CUNLIFFES
PROPERTY & CONSTRUCTION CONSULTANTS

CONSTRUCTION (DESIGN and MANAGEMENT) REGULATIONS 2015

TENDER STAGE
PRE CONSRUCTION INFORMATION

for

AI: MORE THAN HUMAN EXHIBITION
ENABLING WORKS PACKAGE

At

WORLD MUSEUM LIVERPOOL,
WILLIAM BROWN STREET,
LIVERPOOL
L3 8EN

For

THE BOARD OF TRUSTEES OF THE NATIONAL MUSEUMS AND GALLERIES ON MERSEYSIDE (NATIONAL MUSEUMS LIVERPOOL)

March 2020

Ref: 6486

Issue No : 01

1. Project Details	
Project	AI: More Than Human Exhibition – Enabling Works Package
Client	The Board of Trustees of the National Museum and Galleries on Merseyside, 127 Dale Street, Liverpool, L2 2JH
Principal designer	Cunliffes Ltd
Designer(s)	Cunliffes Ltd and Contractor
Site location	World Museum Liverpool, William Brown Street, Liverpool, L3 8EN
Description of works	The work consists of the formation of new partition walls, new areas of flooring, electrical and data installation works, decoration works, installation of new lighting rig, new internal door sets, removal of large wall mounted 'Sock' to the atrium all in preparation and to enable the full installation of the new exhibition at the museum
Key dates, including start and completion of construction phase	Works to commence on site 4th May 2020
Minimum time allowed between appointment of principal contractor and start of construction phase	2 weeks
Will the structure be used as a workplace?	Yes - The museum is due to be open to the public from the 1st May 2020 subject to any further restrictions on opening provided by NML or the Government in relation to COVID-19. If opened the Museum will operate normally during the course of the work. Strict access limitations will apply. The contractor will be informed if any of this, changes in terms of the Museum being open to the public. The Museum will still have essential maintenance and statutory works being carried out.
Extent and location of existing records and plans	The contractor, before commencing works, must check with Statutory Bodies or Public Utilities to definitely establish the presence of all services on site. Live services existing on site to be protected and maintained as necessary ie: gas, water, electric, drains, sewers, cable, telephone and other similar properties. Any such services likely to be interfered with during the execution of the works to be plotted on a Site Plan and passed to the C.A for record purposes prior to commencement of work. Any existing surface fixed light fittings, electrical cables, sensors etc that affect the proposed works will need to be removed and re-fixed / replaced on completion.

	Site plans for all work areas are provided with the tender package. Existing as built drawings are available upon request. Any other site-specific documents are available for reference from the CA.
2. Client's considerations and management requirements Arrangements for: • Structure and Organisation	The main point of contact to discuss and agree health & safety aspects of the project will be the Principal Designer/CA, however day to day liason will be with a designated visitor services manager with regards to delivery access etc. Cunliffes Ltd are the lead consultant for the project and are providing design, CA and Principal Designer services for the client. Cunliffes Ltd have worked with the client from the initial stages of design and will continue to provide the role as lead consultant through to completion and handover of the proposed works.
• Communications between client and others	All communications between the contractor and the client shall be made through the CA. All instructions to the contractor will be issued directly from the CA in writing. The contractor shall liaise directly with CA for all site issues for the duration of the contract. The Principal designer will arrange a pre-start meeting in advance of commencing work on site to discuss and agree management and co ordination for project health & safety. Regular site progress meetings (fortnightly) will be held throughout the construction period at which time opportunity will be given to update all parties on the relevant aspects of project health and safety. Cunliffes Ltd (CA) will maintain lines of communication between all duty holders for the duration of the project & also as principal designer will liaise with designers & the principal contractor & distribute relevant design risk information throughout the design phase. The contractor must provide a programme to be agreed with the client, clearly indicating dates when access to specific work areas area required.
• Safety Goals	The client expects the highest standards of Health & Safety to be observed throughout all building projects and will work together with the successful contractor to ensure that the safety goals are achieved.

	The Principal Contractors Construction Phase Health & Safety Plan will be the principal document for setting out how the project will be managed with regard to Health & Safety. The Construction Phase Health & Safety Plan **MUST** be site specific. Generic plans will not be accepted. A copy of the Construction Phase Health & Safety Plan must be submitted to the client at least 1 week prior to commencement. Works should not commence until the client is satisfied that the construction phase plan has satisfactorily addressed the relevant project health & safety risks. A formal meeting with all duty holders will take place prior to commencement of works on site at which time the project Health & Safety issues will be discussed in detail. Further site meetings will take place throughout the contract period during which opportunity will be given to discuss the Health & Safety issues in the presence of all duty holders. It is essential that the proposed works are planned with thought for safe access during the contract programme. All unauthorised persons are to be kept segregated from the works and exposure to potential associated construction hazards.
• Security	All personnel will be required to attend a site induction prior to entering the site. The site induction will be held on site and will be arranged by Principle Contractor and Principal Designer. A security pass system will be in operation on site and all Contractors/ Sub-contractors shall adhere to directions given by authorised security personnel on site at the venue. Details for signing in and out of the building will be advised during the site induction process, and in line with Principle Contractor site rules and site setup. The Contractor shall comply with all regulations and operating restrictions imposed by the Client / Principal Designer / Principle Contractor with regard to access routes throughout the site. In addition the Contractor shall liaise with the NML Security/ Visitor Services Managers to obtain building security badges for staff during the carrying out of the works. The Contractor shall give the Client and Principal Contractor 48 hours notice of personnel visiting the site. The principal contractor will have responsibility for ensuring that all work areas including the contractors site compound are secure in order to prevent unauthorised access. The principal contractor should keep a site signing in document to be located in the site office. All operative are required to complete a site induction prior to being permitted access onto the construction site.

