Assurance Standards

Health, Safety and Environment

Revision 1

Prepared by

Expo City Dubai LLC

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Acronyms, Abbreviations and Definitions

Acronyms and Abbreviations

Acronym / Abbreviation	Expansion
AED	Automated External Defibrillator
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
BIE	Bureau International Des Expositions
BS	British Standard
CCR	Community Control Room
COSHH	Control of Substances Hazardous to Health
DCD	Dubai Civil Defence
DEWA	Dubai Electricity and Water Authority
DG	Dangerous Goods
DID	Drainage and Irrigation Department
DM	Dubai Municipality
DM ED	Dubai Municipality Environment Department
EC	Environment Clearance
ECS	Environment Control Section
EIA	Environmental Impact Assessment
EPSS	Environmental Planning and Studies Section
HAVS	Hand Arm Vibration Syndrome
H&S	Health and Safety
Hi-Vis	High-visibility
HSMS	Health and Safety Management System
HSP	Health and Safety Plan
HSE	Health, Safety and Environment
HVAC	Heating, Ventilation and Air Conditioning

Acronym / Abbreviation	Expansion
ISO	International Organisation for Standardisation
KPI	Key Performance Indicator
LED	Light-Emitting Diode
LOTO	Lock Out Tag Out
MEWP	Mobile Elevating Work Platform
MS	Method Statement
MSDS	Material Safety Data Sheet
NOC	No Objection Certificate
NRPS	Natural Resources Protection Section
RAMS	Risk Assessment and Method Statement
PAT	Portable Appliance Testing
PEP	Project Execution Plan
PPE	Personal Protective Equipment
PTW	Permit to Work
RA	Risk Assessment
RTA	Roads and Transport Authority
SIL	Safety Integrity Level
SLT	Safety Leadership Team
TG	Technical Guideline
TWL	Thermal Working Limit
WAH	Work at Height
WMD	Waste Management Department
WW	Worker Welfare

Definitions

Term	Definition
Community Control Room	The coordination centre for Expo City Dubai operations. The CCR is located on the Expo City Dubai site, supporting operations and services delivered across the city.
Employer	Any entity that employs workforce, contractors or subcontractors for works undertaken on the Expo City Dubai site. For Expo City Dubai, employers include third-party delivery agents, developers and contractors
Major Incident	An incident that requires implementation of special arrangements by one or more of the Emergency Services.
Minor Incident	An event or an occurrence that causes minor operational disruption. A minor incident is containable and creates no reputational risks. Minor incidents can usually be dealt with using internal resources and capabilities only.
Serious Incident	An event or an occurrence that causes serious operational disruption. A major incident will affect adjacent areas and creates reputational risks. Serious incidents will require the intervention of external resources and capabilities.
Contractor	Any entity who is employed to provide services for Expo City Dubai, including all appointed subcontractors who deliver specific services under the main contractor's contract.
Delivery Management System (DMS)	A centralised logistics system that manages and regulates the flow of delivery, collection and maintenance vehicles to the Expo City Dubai site.
Environment	The surroundings in which an organisation operates, including air, water, land, natural resources, flora, fauna, humans and their interrelation.
Environmental Aspect	Activities, products or processes that interact with, or could interact with the environment, either directly or indirectly, causing an environmental impact.
Environmental Impact	Changes, both positive and negative, to the environment as a result of the environmental aspect.
Environmental Performance	The measurable results of an organisation's management of its environmental aspects.
Event Organiser	Any organisation responsible for the planning and delivery of events and related activities at Expo City Dubai.
Expo City Dubai Site	Located in Dubai South and circulated by the Outer Perimeter fence, it is made up of internal and external operational zones, managed by Expo City Dubai. Also referred to as the 'site.'
Guest Groups	Personnel who attend Expo City Dubai in a non-work related capacity including, dignitaries, visitors and members of the public.

Term	Definition
Hazardous Materials	A hazardous material is any item or agent (biological, chemical, radiological, and/or physical), which has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors.
Hazardous Waste	Any waste that exhibits one or more hazardous characteristics, such as being corrosive, flammable, oxidizing, poisonous, radioactive or toxic and that can pose a substantial or potential hazard to human health or the environment when improperly managed.
Incident	An unplanned event or chain of events, which caused, or could have caused, injury, illness or damage (loss) to assets, the environment or third parties.
Landlord	The Expo City Dubai representative in charge of delivering leadership and direction for the management of the site real estate assets.
Load in	The physical movement of inventory onto the Expo City Dubai site to a defined location.
Load out	The physical movement of inventory out of the Expo City Dubai site to its final destination.
Material Handling Equipment (MHE)	Mechanical equipment used for the movement, storage, control and protection of materials, goods and products, including (but not limited to) forklifts, reach trucks and pallet jacks.
Overlay	All temporary structures and infrastructure required to enable the successful operation of an event. Overlay is either added to expand an existing permanent build, integrated with an existing permanent build or a completely temporary stand-alone venue. Overlay usually comprises of lightweight temporary construction, hired or purchased, which is dismantled and removed after the event.
Personal Protective Equipment (PPE)	Protective clothing, helmets, safety glasses, or other garments or equipment designed to protect the wearer's body from injury or infection. It should be the last consideration in deciding control measures for a specific hazard.
Plant and Equipment	All machinery, tools, appliances and equipment, used to maintain the asset equipment. Plant and equipment cover a diverse range of items including (not limited to) vehicles, utility vehicles, trailers, lifts, forklifts, mechanical handling equipment, hand tools, ladders, boom lifts and scissor lifts.
RISE™ Guide for Sustainable Operations	A document developed by the Expo City Dubai based on the RISE (Respect, Impact, Safety, Environment) methodology, outlining the standards, guidelines, and best practice recommendations to drive sustainability across all operations on the Expo City site.
Sector	Operational area within a zone including all the venues and spaces that fall within its borders.

Term	Definition
Venue	An operational physical location on the Expo City Dubai site, which could be an open/closed area, or a floor of a building contained spaces.
Workforce	Expo City Dubai and Tennant staff, volunteers, contractors and service providers undertaking work activities.
Zone	An operational area that breaks the Expo City Dubai site into a set of smaller, more manageable operational areas, containing a number of venues.

1 Introduction

Expo City Dubai is committed to protecting the health, safety and wellbeing of all visitors and workforce. This commitment is central to the planning, delivery and operations of Expo City Dubai. It is expected that all tenants and those working on their behalf embrace this commitment and ensure that activities are carried out safely and do not place visitors or workforce at risk.

The Health, Safety and Environment (HSE) Standards, herein referred to as the “Standards”, supports Expo City Dubai’s commitment to care and defines the HSE requirements that apply to all organisations, tenants and those working on their behalf, throughout the planning, delivery and operations of the site. The Standards enable robust HSE management for all activities and ensure compliance with applicable HSE laws and regulations.

Readers of this document must make note of the following:

- The Standards are mandatory for all Expo City Dubai tenants and those working on their behalf and any other entity engaged to perform work as part of or on behalf of Expo City Dubai.
- The Standards apply to all activities undertaken at Expo City Dubai.
- All tenants and those working on their behalf must familiarise themselves with these Standards and ensure that they are adhered to by contractors and service providers, including any subcontractors.
- The Standards assist tenants and those working on their behalf in the planning and delivery of safe operations and establish requirements for the provision of HSE resources.
- Where tenants and those working on their behalf may have their own systems for managing HSE these arrangements can be maintained. However, alternative systems must meet these Standards.
- Compliance with the Standards will be evaluated through Expo City Dubai assurance activities, including audits and inspections.

2 Expo City Dubai Health, Safety and Environment (HSE) Strategy

Expo City Dubai adopts an integrated approach to the management of Health, Safety and Environment (HSE). The HSE strategy is under the banner of Better Together, delivered through the following key documents:

- Policy – The HSE policy establishes core values, strategic pillars and provides a framework for setting objectives and targets.
- Commitments – The HSE Commitments focus on leadership behaviours that are required to develop a positive HSE culture.
- Standards – The HSE Assurance Standards define detailed requirements applicable to operations.
- Legislation – The HSE laws and regulations of the UAE and Dubai establish fundamental compliance requirements.

2.1 HSE Policy

Expo City Dubai's HSE Policy is founded upon three core values of Care, Respect and Pride. The values represent the following:

- Care: We care for about our visitors and workforce and protecting their health and safety.
- Respect: We respect the environment and promote sustainable practices.
- Pride: We take pride in the work that we do and strive for operational excellence.

The HSE Policy can be obtained from Expo City Dubai's HSE team at hsqe@expocitydubai.ae. The Policy is supported by a commitment to implement local requirements and international best practice standards and leave a lasting legacy related to HSE in the UAE.

2.2 HSE Commitments

Expo City Dubai's HSE Commitments provide organisational and leadership behaviours linked to the six pillars in the Better Together strategy:

- Leadership – demonstrating visible leadership and setting a personal example.
- Communication – communicating a shared vision and building a culture of trust.
- Competency – improving competence and supporting the development of others.
- Engagement – encouraging participation, ownership and empowerment.
- Reward and Recognition – focusing on positive reinforcement and rewarding excellence.
- Continual Improvement – driving continual improvement and innovation.

The HSE Commitments can be obtained from Expo City Dubai's HSE team at hsqe@expocitydubai.ae.

2.3 Legal and Other Requirements

All tenants and those working on their behalf must comply with local legislation and Expo City's requirements. As a minimum, all activities will be carried out in compliance with the following:

- United Arab Emirates Federal Laws.
- DM local laws and ministerial decrees.
- DM Codes and Technical Guidelines.
- UAE Ministry of Human Resources and Emiratization requirements.
- Ministry of Climate Change and Environment requirements.
- Expo City Dubai HSE Policy and Assurance Standards.
- UAE Fire and Life Safety Code 2018.
- Contractually specified international standards and codes of practice.

- Relevant manufacturer's instructions and guidelines.

Where the Standards and legal requirements conflict, compliance must be in accordance with the most stringent. Where any discrepancies exist, these shall be brought to the attention of Expo City Dubai's HSE department.

Expo City Dubai has developed a HSE Legal Register based on Federal and local HSE laws and legislation, their articles and requirements, applicable to the activities and operations taking place at site. The HSE Legal Register aims to support tenants and those working on their behalf in meeting statutory HSE requirements. The register is a live document subject to continuous review and update. A copy of the HSE legal register can be obtained from the HSE team at hsqe@expocitydubai.ae.

2.3.1 Environment Permits

Specific activities or aspects may require an Environmental Permit or No Objection Certificate (NOC) from Dubai Municipality Environment Department (DM ED). Tenants and those working on their behalf must obtain and maintain the relevant permit prior to start of applicable activity. Table 2-1 lists, some of the activities that would require environment permits.

The list is non-exhaustive and other environmental permits might be requested as deemed necessary by the relevant authorities.

Table 2-1. Activity-specific Environmental Permits or NOCs

Activity	Permit Type
Storage of Dangerous Goods (Chemicals)	Dangerous Goods Storage Permit from DM EPSS
Setting up Temporary / New Facilities e.g. Waste to Energy Plant, Composting Plant, etc.	Permit for construction and/ or operation of temporary / new facilities from DM EPSS
Groundwater Well Drilling	Permit for groundwater well drilling from DM NRCS –
Groundwater Reuse	Groundwater Use License from DM NRCS
Tie-in to DM sewer network	Permit for temporary connection to a sewerage network (From Drainage and Irrigation Department (DID))
Tie-in to DM TSE network	Permit for connection with irrigation network system to receive treated wastewater (From DID)
Hazardous waste / Special Waste / Waste disposal	Permit for waste / hazardous waste disposal
Wastewater Treatment / TSE Polishing / Groundwater Treatment	Clearance or NOC for the treatment of wastewater or TSE polishing plants from DM EPSS (if reject water will be reused)

3 Expo City Dubai Operations

The Standards cover all aspects of Expo City Dubai operations as detailed below. It is important to be aware of the key HSE roles and responsibilities throughout these operational phases.

3.1 Construction and Overlay Operations

Construction and Overlay operations are to be managed by relevant Contractors and Supervision Consultants. During construction and overlay operations, the individual sites function under Expo City Dubai's Construction Health and Safety and Environment Assurance Standards and Contractor's health and safety policies and procedures. All visitors to site, including Expo City Dubai employees, will be required to meet Contractor requirements for induction, Personal Protective Equipment (PPE) and other health and safety controls when accessing the site for areas under control of the main construction or overlay Contractors.

Any construction and/or overlay activities must adhere to the health and safety requirements specified in Expo City Dubai's Construction Health and Safety Assurance Standards, and to the environment requirements specified in Expo City Dubai's Construction Environment Assurance Standards. Copies of these standards can be obtained from the HSE team at hsqe@expocitydubai.ae.

