ropes and woven textiles, asbestos paper and felt. -
	3	Thermal insulation (eg pipe and boiler lagging), sprayed asbestos, loose asbestos, asbestos mattresses and packing,
Extent of damage/deterioration	0	Good condition: no visible damage.
	1	Low damage: a few scratches or surface marks, broken edges on boards, tiles etc.
	2	Medium damage: significant breakage of materials or several small areas where material has been damaged revealing loose asbestos fibres.
	3	High damage or delamination of materials, sprays and thermal insulation. Visible asbestos debris.
Surface treatment	0	Composite materials containing asbestos: reinforced plastics, resins, vinyl tiles.
	1	Enclosed sprays and lagging, AIB (with exposed face painted or encapsulated) asbestos cement sheets etc.
	2	Unsealed AIB, or encapsulated lagging and sprays.
	3	Unsealed lagging and sprays.
Asbestos Type	1	Chrysotile
	2	Amphibole asbestos excluding crocidolite
	3	Crocidolite.

PROJECT-REPORT NUMBER: 5881 – S02

Kershaw Contracting Services Limited  
Units 2 & 3, Lewis Industrial Estate  
Wheatley Terrace Road  
Erith Kent  
DA8 2AP

General Enquiries: [sales.office@kershaw-grp.co.uk](mailto:sales.office@kershaw-grp.co.uk)  
Quality / Technical Queries: [tim.peters@kershaw-grp.co.uk](mailto:tim.peters@kershaw-grp.co.uk)  
Phone: 01322 336917  
Fax: 01322 336914

The scores from each of the above 4 elements are added together to arrive at a total score of between 2 and 12 which is interpreted in terms of the potential for fibre release as follows:-

<b>Score</b>	<b>Potential to release asbestos fibres</b>
10 or more	High
7-9	Medium
5-6	Low
4 or less	Very low

**Non-asbestos materials have no potential to release asbestos fibres**

**PROJECT-REPORT NUMBER: 6881 – S02**

**Kershaw Contracting Services Limited  
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Phone: 01322 336917  
Fax: 01322 336914**

**SITE: Basement - The Horniman Museum, 100, London Road, Forest Hill, London SE23 3PQ**



Management

R.F. McGiff

DATE OF INSPECTION  
12-Sep-2011

SURVEY TYPE

SURVEYOR(S)

15

NO OF SUSPECTED ASBESTOS ITEMS IDENTIFIED

WORKSHEET SAMPLING REFERENCE  
12092011RFMA

DATE OF PRINTING  
19-Oct-11

SAMPLE REFERENCE NUMBER

ROOM / FUNCTIONAL SPACE

LOCATION

ASBESTOS ITEM

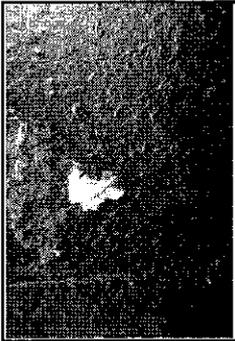
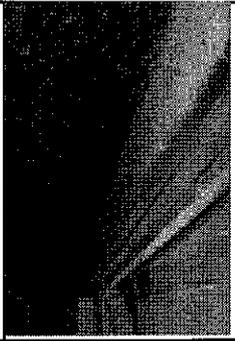
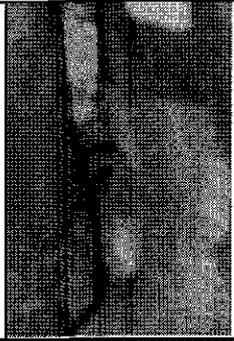
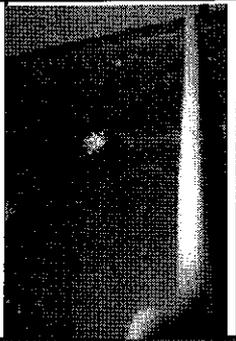
EXTENT  
M2 / M3

PRODUCT TYPE

EXTENT OF DAMAGE

SURFACE TREATMENT

ASBESTOS TYPE

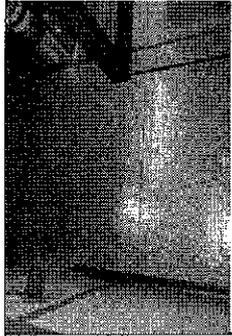
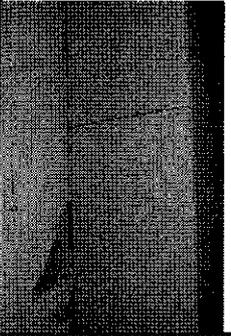
SAMPLE REFERENCE NUMBER	ROOM / FUNCTIONAL SPACE	LOCATION	ASBESTOS ITEM	EXTENT M2 / M3	PRODUCT TYPE	EXTENT OF DAMAGE	SURFACE TREATMENT	ASBESTOS TYPE	RISK ASSESSMENT SCORE	POTENTIAL FOR FIBRE RELEASE	INITIAL RECOMMENDATION BASED UPON RISK ASSESSMENT RATING	PHOTOGRAPHS
A001/12092011/RFM	South Boiler Room	Steel Column adj Boiler Air Supply	Thermal Insulation Debris	<1 m2	3	3	3	2	11	High		
A002/12092011/RFM	South Boiler Room	Steel Girder above Door - On Ledge	Thermal Insulation Debris	<1 m2	3	3	3	2	11	High		
A003/12092011/RFM	South Boiler Room	Above Door - Pipe Entry Point in Corner - Insulation Pipe	Thermal Insulation Debris	<1 m2	3	3	3	2	11	High		
A004/12092011/RFM	South Boiler Room	Steel Column in Corner adj Wall with Plant Room 8	Thermal Insulation Debris	<1 m2	3	3	3	2	11	High		

Handwritten notes: 12092011/RFMA, 15/13

**Lower Ground Floor - The Horniman Museum, 100,  
London Road, Forest Hill, London SE23 3PQ**



<b>SITE</b>	<b>Management</b>	
<b>DATE OF INSPECTION</b>	<b>SURVEY TYPE</b>	<b>Management</b>
12-Sep-2011		
<b>WORKSHEET SAMPLING REFERENCE</b>	<b>SURVEYOR(S)</b>	<b>R.F. McGliff</b>
12092011RFMA		
<b>DATE OF PRINTING</b>	<b>NO OF SUSPECTED ASBESTOS ITEMS IDENTIFIED</b>	<b>15</b>
19-Oct-11		

SAMPLE REFERENCE NUMBER	ROOM / FUNCTIONAL SPACE	LOCATION	ASBESTOS ITEM	EXTENT	M2 / M3	PRODUCT TYPE	EXTENT OF DAMAGE	SURFACE TREATMENT	ASBESTOS TYPE	RISK ASSESSMENT SCORE	POTENTIAL FOR FIBRE RELEASE	INITIAL RECOMMENDATION BASED UPON RISK ASSESSMENT RATING	PHOTOGRAPHS
A005/12092011/RFM	Plant Room off Temporary Exhibition Hall	Wall	Durasteel Panels	8 m2		0	0	0	0	0	No Asbestos Present	No Asbestos Present	
A007/12092011/RFM	Security Office Areas	Above Suspended Ceilings - Cladding to Beam	Insulating Board	18 m2		2	1	2	2	7	Medium	No Asbestos Present	

done  
03/13



**SITE:** Ground Floor - The Horniman Museum, 100, London Road, Forest Hill, London SE23 3PQ

Management

R.F. McGiff

DATE OF INSPECTION: 12-Sep-2011

NO OF SUSPECTED ASBESTOS ITEMS IDENTIFIED: 15

SURVEYOR(S):

15

WORKSHEET REFERENCE: 12092011RFMA

DATE OF PRINTING: 19-Oct-11

ASBESTOS TYPE

SAMPLE REFERENCE NUMBER

ROOM / FUNCTIONAL SPACE

LOCATION

ASBESTOS ITEM

EXTENT

M2 / M3

PRODUCT TYPE

EXTENT OF DAMAGE

SURFACE TREATMENT

ASBESTOS TYPE

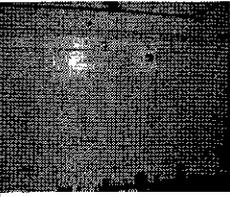
RISK ASSESSMENT SCORE

POTENTIAL FOR FIBRE RELEASE

INITIAL RECOMMENDATION BASED UPON RISK ASSESSMENT RATING

PHOTOGRAPHS

AREAS SUSPECTED TO CONTAIN ASBESTOS MATERIALS AND SAMPLED

SAMPLE REFERENCE NUMBER	ROOM / FUNCTIONAL SPACE	LOCATION	ASBESTOS ITEM	EXTENT M2 / M3	PRODUCT TYPE	EXTENT OF DAMAGE	SURFACE TREATMENT	ASBESTOS TYPE	RISK ASSESSMENT SCORE	POTENTIAL FOR FIBRE RELEASE	INITIAL RECOMMENDATION BASED UPON RISK ASSESSMENT RATING	PHOTOGRAPHS
A006/12092011/RFM	Cleaners Room Rear of Natural History Gallery	Door Panels (3)	Cement Sheet	2 m2	1	1	1	1	4	Very Low	Manage	