• Welfare provision	The Principal Contractor should ensure that adequate welfare facilities are provided in accordance with HSE Construction Information Sheet No 59 (Provision of welfare facilities during construction work)
Requirements relating to the health and safety of the client's employees and others:	
• Site fencing	The contractor is to provide suitable hoarding or heras fencing around all work areas including the contractors compound area. These are to be indicated on the contractors site management drawing.
• Site transport, including vehicle restrictions	The Contractor shall ensure that all delivery vehicles and refuse vehicles are of a size suitable to negotiate the surrounding roads and area in a safe manner. The area around the building is a pedestrian zone and drivers must comply with site rules when driving / operating vehicles or machinery in this area. Vehicle access for deliveries only will be gained via Cuerden Street to the rear of the Museum and into the Museum car park. Site deliveries are to be agreed with the Visitor Services managers. All deliveries shall be accompanied and controlled by a banksman.
• Site Rules	All deliveries to site must be supervised by the Principal Contractor. No waste materials shall be burnt on site. Under no circumstances shall materials, tools, waste etc. be positioned on site so as to pose a hazard. Waste should be regularly removed from site and must not be allowed to accumulate and form a potential fire hazard. All paths, roads, car parking areas, etc. must be kept clear of waste, debris, mud, etc. at all times. Skips shall not be left on site overnight unless they have a secure lockable cover. Appropriate fire extinguishers shall be provided at all areas of work. Adequate warning signs e.g. 'Danger Keep Out', 'Men Working Overhead' etc. must be provided at all areas of work. Relevant warning signs and notices shall be displayed at the site entrance.

	At least one member of the Principal Contractor's Personnel should be sufficiently competent in the administration of first aid. The appointed First Aider must be site based. Evidence of training is to be provided in the developed Health & Safety Plan. Permit systems will be administered on behalf of the Client/Principal Designer. Permits will be required, but not limited to; Hot works Access to plant rooms Access to risers Access to the roof Access to electrical equipment rooms
• Fire precautions	The principal contractor shall produce a construction site fire evacuation plan to include details of muster points, egress routes etc. In the event of a fire, the contractor shall ensure that a site register is taken to ensure all operatives are present and this is to be confirmed back to the The building has an active automatic fire detection system. The Contractor must advise the Client/Principal Contractor if it is necessary to isolate areas / zones within the building whilst works are being undertaken. Smoking will not be permitted anywhere on site. This includes car park areas or anywhere within the boundaries of the Museum and its external grounds. Hot works permits will be issued if these hot works are necessary. Hot Work Permits will be issued by the Client/Principal Designer as required. These will include details of fire extinguishers, personnel, how long a fire watch is to be maintained after hot works and how long before closure of the site these should be completed and any other rules and restrictions. The Contractor will however be expected to utilise any method other than hot works if deemed practical and economical by the Principal Designer.
• Emergency procedures	The principal contractor shall familiarise himself with the Museums emergency evacuation procedures prior to commencement of works on site. The building has a major / minor incident emergency plan together with emergency evacuation procedures. These will be explained to the Contractor during the site induction

	Every employee working on this project who reasonably considers that they are exposed to serious, imminent and unavoidable danger, shall in the absence of any further guidance or instruction, stop work and immediately proceed to a place of safety. Such a situation must be reported immediately to the Principal Contractor. Notices containing emergency procedures shall be displayed by the Principal Contractor on site. The contractor should establish where nearest hospital to the site is and obtain its telephone number. The local Health & Safety Executive is: Redgrave Court, Merton Road, Bootle, Merseyside L20 7HS In addition to individual sub-contractor's accident reporting procedures, all accidents must be reported to the Principal Contractor where they shall be recorded in his accident book. All injuries, diseases and dangerous occurrences which are notifiable to the HSE under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations, must also be notified to the Principal Contractor. The nearest hospital to World Museum Liverpool is: The Royal Liverpool University Hospital Prescot Street Liverpool L7 8XP
• No-go areas	No contractor access to any area outside of the construction work areas without prior permission from the CA or designated visitor services manager.
• Confined spaces (as designated by the client)	Not applicable
• Smoking and parking restrictions	Smoking is not permitted anywhere on the site. There is no smoking on or near the building. Designated smoking areas are to be identified in the construction phase health and safety plan. There will be no or limited contractor parking available at the venue. Limited parking for contractors will be available on World Museum Liverpool site to the rear car park, exact locations and number of spaces to be agreed at the pre-start meeting.

3. Significant Project Hazards

Safety hazards, including:

• Boundaries and access, including temporary access	Access to the site and contractors parking is as detailed above. These areas are in constant daily use by other term contractors, NML staff and general public. The contractor should take care when entering and exiting the premises to avoid traffic/pedestrian collisions. There is a designated speed limit in place on all access routes to the site and contractors compound/parking area and these must be adhered to at all times. Hazard warning lights must be used when entering and exiting these areas.
• Restrictions on deliveries or waste collection or storage	Deliveries should be timed to avoid clashes with food deliveries, bin collections etc. The contractor will be required to liase with the visitor services manager to agree suitable delivery times. All deliveries are to be made to the building at a time agreed with the Client and Principle Designer. The materials & equipment will only be brought through the building and to the site area between the hours of 8am - 10am (Monday to Friday) unless otherwise agreed and confirmed with the CA and/or Visitor Services Managers. The Contractor will ensure nothing is damaged within existing galleries/communal areas as equipment and materials are brought through the building. Roads, loading bays and access lifts shall be left clean and clear to allow access for emergency vehicles at all times. The Contractor will be responsible for removal of all debris and rubbish arising from the Contract Works and must maintain a clean and clutter free environment. Storage space is limited and the Contractor shall agree with the Client / Principle Designer locations for storage of materials and shall relocate material if requested by the Client / Principal Contractor within 24 hours of the request being made or immediately if so requested. The Contractor shall thoroughly clean the working and storage areas daily as the works proceed to the satisfaction of the Client/Principle Designer and remove rubbish, debris and surplus materials daily. No flammable materials are to be stored on the Site. Skips should be removed from site each day unless the skip has a lockable cover.