3.2 Events and Entertainment Operations

Some areas may undertake a transition or temporary build during Events and Entertainment Operations, and some construction work may also be undertaken. These transitions / builds will be subject to separate planning and where required suitable Contractors / suppliers will be engaged to support these activities. Access to the site will be controlled through Expo City Dubai Security and all personnel undertaking work will be required to meet Expo City Dubai's relevant health and safety requirements for access at this time.

Any work undertaken that may affect other personnel is to be suitably segregated and secured to ensure no unauthorised access to the site. Where equipment is to be moved onto site this is to be coordinated through the Delivery Management System (DMS) and only undertaken when safe passage can be assured. Any work activities will be subject to approval from venue operators and require appropriate risk assessments and method statements prior to commencing work.

3.3 Expo City Dubai Site Operations

Expo City Dubai Community Operations will be responsible for the day to day management of the site. Any work undertaken within this scope of work, that may affect other personnel, is to be suitably segregated and secured to ensure no unauthorised access to the work area is permitted. Where equipment is to be moved onto site this is to be coordinated through the Delivery Management System (DMS) and only undertaken when safe passage can be assured. Any work activities will be subject to approval from venue operators and will require appropriate risk assessments and method statements prior to commencing work.

3.4 Tenant Fit-Out Operations

Expo City Dubai has prepared a Fit-out Delivery Guide to support Tenants in the delivery process of their premises, and to inform them of the requirements and standards for the fit-out works within their spaces. The main steps for the delivery process are:

- Set-Up
- Design
- Requirements Prior to Construction
- Construction

- Move Out and Removal.

Access to fit out areas is to be controlled through the relevant Contractor and all personnel will be required to meet induction and other relevant HSE requirements.

3.5 Tenant Operations

Expo City Dubai expects that all organisations, tenants and those working on their behalf will manage their operations so as to reduce HSE risks to visitors and workforce, and anyone else that may be affected by their activities. This will require robust planning to ensure that specific hazards are identified and measures are put in place to reduce risks to an acceptable level.

All Organisations, tenants and those working on their behalf must ensure that they provide plant and equipment to undertake the work safely. This equipment is to be suitable for the task and maintained in accordance with the manufacturer's instructions. All plant is only to be operated by a competent person and where applicable relevant licenses must be held.

All Organisations, tenants and those working on their behalf will have a significant role in ensuring safe work behaviours and practices on site. They will need to attend/undertake a site-specific induction prior to accessing site. A process to enable consultation and communication with relevant parties on HSE risks must be implemented.

All Organisations, tenants and those working on their behalf will be responsible for establishing any requirements for PPE in line with site-specific risk assessments and method statements (whilst continuing to address and control risks beyond reliance on PPE as a control measure). There may be general site-specific PPE requirements and compliance with this must be ensured.

All organisations, tenants and those working on their behalf must ensure that they provide access to adequate welfare arrangements and first aid facilities. In addition, sufficient staff should be trained in first aid and fire fighting.

3.6 Ad Hoc Events

It is expected that events will be held at Expo City Dubai on a regular basis; this may include small-scale events and activities, such as launches, media events and publicity campaigns but also large-scale events such as music concerts, festivals and exhibitions. It is essential that organisers of these events plan and deliver them safely, including submission and approval of relevant documentation prior to mobilisation for the event or activity area.

Appendix A includes a Health, Safety and Environment Management Plan (HSEMP) template, detailing all the items to be addressed in planning the event / activity, including, risk assessment, logistics management, worker welfare and management of significant HSE risks.

If the event is undertaken by an external Contractor then it is permitted for the Contractor to develop the HSEMP. However, ultimate responsibility for review and approval of the HSE arrangements sits with the Event Organiser.

4 Roles and Responsibilities

The following section provides an overview of operational roles and responsibilities. The roles and responsibilities are provided as indicative, not an exhaustive list. It is expected that all organisations supporting Expo City Dubai establish clear responsibilities and accountabilities across all levels of their organisation.

4.1 Expo City Dubai

Expo City Dubai has an overarching responsibility to ensure sound HSE management to protect all workforce and visitors and to ensure that their activities do not place any other person at risk. The general HSE responsibilities of Expo City Dubai are as follows:

- Provide leadership, direction and support for the implementation of these Standards and the HSE Policy.
- Ensure the provision of sufficient competent resources.
- Liaise with government authorities and other stakeholders regarding compliance with HSE laws and other requirements.
- Establish forums to promote a collaborative approach to HSE leadership and management.
- Work collaboratively with all Organisations, Tenants and those working on their behalf to ensure activities are coordinated to ensure the health and safety of all personnel.
- Appoint competent resources and ensure that designers, consultants, contractors and sub-contractors have the skills, knowledge, experience and organisational capability.
- Assist in compiling pre-mobilisation and specific HSE information, including risk assessments and safe work procedures for communication to relevant organisations as required.
- Procure, review, and manage the delivery of environmental studies, sensors, plans, where required.
- Evaluate performance and monitor compliance with environmental requirements over the entire site.
- Make critical health and safety decisions in a timely manner.
- Report and investigate any incidents and implement corrective actions to prevent recurrence.

4.2 Senior Leadership

Senior Leadership, across all organisations is responsible for ensuring that HSE is embraced at a strategic level and integrated into planning and operational delivery. The commitment from Senior Leadership will define the HSE culture and have a significant impact on HSE related behaviours.

Senior Leadership are responsible for:

- Demonstrating visible leadership on HSE.
- Supporting the implementation of HSE policies and procedures.
- Allocating sufficient resources for HSE.
- Communicating HSE updates and information.
- Attending relevant HSE training and supporting the development of others.
- Encouraging workforce involvement and participation in HSE.
- Recognising positive HSE behaviours at an organisational and individual level.
- Driving continual improvement and innovation in HSE.

4.3 Department Heads

Department Heads are responsible for:

- Ensuring good HSE practice within their areas of control.
- Supporting Senior Leadership in delivering safe operations at Expo City Dubai.
- Implementing HSE policies and procedures.
- Ensuring workforce within their department have adequate knowledge, training and skills to carry out their HSE responsibilities.

- Attending relevant health and safety related training.
- Reporting and investigating HSE incidents within their area of control and ensuring control strategies are established and implemented.

4.4 Managers

Managers are responsible for:

- Implementing and ensuring good HSE practices within their respective Departments or Areas.
- Developing and implementing HSE risk assessments and plans.
- Ensuring that relevant controls are implemented to reduce risks and ensuring the health, safety and welfare of all workers.
- Monitoring HSE performance and taking action to address issues.
- Creating a safe environment for everyone working or visiting Expo City Dubai and ensuring that their activities or operations do not compromise HSE.
- Reporting and investigating HSE incidents within their area of control and ensuring any improvement measures are implemented.

4.5 Workforce

All Workforce are responsible for:

- Taking care of the environment and their own health and safety, and that of others who may be affected by activities.
- Following any reasonable instruction aimed at protecting their health and safety while at work and using any equipment provided to protect their health and safety appropriately.
- Identifying possible HSE hazards, implementing controls, and reporting hazards to their manager or supervisor immediately.
- Reporting any HSE incidents to their supervisor and if they feel that their health and safety is compromised and there is an imminent risk stopping the task and immediately reporting the unsafe situation to their supervisor.

4.6 Contractors

Contractors including service providers and suppliers are responsible for:

- Adhering to the requirements specified within Expo City Dubai's HSE Assurance Standards and cascading this information to sub-contractors.
- Ensuring compliance with the Expo City Dubai and/or their own HSE policies and procedures.
- Developing and implementing safe systems of work supported by the relevant documentation including risk assessments, methods statements etc.
- Monitoring HSE performance and taking action to address issues.
- Creating a safe environment for all those working or visiting Expo City Dubai and ensuring that their activities or operations do not compromise HSE.
- Ensuring workers within their organisation have adequate knowledge, training and skills to carry out their HSE responsibilities.
- Provide training and inductions to workers engaged to deliver services on their behalf.
- Reporting and investigating HSE incidents within their area of control and ensuring control measures are implemented.

4.6.1 Contract Owner

Expo City Dubai Functional Areas procuring products or services from external organisations must ensure contractors are made aware of and adhere to the requirements specified within Expo City Dubai Community HSE Assurance Standards. The Contract Owner is responsible for ensuring contractors implement effective HSE practices and submit the relevant HSE documentation. The Contract Owner is also responsible for monitoring contractor activities and ensuring HSE issues are identified and resolved.

4.7 Visitors

Expo City Dubai has a responsibility to protect the health and safety of visitors attending venues or participating in events at the Site. Visitors are ultimately responsible for their own health and safety and to ensure the health and safety of others who may be at or around the areas they access.

Members of the public who visit Expo City Dubai are required to comply with any reasonable instructions given to them to protect their health and safety.

For some visitors, depending on the activities being conducted, and the site conditions, an escort may be required to ensure they are not inadvertently exposed to any HSE risks.

Any HSE incident involving a visitor at Expo City Dubai is to be reported to the Venue Manager and Expo City Dubai's HSE team for notification and investigation as required.

4.8 Venue Manager / Landlord

The Venue Manager / Landlord has control of a venue, or is handed the venue for operational purposes, with responsibility for ensuring that the daily operations at a venue are conducted in accordance with HSE requirements to protect Workforce and visitors. The Venue Manager / Landlord will be required to ensure HSE consultation and cooperation arrangements with all relevant stakeholders to ensure that operations are effectively controlled. The Venue Manager / Landlord is responsible for monitoring and reviewing activities and where necessary implementing immediate controls to reduce HSE risks.

The Venue Manager is to ensure that the Venue Operating Plan and all related HSE documentation is completed and submitted to Expo City Dubai HSE for review prior to the venue commencing operations.

The Venue Manager / Landlord has the authority to direct operations at the Venue to ensure health and safety, and will be supported where necessary by the Expo City Dubai's HSE department.

4.8.1 Venue Owner

The Venue Owner is an organisation, person, department or Functional Area (FA) that is typically responsible for:

- Holding accountability for the venue and its associated assets.
- Ensuring the operational success of the venue from a reputational, financial and HSE perspective.
- Appointing/Hiring/Agreeing the operator.
- Holding accountability for the health, safety and welfare of its guests, visitors and staff.
- Sourcing Service Providers.
- Determining service levels in line with overall site requirements.
- Undertaking overall budget development, management and accountability.
- Signing-off the venue operating structure and plans.
- Approving and procuring content.
- Determining the commercial model. e.g. ticket prices.
- Leading strategic planning – e.g. if visitation numbers are low develops strategy to increase visitation in line with Expo City Dubai site coordination.
- Acting as the tenant and is accountable for the venue handover process.
- Ensuring completion and submission, as applicable, of the Health, Safety and Environment Management Plan, detailed in Appendix A, prior to operations.
- Ensuring that venue-specific inductions are conducted as required.

4.8.2 Venue Operator

The Venue Operator is an organisation, person, department or FA which works for the owner in:

- Managing the operations of the venue for an agreed period of time at an agreed moment in time.
- Holding responsibility for the planning and delivery of the venue operations on behalf of the venue owner.

- Holding responsibility for the health, safety and welfare of its guests, visitors and staff on behalf of the owner, including development of the venue emergency action plans and acts as Venue Warden in the instance of an emergency.
- Managing supplier operations on behalf of the venue owner and the associated cross-functional venue services e.g., facility management, access control, cleaning etc.
- Ensuring service levels are met and maintained throughout the event.
- Holding budgetary responsibility for the operations.
- Delivering operations as per the operating structure.
- Providing operational support for the delivery of content.
- Operating within the constraints of the commercial model.
- Providing operational planning and delivery.
- Conducting venue-specific inductions as required.
- Ensuring completion and submission, as applicable, of the Health, Safety and Environment Management Plan, detailed in Appendix A, prior to operations.

4.9 Supervision Requirements

All organisations, tenants and those working on their behalf are required to provide sufficient resources to ensure adequate supervision of all venue related activities.

The ratio is at least one working supervisor per 12 employees and one non-working supervisor per 36 employees. The supervisor must be on site and regularly monitoring operations. The supervisor is responsible for ensuring tasks are conducted in a safe manner and adequate tools and facilities are provided.

All organisations, tenants and those working on their behalf must ensure that a risk assessment is provided to demonstrate why these ratios have not been met and the mitigations in place to ensure adequate supervision. A risk assessment may also determine that increased levels of supervision are required, particularly for complex activities or night work.