**Bothy Building - The Horniman Museum, 100, London Road, Forest Hill, London SE23 3PQ**



SITE:	Bothy Building - The Horniman Museum, 100, London Road, Forest Hill, London SE23 3PQ		SURVEY TYPE	Management
DATE OF INSPECTION	12-Sep-2011	NO OF SUSPECTED ASBESTOS ITEMS IDENTIFIED	SURVEYOR(S)	R.F. McGiff
WORKSHEET SAMPLING REFERENCE	12092011RFMA	DATE OF PRINTING		

SAMPLE REFERENCE NUMBER	ROOM / FUNCTIONAL SPACE	LOCATION	ASBESTOS ITEM	EXTENT (M <sup>2</sup> / M <sup>3</sup> )	PRODUCT TYPE	EXTENT OF DAMAGE	SURFACE TREATMENT	ASBESTOS TYPE	RISK ASSESSMENT SCORE	POTENTIAL FOR FIBRE RELEASE	INITIAL RECOMMENDATION BASED UPON RISK ASSESSMENT RATING	PHOTOGRAPHS
A008/12092011/RFM	Store (Former Garage)	Ceiling	Insulating Board	16 m <sup>2</sup>	2	2	2	2	8	Medium	Manage	
PRESUMED	Ground Floor	Above Plastered Ceilings	Insulating Board	110 m <sup>2</sup>	2	1	2	2	7	Medium	Manage	PICTURE NOT AVAILABLE
A009/12092011/RFM	Boiler Room	Pipe Riser to L.H. Wall - Floor	Insulating Board Debris	<1 m <sup>2</sup>	2	4	2	2	10	High	Manage	
A010/12092011/RFM	Boiler Room	Chimney in Wall (Presumed to extend to Roof)	Cement Flue	6 m	1	1	1	1	4	Very Low	Manage	

0024/07/D

0024/07/D





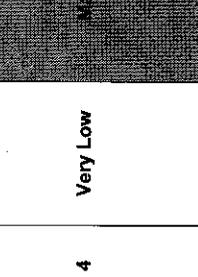


**SITE:** Dutch Barn - The Horniman Museum, 100, London Road, Forest Hill, London SE23 3PQ

**DATE OF INSPECTION WORKSHEET:** 12-Sep-2011  
**MANAGEMENT REFERENCE:** 12092011RFMA

**NO OF SUSPECTED ASBESTOS ITEMS IDENTIFIED:** 15  
**DATE OF PRINTING:** 19-Oct-11  
**EXTENT:** M2 / M3  
**ASBESTOS TYPE:** SURFACE TREATMENT  
**EXTENT OF DAMAGE:** PRODUCT TYPE  
**RISK ASSESSMENT SCORE:** POTENTIAL FOR FIBRE RELEASE  
**INITIAL RECOMMENDATION BASED UPON RISK ASSESSMENT RATING:** PHOTOGRAPHS

**SURVEYOR(S):** R.F. McGiff

SAMPLE REFERENCE NUMBER	ROOM / FUNCTIONAL SPACE	LOCATION	ASBESTOS ITEM	EXTENT	M2 / M3	PRODUCT TYPE	EXTENT OF DAMAGE	SURFACE TREATMENT	ASBESTOS TYPE	RISK ASSESSMENT SCORE	POTENTIAL FOR FIBRE RELEASE	INITIAL RECOMMENDATION BASED UPON RISK ASSESSMENT RATING	PHOTOGRAPHS
A014/12092011/RFM	External - Roof	Roof	Cement Tiles	80 m2	1	1	1	1	1	4	Very Low		

## APPENDIX B

### BULK SAMPLE REPORTS

(2 pages to follow)

PROJECT-REPORT NUMBER: 5881 – S02

Kershaw Contracting Services Limited  
Units 2 & 3, Lewis Industrial Estate  
Wheatley Terrace Road  
Erith Kent  
DA8 2AP

General Enquiries: [sales.office@kershaw-grp.co.uk](mailto:sales.office@kershaw-grp.co.uk)  
Quality / Technical Queries: [lm.peters@kershaw-grp.co.uk](mailto:lm.peters@kershaw-grp.co.uk)  
Phone: 01322 336817  
Fax: 01322 336914



**CERTIFICATE FOR IDENTIFICATION OF ASBESTOS FIBRES**

STANDARD   
 PREMIUM   
 EMERGENCY

Client:	KERSHAW CONTRACTING SERVICES LTD
Address:	UNITS 2 & 3 LEWIS INDUSTRIAL ESTATE WHEATLEY TERRACE ROAD ERITH, DA8 2AP
Attention:	TECHNICAL MANAGER
Site Address:	THE HORNIMAN MUSEUM 100 LONDON ROAD FOREST HILL LONDON SE23 3PQ
Date sample taken:	12/09/11
Date sample received:	20/09/11
Date of Analysis:	20/09/11

Analysis Report No.	SCO/11/30665
Report Date.	20/09/11
Site Ref No.	N/A
Page No:	1 OF 2
No. of Samples:	14
Obtained:	DELIVERED

Samples of material, referenced below, have been examined to determine the presence of asbestos fibres, using Scopes Asbestos Analysis "in house" method of transmitted/polarised light microscopy and centre stop dispersion staining, based on HSE's HSG248. If samples have been DELIVERED the site address and actual sample location is as given by the client at the time of delivery. Scopes Asbestos Analysis Services Limited are not responsible for the accuracy or competence of the sampling by third parties. Under these circumstances Scopes Asbestos Analysis Services Limited cannot be held responsible for the interpretation of the results shown.

SCOPE SAMPLE	CLIENT SAMPLE No.	Sample Location	Fibre Type Detected
1	A001/12092011/RFM	SOUTH BOILER ROOM – STEEL COLUMN ADJACENT TO BOILER AIR SUPPLY – THERMAL INSULATION DEBRIS	CHRYSTOTILE / AMOSITE
2	A002/12092011/RFM	SOUTH BOILER ROOM – STEEL GIRDER ABOVE DOOR – THERMAL INSULATION DEBRIS	CHRYSTOTILE / AMOSITE
3	A003/12092011/RFM	SOUTH BOILER ROOM – INSIDE PIPE ENTRY POINT IN CORNER ABOVE DOOR – THERMAL INSULATION	CHRYSTOTILE / AMOSITE
4	A004/12092011/RFM	SOUTH BOILER ROOM – STEEL COLUMN IN CORNER ADJACENT WALL WITH PLANT ROOM 8 – THERMAL INSULATION DEBRIS	CHRYSTOTILE / AMOSITE / CROCIDOLITE
5	A005/12092011/RFM	PLANT ROOM OFF TEMPORARY EXHIBITION HALL – WALL – DURASTEEL PANEL	NADIS
6	A006/12092011/RFM	CLEANERS ROOM TO REAR OF NATURAL HISTORY GALLERY – DOOR PANEL – CEMENT SHEET	CHRYSTOTILE
7	A007/12092011/RFM	SECURITY AREA – ABOVE SUSPENDED CEILING – CLADDING TO BEAM – INSULATING BOARD	AMOSITE

KEY: NADIS - No Asbestos Detected in Sample  
 Note: All samples will be retained for a minimum of six months.  
 Note: This Certificate for Identification of Asbestos Fibres shall not be reproduced except in full without the written approval of the Laboratory.

Analysed by:	J BARNETT	Authorised signatory:	
		Print name:	S BOLTON - Q.C.M.
<b>BULK 001-VER 5 12-AUGUST-09-QCM</b>			



**CERTIFICATE FOR IDENTIFICATION OF ASBESTOS FIBRES**

STANDARD	<input type="checkbox"/>
PREMIUM	<input type="checkbox"/>
EMERGENCY	<input type="checkbox"/>

Client:	KERSHAW CONTRACTING SERVICES LTD
Address:	UNITS 2 & 3 LEWIS INDUSTRIAL ESTATE WHEATLEY TERRACE ROAD ERTH, DA8 2AP
Attention:	TECHNICAL MANAGER
Site Address:	THE HORNIMAN MUSEUM 100 LONDON ROAD FOREST HILL LONDON SE23 3PQ
Date sample taken:	12/09/11
Date sample received:	20/09/11
Date of Analysis:	20/09/11

Analysis Report No.	SCO/11/30665
Report Date.	20/09/11
Site Ref No.	N/A
Page No:	2 OF 2
No. of Samples:	14
Obtained:	DELIVERED

Samples of material, referenced below, have been examined to determine the presence of asbestos fibres, using Scopes Asbestos Analysis "in house" method of transmitted/polarised light microscopy and centre stop dispersion staining, based on HSE's HSG248.  
 If samples have been DELIVERED the site address and actual sample location is as given by the client at the time of delivery. Scopes Asbestos Analysis Services Limited are not responsible for the accuracy or competence of the sampling by third parties. Under these circumstances Scopes Asbestos Analysis Services Limited cannot be held responsible for the interpretation of the results shown.