• Adjacent land use	The building is located in a prominent position in the centre of Liverpool with vehicle and pedestrianised areas surrounding, largely used for recreational and commercial activities.
• Existing Structures	The existing structure consists of stone, 1 storey with basement, 17 bays. Rusticated basement. Projecting end bays with centres recessed behind Corinthian angle pilasters. Central hexastyle Corinthian portico with 2 rows of unfluted columns. 1st floor windows have architraves and entablatures, and panelled aprons, those to end bays project and have pediments on consoles recessed panels with carved wreaths above windows which are sashed with glazing bars. Steps to portico with balustrading and 2 lion lamp stands.
• Location of existing services, particularly concealed services	Above ground services to affected work areas both internally and externally are generally surface fixed, however care should be taken to identify service runs prior to removal or opening up of any areas.
• Ground conditions, underground structures or water courses	Not Applicable
• Information about existing structures, ie stability, or those containing fragile or hazardous materials	The building was constructed in 1857-60. Alterations and rebuilding taken place following the 2nd World War. A refurbishment and demolition asbestos survey is required for this project. A copy of the survey report will be forwarded onto the Principal Contractor prior to commencement of the works. The contractor should note that based on previous projects carried out at the school it is likely that there will be Asbestos Containing materials present which maybe not be accessible at the time of the Refurbishment and Demolition survey. The contractor should proceed with caution when carrying out any stripping out / demolition works and stop works immediately if and suspected ACM's are found. This should be reported to the C.A who will take appropriate action.
• **COVID-19**	**The works may only commence providing the contractor provides RAMS to be included in the construction phase health and safety plan. The RAMS must satisfy current government guidance (See appendix A below).** **Should the contractor be unable to comply with all recommendations set out in government guidelines no work may commence on site.**

	Given that there is a very real possibility that current guidelines could change at short notice with the potential to halt the project, the contractor must also ensure that a contingency plan is in place to ensure that in the event of an immediate shut down the site is left safe and secure and that the building is left watertight until such time that it is safe for works to re-commence.
Design assumptions and control measures	
• Principals of Design	The project is to undertake the enabling building works package prior to the AI: More Then Human exhibition being installed at the World Museum Liverpool. The enabling package of works are to be undertaken within the Temporary Exhibition space, William Brown Room and main Atrium area housed within the World Museum. The works involved are all clearly indicated within the schedule of works but will provide the necessary and essential infrastructure for the main exhibition to then be installed. The works will require the formation of new partition walls, new areas of flooring, electrical and data installation works, decoration works, installation of new lighting rig, new internal door sets, removal of large wall mounted 'Sock' to the atrium all in preparation and to enable the full installation of the new exhibition at the museum.
• Fire damage, ground shrinkage	Not applicable
• Health and safety information contained in earlier design and construction information	Health and Safety and operation manuals from previous projects will be made available where applicable.
• Asbestos, including results of surveys, etc	N/A
Design assumptions, suggested work methods, sequences, etc	The works are to be carried out over a single phase. The Principal Contractor will be expected to provide a programme of works indicating the proposed sequencing of the works for discussion and agreement at the pre contract meeting. Exact dates are to be agreed with NML at the pre contract meeting.
Arrangements for co-ordination of on-going design work and handling design changes	The principal designer will be notified of any design changes and will review the changes. The principle designer will provide the Principal Contractor with any information relating to health & safety risks associated with the design change. The Principal contractor shall notify the principal designer of any changes in design or other material changes proposed by contractors during construction.

Risks identified during design	Measures to prevent members of the public coming into contact with construction activities shall be implemented by the principal contractor. It is essential that all site operatives are informed of the proposals to protect the public and that the safety plans are reviewed as the works and progress. The Contractor shall locate skips away from pedestrian areas where applicable and ensure that they are enclosed with suitable fencing. The site will be an occupied by general public, visitors and staff for the duration of the works. Adequate high visibility temporary barriers must be erected around work areas as some owners may be partially sighted.
Materials requiring particular precautions	Working with adhesives, COSHH details from manufacturers

The Principal Contractors Construction Phase Plan must set out the arrangements for securing health & safety during the period construction work is carried out. The plan must be drawn up before the pre-construction phase and before the construction site set up. The plan must take into account the pre-construction information issued at tender stage and any further pre construction information issued through the course of the project. During the construction phase, the principal contractor must ensure the plan is appropriately reviewed, updated and revised, so it remains effective.

Appendix A. – COVID-19 Guidance Document

Section 4. – The Health & Safety File

Site Operating Procedures – Protecting Your Workforce

Contents

Introduction

Construction sites operating during the Coronavirus Covid-19 pandemic need to ensure they are protecting their workforce and minimising the risk of spread of infection.

This guidance is intended to introduce consistent measures on sites of all sizes in line with the Government's recommendations on social distancing.

These are exceptional circumstances and the industry must comply with the latest Government advice on Coronavirus at all times.

The health and safety requirements of any construction activity must also not be compromised at this time. If an activity cannot be undertaken safely due to a lack of suitably qualified personnel being available or social distancing being implemented, it should not take place.

We are aware that emergency services are also under great pressure and may not be in a position to respond as quickly as usual.

Sites should remind the workforce at every opportunity of the Site Operating Procedures which are aimed at protecting them, their colleagues, their families and the UK population.

If a site is not consistently implementing the measures set out below, it may be required to shut down.

Self-Isolation

Anyone who meets one of the following criteria should not come to site:

- Has a high temperature or a new persistent cough - follow the guidance on self-isolation
- Is a vulnerable person (by virtue of their age, underlying health condition, clinical condition or are pregnant)
- Is living with someone in self-isolation or a vulnerable person.

Procedure if Someone Falls Ill

If a worker develops a high temperature or a persistent cough while at work, they should:

- Return home immediately
- Avoid touching anything
- Cough or sneeze into a tissue and put it in a bin, or if they do not have tissues, cough and sneeze into the crook of their elbow.