4.10 HSE Documentation Requirements

All organisations, tenants and those working on their behalf are to ensure that all relevant HSE documentation is provided prior to their operations commencing. The table below provides guidance on the expectations and supporting paperwork to be provided to the Organiser by All organisations, tenants, contractors and service providers.

4.10.1 Standard Operations

All organisations, tenants and those working on their behalf must be able to provide documented evidence of safe systems of work to protect workforce and visitors. All organisations must ensure their daily operations are conducted safely to ensure their activities do not harm the environment.

The HSE requirements for standard operations (business as usual activities) must be captured in detail through the following documentation:

Table 4-1. HSE Documentation Requirements

Requirement	Further Information / Advice / Examples	Completed / Supplied
Scope of Work and Timelines.	Provide a scope of work and applicable timelines or timeframes for events / activity.	☐
Staffing / Manning.	Provide an overview of staffing and manning requirements for operation.	☐

Requirement	Further Information / Advice / Examples	Completed / Supplied
Operating Plan.	Provide a copy of the operating plan for all planned event activities and deliverables. NB: Depending on the scope of work an operating plan may be required for site wide activities or 'venue operating plan' for operations within a designed space or building.	☐
Risk Assessment.	Details of the specific hazards, risks and controls associated with the event operations. This can be included in the operating plan or a separate document.	☐
Impact/Aspect Register	Hazard/aspect identified from environment risks. This may be integrated in the risk assessment.	☐
Emergency Management Process / Procedures.	Provide a copy of Emergency Management Process / Procedures, including the Emergency Action Plan.	☐
Incident Management Process / Procedures.	Provide a copy of Incident Management Process / Procedures.	☐
Insurance / Public Liability.	Provide a copy of the current public liability and worker's compensation (where appropriate).	☐
Health and Safety Policy.	Provide a copy of Health and Safety Policy. Generally, a one-page document demonstrating commitment to health and safety.	☐
Appropriate licenses and authorisations for the work.	Provide a copy or details of any specific licenses and or competency for workers to undertake work applicable to the event / activity operation. This should be recorded within a training matrix.	☐
Competent Persons.	Provide a copy of the CV for the competent person in the organisation responsible for providing health and safety advise.	☐
Vehicles, Plant and Equipment.	Provide details of vehicles, plant and equipment to be used, including arrangements for inspections and maintenance.	☐
Sub-Contractor Information.	Provide details of any sub-contractors engaged or likely to be engaged, along with evidence of how the Contractor has been assessed.	☐
Environment Permits and Licenses.	Provide a copy of environmental permits or NOC (where applicable) to undertake the activity.	☐

4.10.2 Build, Installs and Dismantles

All organisations, tenants or those working on their behalf must have a safe system of work established prior to commencing any construction related activities. This would apply predominately during the overlay or load in phase or anytime during an event where a build, install or dismantle is required. Requirements differ from standard operations as building an asset or installing or dismantling a structure will require additional information.

The health and safety requirements for builds, installs and dismantles must be capture in detail through the following documentation:

Requirement	Further Information / Advice / Examples	Completed / Supplied
Risk Assessment.	Details of the task specific hazards, risks and controls associated with the build, install or dismantle.	☐
Method Statement.	A method statement must include: • Scope of work • Timelines • Overview of staffing requirements • Roles and responsibilities including HSE • Tools and equipment • Step by step instructions and clear sequence of work including safety controls • Detailed emergency arrangements including fire, medical and rescue plans (if required).	☐
Approved Design.	Any temporary structures will require an approved design, depending on the structure and risks associated with it, independent third party sign off from a DM approved organisation may also be required.	☐
Incident Management Process / Procedures.	Provide a copy of Incident Management Process / Procedures.	☐
Insurance / Public Liability.	Provide a copy of the current public liability and worker's compensation (where appropriate).	☐
Appropriate licenses and authorisations for the work.	Provide a copy or details of any specific licenses and or competency for workers to undertake work applicable to the event / activity operation. This should be recorded within a training matrix.	☐
Competent Persons.	Provide a copy of the CV for the competent person in the organisation responsible for providing health and safety advise.	☐
Vehicles, Plant and Equipment.	Provide details of vehicles, plant and equipment to be used, including arrangements for inspections and maintenance.	☐
Sub-Contractor Information.	Provide details of any sub-contractors engaged or likely to be engaged, along with evidence of how the Contractor has been assessed.	☐

4.10.3 Special Events

Where an event organiser or those working on their behalf is hosting an event / activity including any associated event for Expo City Dubai, they are responsible to provide sufficient HSE information prior to an event / activity to the venue operator and Expo City Dubai.

The organisation must provide the following information specific to the event / activity to Expo City Dubai for review:

Requirement	Further Information / Advice / Examples	Completed / Supplied
Health, Safety and Environment Management Plan.	Provide a copy of the Health, Safety and Environment Management Plan (HSEMP) for special events. A HSEMP details the approach to managing HSE for special events which fall outside of normal (business as usual) operations.	☐

5 Prequalification and Tender Requirements

All organisations, tenants and those working on their behalf must only engage suppliers that can demonstrate a commitment to HSE. HSE should form a fundamental part of any supply chain prequalification and tender process where the organisation must demonstrate comprehensive and robust HSE arrangements. Where improvements are required, action plans must be developed and agreed prior to contract award.

All organisations, tenants and those working on their behalf are responsible to ensure that these Standards are effectively cascaded and implemented throughout their supply chain.

5.1 Contract Health and Safety Requirements

5.1.1 Pre-Contract Request

All requests for tender or quotation are to include Expo City Dubai's HSE Policy and Assurance Standards and organisations are required to indicate compliance with these requirements.

5.1.2 Requirements for Suppliers

Where the level of work is restricted to the supply of equipment it must be ensured that the equipment is safe and the supplier has a system to ensure their own health and safety as part of this process. There may also be requirements to ensure that items imported to the UAE meet the applicable Standards and comply with local requirements. Relevant health and safety information is also to be provided with the equipment that details the safe installation and operation of the equipment. Safe disposal instructions should also be provided. Suppliers are required to indicate compliance with Expo City Dubai's HSE Policy and Assurance Standards.

5.1.3 Requirements for All organisations, tenants

Where a service or function requires a contractor to access or work on the Expo City Dubai site, a minimum set of health and safety requirements are to be included within the scope of the works. The HSE Policy and Assurance Standards are to be provided. A set of health and safety questions to be included can be provided by Expo City Dubai's HSE department. These can form the basis for more detailed questions, but are considered a minimum standard for operating at Expo City Dubai.

5.1.4 Review and Evaluation

At the evaluation stage the health and safety responses can either be reviewed by the Department requesting the service, or where required by Expo City Dubai's HSE department. It is expected that the tenderer provides suitable evidence to demonstrate and justify that they have a system for HSE management and Expo City Dubai may request specific responses. Where insufficient evidence is provided this is to be reflected in the technical evaluation and may require further information to be requested.

Where the tenderer provides either a niche service or function, and their submission does not meet the requirements, it may be necessary to include the tenderer for further evaluation. This should only be decided in consultation with Expo City Dubai's HSE and Procurement departments. Where this occurs, this should be identified as a risk associated with the contract with a view to Expo City Dubai working with the contractor to establish HSE processes that will meet the minimum requirements.

5.1.5 Contract Award and Establishment

Once a contract is successfully awarded the successful applicant can be provided with additional information to enable them to operate safely on Expo City Dubai. Within the scope of requirements, the HSE Policy and Assurance Standards must be included.

Where required Expo City Dubai's HSE function should be invited to the contract kick-off up meeting to reinforce the Standards and requirements for HSE.

All organisations, tenants and those working on their behalf will be required to provide Expo City Dubai updated and specific risk assessments and procedures to support their activities prior to commencing work.

5.1.6 Contract Delivery and Monitoring

Once the All organisations, tenants and those working on their behalf have commenced work with Expo City Dubai, the relevant Contract Owner is responsible for ensuring the implementation of the HSE arrangements provided within their documentation. Expo City Dubai's HSE function will conduct assurance activities based on these activities and the associated level of risk.

All organisations, tenants and those working on their behalf are required to provide any relevant information and notifications to the Organiser in accordance with the requirements in these Standards related to Incident Reporting and Investigation.

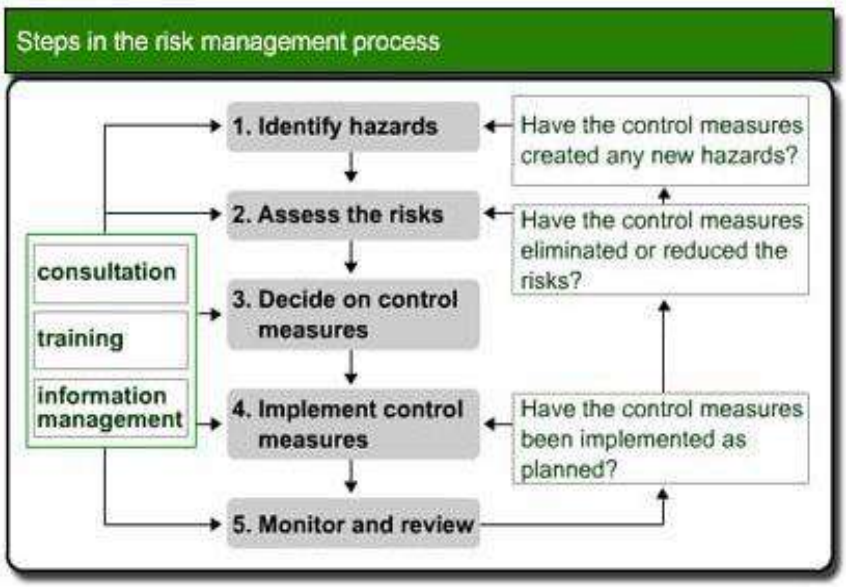
6 Risk Management

Risk assessment is central to proactive HSE risk management. Expo City Dubai expects all organisations, All organisations, tenants, tenants or those working on their behalf to assess HSE risks associated with operations and ensure suitable precautions are in place.

6.1 Risk Management

Risk management is a problem-solving process aimed at defining problems (identifying hazards), gathering information about them (assessing the risks) and solving them (controlling the risks). Where a control has been used to address an identified hazard, this should be evaluated by checking the effectiveness of the control. The risk management process should be reviewed periodically, particularly following significant change.

Figure 6-1. Steps in Risk Management



An HSE risk management process is detailed in Appendix B that is intended for use by All organisations, tenants and those working on their behalf.

6.2 Risk Assessments

Risk assessment is the process for:

- Identifying hazards.
- Establishing who may be harmed and how.
- Analysing or evaluate the risk associated with that hazard.
- Determining appropriate ways to eliminate or control the hazard.

The HSE risk assessment is conducted to identify hazards and risks associated with event operations and to formally record the controls that need to be implemented to reduce the risk to an acceptable level.

A risk assessment is a thorough analysis of a venue or workplace to identify items, situations, processes, etc. that may cause harm, particularly to people or the environment. After hazard identification, the likelihood and severity of the risk needs to be assessed to determine what measures should be in place to effectively prevent or control the harm from arising. It is important that all controls identified in the HSE risk assessment are implemented in practice.

It is critical to engage and consult with the workforce performing the activities to ensure hazards, risk and controls identified are effective, achievable and reflect operational reality.

Expo City Dubai expects all organisations, tenants and those working on their behalf to conduct risk assessments associated with their operations. Risk assessments should be proportionate and tasks specific, in terms of the level of detail in consideration of the nature of the activity and complexity of the risks involved.

A risk assessment can be incorporated into operational plans or be captured in a standalone document. All venue operating plans must include an HSE risk assessment addressing specific risks associated with venue operations.

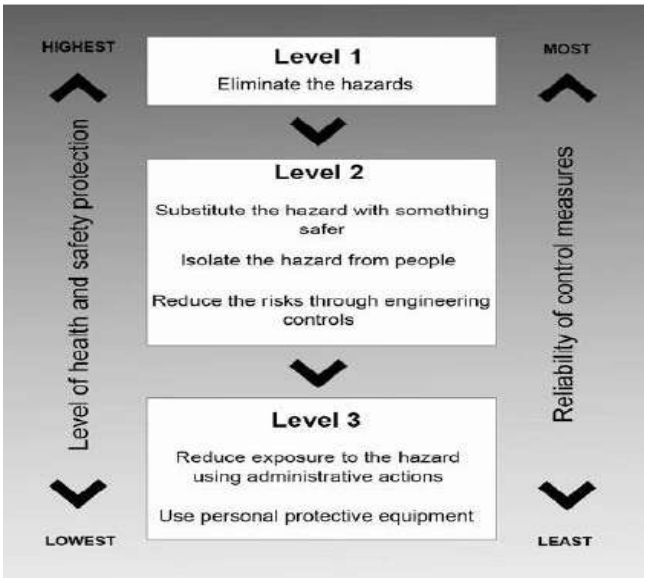
6.2.1 Contractors and Services Providers

All works undertaken by contractors (including sub-contractors) and service providers is required to have an approved HSE risk assessment and/or method statement or operating plan. The HSE risk assessment and method statement has to be submitted to Expo City Dubai for review and approval prior to works commencing. Where routine tasks are undertaken across a number of locations, a generic risk assessment can be prepared and utilised. However, if there is a significant change in activity or following an incident (regardless of severity) the tasks must be reviewed and a specific HSE risk assessment developed and implemented.