SCOPE'S SAMPLE	CLIENT SAMPLE No.	Sample Location	Fibre Type Detected
8	A008/12092011/RFM	BOTHY BUILDING - STORE - CEILING - INSULATING BOARD	AMOSITE
9	A009/12092011/RFM	BOTHY BUILDING - BOILER ROOM - PIPE RISER - FLOOR - INSULATING BOARD DEBRIS	AMOSITE
10	A010/12092011/RFM	BOTHY BUILDING - BOILER ROOM - CHIMNEY IN WALL - CEMENT FLUE	CHRYSOTILE
11	A011/12092011/RFM	BOTHY BUILDING - GABLE ENDS - ROOF EDGE UNDERCLOAKS - CEMENT SHEET	CHRYSOTILE
12	A012/12092011/RFM	BOTHY BUILDING - ROOF EDGE SOFFIT - INSULATING BOARD	CHRYSOTILE / AMOSITE
13	A013/12092011/RFM	MACHINERY SHED - ROOF - CEMENT SHEET	CHRYSOTILE
14	A014/12092011/RFM	DUTCH BARN - ROOF - CEMENT TILE	CHRYSOTILE

KEY: NADIS - No Asbestos Detected in Sample  
 Note: All samples will be retained for a minimum of six months.  
 Note: This Certificate for Identification of Asbestos Fibres shall not be reproduced except in full without the written approval of the Laboratory.

Analysed by:	S BOLTON	Authorised signatory:	
		Print name:	S BOLTON - Q.C.M

**BULK 001-VER 5 12-AUGUST-09-QCM**

## APPENDIX C

### ANNOTATED FLOOR PLANS

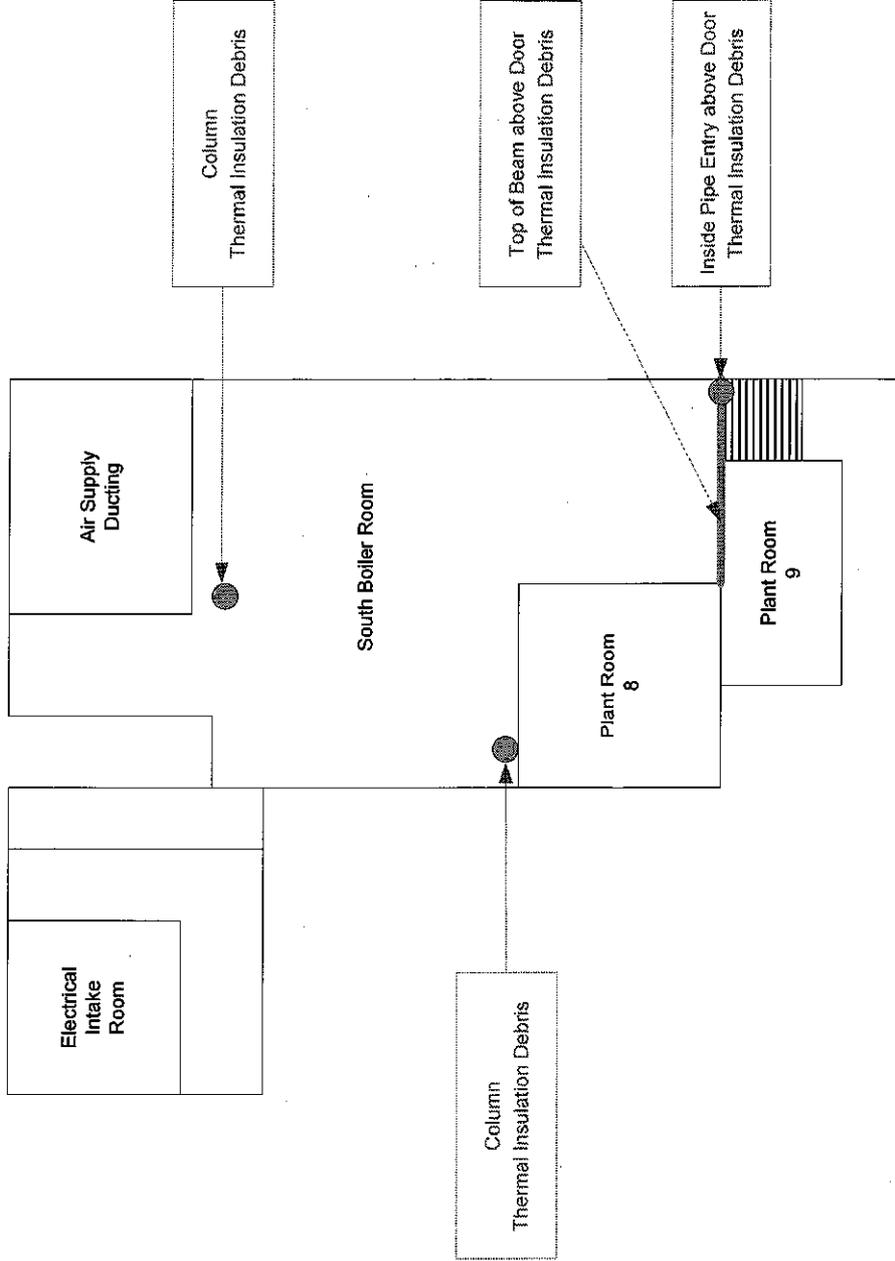
(6 pages to follow)

PROJECT-REPORT NUMBER: 5881 – S02

Kershaw Contracting Services Limited  
Units 2 & 3, Lewis Industrial Estate  
Wheatley Terrace Road  
Erith Kent  
DA8 2AP

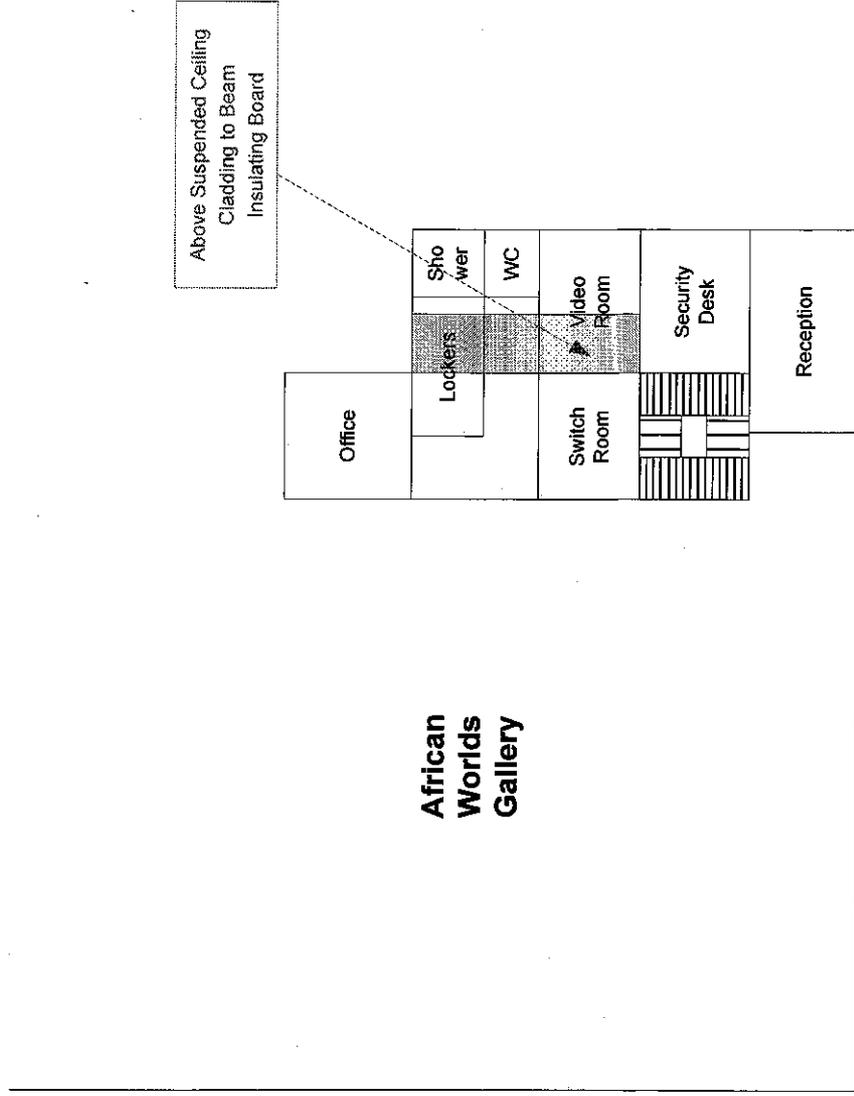
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Quality / Technical Queries: [tim.peters@kershaw-grp.co.uk](mailto:tim.peters@kershaw-grp.co.uk)  
Phone: 01322 336917  
Fax: 01322 336914