They must then follow the guidance on self-isolation and not return to work until their period of self-isolation has been completed.

Travel to Site

- Wherever possible workers should travel to site alone using their own transport and sites need to consider:
    - Parking arrangements for additional cars and bicycles
    - Other means of transport to avoid public transport e.g. cycling
    - Providing hand cleaning facilities at entrances and exits. This should be soap and water wherever possible or hand sanitiser if water is not available
    - How someone taken ill would get home.

Site Access Points

- Stop all non-essential visitors
- Introduce staggered start and finish times to reduce congestion and contact at all times
- Monitor site access points to enable social distancing – you may need to change the number of access points, either increase to reduce congestion or decrease to enable monitoring
- Remove or disable entry systems that require skin contact e.g. fingerprint scanners
- Require all workers to wash or clean their hands before entering or leaving the site
- Allow plenty of space (two metres) between people waiting to enter site
- Regularly clean common contact surfaces in reception, office, access control and delivery areas e.g. scanners, turnstiles, screens, telephone handsets, desks, particularly during peak flow times
- Reduce the number of people in attendance at site inductions and consider holding them outdoors wherever possible
- Drivers should remain in their vehicles if the load will allow it and must wash or clean their hands before unloading goods and materials.

Hand Washing

- Provide additional hand washing facilities to the usual welfare facilities if a large spread out site or significant numbers of personnel on site
- Ensure soap and fresh water is readily available and kept topped up at all times
- Provide hand sanitiser where hand washing facilities are unavailable
- Regularly clean the hand washing facilities and check soap and sanitiser levels
- Provide suitable and sufficient rubbish bins for hand towels with regular removal and disposal.

Sites will need extra supplies of soap, hand sanitiser and paper towels and these should be securely stored.

Toilet Facilities

- Restrict the number of people using toilet facilities at any one time e.g. use a welfare attendant
- Wash hands before and after using the facilities
- Enhance the cleaning regimes for toilet facilities particularly door handles, locks and the toilet flush
- Portable toilets should be avoided wherever possible, but where in use these should be cleaned and emptied more frequently
- Provide suitable and sufficient rubbish bins for hand towels with regular removal and disposal.

Canteens and Eating Arrangements

With cafés and restaurants having been closed across the UK, canteens cannot operate as normal.

Whilst there is a requirement for construction sites to provide a means of heating food and making hot drinks, these are exceptional circumstances and where it is not possible to introduce a means of keeping equipment clean between use, kettles, microwaves etc. must be removed from use.

The workforce should also be required to stay on site once they have entered it and not use local shops.

- Dedicated eating areas should be identified on site to reduce food waste and contamination
- Break times should be staggered to reduce congestion and contact at all times
- Hand cleaning facilities or hand sanitiser should be available at the entrance of any room where people eat and should be used by workers when entering and leaving the area
- The workforce should be asked to bring pre-prepared meals and refillable drinking bottles from home
- Workers should sit 2 metres apart from each other whilst eating and avoid all contact
- Where catering is provided on site, it should provide pre-prepared and wrapped food only
    - Payments should be taken by contactless card wherever possible
    - Crockery, eating utensils, cups etc. should not be used
- Drinking water should be provided with enhanced cleaning measures of the tap mechanism introduced
- Tables should be cleaned between each use
- All rubbish should be put straight in the bin and not left for someone else to clear up
- All areas used for eating must be thoroughly cleaned at the end of each break and shift, including chairs, door handles, vending machines and payment devices.

Changing Facilities, Showers and Drying Rooms

- Introduce staggered start and finish times to reduce congestion and contact at all times
- Introduce enhanced cleaning of all facilities throughout the day and at the end of each day
- Consider increasing the number or size of facilities available on site if possible
- Based on the size of each facility, determine how many people can use it at any one time to maintain a distance of two metres
- Provide suitable and sufficient rubbish bins in these areas with regular removal and disposal.

Avoiding Close Working

There will be situations where it is not possible or safe for workers to distance themselves from each other by 2 metres.

General Principles

- Non-essential physical work that requires close contact between workers should not be carried out
- Work requiring skin to skin contact should not be carried out
- Plan all other work to minimise contact between workers
- Re-usable PPE should be thoroughly cleaned after use and not shared between workers
- Single use PPE should be disposed of so that it cannot be reused
- Stairs should be used in preference to lifts or hoists
- Where lifts or hoists must be used:
    - Lower their capacity to reduce congestion and contact at all times

    - Regularly clean touchpoints, doors, buttons etc.
- Increase ventilation in enclosed spaces
- Regularly clean the inside of vehicle cabs and between use by different operators.

Site Meetings

- Only absolutely necessary meeting participants should attend
- Attendees should be two metres apart from each other
- Rooms should be well ventilated / windows opened to allow fresh air circulation
- Consider holding meetings in open areas where possible.

Cleaning

- Enhanced cleaning procedures should be in place across the site, particularly in communal areas and at touch points including:
    - Taps and washing facilities
    - Toilet flush and seats
    - Door handles and push plates
    - Hand rails on staircases and corridors
    - Lift and hoist controls
    - Machinery and equipment controls
    - Food preparation and eating surfaces
    - Telephone equipment
    - Key boards, photocopiers and other office equipment
- Rubbish collection and storage points should be increased and emptied regularly throughout and at the end of each day.