6.3 Hierarchy of Control

When identifying ways to minimise or control risk, the hierarchy of control should be considered. All organisations, tenants and those working on their behalf must always aim to eliminate the hazard, which is the most effective control. If it is not possible then attempts must be implemented to reduce the risk to an acceptable level.

Figure 6-2. Hierarchy of Control



The hierarchy of control incorporates controls from the most effective (elimination) to the least preferred, typically Personal Protective Equipment (PPE). Only where all other controls have been considered should PPE be implemented as a precaution.

6.4 Risk Profiling

All organisations, tenants and those working on their behalf must plan ahead to identify upcoming risks associated with their operations and activities. An appropriate daily and/or weekly look-ahead

should be incorporated into briefings or meetings to ensure that HSE risks are identified, assessed and appropriately controlled.

6.5 Monitoring and Compliance

All organisations, tenants and those working on their behalf must ensure that an internal monitoring process is developed, which can include inspections and audits, to validate the implementation of the HSE risk assessment. The HSE monitoring programme should encompass any activities undertaken by workers, contractors and service providers, with findings monitored and closed out in a timely manner. This can be achieved by inspections, audits and regular reviews of activities and associated safe systems of work, supplemented with external reviews as required. Where high risk operations are undertaken, consideration should be given to obtaining specialist HSE advice as necessary.

Expo City Dubai will conduct HSE assurance activities relevant to the scope of the works being undertaken to ensure compliance with these Standards.

6.6 Communication

The HSE risk assessment should be communicated to people involved in the activities, to ensure that everyone is aware of the controls in place and their responsibilities. Consideration should be given to potential barriers to communication, particularly when communicated HSE information to a diverse workforce.

HSE hazards and risks may be discussed during briefings, functional meetings or formally shared via alerts, site-wide instruction or signage. If several duty holders are affected by the same risks information on relevant controls should be communicated.

6.7 Method Statements

This section only applies to construction related activities where there is a particular sequence of work that must be followed. This will apply to temporary structures, overlay or fit out works. The Method Statement is conducted following a risk assessment and clearly defines, in detail, the step by step methodology required to complete the activities safely. For construction work the method statement must be approved by the relevant engineer, but for other works this should be approved by the organisation or entity undertaking the work. The method statement and risk assessment should be submitted to the Organiser for review a minimum of 14 days prior to works commencing.

Where an organisation, event organiser, tenant or those working on their behalf has an established system for the production of risk assessments and method statements this can be utilised and submitted to Expo City Dubai for review. In addition to the health and safety risk management process detailed in Appendix B, guidance on the development of method statements is enclosed in Appendix C. This guidance has been produced to assist organisations, tenants and those working on their behalf in providing site management staff with a satisfactory standard of health and safety method statement, which clearly identifies the key health and safety arrangements to be implemented on-site in respect to the control of risks associated with their site operations/tasks.

Method statements are to be communicated to all relevant workforce and a copy should be available on site while the works are being undertaken. The method statement can be communicated to those involved in the task through a variety of ways, including pre-task briefings and toolbox talks. Records of training and communicating the requirements of the method statement should be retained.

Where generic tasks are undertaken across a number of locations a generic method statement can be prepared and utilised. However, there must be a system that assesses on site hazards and where required adjusts the method statement in light of these hazards. Method statements must be documented and be readily available on site.

6.8 Permits to Work

For high risk activities, Expo City Dubai requires a permit-to-work system to be adopted. The majority of these permits will be under the direct issue and control of Expo City Dubai Landlord function or an appointed organisation approved to oversee the permit process which may include Contractors or venue owners. Organisations, tenants and those working on their behalf must ensure permit system arrangements are reviewed and approved by Expo City Dubai and must include details covering authorised persons, specific control measures, training requirements and obtaining and rescinding permits. Due to the high-risk nature of these activities, it is expected that Expo City Dubai will regularly monitor permitted works.

As a minimum, permit systems are required to include the following permits:

- Permit to dig, disturb or penetrate ground.
- Hot Works.
- Confined Space.
- Electrical and Mechanical (Lock Out Tag Out/Isolation).
- Restricted Access.
- Work at Height (Rope Access Works)

7 Communication and Engagement

7.1 HSE Consultation

Effective consultation is required to ensure that HSE matters are discussed with workforce and where a shared duty or responsibility exists with other duty holders that HSE arrangements are communicated. Venue operators are also encouraged to establish forums for HSE consultation with operational teams.

Expo City Dubai has established various forums to provide an opportunity to raise concerns and to enable the cascade of information and consider workforce input to HSE decisions. Where decisions and guidance is required, items can be escalated via the agreed command and control structure.

7.2 HSE Communication

Effective HSE communication is essential to ensure that relevant information is provided across Expo City Dubai and personnel are aware of key issues and how they can ensure they are meeting their HSE responsibilities. HSE communication will be both proactive to provide relevant information and updates and reactive to address specific problems, or as the result of an incident. In all communication the following is a reminder:

- Communications must take into consideration the literacy levels and languages spoken by the workforce while planning communications, which may require the provision of translators to communicate instructions to the workforce.
- The standards of HSE competence and training requirements required within the workforce remain the same regardless of origin and/or language spoken.

To enable effective communication a number of mediums will be used, as detailed in the following sections.

7.2.1 Routine HSE Notices and Emails

Proactive communication will be used to communicate non-urgent HSE matters through routine notices, emails and input to planning meetings, working groups etc. The focus of these communications is to raise awareness across workforce of their responsibilities and communicate changes in HSE legislation and Expo City Dubai's Standards.

HSE campaigns and communications may also need to be shared with external organisations and contractors and service providers, this will be communicated to functional area representatives to distribute relevant communications.

7.2.2 HSE Alerts

Reactive communication will be used to issue essential information where an imminent risk to HSE has been identified following an incident, inspection or hazard identification process, and will be issued through an HSE Alert. HSE Alerts, where required, will be issued within 24 hours of the issue being identified and sent to all. It will be necessary for team meetings or briefings to include applicable HSE Alerts as an agenda item to ensure the information is disseminated to relevant workforce. Where necessary all organisations, tenants and those working on their behalf will also receive HSE Alerts, and the Venue Manager will be responsible to ensure that all relevant personnel are any immediate actions.

7.2.3 Inductions

Inductions are conducted to familiarise personnel with the hazards and controls relevant to the Site, Zone, Sector or Venue. All workforce are to be inducted to ensure they are aware of any specific hazards, activities and relevant emergency procedures. Key functions or space owners (or their representative) will ensure that site inductions are available and are delivered; however, all workforce must ensure that they receive an induction when attending a new venue where they have not been.

All organisations, tenants and those working on their behalf must ensure all workforce receive the following HSE information prior to commencing any operations:

- HSE roles and responsibilities.
- Information on HSE hazards and risks.
- Mandatory controls and site rules.
- Emergency procedures.
- How to report HSE incidents and observations.

A record of inductions is to be maintained by the Venue Manager or nominated representative. Inductions are to be developed in consultation with Expo City Dubai's HSE department. Where an induction cannot be provided, or the nature of work is a visit, the individual can be escorted by a fully inducted person who is responsible for their health and safety whilst on the site and should be present at all times whilst on site.

7.2.4 Pre-Start Task Briefing

When commencing an activity or work task a pre-start briefing should be conducted that addresses specific HSE issues associated with the Site, Zone, Sector or Venue, or the activity. These may be associated with the risk management process or an opportunity to share HSE information. These briefings should allow both the provision of relevant HSE information (communication) and enable a forum to discuss relevant issues (consultation). These are held onsite where the activity is to be conducted to ensure that all personnel are aware of the task sequence and related hazards, risks and controls, and any considerations that may affect the activity.

Where shared duty holders are onsite it is an opportunity to discuss other activities that may impact on operations within the Site, Zone, Sector or Venue. HSE Alerts should be routinely discussed at these forums.

Where a person is inducted but not routinely attending the specific site for work e.g. office based staff or visitors, they must have a specific brief on any hazards and controls that may have changed since their induction prior to accessing the site. No person is to be operating / visiting the Site, Zone, Sector or Venue without being briefed on the current hazards and risks.

7.2.5 Briefings

All organisations, tenants and those working on their behalf must ensure that safety toolbox meetings / daily briefings are held on-site. The organisation's management or supervisor must select a suitable topic and address the workforce on the relevant safety requirements. The delivery of functional area briefings should reinforce the Expo City Dubai HSE Policy, Standards and key programmes, such as the Promises.

Toolbox talks (for contractors and service providers) / daily briefings must be compliant with the following:

- Frequency of meeting: Daily.
- Duration of meeting: Typically, no less than 10 minutes. However, may be longer to cover key information, risks and controls.
- Attendance: All workforce.
- A record of each briefing / toolbox talk listing attendees must be maintained.

7.3 HSE Cooperation and Coordination

Effective HSE cooperation and coordination is required to ensure that HSE matters are discussed, and HSE arrangements clarified where a shared duty or responsibility exists. Cooperation and coordination between duty holders is essential to ensure that HSE hazards and risks are addressed and that consistent application of controls is established and maintained. It also ensures that where multiple duty holders are operating on site that all workforce are aware of HSE hazards and how to avoid or control exposure.

Within Zones, Sectors and Venues, Managers will need to establish mechanisms to ensure that all activities are coordinated to reduce HSE risks and ensure a safe environment is maintained. This can include involving relevant representatives at start up meetings, briefings or specific HSE meetings or

walk throughs to discuss relevant issues. Where conditions change throughout the day, or the activities change, ad hoc coordination meetings may be necessary to ensure the controls remain effective and all personnel are aware of the change.

8 Training and Competence

All organisations, tenants and those working on their behalf must ensure organisations and individuals working on Expo City Dubai are competent. Every organisation should have a system in place to identify and assess competency which includes skills and experience in addition to training requirements. Management of competency must extend throughout the supply chain.

Expo City Dubai has defined requirements for leaders, managers and supervisors related to or involved in the site as well as for workforce using various items of plant or equipment. Requirements for such training are included in Appendix D.

Every organisation must take reasonable and practical steps to ensure the competency of their staff for the work they perform; staff must have suitable knowledge, skills and experience to carry out operations in line with Expo City Dubai's Standards.

Sufficient information, instruction and training must be provided to workforce involved in high risk work tasks. Every organisation should have a training matrix, training record and training plan as well as copies of certificates and records available on-site. Training can include on or off the job training, coaching, toolbox talks or briefings.

All organisations, tenants or those working on their behalf must maintain records of training. Such records should be made available to Expo City Dubai for compliance auditing purposes.

Staff nominated as fire wardens or first aiders must be trained by the relevant authority and be locally qualified to assist in responding to emergency situations.

All organisations, tenants and those working on their behalf must ensure that additional environmental training (e.g. waste management, water management, chemical handling and storage, energy management, fuel storage and refuelling, noise and dust control, spill response, etc.) is provided to personnel and service providers as needed and depending on their tasks and activities.

9 Incident Notification and Reporting

Effective incident response and reporting is essential to provide and ensure a safe workplace. Open and transparent reporting of all HSE incidents including near misses are a prerequisite on Expo City Dubai. Incidents must be reported through an incident reporting process.

All organisations, tenants and those working on their behalf, are expected to report health and safety incidents to Expo City Dubai as well as applying their own reporting processes. Appendix E provides guidance on the health and safety incidents that need to be reported and the classification of these incidents.

All organisations, tenants and those working on their behalf are to have a mechanism for preserving the incident site, as required, and reporting the investigation requirements.