# South Boiler Room The Horniman Museum



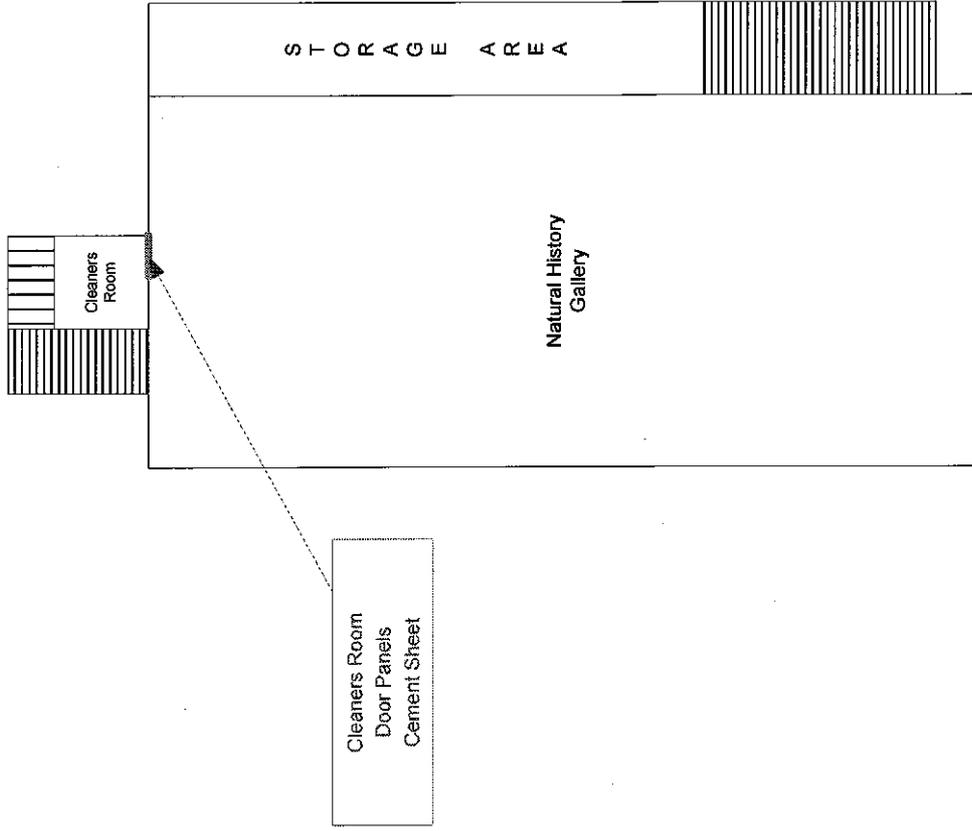
**Project Number:- 5881 - S02**

**Lower Ground Floor (detail)**  
**The Horniman Museum**



Project Number:- 5881 - S02

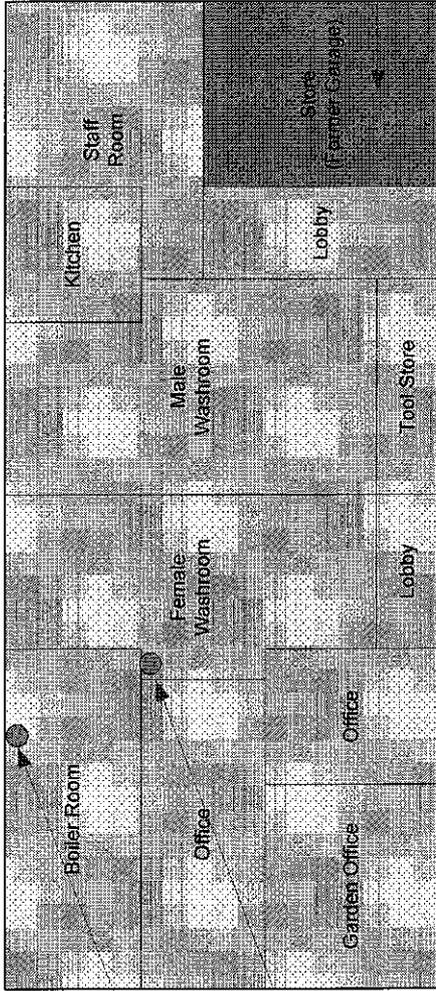
**Ground Floor (detail)**  
**The Horniman Museum**



**Project Number:- 5881 - S02**

# Bothy Building The Horniman Museum

## Ground Floor



Insulating Board above  
Plastered Ceilings  
(PRESUMED)

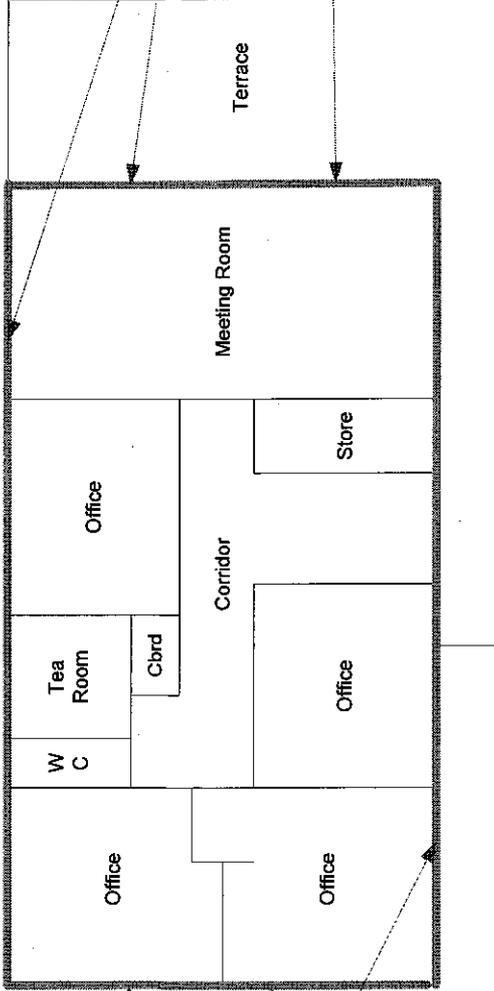


Floor of Riser  
Insulating Board Debris

Inside Chimney  
Cement Flue  
(Extends to Roof)

Store  
Ceiling  
Insulating Board

## 1st Floor



Gable End  
Roof Edge Undercloaks  
Cement Sheet

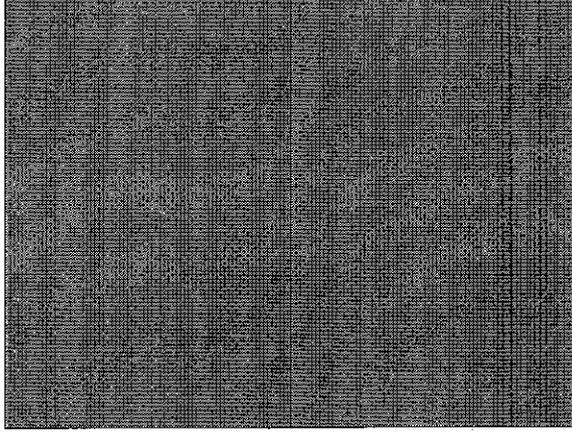
Roof Edge Soffits  
Insulating Board

Roof Edge Soffits  
Insulating Board

Gable End  
Roof Edge Undercloaks  
Cement Sheet

**Project Number:- 5881 - S02**

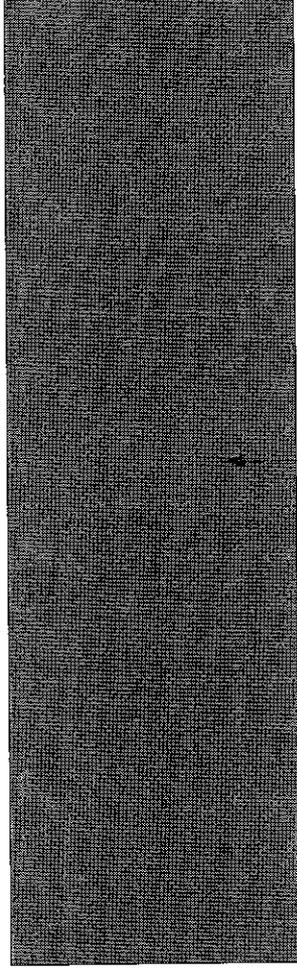
**Machinery Shed**  
**The Horniman Museum**



Roof  
Cement Sheet

**Project Number:- 5881 - S02**

**Dutch Barn**  
**The Horniman Museum**



Roof  
Cement Tiles

**Project Number:- 5881 - S02**

**APPENDIX D**

**ACTS OF PARLIAMENT**

**&**

**LEGISLATION**

**(3 pages to follow)**

**PROJECT-REPORT NUMBER: 6881 – S02**

**Kershaw Contracting Services Limited  
Units 2 & 3, Lewis Industrial Estate  
Wheatley Terrace Road  
Erith Kent  
DA8 2AP**

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Phone: 01322 336917  
Fax: 01322 336914**

## **Acts of Parliament, Regulations, HSE Publications for Work with Asbestos and Asbestos Containing Materials**

Acts of Parliament, Regulations and HSE publications for work with asbestos and asbestos containing materials include, but not exclusively to, those listed on the following pages. There are other regulations (not listed) that relate specifically to Wales, Scotland and Northern Ireland. This is not meant to be an exhaustive list, there are other pieces of legislation dealing with health and safety matters that has not been listed here that still applies to work with asbestos and should be considered at all times.