World Museum Fire Safety

Arrangements for Only Ai Only Human Exhibition

Design Construction and Operational Phase

Date: 5/2/20

Consultant: Simon Cable

Background and Context

At the request of National Museums Liverpool (Joseph Dixon Health and Safety Officer) the proposal to build and operate a new exhibition called ‘Ai Only Human’ has been examined to assess the fire safety implications during the construction and operational phases, including the wider implications in terms of the World Museum fire strategy. The exhibition will be housed in the ground floor atria and second floor (not including the William Brown Room) as indicated on drawing 545 100a. Construction and Design Regulations (CDM) requires that "Suitable and sufficient steps must be taken to prevent, so far as is reasonably practicable, the risk of injury to a person during the carrying out of construction work arising from fire or explosion. Proper planning for fire safety must be an integral part of overall preparation and budgeting for the efficient running of construction projects. Clear procedures and standards must be laid down and adequate resources, in terms of time, materials and money, must be committed to the prevention of fires, by all concerned with the project

The potential fire risks are particularly severe where construction activities are taking place, where high-risk tasks such as hot work are frequently combined with the potential for combustible materials to accumulate in circumstances where fires can spread quickly. Typical issues which can occur if contractors are not supervised properly are the wedging open of fire doors and compartmentation lines being breached to fit new cables or pipework etc. These must be addressed at the commencement of the project and managed to its conclusion.

This report assumes that due diligence has been exercised by NML in planning the work and selecting the contractors to carry it out; including their competence, experience, fire/health and safety record. It also assumes that method statements, safe systems of work and risk assessments have been submitted and assessed for their suitability and sufficiency. During construction and once completed and being occupied the exhibition has to satisfy the requirements of Regulatory Reform (Fire Safety) Order 2005. This report forms a supplement to the fire risk assessment undertaken on 23/9/19 (amended 29/9/19).

Exhibition Schedule Build	
Commencement Date	**Completion and Handover**
23/4/20	3/7/20
Operational Phase	
Exhibition Opening Event	**Closure**
9/7/20	8/11/20
Information Provided by National Museums Liverpool source Joseph Dixon Health and Safety Officer National Museums Liverpool	

Observations

1) The construction phase and the exhibition will take place in the ground floor atria and part of the second floor.

2) Access to the building for the fire and rescue service will not be affected due to the works.

3) The exhibition construction falls under the requirements of the Construction Management Regulations 2015.

4) During construction and when built and occupied the relevant provisions of the Regulatory Reform (Fire Safety Order) apply.

Design Stage

1) Consideration should be given to all potential fire hazards which may be identifiable at the design stage. These may be managed by considering the following:

- The exhibition stands, backdrops and props must be constructed with materials which do not significantly contribute to the growth of a fire or the propagation of smoke and/or corrosive fumes. It should as a minimum conform to Approved Document 'B' (B2) which basically states it is necessary to inhibit the spread of fire within the building, the internal linings shall adequately resist the spread of flame over their surfaces; and have, if ignited, either a rate of heat release or a rate of fire growth, which is reasonable in the circumstances.
- Materials and methods that avoid the need for hot work on site;
- Design of access routes to enable the contractors to construct the exhibition in such a manner as to retain safe evacuation routes within the construction space and beyond which affords easy access to the means of escape from the second floor and the ground floor atria.

2) In accordance with a risk profile B2 BS9999 **actual** travel distances from the exhibition space must not exceed 50m where there is escape available in two directions; or more than 20m where there is escape available in one direction only. Travel distances are measured to the nearest storey exit or final exit.
Photograph 4

3) All doors forming the means of escape from the exhibition must be readily available at all material times.

4) Any security devices fitted must return to the unlocked position on operation of the fire alarm system and loss of power or system error in accordance with BS7273-4.

5) The impact on the emergency lighting levels in the altered space needs to be assessed to ensure there is a satisfactory level of emergency lighting in accordance with the lux levels prescribed in BS5266 2016.

6) The impact on the emergency exit indication from the altered space needs to be assessed to ensure emergency exit route are obvious.

7) The impact of the altered space on the automatic fire detectors needs to be assessed to ensure the level of coverage is not degraded. As a general rule a smoke detector will cover a radius of 7.5m. and an area of 100m^2 in addition collections should not encroach on detector heads. As a rule, there should be at least a 500mm gap between the top of any displays and the detector.

8) Because the sound pressure level of music in the atria Karaoke is likely to be greater than 80 dB(A), the music should be muted automatically when a fire alarm signal is given in accordance with BS5839 2017 clause 16.2

9) The building has an addressable fire alarm system where each device has a unique address which gives device address, text location and zone. This **may** need amending to reflect the new space.

Construction Phase

Managing of Fire Safety Arrangements

1) ‘Front door’ controls are essential to control the coming and going of contractors in and out of the premises. Arrangements should be sufficiently detailed to know who is on site and precisely where they are.

2) Nominate a ‘manager’ to liaise with the contractors and staff throughout the duration of the work. This manager should be sufficiently senior to make dynamic decisions without having to refer upwards. During the construction phase the responsibility for health and safety on site passes to the Principal Contractor (where there is more than one contractor) or to the contractor in the case of a single contractor project. The nominated manager should **liaise directly with this person daily.**

3) All procedures, precautionary measures and safety standards as laid down in the World Museum Fire Safety Plan must be communicated through a formal induction process to the contractors in advance and be recapped when the contractors first arrive on site. The nominated manager must ensure the information has been understood recorded and is complied with by all those working on the project.

4) Consideration must be given to any precautions necessary to mitigate any risks arising from the building works and whether permits-to-work (PTW) are needed for any particular activity or stage of the build.

5) Contractors must be furnished with information about the hazards present within the museum

6) The appointed manager should monitor the situation **on a daily basis** so that agreed parameters are not exceeded.

7) Daily inspections must be conducted of escape routes, fire and rescue service access, firefighting facilities to ensure they are not degraded by the contractor’s work.

8) Contractors must not park vehicles where they negate fire service access to the building.

9) At the end of each working day an inspection of the working area should be undertaken to ensure there are no potential ignition hazards.

10) A fire safety working culture must be proactively promoted always.

Fire Hazards Sources of Fuel and Oxygen

1) Good housekeeping throughout the project is essential. Waste material, if allowed to accumulate, provide a readily available fuel source for fire. Therefore, the introduction of combustible waste should be minimised, and all waste packing materials, wood, shavings and oily rags must be removed from the premises at least once per day

2) Separate metal bins, with close-fitting metal lids, must be provided for combustible materials such as oily rags.