9.1 Immediate Response to a Health and Safety Incident

Table 9-1. Immediate Response to a Health and Safety Incident

Step	Requirement
Ensure the health and safety of all persons.	• The health and safety of the injured or ill person/s and other persons around the incident site must be the primary concern immediately after an incident. • Implement initial control or cordon around the incident site. • The Venue Manager must: - Ensure that persons, property and/or equipment are immediately protected from further injury or damage. - Check for still-present dangerous situations and implement immediate temporary controls to avoid exposure to these, to minimise the impact of the incident or to prevent incident recurrence. - Initiate appropriate emergency response.
Follow emergency preparedness and response procedures.	• Call for the appropriate response: Emergency services (999). • Depending on the nature of the incident, other emergency, preparedness, venue and / or response procedures may apply.
Notify supervisor / Venue Manager of incident.	Workforce must notify their supervisor and the Venue Manager of the incident as soon as practicable, who will either take control of the incident site or will nominate an individual to take control of the incident site. (Onsite Controller)
Arrange First Aid / Medical Treatment.	• Depending on the nature of any injury / illness sustained as a result of the incident, it may be necessary to seek first aid or medical treatment or request the individual to see a doctor. • Prior to assisting an injured individual, personnel must ensure that they are not exposed to similar or additional hazards.
Preserve the incident site.	• Depending upon the nature of the incident, the incident site must be preserved / secured immediately following an incident to ensure that the incident scene is not disturbed and all evidence remains intact. • The incident site includes any: - Plant. - Substance. - Structure or item associated with the incident. • When preserving the incident site, only preserve the immediate area where the incident occurred and ensure the following:

Step	Requirement
	- Cordon off the incident site and stop all work within the cordoned off zone. - Lock out plant / equipment if any was involved in the incident. - Restrict access by all persons other than those given permission to enter the incident site by the Onsite Controller or the Venue Manager. - Do not move or touch anything in / on the incident site until the incident investigator or other authorised person arrives at the site and/ or authorises the release or disturbance of the site. - If practicable and without disturbing the incident site, take incident details and photos of the incident site including plant and equipment used at the time of incident, as this may be of use in the incident investigation. • In the event of a serious / major incident, the incident site may only be disturbed if safe to do so and only for the following circumstances: - To assist an injured person. - To make the site safe or to minimise the risk of a further serious or dangerous incident. - If it is associated with a police investigation. - Permission has been granted by the Expo City Dubai HSE Department or the delegated representative. • When releasing the incident site ensure that: - In the event of a serious / major incident, the release has been authorised by the Expo HSE Department or the delegated representative or Legal Services. - If not a serious / major incident, the release has been authorised by the Onsite Controller in consultation with the Venue Manager and HSE representative - Prior to allowing work to proceed in the area, that the circumstances leading to the event have been controlled; this may require the implementation of temporary controls. The recovery of heavy plant (including vehicles) and equipment must only be conducted by a licensed and competent person.
Investigate the incident.	• All incidents / accidents are to be appropriately investigated and the outcomes of this investigation communicated to all relevant workforce. Further guidance on incident investigations is at Section 11.

9.2 Reporting of Injury / Accidents

All organisations, tenants and those working on their behalf must report to Expo City Dubai any occurrence resulting in injury to an employee, volunteer or a member of the public and/or any incident having the potential to cause injury or damage. Serious / major incidents must be notified immediately. Regular updates are required throughout any incident until the outcomes are known. This line of reporting is additional to any requirement to report incidents / injuries to jurisdictional agencies.

An incident report is required for all incidents within 24 hours of the occurrence, with an investigation report and action plan for all major incidents within 5 days. Evidence should be provided to demonstrate that corrective actions have been implemented to prevent a recurrence. Expo City Dubai will monitor the implementation of corrective actions as part of health and safety assurance activities.

For any major incident, a safety alert and / or lessons learned must be developed and distributed to Expo City Dubai for wider distribution and learning.

A copy of the Incident Report Card is included in Appendix F. Expo City Dubai will ensure that all incident report cards received are captured on a central health and safety reporting system.

9.3 Reporting of Observations

Expo City Dubai encourages the reporting of HSE observations. Observations are unsafe acts or conditions that have the potential to lead to an incident, particularly any observations linked to significant hazards. All organisations, tenants and those working on their behalf should report and ensure the close-out of actions linked to observations.

A copy of the Observation Report Card is included in Appendix G. Expo City Dubai will ensure that all observation cards received are captured on a central health and safety reporting system.

9.4 Regulatory Reporting and Investigation of Incidents

In the event of an HSE incident, particularly serious / major incidents, there will be involvement from relevant government authorities, including Dubai Police, Dubai Civil Defence and Dubai Municipality, in relation to incident reporting and investigations. All organisations, tenants and those working on their behalf must comply with any regulatory HSE reporting requirements.

All workforce must follow Expo City Dubai's HSE Standards and UAE legal and other requirements, including set processes and procedures in place within their areas of responsibility. This will help to mitigate any potential personal liability following an incident.

In the event of a serious / major incident, workforce should be made aware of the following potential actions:

- Government authorities may approach workforce to inquire or verify information on the incident.
- Dubai Police may request workforce to be present at one of their stations for further questioning or clarification as part of the incident investigation.
- Any documents, records and evidence requested by the government authorities must be provided as part of the investigation.
- Any further support requested by government authorities should be provided as part of any incident investigation.
- During any incident investigation involving government authorities, workforce must provide accurate information and if requested ensure a representative from the organisation/department is present to support and provide the authorities with the required information
- Workforce must comply with any request from a government authority not to attend their work shift until clearance/approval is obtained.

Contact Expo City Dubai's HSE team at hsqe@expocitydubai.ae regarding any further information related to personal liability following a serious / major incident.

10 Incident Investigation

Effective incident investigation is essential to provide and ensure a safe workplace and to ensure lessons are learned following an incident. All HSE incidents are to be investigated to establish what caused the incident and to identify the steps to be taken to prevent recurrence.

The level of investigation is to be commensurate with the nature and type of incident and the potential consequence of the incident as classified at the incident response and reporting stage.

The timing of an investigation of an incident / near miss is crucial and must begin as soon as practicable after the incident has occurred. This way, the investigator / investigation team are more likely to be able to observe the conditions as they were at the time of the incident, prevent disturbance of evidence and identify and interview witnesses.

Evidence should be collected as soon as practicable after the incident to prevent it being lost or disturbed. Requesting witnesses to write down what they saw and when (including timings) immediately after the incident will enable a true picture of the event to be formed when it is investigated.

Only competent and authorised personnel should liaise with external authorities following an incident. This also applies to the initial incident response for serious / major incidents, only trained and competent personnel should collect evidence or witness statements.

Expo City Dubai's HSE department can assist in the conduct of, or where appropriate, lead the health and safety investigation. If necessary, the HSE department will issue immediate advice through a Safety Alert to address site wide specific concerns following an incident. The HSE department may also review the outcomes of all health and safety incident investigations and report the circumstances surrounding incidents and lessons learned.

10.1 Incident Investigation Process

The aim of the incident investigation process is to identify the factors that contributed to the incident. It is important that HSE risk assessments are reviewed to ensure that all known hazards are considered as part of the investigation process.

The purpose of the investigation process is to:

- Gather facts by:
  - Determining exactly what happened by talking to eye witnesses and circumstantial witnesses.
  - Establishing the sequence of events.
  - Separating facts from opinion.
- Identify hazards and causation factors by:
  - Analysing the differences between what actually happened and what should have happened.
  - Determining whether any existing controls failed e.g. was equipment guarded, were chemicals stored correctly, was correct procedure followed etc.
- Determine corrective actions by:
  - Identifying new or improving the existing corrective actions to be implemented to prevent the incident from occurring again.
  - Identifying the person/s responsible for carrying out corrective actions and an appropriate time frame.
  - Distributing findings of the investigation to employees and other relevant persons.

To conclude a successful investigation 6 key questions need to be answered: who; what; when; where; how; and why.

Who was involved?

This includes people both directly involved (injured or witnesses) and those that may be able to contribute useful information about the facts surrounding the incident:

What happened?

- This includes the equipment involved, the processes undertaken, systems and what happened before and immediately after the incident. What action or lack of action led to the incident? What task was being undertaken? Was a procedure in place and was it being applied?

When did the incident occur?

- When was the incident and what could have affected this? When did the person involved start work that day and what had they been doing the day prior to the incident? How much experience had they had in the task? What was the date and time of day and were there any other psychosocial issues that could have contributed to the incident?

Where did the incident occur?

- Have there been previous similar incidents in this area? What were the outcomes of previous incidents? Are there physical aspects of the environment that may have contributed to the incident?

How did the incident occur?

- What was unusual about the event? How could the incident have been prevented? This may lead to identification of the root causes or contributory factors of the incident.
- Why did the incident occur?
- Was the person trained for the process being undertaken? Were there safety procedures in place? Had a risk assessment been conducted for the task? Why were safety systems or controls not followed, or did they fail?
- The 5 why's questioning technique should also be used when evaluating the risk scenario to establish the root cause of the incident, for example:
  - The individual fell off a ladder while removing a light fitting. Why?
  - An alternative work platform was not provided for the activity. Why?
  - The supervisor believed it was a short duration task and only a ladder was needed. Why?
  - A specific risk assessment for the activity had not been undertaken. Why?
  - The health and safety plan did not specify that work at height should be risk assessed. Why?
- The root cause is where additional or new controls should be focussed to prevent recurrence of the incident. Where new or improved controls are identified to be implemented to prevent recurrence it must be ensured that these are communicated to all relevant personnel as required.

10.2 Identifying Basic Causes

As a guide the following categories can be used to assist in identifying the basic causes of the incident:

Lack of Knowledge	**Employee Placement Issue**
• Employee not qualified to perform task. • Safe method not known or understood. • Improper use of equipment. • Inadequate equipment for the task. • Employee not properly trained to perform the task.	• Physical overexertion. • Task exceeded medical restrictions. • Recurrence of previous illness. • Not physically fit or able to continuously perform the task.

Unsafe Method • No established procedure. • Existing procedure did not recognise the hazard.	**Not Enforcing Safe Practices** • Inconsistent enforcement of safe practices. • Similar unsafe / wrong behaviour not confronted. • Written practices and / or procedures not followed (using shortcuts).
Inappropriate Design / Substandard Construction • Unsafe or wrong design / construction. • Inadequate guarding. • Difficult to perform the task safely. • Exposed pinch point or other hazards.	**Inadequate Personal Protective Equipment** • Necessary safety equipment not available. • Inadequate protection for task performed. • Inadequate eye protection. • Inadequate respiratory protection.
Inadequate Inspection and Maintenance Programme • Defective tools and equipment. • Inoperative safety device. • Inadequate / wrong chemical labelling. • Hazard created by normal wear and tear. • Equipment / device used needed repair. • Equipment / device failed during use.	**Inadequate Feedback System** • Safe behaviour is “punishing” while unsafe behaviour is “rewarding”. • Task completion is emphasised over safe completion. • Inadequate feedback given on similar unacceptable behaviour. • Production or other factors implied over safe performance.
Inadequate / Inferior Equipment • Required safety features and interlocks not provided. • Frequent maintenance required. • Complicated and not user-friendly operation.	**Others** • Performance error (similar accident). • Absent-mindedness. • Gross negligence. • Deliberate Action, etc.

10.3 Minor Incident Investigation

The only difference between minor and major incidents is the level of investigation that needs to be undertaken. The same incident investigation form should be used but the time and effort associated with the investigation needs to be commensurate with the risk of the potential consequence. The aim of all incident investigations is to identify the causes so relevant controls can be implemented to prevent recurrence.

Minor incident investigations must be conducted and completed on the incident investigation form included in Appendix H. Minor incident investigations could include minor injuries, slips, trips and falls and near misses.

The Incident Investigation form provides a means to collect relevant information relating to the incident. Reference should also be made to the relevant health and safety risk assessment associated with the task that was being undertaken and where necessary the outcomes of the investigation should be reflected in updates to the risk assessment. Where an existing risk assessment is not present a new one should be prepared.

Outcomes of Minor Incident Investigations should be retained and Expo City Dubai may request to audit and review incident investigations and any evidence collected as part of the investigation.

10.4 Serious / Major Incident Investigations

An incident investigation must be conducted for all serious / major incidents (as detailed in Appendix E), or for any incident that requires immediate notification to Expo City Dubai's HSE department, as per this Standard or Dubai Municipality. Serious / major incident investigations are to be led by an appropriately qualified person or team and can be assisted or led by Expo City Dubai's HSE department. The investigation should commence within 24 hours of the incident occurring, unless this is to be conducted by an external party. The detailed report and action plan should be submitted to Expo City Dubai's HSE team at hsqe@expocitydubai.ae within 5 days.

High potential near misses that could have resulted in a serious injury or fatality should be subject to a detailed investigation. It is important that incidents of this nature a dealt with appropriately, in terms of the level of response and actions implemented.