All Legislation, Approved Codes of Practice and Guidance Notes listed together with any subsequent amendments or revisions and any new relevant requirements should be considered before undertaking any work with asbestos or asbestos containing materials.

The following list was last revised in August 2010.

### **1. ACTS OF PARLIAMENT**

Health and Safety at Work, etc Act 1974

Environmental Protection Act 1990

Environment Act 1995

Water Industry Act 1991

Pollution Prevention and Control Act 1999

PROJECT-REPORT NUMBER: 5881 – S02

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Phone: 01322 336917  
Fax: 01322 336914

## 2. REGULATIONS

CDG 2009	Carriage of Dangerous Goods and Use of Transportable Pressure Receptacles Regulations 2009
2002/1689	Chemicals (Hazard Information and Packaging for Supply) Regulations 2002 (CHIP 3)
1997/1713	Confined Spaces Regulations 1997
2007/0320	Construction (Design and Management) Regulations 2007
1999/1592	Construction (Health, Safety & Welfare) Regulations 1999
2006/2739	Control of Asbestos Regulations 2006
2002/2677	Control of Substances Hazardous to Health Regulations 2002
1991/1624	Controlled Waste (Registration of Carriers and Seizure of Vehicles) Regulations 1991
1991/2839	Dangerous Substances and Explosive Atmosphere Regulations 2002
1991/472	Environmental Protection (Prescribed Processes and Substances) Regulations 1991
1996/1513	Health & Safety (Consultation with Employees) Regulations 1996
2002/655	Health and Safety (Fees) Regulations 2002
1996/341	Health and Safety (Safety Signs and Signals) Regulations 1996
2002/1559	Landfill (England and Wales) Regulations 2002
1998/2307	Lifting Operations and Lifting Equipment Regulations 1998
2007/3242	Manual Handling Operations Regulations 2007
2005/1790	Control of Noise at Work Regulations 2005
2002/1144	Personal Protective Equipment Regulations 2002
2000/1973	Pollution Prevention and Control (England and Wales) Regulations 2000
1998/2306	Provision and Use of Work Equipment Regulations 1998
1995/3163	Reporting of Injuries, Diseases and Dangerous Occurrence Regulations 1995
1977/500	Safety Representatives and Safety Committees Regulations 1977
	Hazardous waste regulations 2005
1999/257	Transport of Dangerous Goods (Safety Advisors) Regulations 1999
1994/1056	Waste Management Licensing Regulations 1994
1992/3004	Workplace (Health, Safety and Welfare) Regulations 1992

PROJECT-REPORT NUMBER: 5881 – S02

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Units 2 & 3, Lewis Industrial Estate  
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Phone: 01322 336917  
Fax: 01322 336914

### **3. HSE PUBLICATIONS FOR WORK WITH ASBESTOS AND ASBESTOS CONTAINING MATERIALS**

MS13	<i>Asbestos: Medical Guidance Notes (4<sup>th</sup> Edition, 2005)</i>
MDHS 87	<i>Fibres in Air; Guidance on the Discrimination Between Fibre Types in Samples of Airborne Dust on Filters Using Microscopy (1998)</i>
HSG 264	<i>The Survey Guide</i>
HS(G) 53	<i>Respiratory Protective Equipment at Work ~ A Practical Guide (2005)</i>
HS(G) 247	<i>Asbestos : The licensed Contractors Guide</i>
HS (G) 248	<i>Asbestos: The analysts guide for sampling, analysis, and clearance procedures.</i>
HS(G) 189/2	<i>Working with Asbestos Cement (second edition 1999)</i>
HS(G) 210	<i>Asbestos Essentials: Task Manual (2000)</i>
HS(G) 213	<i>Introduction to Asbestos Essentials (2000)</i>
HS(G) 227	<i>A Comprehensive Guide to Managing Asbestos in Premises (2002)</i>
IND(G)418	<i>Asbestos Kills. A quick guide to protecting yourself</i>
IND(G)223	<i>A Short Guide to Managing Asbestos in Premises (rev 4, 2009)</i>
IND(G)419	<i>Asbestos Kills. Protect yourself</i>
L5	<i>COSHH (fifth edition): Control of Substances Hazardous to Health Regulation 2002: Approved Code of Practice and Guidance</i>
L21	<i>Management of Health and Safety at Work: Management of Health and Safety at Work Regulations 1999: Approved Code of Practice and Guidance (2<sup>nd</sup> Edition, 2000)</i>
L22	<i>Safe Use of Work Equipment: Provision and Use of Work Equipment Regulations 1998: Approved Code of Practice and Guidance (3<sup>rd</sup> Edition, 2008)</i>
L24	<i>Workplace Health Safety and Welfare: Workplace Health Safety and Welfare Regulations 1992: Approved Code of Practice and Guidance</i>
L25	<i>Personal Protective Equipment at Work (Second edition 2005):</i>
L127	<i>The Management of Asbestos in Non-domestic Premises. Regulation 4 of the Control of Asbestos Regulations 2006</i>
L143	<i>Work with Materials Containing Asbestos (Control of Asbestos Regulations 2006)</i>

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## APPENDIX E

### ASBESTOS MATERIALS IN BUILDINGS

&

### FORMS OF INSPECTION

(4 pages to follow)

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## 1. ASBESTOS MATERIALS IN BUILDINGS

- 1.01 Sprayed coatings applied in the UK were typically a mixture of hydrated asbestos cement containing up to 85% asbestos, mainly amosite but crocidolite and mixtures have been used. Primarily used for anti-condensation and acoustic control and fire protection to structural steelwork. It is a friable material and is likely to release fibres, especially if disturbed during repair and maintenance work. As it ages the binding medium of sprayed asbestos may degrade with the consequent release of more fibres.
- 1.02 Thermal insulation to boilers, vessels, pipework, valves, pumps etc also known as lagging. Lagging may have a protective covering of cloth, tape, paper, metal or a surface coating of cement. All types of asbestos may be found in lagging and the content can vary from 1% to 100% asbestos. The likelihood of fibre release depends upon its composition, friability and state of repair, but it is particularly susceptible to damage and disturbance through maintenance work or the action of water leaks.
- 1.03 Asbestos insulating boards usually contain between 16 to 40% Amosite (brown) asbestos, although boards may be found to contain other types of asbestos and in other quantities. Insulating boards were developed in the 1950s to provide an economical, lightweight, fire resisting insulating material. As insulation board is semi-compressed it is more likely to release fibres as a result of damage or abrasion than typically occurs with cement. Work on Asbestos Insulation Board can give rise to high levels of airborne asbestos fibres.
- 1.04 Asbestos cement products generally contain 10 to 15% of asbestos fibre bound in a matrix of Portland Cement or autoclaved calcium silicate. Three types of asbestos have been used in the manufacture of asbestos cement. The asbestos fibres in asbestos cement are usually firmly bound in the cement matrix and will be released only if the material is mechanically damaged or as it deteriorates with age.
- 1.05 Ropes, yarns and cloths are usually high in asbestos content, approaching 100%. They were used as packing, caulking or gasket materials where thermal of fire protection was required. The risk of fibre release depends upon the structure of the material. Bonded gasket material is unlikely to release asbestos but an unbonded woven material may release fibres when in use, especially if damaged or frayed.
- 1.06 Millboard, paper and paper products are usually high in asbestos content, approaching 100%, and may contain any combination of the three most common types of asbestos. They were used for insulation of electrical equipment and for thermal insulation, asbestos paper has been used as fireproofing to wood fibre panels. These materials are not well bonded and will release asbestos fibres if subject to abrasion and wear.
- 1.07 Bitumen felts and coatings may contain asbestos either bound in the bitumen matrix or as an asbestos paper liner.
- 1.08 Reinforced plastics, floor tiles and flooring linoleum may contain asbestos either bound in the matrix or as an asbestos paper liner. These materials may not present a hazard during normal use, but should be removed and disposed of carefully by a licensed asbestos contractor.
- 1.09 Textured coatings and paints or 'Artex' may contain small amounts of asbestos and are notifiable to the Health and Safety Executive. A licensed asbestos contractor should carry out any works to this material.
- 1.10 Mastics, sealants, putties and adhesives may contain small amounts of asbestos. A risk of exposure to airborne fibres may arise if such materials are sanded.

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### *Management survey*

A management survey is the standard survey. Its purpose is to locate, as far as reasonably practicable, the presence and extent of any suspect ACMs in the building which could be damaged or disturbed during normal occupancy, including foreseeable maintenance and installation, and to assess their condition.