3) All non-essential combustible wrapping, and packaging should be removed to a safe place away from the working area and be disposed of at the earliest opportunity, and in any case not less than once per day.

4) All recycling collection points and other combustible waste materials awaiting disposal must be kept in an area as far as reasonably practical away from the building.

5) Burning waste should be generally prohibited but if deemed essential must be controlled by a permit system.

6) If being contemplated and where practicable, rubbish chutes should be constructed outside the building and be of fire-resisting construction. They should be situated so as not to obstruct escape routes

7) Flammable liquids or gases used in the construction process must be stored outside and only the amounts required for a specific purpose be brought into the building. Any residue must be returned to the external storage facility immediately and not left in the build area.

8) A risk assessment of any work activities/storage involving dangerous substances should be carried out in compliance with the Dangerous Substance (Explosive Atmospheres) Regulations 2002 (DSEAR) and be recorded. Measures should be provided to eliminate or reduce as far as reasonable practicable.

Ignition Sources Hot Work

1) Hot work should be avoided however where deemed unavoidable a system using hot work permits must be established, and compliance monitored.

2) When there is no alternative to hot work then, if possible, the hot work should be undertaken in a dedicated area away from the area of work or storage of materials.

✓ All hot work must be subject to a hot work permit.

✓ Hot work permits must only cover specific, identified activities and locations and be signed off at the end of each work period. ‘Blanket’ permits covering hot work activities over an extended period or several days must not be allowed.

✓ Before starting hot work, the area must be cleared of all loose combustible material and, if work is to take place on one side of a wall or partition, the opposite side must be examined to ensure no combustible material will be ignited by conducted heat.

✓ At least two appropriate fire extinguishers must be at hand and a careful watch maintained for fire breaking out whilst work is in progress.

✓ Exposed combustible material which cannot be removed must be covered with non-combustible material.

✓ When welding, cutting or grinding, the work area must be suitably screened using non-combustible material.

✓ The area should be inspected routinely after the work is completed.

Ignition Sources Electrical

1) Electrical supply installations, both temporary and permanent, must be installed in accordance with the latest edition of BS 7671: *Requirements for electrical installations a*nd the Electricity at Work Regulations 1989.

2) Portable electric equipment used on site should carry durable labels which display that it has been inspected and tested and is in satisfactory condition. (Guidance on the frequency and scope of the inspection of portable electrical equipment is available from the HSE)

3) All electrical work should be undertaken by a skilled electrician as defined in BS 7671: Requirements for Electrical Installations.

4) Installations (especially of a temporary nature) must be inspected regularly and routinely tested. The results must be recorded in a register kept for the purpose.

5) Where portable or temporary lights are required, these should be located well away from combustible materials. Where low voltage festoon lighting cannot be used, sealed fluorescent light tubes are recommended.

6) The use of unprotected quartz halogen lights should be discouraged.

Compartmentation

1) Contractors should be advised of compartmentation lines to ensure they are not inadvertently breached.

2) Where it is necessary to breach compartmentation lines to install essential services/infrastructure they should be restored. All such works should comply with the relevant parts of BS 476 or BS EN 1634.

Means of Warning Occupants in the Event of Fire

1) During the adaptations the fire alarm system should not be degraded or isolated in anyway. Where it is likely that building works within the construction will trigger a false alarm, it is permissible to cover the detectors in the immediate for the duration of that specific work, however any covers must be immediately removed once the activity is completed. Covers should be retained by management and issued when required. As soon as the particular activity has been concluded they should be returned to ensure a safe system of work is always adopted and the detectors are restored to normal as soon as possible.

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Firefighting Equipment

1) An adequate number of appropriate portable fire extinguishers should be provided, within the construction space accordance with the requirements of BS 5306-8

2) Extinguishers must be located in conspicuous positions and they should be situated in red boxes raised 500mm above ground level with a sign ‘FIRE POINT’

3) Contractors must be sufficiently competent to be able to use the portable firefighting equipment provided

Operational Phase

1) The day to day operational management of the exhibition must be conducted within the parameters prescribed in the fire risk assessment dated 13/8/19 (amended 20/9/19)

2) The original fire strategy dated 10/1999 provided for an overall occupancy figure of 3,611, however this was calculated on empty space at the design stage. The current fire risk assessment limits the **total building occupancy to 2,800**. The atria floor is an area of approximately 300m^2 and the dedicated exhibition space at L2 is approximately 400m^2. Where floor spaces contain collections etc the maximum occupancy is determined on the floor space available per individual providing there are sufficient exits/exit width to achieve evacuation within a reasonable time frame. Therefore, the maximum capacity should meet the combined requirements of 'Tables 1 and 2 below.

Table 1 Floor Space Factors Source BS9999 2017 Table 9.			
Use Type	**Density**	**Floor Space Factor**	**Example**
Standing Areas	Very High	0.3	People Queuing
	High	0.5	Bar
	Normal	1	Theatre/Cinema
	Low	2	Museum Gallery
Seating Areas	Normal	0.4	Theatre/Auditorium

Table 2 Exit Width Requirements BS9999 2017 Table 12.	
Risk Profile	**Minimum Exit Width Per Person**
B2	4.1mm
Number of Storey Exits Available L2	**Exit Width**
6 – 4 *Note 1	2400mm
Note 1: Four exits discharge into the same area.	