The incident investigation is to be recorded using the Incident Investigation Report Template included in Appendix H. Outcomes of serious / major incident investigations are to be briefed at the relevant HSE forums and escalated as required on conclusion of the investigation to ensure that these are implemented across Expo City Dubai to prevent recurrence.

10.4.1 Site Preservation

The site of a notifiable incident must not be disturbed until Expo City Dubai (and relevant authorities) releases the site, unless there is a need to:

- Protect the health and safety of a person.
- Provide emergency aid an injured person involved in an incident.
- Take essential action to make the site safe or to prevent any recurrence of an incident.

10.4.2 Incident Investigation Team

The size and composition of the investigation team will depend on the seriousness and/or complexity of the incident. The team usually involves a relevant Manager, operator and/or health and safety manager, Legal Services (where required), supervising employee for the area concerned, and any other relevant employee/s, providing they have not witnessed the incident. The size of the team should be dictated by the lead investigator to achieve the best outcomes from the incident investigation to prevent recurrence of the incident.

10.5 Investigation Outcomes

The Supervisor / Lead Investigator must ensure that any findings identified as a result of the investigation are assessed and appropriate controls are recommended. Where new or improved controls are identified to be implemented to prevent recurrence it must be ensured that these are communicated to all relevant areas of Expo City Dubai.

Outcomes from any incident and / or accident are to be communicated to all relevant workforce. This can be through various means but at least must be included in the next day's briefing. When this information is included in a daily briefing a record must be kept of the information passed and those who attended the briefing.

10.6 Record Keeping

The Supervisor / Lead Investigator must maintain copies of all documentation used during the incident investigation. Where required, documents should be attached electronically to the incident report and appropriately stored and a copy provided to Expo City Dubai's HSE department. Appendix H provides an example of health and safety incident investigation template. Expo City Dubai will ensure that all investigation reports are captured on a central health and safety reporting system.

10.7 Environment Incidents

10.7.1 Environment Incident Notification

In the event of any environmental incident, minor or serious, Expo City Dubai's HSE team must be contacted immediately and corrective and preventive actions implemented in a timely manner to prevent serious environmental damage.

10.7.2 Environment Reporting and Investigation

In line with Dubai Municipality (DM) requirements, Expo City Dubai is obliged to report any environmental incidents to DM, minor or serious / major, within 24 hours of occurrence.

An Incident Report Card is included in Appendix F, to facilitate the timely reporting of incidents. A detailed environment incident report and action plan is expected within 24 hours of occurrence.

To ensure a proper notification of an environmental incident to DM, the following information must be included in the Incident Report Cards:

- Time and date of occurrence.
- Incident type.
- Material spilled/released.
- Estimated quantity of spill.
- Probable root cause.
- Immediate corrective actions (with evidence).

Evidence should be provided to demonstrate that organisations, tenants or those working on their behalf have implemented corrective actions to mitigate the impacts and prevent recurrence.

Expo City Dubai encourages environmental observations to be reported using the Observation Report Card in Appendix G.

10.7.3 Environment Incident Classification

Environment incidents, such as spillage, leakage, emissions, releases, etc., have the potential to impact the surrounding environment. Since there are no legal/DM guidelines for classification of environmental incidents, Best Available Techniques (BAT) have been adopted to classify environmental incidents as presented in Table 10-1.

Table 10-1. Types of Environmental Incidents and Severity Type

Minor Incident	Serious / Major Incident
• Incidents that have or may cause minor harm or damage to the environment, and that are easily brought under control and prevented from re-occurring. • Spillage: A spill of less than 200 litres of a hazardous liquid where the location is away from a sensitive receptor, the impact is immediately reversible and where spill response is immediately and successfully deployed). * • Non-Hazardous Waste: Unauthorised disposal of a small quantity of non-hazardous waste (quantity less than 1 ton). ** • Wastewater: Accidental overflow/ unauthorised discharge of minor quantities of wastewater (less than 200 litres) where the location is away from a sensitive receptor, the impact is immediately reversible and where cleaning response is immediately and successfully deployed. ** • Receipt of a substantiated complaint associated with specific site activity. • Minor nuisance but controllable and preventable from re-occurrence. • Any other minor incident that occurs in an area of low sensitivity and where small number and type of sensitive receptors affected. • Minor harm to biodiversity or to non-endangered species of fauna/ flora at the site. • Localised heavy smoke generated from equipment or vehicles on site.	• Incidents which have caused catastrophic harm or damage to the environment e.g. requiring external involvement to clean-up, and therefore a high likelihood of regulatory action or other intervention by enforcing authority. • Incidents that have or may cause significant or irreversible damage to the environment. • Persistent non-significant breach or reoccurrence of the same minor incidents. • Significant breach of the environment permit/ license conditions. • Fire, collapse, explosion or leakage of hazardous materials accidents accompanying with financial losses which lead to work suspension in a Zone or Venue. • Spillage: Significant spill of a hazardous liquid within where the quantity of material released to the environment exceeds 200 litres. • Non-Hazardous Waste: Accidental release or unauthorised disposal of a large quantity of non-hazardous waste (quantity exceeding 1 ton). • Hazardous Waste: Unauthorised disposal of hazardous waste, disregarding the volume or quantity. • Wastewater: Accidental overflow of large quantities of wastewater (more than 200 litres). Deliberate or unauthorised disposal of wastewater disregarding the volume or quantity. ** • Excessive uncontrollable incidents which are likely to, or will re-occur to cause danger, nuisance, numerous complaints or significant impact to reputation. • Massive loss of biodiversity at the site. • Any other incident that occurs in sensitive areas (e.g. close to residential areas) and where large number and different type of sensitive receptors are affected.

Note:

* A spill of less than 5 litres of a hazardous liquid, where the location is away from a sensitive receptor, the impact is immediately reversible and where the spill response is immediately and successfully deployed, will be recorded as an observation/ finding (not as an incident). However, Expo City Dubai reserves the right to request such occurrences to be recorded as an incident, or reclassified, onto the online system and investigated where required.

** Expo City Dubai reserves the right to revise the classification of such incidents where required.

11 Emergencies and First Aid Requirements

11.1 Site or Venue Emergency

All organisations, tenants, those working on their behalf and venue owners must ensure that emergency arrangements are clearly defined within an Emergency Action Plan (EAP). All venue operators are also required to develop an EAP.

The EAP is designed to:

- Include a list of designated emergency response personnel, details of emergency services, such as ambulance, fire brigade, spill clean-up and poison response.
- Communications strategy including the reporting of serious environmental incidents or complaints.
- Details of containment measures and remedial action to be taken in the event of emergency situations that may arise during the work activities.
- Location of the onsite register and information on hazardous materials including Material Safety Data Sheets (MSDS).

All organisations, tenants and those working on their behalf must comply with UAE Fire and Life Safety Code of Practice, and all instructions given during an emergency evacuation of the building or venue.

During venue inductions, information will be provided on the nearest exits, assembly points and the procedures to follow in the event of an emergency. All organisations, tenants and those working on their behalf are responsible for ensuring the fire and emergency response procedures are adhered to.

In the event of an order to evacuate the following requirements apply:

- Ensure the safe evacuation of all personnel.
- Proceed to the nearest Local Assembly Point (LAP), indicated on either in the EAP, or by a fire warden or member of staff.
- Remain at the LAP until advised the emergency is over.
- Do not re-enter the venue until advised it is safe to do so by a fire warden or other authorised person.

Venue operators must ensure that local emergency plans are integrated with Expo City Dubai's site-wide emergency plans.

Venue operators are required to nominate a least one person to be present at all times during operations to act as "Fire Incident Commander". The Fire Incident Commander is expected to keep a record of all staff at the venue and, in the event of a fire, make sure that the venue has been evacuated safely and all staff are accounted for.

Fire Warden(s) should be assigned for each venue and trained in line with the UAE Fire and Life Safety Code. A sufficient number of fire wardens should be appointed to ensure that the whole venue is evacuated safely within a suitable response time.

11.2 Medical Emergencies

All organisations, tenants and those working on their behalf must have a process for responding to any medical emergencies.

Venue Operators must ensure that a suitable number of staff are trained in first aid. The number of first aid staff and any associated medical resources should be identified by risk assessment, which should include the nature of activities being undertaken. The risk assessment must also consider medical resources and capabilities required for People of Determination (PoD). The number of first aiders for planning purposes should be based on at least the following ratios:

- Low Risk Workplaces / Activities – one First Aider for every 50 personnel.
- High Risk Workplaces / Activities – one First Aider for every 25 personnel.

11.3 First Aid Box and Emergency Medical Response Requirements

First aid boxes containing sufficient quantity of suitable first aid materials must be provided and be placed in clearly identified and easily accessible locations. All organisations, tenants and those working on their behalf should assess the risk associated with their activities to ensure the appropriate medical cover and response is provided for all of their operations and activities. A first aid kit for a workplace where the risk of injury or illness is low should include at least the following:

- Instructions for providing first aid, including Cardio-Pulmonary Resuscitation (CPR) flow chart.
- Adhesive strips (assorted sizes) for minor wound dressing.
- Splinter probes (single use, disposable).
- Non-allergenic adhesive tape for securing dressings and strapping.
- Eye pads for emergency eye cover.
- Triangular bandage for slings, support and/or padding.
- Hospital crepe or conforming bandage to hold dressings in place.
- Wound/combine dressings to control bleeding and for covering wounds.
- Non-adhesive dressings for wound dressing.
- Safety pins to secure bandages and slings.
- Scissors for cutting dressings or clothing.
- Small dressings' bowl for holding liquids.
- Gauze squares for cleaning wounds.
- Forceps/tweezers for removing foreign bodies.
- Disposable nitrile, latex or vinyl gloves for infection control.
- Sharps disposal container for infection control and disposal purposes.
- Sterile saline solution or sterile water for emergency eye wash or for irrigating eye wounds.
- Resuscitation mask to be used by qualified personnel for resuscitation purposes.
- Antiseptic solution for cleaning wounds and skin.
- Plastic bags for waste disposal.
- Note pad and pen/pencil for recording the injured or ill person's condition and treatment given.
- Re-usable ice-pack for the management of strains, sprains and bruises.

Where the nature of the work is outdoors the following additional items should be considered:

- Heavy duty crepe bandage for insect or snake bite or sting dressing.
- Sting relief cream, gel or spray.

Additional content based on the nature of the risk present should be considered on a case by case basis. All items should be routinely checked for expiry dates and restocked as required.

First aid information must be displayed in suitable locations and on notice boards and include the location of, distance and directions to the relevant first aid room or the nearest hospital, as well as those trained in first aid.

11.4 Environmental Emergency - Spills

Various emergency situations have the potential to create environmental impacts. For example, a fire or a serious accident may involve the spillage or production of hazardous substances, including petroleum hydrocarbon fuels, fire-fighting fluids and the carcinogenic by-products of burning processes.

All organisations, tenants and those working on their behalf must ensure that the EAP includes arrangements for spill prevention and response.

When responding to a spill, the following must be considered:

- Potential source, location and severity of the spill.
- Containment measures in/ around the identified sources and locations prone to spillage.
- Notification process, including alerts to local authorities in case of major spills.

- Key personnel and responsibilities.
- Presence of onsite spill response equipment stored near hazardous materials storage areas or areas prone to spills (e.g. fuelling points, loading and unloading platforms, etc.).
- Periodic inspection of spill response equipment (monthly) to include the following contents as a minimum:
  - Polypropylene adsorbent pads.
  - Sand stock if applicable (onsite).
  - Shovels and buckets.
  - Heavy duty oil resistant storage bags.
  - Duct tape.
  - Spill containment.
  - Personal Protective Equipment (PPE): Protective gloves, goggles/ safety glasses.
  - Containment drip trays, containers, and skips.
  - MSDS compilation of all chemicals stored.
- Material Safety Data Sheets (MSDS) of all chemicals must be stored onsite with spill response equipment. The spills are to be dealt with in accordance with the instructions of the MSDS and the spill response procedure.
- Contaminated materials and earth must be labelled and treated as hazardous waste in accordance with the MSDS of the contaminant. Contaminated materials shall be disposed of in accordance with the disposal requirements of the Waste Management Plan. Contaminated soils and used absorbent equipment shall be treated as hazardous waste.

12 Performance Measurement

Expo City Dubai will monitor the HSE performance of all organisations, tenants and those working on their behalf. Expo City Dubai will facilitate this assurance through various formal and informal means, including but not limited to the elements listed in table 12-1.