Management surveys will often involve minor intrusive work and some disturbance. The extent of intrusion will vary between premises and depend on what is reasonably practicable for individual properties, ie it will depend on factors such as the type of building, the nature of construction, accessibility etc. A management survey should include an assessment of the condition of the various ACMs and their ability to release fibres into the air if they are disturbed in some way. This 'material assessment' will give a good initial guide to the priority for managing ACMs as it will identify the materials which will most readily release airborne fibres if they are disturbed.

The survey will usually involve sampling and analysis to confirm the presence or absence of ACMs. However a management survey can also involve presuming the presence or absence of asbestos. A management survey can be completed using a combination of sampling ACMs and presuming ACMs or, indeed, just presuming. Any materials presumed to contain asbestos must also have their condition assessed (ie a material assessment). By presuming the presence of asbestos, the need for sampling and analysis can be deferred until a later time (eg before any work is carried out). However this approach has implications for the management arrangements. The dutyholder bears potential additional costs of management for some non-ACMs. Any work carried out on 'presumed' materials would need to involve appropriate contractors and work methods in compliance with CAR 2006 irrespective of whether the material was actually an ACM or not. Alternatively, before any work starts, sampling and analysis can be undertaken to confirm or refute the presence of asbestos. The results will determine the work methods and contractors to be used. The 'presumption' approach has several disadvantages: it is less rigorous, it can lead to constant obstructions and delays before work can start, and it is more difficult to control, see *A comprehensive guide to managing asbestos in premises*. 'Default' presumptions may also lead to unnecessary removal of non-ACMs and their disposal as asbestos waste. Default presumptions may be suitable in some instances, eg 'small' or simple premises, as part of a client's management arrangements.

Surveyors should always endeavour to positively identify ACMs. A sufficient number of samples should be taken to confirm the location and extent of ACMs. It is legitimate to reduce sample numbers where materials can be strongly presumed to be ACMs. However the default presumption option should be avoided where possible, as it can make managing asbestos more difficult for the dutyholder. Default presumption should only be used in circumstances where it is requested by the client and/or where access genuinely cannot be obtained. When sampling is carried out as part of a management survey, samples from each type of suspect ACM should be collected and analysed. If the material sampled is found to contain asbestos, other similar materials used in the same way in the building can be strongly presumed to contain asbestos. Less homogeneous materials (eg different surfaces/coating, evidence of repair etc) will require a greater number of samples. The sample number should be sufficient to establish whether asbestos is present or not in the particular material. Sampling may take place simultaneously with the survey, or as in the case of some larger surveys, can be carried out later as a separate exercise.

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All areas should be accessed and inspected as far as is reasonably practicable. Areas should include underfloor coverings, above false ceilings, and inside risers, service ducts, lift shafts etc. Surveying may also involve some minor intrusive work, such as accessing behind fascia and panels and other surfaces or superficial materials. The extent of intrusion will depend on the degree of disturbance that is or will be necessary for foreseeable maintenance and related activities, including the installation of new equipment/cabling. Surveyors should come prepared to access such areas (ie with the correct equipment etc). Management surveys are only likely to involve the use of simple tools such as screwdrivers and chisels. Any areas not accessed must be presumed to contain asbestos. The areas not accessed and presumed to contain asbestos must be clearly stated in the survey report and will have to be managed on this basis ie maintenance or other disturbance work should not be carried out in these areas until further checks are made.

Management surveys should cover routine and simple maintenance work. However it has to be recognised that where 'more extensive' maintenance or repair work is involved, there may not be sufficient information in the management survey and a localised refurbishment survey will be needed. A refurbishment survey will be required for all work which disturbs the fabric of the building in areas where the management survey has not been intrusive. The decision on the need for a refurbishment survey should be made by the dutyholder (probably with help from others).

#### *Refurbishment and demolition surveys*

A refurbishment and demolition survey is needed before any refurbishment or demolition work is carried out. This type of survey is used to locate and describe, as far as reasonably practicable, all ACMs in the area where the refurbishment work will take place or in the whole building if demolition is planned. The survey will be fully intrusive and involve destructive inspection, as necessary, to gain access to all areas, including those that may be difficult to reach. A refurbishment and demolition survey may also be required in other circumstances, eg when more intrusive maintenance and repair work will be carried out or for plant removal or dismantling.

There is a specific requirement in CAR 2006 (regulation 7) for all ACMs to be removed as far as reasonably practicable before major refurbishment or final demolition. Removing ACMs is also appropriate in other smaller refurbishment situations which involve structural or layout changes to buildings (eg removal of partitions, walls, units etc). Under CDM, the survey information should be used to help in the tendering process for removal of ACMs from the building before work starts. The survey report should be supplied by the client to designers and contractors who may be bidding for the work, so that the asbestos risks can be addressed. In this type of survey, where the asbestos is identified so that it can be removed (rather than to 'manage' it), the survey does not normally assess the condition of the asbestos, other than to indicate areas of damage or where additional asbestos debris may be present. However, where the asbestos removal may not take place for some time, the ACMs' condition will need to be assessed and the materials managed.

Refurbishment and demolition surveys are intended to locate all the asbestos in the building (or the relevant part), as far as reasonably practicable. It is a disruptive and fully intrusive survey which may need to penetrate all parts of the building structure. Aggressive inspection techniques will be needed to lift carpets and tiles, break through walls, ceilings, cladding and partitions, and open up floors. In these situations, controls should be put in place to prevent the spread of debris, which may include asbestos. Refurbishment and demolition surveys should only be conducted in unoccupied areas to minimise risks to the public or employees on the premises. Ideally, the building should not be in service and all furnishings removed. For minor refurbishment, this would only apply to the room involved or even part of the room where the work is small and the room large. In these situations, there should be effective isolation of the survey area (eg full floor to ceiling partition), and furnishings should be removed as far as possible or protected using sheeting. The 'surveyed' area must be shown to be fit for reoccupation before people move back in. This will require a thorough visual

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inspection and, if appropriate (eg where there has been significant destruction), reassurance air sampling with disturbance. Under no circumstances should staff remain in rooms or areas of buildings when intrusive sampling is performed.

There may be some circumstances where the building is still 'occupied' (ie in use) at the time a 'demolition' survey is carried out. For example in the educational sector, refurbishment/demolition surveys may be conducted in schools or colleges during one closure period (eg holidays) and the work not undertaken until the next holiday period. Also, a demolition survey maybe conducted to establish the economic future or viability of a building(s). The survey results would determine the outcome. In such situations, the 'survey' will need extremely careful managing with personnel and equipment/furnishings being decanted and protected (as necessary), while the survey progresses through the building. Again, there should be effective isolation of the survey areas and the 'surveyed' area must be shown to be fit for reoccupation before personnel reoccupy.

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**APPENDIX D**

**MUSEUM RULES FOR VISITING CONTRACTORS**



## Museum Rules for Visiting Contractors

This sheet sets out the Museum rules for all visiting contractors, and should be issued to all relevant person for information.

We are required under the Health and Safety at Work etc. Act 1974 to ensure that a safe place of work exists for all those who have cause to use the premises. This duty extends to not only staff and visitors but other users, including contractors.

It is the responsibility of every contractor to ensure that his site supervisor receives a copy of these rules and that his employees are informed of those rules which affect them.

These rules are not negotiable and the Museum requires, as part of the work contract, that they are strictly adhered to.

Any willful ignoring of these rules will result in the person being banned from the Museum site and any further breach may result in the company being barred from any further work for the Museum.

### Parking

As there is limited space onsite the Museum cannot guarantee to provide contractor parking and staff attending site should be informed of this and advised that they may need to park offsite. If there is equipment to unload, the Museum should be informed in advance and arrangements can be made for short term parking on site. Vehicles should then be removed from the site unless tools and equipment, that is essential to their operation, are kept and accessed in the vehicle.

### Vehicle Access

All means of access must be agreed in advance by the Facilities Manager or Deputy Facilities Manager. The normal vehicle access route is via the Horniman Drive gate. Contractors should be reminded of the rules while driving a vehicle on site which must be observed. Mobile telephones must not be used whilst driving. The speed limit is 5mph with hazard lights on.

### Identification badges work permits and keys

Every person must wear the prescribed Museum identification badge/work permit in a prominent position at all times when in the Museum. Museum identification badges/work permits may be removed **temporarily** if it is identified that they will interfere with the safe use of tools or equipment. The badge/permit/key/swipe card will be issued at the security desk on arrival and must be returned on departure. The badges/permits/keys/ swipe cards must not be taken 'off site' and must be handed in whenever leaving the Museum. Failure to comply may result in permission to work on site being refused.

### Smoking

No smoking except in the designated location is permitted anywhere in the Museum at any time, including courtyard areas.