3) Based on the available exits and floor space in the ground floor atria and L2 a total **capacity figure for the exhibition of 350 is recommended. It will be necessary for staff to monitor the numbers of persons viewing the exhibition to ensure overcrowding does not take place. It may be necessary to restrict viewing times to allow a steady throughput of people and to prevent frustrations raising tensions among patrons.**

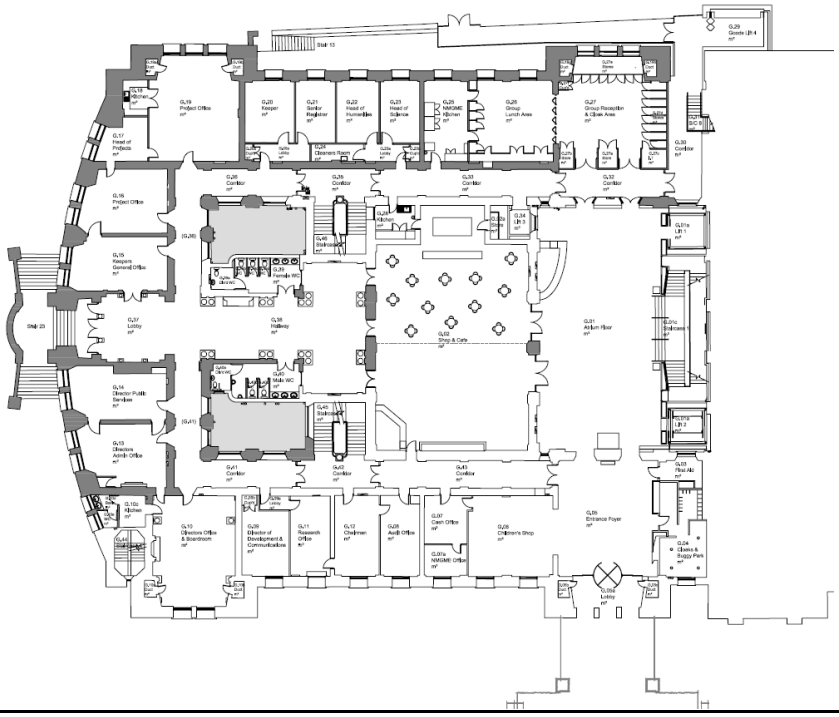
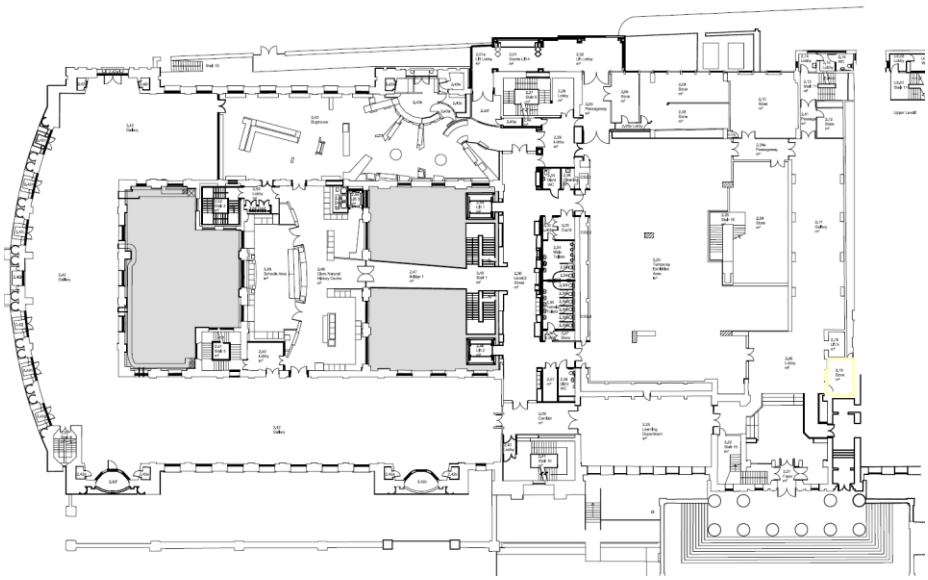
4) It will be necessary to consider the maximum numbers admitted holistically in terms of the overall building and specifically in terms of the exhibition.

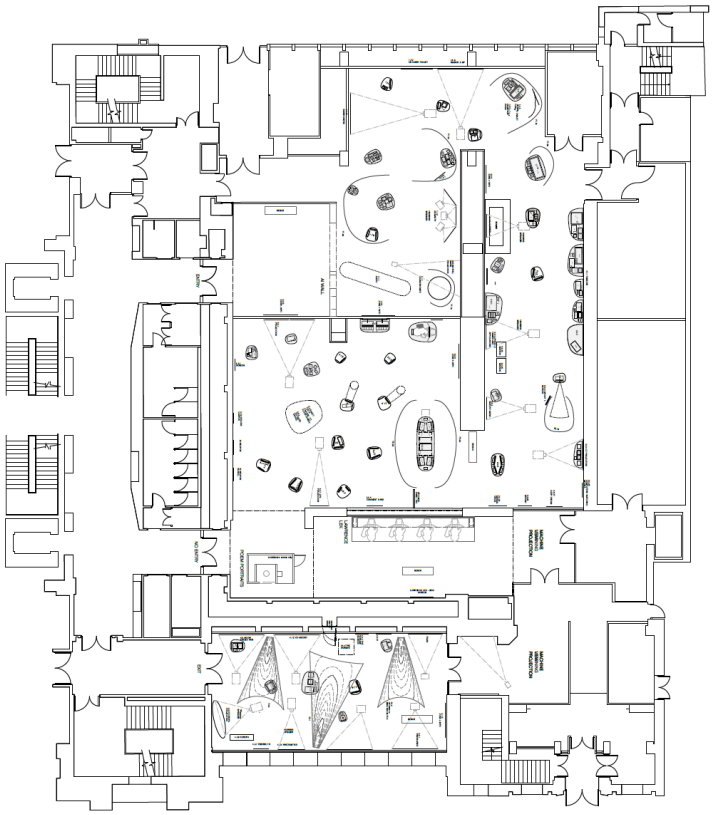
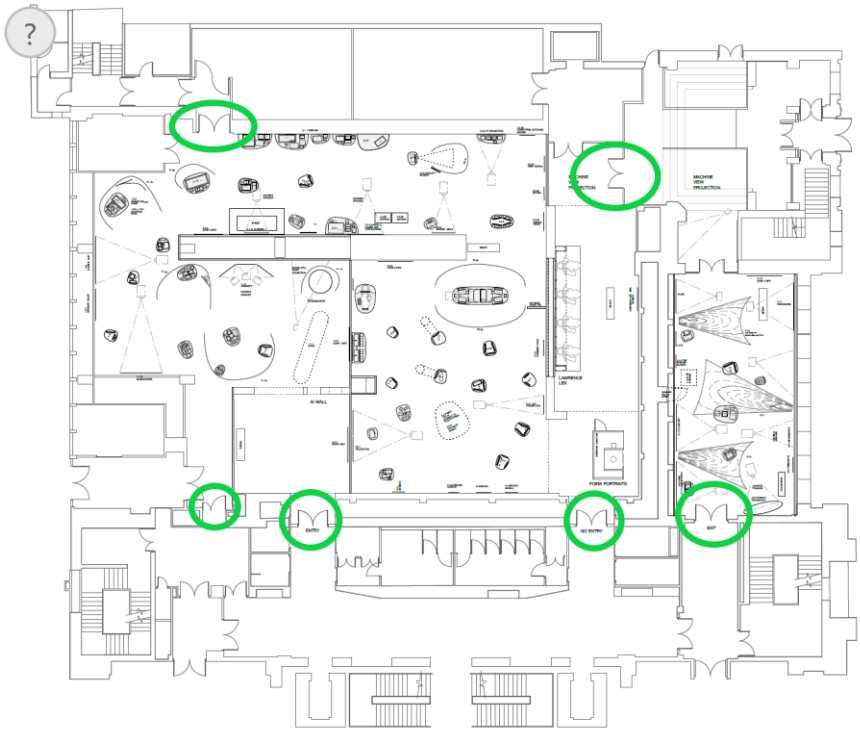
5) The opening private event should be conducted within the parameters of the existing fire risk assessment