Table 12-1. HSE Performance Measurement

Procedure	Description	Frequency
Accident Trend Analysis.	Accidents are analysed to identify if any specific trends are evident (e.g. by contractor, by work activity, by work area, and by injury).	Recorded in monthly reports.
Observation Trend Analysis.	Observations raised on the online reporting system are analysed to identify trends.	Recorded in monthly reports.
Health, Safety and Environment Inspections.	Physical inspections of site Health, Safety and Environment standards. Undertaken by Health, Safety and Environment Manager/Advisor.	Ad hoc inspections
Health, Safety and Environment Focus Audits.	Audit review of procedural compliance related to an identified specific HSE issue or activity. Undertaken by Health, Safety and Environment Manager	As per Expo City Dubai's HSE assurance programme.
HSE Performance Review.	HSE performance review completed by an Expo City Dubai representative to summarise performance during the month.	Monthly.

Where an organisation, tenant or those working on their behalf has its own system, any associated documentation and checklists can be used. Venue operators should implement monitoring programmes to ensure the effective implementation of HSE arrangements.

12.1 Environment Data Monitoring and Recording

Expo City Dubai has various requirements related to environment data monitoring and recording, which is a key element to enable robust performance assessment and analysis of trends in order to drive continuous improvement.

12.1.1 Data Monitoring

Environmental monitoring will be captured partially by Expo City Dubai (i.e. indoor air quality in the basement, outdoor air quality, weather, and noise).

However, all organisations, tenants and those working on their behalf may need to undertake their own environmental monitoring through sampling and analysis, including air quality monitoring, noise measurements, groundwater sampling, etc., as per legal requirements and relevant permits conditions (if applicable).

12.1.2 Data Recording

While most data are tracked through e.g. smart metering and/or systemised processes, such as energy, water and wastewater, not all activities will be connected to the grid systems, and therefore the need to keep records of environment data as and when required.

If not reported through smart metering systems, organisations, tenants and those working on their behalf must ensure that they keep records of:

- Water consumption (if brought in by tankers).
- Wastewater generation (if stored in septic tanks).
- Fuel consumption (if generators are used).

All organisations, tenants and those working on their behalf must keep records of the following additional data (as applicable) for auditing and reporting purposes:

- Permits.
- Waste transfer notes/receipts.
- Hazardous materials inventory and MSDS.
- Equipment/Vehicles maintenance schedule and records.
- Training, toolbox and induction materials, attendance sheets.

13 Significant Hazards

Expo City Dubai has identified a number of significant health and safety hazards that are applicable to event time operations. Expo City Dubai's significant hazards are embodied in the Promises campaign, which details key behaviours in relation to each hazard. Although this section focuses on significant hazards, it should be noted that all hazards must be appropriately identified, assessed and managed.

The following significant hazards are to be given particular attention:

- COVID-19. (See section 14)
- Slips, Trips and Falls. (See section 15)
- Working in the Heat / Adverse Weather. (See section 16)
- Manual Handling. (See section 17)
- Driving. (See Section 18)
- Fire. (See Section 19)
- Special Effects and Pyrotechnics. (See section 20)
- Electricity. (See section 21)
- Temporary Demountable Structures. (See section 22)
- Working at Height. (See section 23)
- Mobile Plant and Equipment. (See section 24)
- Lifting. (See section 25)
- Underground Services. (See section 26)

The above hazards and relevant controls are detailed in the following sections. For more information on the Expo Promises campaign please contact the HSE team at hsqe@expocitydubai.ae.

14 COVID-19

Expo City Dubai's top priority is to protect the health and wellbeing of all. In light of the ongoing COVID-19 pandemic, there is a need to review and assess infectious disease processes and tighten controls to minimise the impact of any transmissible illness. This does not just apply to COVID-19, but also to another other communicable diseases.

All organisations, tenants and those working on their behalf must have effective controls in place to prevent or minimise the spread of infectious diseases, including contingency plans to address the operational impacts from infectious diseases.

Expo City Dubai has developed comprehensive guidance which details arrangements for COVID-19 risk management and precautions to be implemented. The following key principles apply to operations:

- All visitors and workforce must comply with COVID-19 precautions on public and private transport modes.
- All visitors and workforce must wear a face mask in enclosed, indoor spaces
- All visitors and workforce must sanitize, or wash their hands regularly.
- All visitors and workforce who are unwell must not visit the Expo City Dubai site.
- All visitors and workforce who feel unwell while at Expo City Dubai must immediately seek medical advice.
- All venue operators must assess the risks from COVID-19 and implement suitable precautions.
- All venue operators must define capacity limits and ensure these limits are not exceeded.
- All venue operators must implement comprehensive cleaning and sanitization programmes.

Contact the HSE team at hsqe@expocitydubai.ae for further information or to receive a copy of the latest COVID-19 Guide.

15 Slips, Trips and Falls

15.1 Safe Access, Egress and Circulation

All organisations, tenants and those working on their behalf are to ensure that the environment is safe for the access, egress and circulation of all members of the public, guests and workforce. All routes are to be kept clear of hazards, be clearly lit and maintained. Routes, especially those used by members of the public, are to be regularly inspected and actions taken to address hazards that could impede circulation.

Cables, leads, and utilities should not be in public areas and should be limited as far as possible in back of house areas. Where this cannot be avoided they should either be raised above walkways or if unavoidable cable ramps in high visibility colours should be used. Cables should be placed in such a way as to avoid slips, trips and falls.

Doors and access corridors are to be kept clear at all times. Emergency exits are to be checked daily, including as part of the pre-event checks prior to opening, and remain clear of obstructions at all times.

15.2 Housekeeping

All organisations, tenants and those working on their behalf will be responsible for maintaining an acceptable standard of cleanliness within their area of works and for ensuring that no build-up of waste occurs in access, egress and circulation areas. Appropriate storage areas should be provided and waste should be removed frequently to limit potential hazards.

15.3 Lighting Levels

Adequate access and task lighting must be provided to ensure operations can be conducted safely. The levels of illumination need to match the demands of the job and the location.

The level of illumination required to provide conditions in which work can be carried out without undue risk or fatigue must be measured using a calibrated lux meter and not be less than the average figures shown in Table 15-1.

Table 15-1. Recommended Minimum Levels of Illumination

Activity	Typical Locations / Type of Work	Average Lux Level
Emergency movement of people.	Emergency lighting, theatre circulation during show time.	10
Movement of people, machines and vehicles where no further hazards exist.	Car parks, corridors, circulation routes, walkways.	20
Movement of people, machines and vehicles in hazardous areas or pedestrian traffic areas; rough work not requiring perception of detail.	Loading bays and work areas where activity does not require detailed perception.	50
Work requiring limited perception of detail and accessible elements, such as paths, crossings and stairs etc.	Break areas, rest rooms, canteens and storerooms, paths, crossings and stairs where people of determination may transit or access.	100
Work requiring perception of detail.	Offices, bookwork, ticketing and security, first aid rooms and kitchens.	250
Work requiring perception of fine detail.	Drawing boards, electrical work.	500

16 Working in the Heat / Adverse Weather

16.1 Adverse Weather Management

In order to provide a safe environment for everyone, all organisations, tenants and those working on their behalf are responsible for managing the appropriate response plans for adverse weather during operations. The negative effects of adverse weather upon event related infrastructure or operations should be identified within risk assessments, operating plans and/or method statements.

The Expo City Dubai weather station, which is located on site, continuously monitors temperature, humidity, wind speed and direction, solar radiation and air pressure. The station is managed by the National Center of Meteorology (NCM) and the data is published and updated every 15 minutes on NCM's official website www.ncm.ae or through the World Weather mobile app – station name is "Expo 2020". The app also provides hourly forecast feed, warning notifications, weather maps, weather stations network, etc. Key weather updates and forecasting are to be used to support operation planning and delivery.

The following section details potential adverse weather and the relevant actions to be taken in preparation for and in response to any adverse weather events. Each venue is responsible for appropriate planning in accordance with existing emergency management plans and procedures.

16.2 Weather Monitoring

All organisations, tenants and those working on their behalf should monitor weather conditions that may affect their operations. They are to consider the possible implications and make the appropriate decisions based on forecasts, briefings and other information provided.

Adverse weather management ensures a comprehensive approach which encompasses all hazards and recognises that dealing with the risks to safety requires a range of prevention/mitigation, preparedness, response and recovery programmes.

16.3 Weather Working Plan

All organisations, tenants and those working on their behalf must have a plan for working in adverse weather conditions.

The plan must include guidance for working in any of the following conditions:

Table 16-1. Guidance for Working Conditions

Weather Condition	Example Controls
Hot and Humid Weather	• Local legislative requirements must be met and measures for monitoring weather must be established by the provision of calibrated equipment, which records the Thermal Working Limit (TWL) or other internationally recognised standard. • Plans must include action levels and detail specific arrangements to be undertaken at each level. • A communication and notification system must be established advising all personnel of changes in the TWL categories. • Work in hot weather must address hydration for workforce and ensure that water and/or electrolyte drinks are available to all workforce. • Provision of adequate shading and methods for monitoring workforce physical condition must also be made. • Resources available to allow frequent breaks and rotation.
Sandstorms / Fog	• Ensure arrangements are in place to dynamically assess works during periods of low visibility. • Appropriate PPE suitable for conditions must be provided.

Weather Condition	Example Controls
	• Rest areas and eating areas to be suitably protected from sand ingress.
High Winds	• Ensure that arrangements are in place to monitor wind speed. • Ensure small pop ups including parasols and umbrellas closed or removed immediately. • Ensure larger temporary structures are monitored and secured as per manufacturer instructions, design and/or adverse weather action plan. • Ensure that barriers or fences are adequately secured/weighted down. • Ensure adequate arrangements are in place to secure any loose materials which may become projectiles, whether at ground level and or at height. • Ensure that any cranes, MEWP's, etc., are operating within allowable wind speed limits during overnight operations. • Remind personnel of their designated smoking areas, the location of disposal methods/containers, and the ease with which high winds can carry cigarettes to combustible materials igniting fires. • Ensure site inspections are undertaken before workforce are permitted to return to work.
Rain/Hail/Lightning	• Be aware of the risk of flooding, particularly in areas with poor drainage. • Prohibit of the use of lifting equipment and Mobile Elevating Work Platforms, (Cherry Picker/Scissor lift) during periods of lightning. • Ensure that rest facilities are adequately protected from water ingress. • Electrical safety systems in place e.g. distribution boards are ingress protection rated and secured, ELCB's fitted and checked, plant earthed and electrical cables routed off ground where possible. • Ensure that adequate provisions are in place for dewatering. • Take additional care when driving as the roads surfaces can become extremely dangerous.

The weather working plan must also address:

- Escalation process in relation to structures which may be impacted by adverse weather.
- When work is to be abandoned.
- Mitigation measures to protect workforce from extreme conditions including adequate provisions to take shelter.
- Return to work requirements.

16.4 Contingency Plans

Expo City Dubai has developed contingency plans for the following weather events:

- Heat.
- Heavy rainfall and flooding.
- Sandstorm.
- Lightning.
- High winds.
- Fog.

16.4.1 Heat

There is an ongoing risk of hot, sunny weather throughout the year. Temperatures exceeding 40 degrees Celsius are common, with long periods of exposed sunshine prevalent. All hot environments present a level of risk particularly to those who are not acclimatised or are suffering from other issues, such as illness or dehydration. The table below provides guidance on the potential risks related to hot and humid weather and control measures in order to minimise heat stress.

Expo City Dubai has developed a specific Working in the Heat Guide that covers key precautions. Please contact the HSE team at hsqe@expocitydubai.ae for a copy of this Guide.

Table 16-2. Response Action Plans – Heat

Hazard	Control Measures
• Increased likelihood of dehydration to staff, contractors, guests and members of the public • Increased likelihood of sunburn or heat stroke/strain to staff, contractors, volunteers and visitors.	• Monitor Expo City Dubai weather station for weather updates • Ensure that shade structures are available for staff and guest groups where necessary. • Consider the delay, postponement or cancellation of outdoor activities e.g. entertainment at queues, shows or F&B services. • Consider non-essential outdoors staff positions to be moved indoors. • Staff located outdoors to wear appropriate clothing. • Ensure that equipment such as HVAC systems are appropriately maintained & monitored. • Ensure frequent breaks are planned for staff and increase rotation. • Additional provision of water to staff and consider deployment of shade umbrellas for outdoor positions. Note: there should be consideration on how to maintain the water on cool temperature. • Consider messaging to visitors on risks. • Ensure sunscreen is available for staff. • Provide health monitoring and support to staff, particularly high-risk roles in exposure to direct sunlight. • Consider the use of electrolytes to keep staff hydrated. • **Recover**. Replenish used stocks of water and consumables.

16.4.2 Heavy Rainfall and Flooding

There is a low probability of rainstorms and heavy precipitation throughout the year; however, the impact to Expo City Dubai is significant. These may be accompanied by electrical storms, leading to related risks. Heavy and prolonged precipitation is likely to cause major disruption to the Expo City Dubai site.