## **Hot Works, Working at Height (at any height where there is a risk of a fall), Electrical Work**

All works which have any element as above must be agreed in advance with the Facilities Manager or Deputy Facilities Manager and a Permit to Work obtained from the security desk. This may also require the authorized isolation of the fire alarm system prior to the commencement of any hot 'work'. Any work activity which creates flame, sparks, smoke or dust must take into account the smoke and heat fire detection units. Any deactivation of alarms should be authorized by the Facilities Manager or deputy Facilities Manager and logged in the security log book. Work may not commence until this precaution has been confirmed by Security. Those persons carrying out 'hot works' are required to supply their own fire extinguishers which are appropriate to the risk identified in the risk assessment.

Suitable risk assessments should be completed as required by the Management of Health and Safety at Work Regulations 1999 before the work begins.

Any contractor refusing to complete a work permit will not be permitted to work on site.

### **Equipment brought on site**

All equipment used by a Contractor or Supplier must be in good working order, comply with appropriate safety and electrical legislation, should be PAT tested and visually inspected before use.

Equipment left on site shall be kept in a safe and secure manner ideally in a locked cupboard and at the risk of the Contractor or Supplier.

All portable appliances used outside of buildings and on construction sites should, where possible, be battery operated or be suitable for use with 110 volt power supply with additional consideration given to the positioning of the trailing leads to avoid slip and trip hazards.

### **Personal protection**

Contractors should ensure they wear appropriate personal protective clothing as specified in the risk assessment to include, safety footwear, head protection, ear protection, eye protection, suitable gloves and face protection as required by the activity risk assessment.

### **Competence**

All those persons employed to carry out work at the Horniman Museum must be competent. They must have the required skills, knowledge, ability, training and experience to complete their work safely and effectively.

## **Construction (Design and Management) Regulations 2015, Contractors and the self-employed**

The Horniman Museum has strict controls in place to comply with the Construction (Design and Management) Regulations 2015 (CDM 2015). Work classed as construction within CDM 2015 (e.g. building maintenance and repair, redecoration, high pressure water jetting, installation of electrical or IT cabling), which involves more than one contractor, requires one of the contractors to be appointed in writing as the Principal Contractor and Principal Designer where necessary, by the Museum. All such work, whether or not involving one contractor, will require a written Construction Phase Plan in place prior to work commencing.

Under the CDM 2015 Regulations, the Horniman Museum will be the 'client' in respect of any relevant works undertaken. The 'client' is required to inform the Health and Safety Executive (HSE) about certain construction projects. A project becomes notifiable to the HSE if the construction work is expected to last longer than 30 working days and have more than 20 workers working at the same time at any point on the project or if the work will exceed 500 person days. The client for the construction work is required to send the notification to HSE, either on-line (on form F10) or in writing.

It is a requirement under the CDM 2015 Regulations that the Principal Contractor manages the Construction Phase Plan and ensures contractors and self-employed people working on the site are made aware of their duties accordingly. All contractors must ensure that full induction of his/her own staff, sub-contractors and the self-employed is carried out and that these site rules are documented and signed by all inductees to demonstrate full understanding by all persons working on site.

The Principal Contractor is required to check the competence of any domestic named or nominated contractor for the purposes of complying with the Construction (Design and Management) Regulations 2015.

### **Food and drink**

No food or drink of any type may be taken into, or consumed within the Museum galleries, plant rooms or in areas where work is being undertaken.

### **Radios**

No music devices, radio headphones or MP3 players may be used within the Museum or Gardens at any time.

### **Language**

Foul, offensive or immoderate language is not acceptable within the Museum and Gardens at any time. Any willful ignoring of this rule will result in the person being banned from the Museum site and any further breach may result in the company being barred from any further work for the Museum. In hot weather, shirts must be kept on at all time across the site.

### **Fire alarms and evacuations**

Fire alarms are tested every Thursday morning between 07.00 and 09.00. They will sound for a few seconds only and then stop. This activation is repeated several times.

At all other times when the fire alarm sounds, all contractors must make safe any equipment being used and must evacuate the building immediately by the nearest exit and gather in front of the clock tower.

The contractor must nominate a member of staff to be responsible for checking that all of the staff are clear of the building and report such to the nearest Visitor Services Assistant who will relay the information to Incident Controller. Contractors must not re-enter the building without permission from the Incident Controller.

### **Accidents and work related illness**

All accidents and work related illness should be reported to the Security Desk and the relevant forms filled in.

Contractors should notify the museum of any known disability (e.g. hearing impairment, colour blindness), health condition (including allergies) or language difficulty which could affect their safety and/or the safety of others whilst undertaking work at the museum.

### **Toilets**

Contractors may use only the toilets designated by the Museum.

### **Materials**

The delivery and storage of materials and the routes and times of entry into the Museum must be agreed with the Facilities Manager or Deputy Facilities Manager in advance.

**Waste**

The Contractor is responsible for removing all unused materials and/or waste and recyclable materials by the completion of the works and at the end of each work period.

**Work Site**

Contractors should restrict their movements to the designated work site and agreed access routes.

**Works**

No work shall be carried out without the prior knowledge and agreement of the Facilities Manager or Deputy Facilities Manager.

**Telephones**

The Museum phone system is not to be used by Contractors except when it is crucial to the completion or continuation of works or in cases of emergency. It should also be noted that the use of mobile phones within the Museum building should not cause nuisance or annoyance to staff or visitors.

**Late/Lone Working**

Whilst every effort is made to ensure that works are carried out during the normal working day it is recognised that on occasion it may be necessary to undertake work out of hours. Any contractor working outside normal hours will be required to make use of the Museum's lone worker protection system and carry a Museum radio to stay in contact with Museum Security staff whilst onsite. Any failure to comply with this request will be refused permission to work onsite.

Any contractor or delivery person failing to take reasonable Health, Safety, and Operational Instruction from security staff or management will be told to leave the premises, their superiors will be informed and they will be banned from accessing or working on the Horniman sites in future.

**Declaration**

I declare that I have fully read and understand this document. I agree to comply with the Rules and acquaint all persons employed by the Company (including sub-contracted staff) with these Safety Rules.

Signed:

Date:

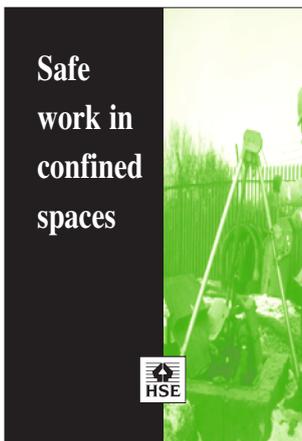
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Company Name (Block Capitals)

Document Reviewed April 2016

**APPENDIX E**  
**SAFE WORK IN CONFINED SPACES**

# Safe work in confined spaces



*This is a web-friendly version of leaflet INDG258*

This document is aimed at employers and the self-employed who carry out work in confined spaces, and forms part of HSE's commitment to make simple and practical guidance available for small firms. It will help them take the necessary action to meet the requirements of the Confined Spaces Regulations 1997. It will also be a useful source of information to anyone involved in carrying out work in confined spaces.

## Confined spaces can be deadly

A number of people are killed or seriously injured in confined spaces each year in the UK. This happens in a wide range of industries, from those involving complex plant to simple storage vessels. Those killed include not only people working in the confined space but those who try to rescue them without proper training and equipment.

## What is a confined space?

It can be any space of an enclosed nature where there is a risk of death or serious injury from hazardous substances or dangerous conditions (eg lack of oxygen). Some confined spaces are fairly easy to identify, eg enclosures with limited openings:

- storage tanks;
- silos;
- reaction vessels;
- enclosed drains;
- sewers.

Others may be less obvious, but can be equally dangerous, for example:

- open-topped chambers;
- vats;
- combustion chambers in furnaces etc;
- ductwork;
- unventilated or poorly ventilated rooms.

It is not possible to provide a comprehensive list of confined spaces. Some places may become confined spaces when work is carried out, or during their construction, fabrication or subsequent modification.

## What are the dangers from confined spaces?

Dangers can arise in confined spaces because of:

- A lack of oxygen.  
This can occur:
  - where there is a reaction between some soils and the oxygen in the atmosphere;
  - following the action of groundwater on chalk and limestone which can produce carbon dioxide and displace normal air;
  - in ships' holds, freight containers, lorries etc as a result of the cargo reacting with oxygen inside the space;
  - inside steel tanks and vessels when rust forms.
- Poisonous gas, fume or vapour.  
These can:
  - build-up in sewers and manholes and in pits connected to the system;
  - enter tanks or vessels from connecting pipes;
  - leak into trenches and pits in contaminated land, such as old refuse tips and old gas works.
- Liquids and solids which can suddenly fill the space, or release gases into it, when disturbed. Free flowing solids such as grain can also partially solidify or 'bridge' in silos causing blockages which can collapse unexpectedly.
- Fire and explosions (eg from flammable vapours, excess oxygen etc).
- Residues left in tanks, vessels etc, or remaining on internal surfaces which can give off gas, fume or vapour.
- Dust may be present in high concentrations, eg in flour silos.
- Hot conditions leading to a dangerous increase in body temperature.