References

CDM Regulations 2015
BS9999 2017 Fire safety in the Design Management and use of Buildings
BS5266 Code of Practice for the Provision of Emergency Lighting
BS5839
World Museum Fire Strategy Document 10/99
Dangerous Substance (Explosive Atmospheres) Regulations 2002 (DSEAR)
Electricity at Work Regulations 1989.
BS 7671: Requirements for Electrical Installations

Fire Risk Assessment – Supporting Photographs

Photo		Description
1.		Existing Ground Floor
2.		Existing L2

3.		Plan view of Proposed Exhibition
4.		Proposed access/egress routes

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HEALTH & SAFETY FILE

Project Title
& Address

for

Client Name
& Address

Photo

Job Reference:

Version	Purpose of Issue/Amendment	Prepared By	Date Issued	Issued to

PURPOSE OF THE HEALTH & SAFETY FILE

This Health and Safety File is a record of information for the end user of the completed project described in section 2.0 and focuses on health and safety.

The information contained within the File is intended to alert those who are responsible for the structure and equipment installed in it, to the significant health and safety risks and the prevention and/or protection measures that will need to be managed during subsequent use, maintenance, cleaning and future construction work or demolition.

The building owner / occupier has a statutory duty to ensure that this Health & Safety file is kept available for inspection by any person who may need it and shall ensure that the file is revised as may be appropriate to incorporate any relevant new information.

If the building owner/occupier disposes of their interest in the building they are responsible for ensuring that any person who acquires an interest in the building is made aware of the nature & purpose of the file.

CONTENTS

1.0 PROJECT DUTY HOLDERS

1.1 Client

Address:
Contact Name:
Contact Phone:

1.2 Designer

Address:
Contact Name:
Contact Phone:

1.3 Principal Designer

Address:
Contact Name:
Contact Phone:

1.4 Principal Contractor

Address:
Contact Name:
Contact Phone:

	Description	Requirement	Information Supplied
2.0	Description of the Works	Brief description of the work carried out	
3.0	Residual Hazards	Any hazards that have not been eliminated through the design and construction processes, and how they have been addressed (e.g. surveys or other information concerning asbestos or contaminated land).	
4.0	Key Structural Principles	Key structural principles (e.g. bracing, sources of substantial stored energy including pre-or post-tensioned members) and safe working loads for floors and roofs.	
5.0	Hazardous Materials Used	Hazardous materials used (e.g. lead paints and special coatings).	
6.0	Information regarding the removal or dismantling of installed plant and equipment.	Information regarding the removal or dismantling of installed plant and equipment (e.g. any special arrangements for lifting such equipment).	
7.0	Equipment for cleaning or maintaining the structure	Health and safety information about equipment provided for cleaning or maintaining the structure (e.g. fall protection systems, high reach mobile platforms/vehicles).	
8.0	Location of Significant Services	The nature, location and markings of significant services, including underground cables, gas supply equipment, fire-fighting services etc.	
9.0	Information and As-Built Drawings	Information and as-built drawings of the building, its plant and equipment (e.g. the means of safe access to and from service voids and fire doors).	

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HEALTH & SAFETY FILE
CERTIFICATE OF HANDING OVER

This certificate is signed in acknowledgement of handing over of the Health and Safety File for the under noted construction project:

Construction Project:

situated at:

for which the client is:

The Health & Safety File has been compiled in accordance with regulation 12(5) of the Construction (Design and Management) Regulations 2015 for the above construction project.

Signed on behalf of the Principal Designer:

Signed (Cunliffes Representative): (Name)_____

Date of handing over the File _____

As client for this project, I acknowledge receipt of the Health & Safety File and am aware that I should take reasonable steps to ensure that the information in the file is:

- Kept available for inspection by any person who may need it to comply with any relevant legal requirements 4(5)(b)(iii);
- If the client disposes of the clients interest in the structure, the client complies with the duty in paragraph (5)(b)(iii) by providing the Health & Safety File to the person who acquires the client's interest in the structure and ensuring that that person is aware of the nature and purpose of the file 4(7).

Signed on behalf of the Client _____

Date of handing over The File _____