Some of the above conditions may already be present in the confined space. However, some may arise through the work being carried out, or because of ineffective isolation of plant nearby, eg leakage from a pipe connected to the confined space. The enclosure and working space may increase other dangers arising through the work being carried out, for example:

- machinery being used may require special precautions, such as provision of dust extraction for a portable grinder, or special precautions against electric shock;
- gas, fume or vapour can arise from welding, or by use of volatile and often flammable solvents, adhesives etc;
- if access to the space is through a restricted entrance, such as a manhole, escape or rescue in an emergency will be more difficult (see *Emergency procedures*).

## What the law says

You must carry out a suitable and sufficient assessment of the risks for all work activities for the purpose of deciding what measures are necessary for safety (**The Management of Health and Safety at Work Regulations 1999, regulation 3**). For work in confined spaces this means identifying the hazards present, assessing the risks and determining what precautions to take. In most cases the assessment will include consideration of:

- the task;
- the working environment;
- working materials and tools;
- the suitability of those carrying out the task;
- arrangements for emergency rescue.

HSE's free leaflet *Five steps to risk assessment* will help you further. You may need to appoint competent people to help manage the risks and ensure that employees are adequately trained and instructed (**The Management of Health and Safety at Work Regulations 1999, regulation 7**). Of course, you may be the best person to do this, however, you may need to train someone else or engage the services of a competent person for additional help.

If your assessment identifies risks of serious injury from work in confined spaces, such as the dangers highlighted above, the **Confined Spaces Regulations 1997** apply. These regulations contain the following key duties:

- avoid entry to confined spaces, eg by doing the work from outside;
- if entry to a confined space is unavoidable, follow a safe system of work; and
- put in place adequate emergency arrangements before the work starts.

These duties, and what you need to do, are further described in this document.

### **Avoid entering confined spaces**

You need to check if the work can be done another way so that entry or work in confined spaces is avoided. Better work-planning or a different approach can reduce the need for confined space working.

Ask yourself if the intended work is really necessary, or could you:

- modify the confined space itself so that entry is not necessary;
- have the work done from outside, for example:
- blockages can be cleared in silos by use of remotely operated rotating flail devices, vibrators or air purgers;
- inspection, sampling and cleaning operations can often be done from outside the space using appropriate equipment and tools;
- remote cameras can be used for internal inspection of vessels.

### **Safe systems of work**

If you cannot avoid entry into a confined space make sure you have a safe system for working inside the space.

Use the results of your risk assessment to help identify the necessary precautions to reduce the risk of injury. These will depend on the nature of the confined space, the associated risk and the work involved.

Make sure that the safe system of work, including the precautions identified, is developed and put into practice. Everyone involved will need to be properly trained and instructed to make sure they know what to do and how to do it safely.

The following checklist is not intended to be exhaustive but includes many of the essential elements to help prepare a safe system of work.

### ***Appointment of a supervisor***

Supervisors should be given responsibility to ensure that the necessary precautions are taken, to check safety at each stage and may need to remain present while work is underway.

### *Are persons suitable for the work?*

Do they have sufficient experience of the type of work to be carried out, and what training have they received? Where risk assessment highlights exceptional constraints as a result of the physical layout, are individuals of suitable build? The competent person may need to consider other factors, eg concerning claustrophobia or fitness to wear breathing apparatus, and medical advice on an individual's suitability may be needed.

### *Isolation*

Mechanical and electrical isolation of equipment is essential if it could otherwise operate, or be operated, inadvertently. If gas, fume or vapour could enter the confined space, physical isolation of pipework etc needs to be made. In all cases a check should be made to ensure isolation is effective.

### *Cleaning before entry*

This may be necessary to ensure fumes do not develop from residues etc while the work is being done.

### *Check the size of the entrance*

Is it big enough to allow workers wearing all the necessary equipment to climb in and out easily, and provide ready access and egress in an emergency? For example, the size of the opening may mean choosing air-line breathing apparatus in place of self-contained equipment which is more bulky and therefore likely to restrict ready passage.

### *Provision of ventilation*

You may be able to increase the number of openings and therefore improve ventilation. Mechanical ventilation may be necessary to ensure an adequate supply of fresh air. This is essential where portable gas cylinders and diesel-fuelled equipment are used inside the space because of the dangers from build-up of engine exhaust. **Warning: carbon monoxide in the exhaust from petrol-fuelled engines is so dangerous that use of such equipment in confined spaces should never be allowed.**

### *Testing the air*

This may be necessary to check that it is free from both toxic and flammable vapours and that it is fit to breathe. Testing should be carried out by a competent person using a suitable gas detector which is correctly calibrated. Where the risk assessment indicates that conditions may change, or as a further precaution, continuous monitoring of the air may be necessary.

### *Provision of special tools and lighting*

Non-sparking tools and specially protected lighting are essential where flammable or potentially explosive atmospheres are likely. In certain confined spaces (eg inside metal tanks) suitable precautions to prevent electric shock include use of extra low voltage equipment (typically less than 25 V) and, where necessary, residual current devices.

### *Provision of breathing apparatus*

This is essential if the air inside the space cannot be made fit to breathe because of gas, fume or vapour present, or lack of oxygen. Never try to 'sweeten' the air in a confined space with oxygen as this can greatly increase the risk of a fire or explosion.

### *Preparation of emergency arrangements*

This will need to cover the necessary equipment, training and practice drills.

### *Provision of rescue harnesses*

Lifelines attached to harnesses should run back to a point outside the confined space.

### *Communications*

An adequate communications system is needed to enable communication between people inside and outside the confined space and to summon help in an emergency.

### *Check how the alarm is raised*

Is it necessary to station someone outside to keep watch and to communicate with anyone inside, raise the alarm quickly in an emergency, and take charge of the rescue procedures?

### *Is a 'permit-to-work' necessary?*

A permit-to-work ensures a formal check is undertaken to ensure all the elements of a safe system of work are in place before people are allowed to enter or work in the confined space. It is also a means of communication between site management, supervisors, and those carrying out the hazardous work. Essential features of a permit-to-work are:

- clear identification of who may authorise particular jobs (and any limits to their authority) and who is responsible for specifying the necessary precautions (eg isolation, air testing, emergency arrangements etc);
- provision for ensuring that contractors engaged to carry out work are included;
- training and instruction in the issue of permits;
- monitoring and auditing to ensure that the system works as intended.

## **Emergency procedures**

When things go wrong, people may be exposed to serious and immediate danger. Effective arrangements for raising the alarm and carrying out rescue operations in an emergency are essential.

Contingency plans will depend on the nature of the confined space, the risks identified and consequently the likely nature of an emergency rescue.

Emergency arrangements will depend on the risks. You should consider:

### **Communications**

How can an emergency be communicated from inside the confined space to people outside so that rescue procedures can start? Don't forget night and shift work, weekends and times when the premises are closed, eg holidays. Also, consider what might happen and how the alarm can be raised.

### **Rescue and resuscitation equipment**

Provision of suitable rescue and resuscitation equipment will depend on the likely emergencies identified. Where such equipment is provided for use by rescuers, training in correct operation is essential.

### **Capabilities of rescuers**

They need to be properly trained people, sufficiently fit to carry out their task, ready at hand, and capable of using any equipment provided for rescue, eg breathing apparatus, lifelines and fire-fighting equipment. Rescuers also need to be protected against the cause of the emergency.

### **Shut down**

It may be necessary to shut down adjacent plant before attempting emergency rescue.

### **First-aid procedures**

Trained first aiders need to be available to make proper use of any necessary first-aid equipment provided.

### **Local emergency services**

How are the local emergency services (eg, fire brigade) made aware of an incident? What information about the particular dangers in the confined space is given to them on their arrival?

### **Relevant law**

- The Confined Spaces Regulations 1997;
- The Management of Health and Safety at Work Regulations 1999;
- The Control of Substances Hazardous to Health Regulations 2002 (as amended);
- The Personal Protective Equipment at Work Regulations 1992 (as amended);
- The Provision and Use of Work Equipment Regulations 1998;
- Electricity at Work Regulations 1989;
- Workplace (Health, Safety and Welfare) Regulations 1992.

Some of the above law is relevant because of the nature of the work to be carried out inside a confined space, eg where there are risks from machinery, electricity or from hazardous substances.

## Further guidance

*Safe work in confined spaces. Confined Spaces Regulations 1997. Approved Code of Practice, Regulations and guidance* L101 HSE Books 1997 ISBN 0 7176 1405 0

*Guidance on permit-to-work systems: A guide for the petroleum, chemical and allied industries* HSG250 HSE Books 2005 ISBN 0 7176 2943 0. The relevance of this guidance is not restricted to the petroleum industry. It will be helpful in any industry or work activity where the preparation and application of permits-to-work are being considered.

*5 steps to risk assessment* Leaflet INDG163(rev2) HSE Books 2006 (single copy free or priced packs of 10 ISBN 0 7176 6189 X)

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