Table 16-3. Response Action Plans – Heavy Rainfall and Flooding

Hazard	Control Measures
• An increase of slippery surfaces across outdoor, partially covered and indoor areas. • An increase in likelihood of staff becoming cold or uncomfortable. • Injury or electrocution caused to staff as a result of working with equipment during rain or submerged in water. • Damage to equipment across outdoor areas. • Loss of visibility on site and increased risks to injury where lifting operations and working at height is present. • Increased risk of major flooding across site, impacting on all operations including vehicle, staff, volunteer, contractor and visitor access to and from site. • Increased likelihood of events being delayed, postponed or cancelled.	• Monitor Expo City Dubai weather station for updates and weather alerts • Heavy rain will likely cause traffic disruption across the city affecting arrival times of staff. Assess impact on staff shifts. • Consider the delay, postponement or cancellation of outdoor activities e.g. entertainment at queues, shows or F&B services. • Consider Non-essential outdoors staff positions to be moved indoors. • Staff located outdoors to wear appropriate wet clothing. • Inform staff to be vigilant for any areas of water stagnation and coordinate response accordingly e.g. demarcation of areas of stagnant water for avoidance. • All non-essential works on external electrical systems, work at height or lifting operations to cease • Maintenance staff on alert to respond. • Consider messaging to visitors on associated risks • Where venues or areas significantly affected by rain and areas impacted by flooding, consider closing off / evacuation of areas. • **Recover**. Conduct safety inspection to confirm Pavilion is safe for guest groups.

16.4.3 Sandstorm

Sandstorms affect air quality, which can adversely affect the health of individuals with respiratory conditions. Equipment that is not appropriately protected for environmental conditions can also be negatively affected. Sandstorms usually happen during daylight hours (due to diurnal variation of wind speed) and occur when wind speeds exceed 50 km/h.

Table 16-4. Response Action Plans - Sandstorm

Hazard	Control Measures
• Loss of visibility on site and increased risks to injury where lifting operations and working at height is present. • Health problems associated with poor air quality. • Risk to electrical equipment integrity due to dust ingress. • Increased likelihood of events being delayed, postponed or cancelled.	• Monitor Expo City Dubai weather station for updates and weather alerts • Ensure all temporary structures are correctly weighted down or removed from outdoor spaces. E.g. Shade structures, freestanding boards • Equipment exposed to the hazard is protected from sand/dust ingress. • Appropriately weight and tie down all ‘at risk’ structures. ‘At risk’ structures that cannot be weighted or tied down to be lowered (e.g. umbrellas), or dismantled (if safe to do so).

	• Ensure that staff are fully aware of the hazards associated with sandstorms and if stationed outdoors wear appropriate PPE. E.g. goggles. • Consider the delay, postponement or cancellation of outdoor activities e.g. queues activation, shows or F&B services. • Stop working at height in at risk locations. • Consider messaging to visitors on associated risks. • **Recover**: Conduct safety inspection to confirm venue is safe for visitors and raise any issue through the agreed channels. • **Recover**: Clear sand from areas.

16.4.4 Lightning

There is a high probability of electrical storms, which may be accompanied by heavy rainfall and high winds. Electrical storms have the potential to cause serious structural and equipment damage. There is also a significant risk to life with lightning strikes against people. Forecasting is imperative in the event of possible electrical storms.

For those operating in or near a storm zone, the 'Thirty30 principle should be used to check if a storm is moving towards or away from the event area. If it takes less than 30 seconds to hear thunder after seeing the flash, lightning is 10 km away and may pose a threat.

- As a thunder storm develops, the seconds between the flash of lightning and the bang of the thunder will be counted.
- If the flash to bang period of time is less than 30 seconds, all personnel will be instructed to seek safe shelter.
- As a guideline, activities should not resume until 30 minutes after the last audible thunder bang.

Table 16-5. Response Action Plans – Lightning

Hazard	Control Measures
• Increased likelihood of damage to temporary structures. • Working at height becomes dangerous. • Crane/mobile elevated work platforms and roof operations become dangerous. • Risk of person being struck by lightning.	• Monitor Expo City Dubai weather station for updates and weather alerts • Identify risk structures and Pavilion specific hazards. Identify safe places for shelter and communicate to teams. • On assessment all personnel to be evacuated from smaller or vulnerable temporary structures and refuge taken in safer place. • Ensure that staff are fully aware of the hazards associated with lightning. • Consider the delay, postponement or cancellation of outdoor activities e.g. entertainment at queues, shows or F&B services. • Stop working at height in at risk locations. • Consider messaging to visitors on associated risks. • **Recover**: Conduct safety inspection to confirm venue is safe for visitors and raise any issue through the agreed channels. • **Recover**: Any structures hit by lightning to be reported to Expo City Dubai Community Control Room and must be signed off by a qualified person before being used again.

16.4.5 High Winds

There is a high likelihood of strong wind speeds throughout the year. Manufacturers guidelines for all structures and equipment susceptible to high wind conditions, must be followed at all times, with relevant teams on standby to inspect, repair and evacuate as necessary. The winds speeds used in this document are based on sustained wind speeds of at least 3-minute duration. The recommended threshold to consider the activation of this contingency plan is 45 km/hours.

Table 16-6. Response Action Plans – High Winds

Hazard	Control Measures
• Increased likelihood of damage to temporary structures. • Windblown structures, equipment and materials making contact with people, causing injury. • Working at height becomes dangerous. • MEWP operations, or any lifting operations, become dangerous.	• Monitor Expo City Dubai weather station for updates and weather alerts • Ensure all temporary structures are correctly weighted down or removed from outdoor spaces. E.g. Shade structures, freestanding boards. • Identify any temporary structures not weighted down and report any risks to Expo City Dubai. • Ensure that teams are fully aware of the hazards associated with strong winds. • Consider the delay, postponement or cancellation of outdoor activities. E.g. entertainment at queues, shows or F&B services. • Stop working at height in at risk locations. • Consider messaging to visitors on associated risks. • **Recover**: Conduct safety inspection to confirm venue is safe for visitors and raise any issue through the agreed channels.

16.4.6 Fog

There is a risk of fog and dust storms that will reduce visibility within, and on access to the site. A likely scenario would be for fog to develop at early hours of the day and disperse towards 11:00 – 00:00 hours. This will particularly affect fall and winter months.

Table 16-7. Response Action Plans – Fog

Hazard	Control Measures
• Loss of safe walking and vehicle access routes (including across multiple ingress, egress, transport, Public Realm and back of house areas). • Restricted view of operations including working at height, vehicle and pedestrian interfaces. • Increased risk of staff and contractors not arriving at work. • Increased risk of vehicle accidents.	• Monitor Expo City Dubai weather station for updates and weather alerts • Dense fog will likely cause traffic disruption across the city affecting arrival times for staff. Assess impact on staff shifts and act accordingly. • Consider the delay, postponement or cancellation of outdoor activities. E.g. entertainment at queues, shows or F&B services. • Consider Non-essential outdoors staff positions to be moved indoors. • Consider messaging to visitors on associated risks.

	• **Recover**: Conduct safety inspection to confirm venue is safe for guest groups, particularly the identification of moist condensation creating slippery surfaces.

17 Manual Handling

17.1 Manual Handling

Manual lifting tasks must be assessed before being undertaken. Weights must be known before being handled and appropriate equipment identified and used to handle heavy/awkward loads. Workforce undertaking manual lifting must be instructed in safe practices and must follow safe manual lifting methods.

All organisations, tenants and those working on their behalf must:

- Avoid or mechanise manual handling operations, as far as possible.
- Provide information on the load to be handled.
- Assess any hazardous manual handling operations which cannot be avoided.
- Implement control measures arising from the risk assessment.

Where manual tasks are to be conducted the following process detailed in the following sections should be applied.

17.1.1 Hazard identification

Not all manual tasks are hazardous. The hazard identification stage of the risk management process helps to identify manual tasks that have the potential to cause musculoskeletal disorders. Manual handling tasks can include:

- Moving tables, resetting rooms.
- Carrying, unloading or stacking items.
- Setting up exhibitions and displays.
- Pushing items in trolleys.

17.1.2 Assessing tasks

The assessment of manual handling tasks should take into account the following factors, in order to reduce the risk of musculoskeletal disorders:

- Postures, movements, forces and vibration relating to the hazardous manual task.
- The duration and frequency of the hazardous manual task.
- Workplace environmental conditions that may affect the hazardous manual task or the workforce performing it.
- The design of the work area.
- The systems of work used.
- The nature, size, weight or number of persons or items involved in carrying out the hazardous manual task.

Risks should be controlled in accordance with the risk management process and hierarchy of control.

17.1.3 Reviewing control measures

Control measures must be monitored and regularly reviewed to make sure they continue to work, particularly in accordance with any significant change in activities.

17.2 Manual Handling Control Measures

Control measures should be aimed at eliminating or minimising the frequency, magnitude and duration of movements, forces and postures by changing the source of risk: the work area, tool, load, environment, method of handling and / or the way work is organised. The following factors should be considered within the context of the hierarchy of control.

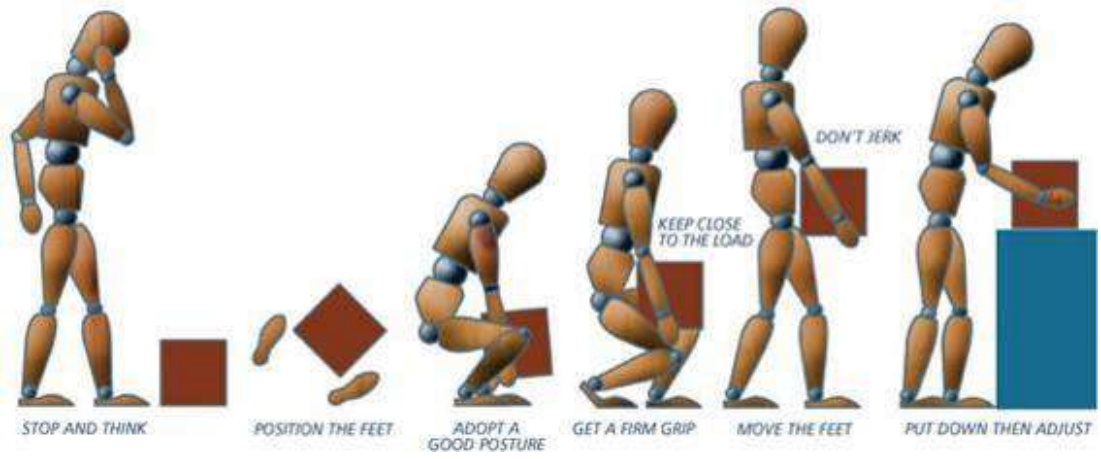
Table 17-1. Hierarchy of Control

Examples of control measures	
Elimination	• Deliver goods directly to the point of use to eliminate multiple handling.
Substitution	• Replace heavy items with those that are lighter, smaller and/or easier to handle. • Replace hand tools with power tools to reduce the level of force associated with the task.
Engineering	• Use mechanical lifting aids.
Administrative	• Rotate workforce between different tasks. • Provide manual handling training. • Ensure team lifts for heavy loads. • Require manual handling risks are minimised in contracts and supply agreements.
PPE	• Provide gloves for handling hot, cold and rough textured items.

When purchasing or considering items for supply the manual handling risks associated with these items should be considered. Where more appropriate items, packaging or supply can be provided to minimise manual handling risks this should be built into the contract.

If it is necessary to manually lift a load the following process steps should be adopted as a minimum:

Figure 17-1. Safe Manual Handling Technique



- Stop and think: Are you able to lift the load? Is it too heavy or awkward? Do you need help to safely lift the load? Plan the lift so you know the route is clear and you can minimise the distance.
- Position the feet: Position the feet around the load so it can be lifted keeping it close to the body. Prior to lifting check the weight of the load and that you are capable of lifting the load.
- Adopt a good posture: Keep your back straight and lift using the large muscles in your legs.
- Get a firm grip and keep close to the load: Make sure you have a good grip of the load and that the load is kept close to the body.
- Move the feet and don't jerk: Move the load by moving your feet rather than bending or stretching to place the load.
- Put down and then adjust: Place the load down using the legs and keeping the back straight if it is required to place the load back on the floor.

For team lifts ensure that everyone is applying the above steps and coordinate movements by giving clear instructions on the lift. All team lifts should be discussed and a method established prior to lifting the load.

If you cannot safely lift the load alternative means of safely moving the items must be used.

18 Driving

18.1 Transport Safety

All organisations, tenants and those working on their behalf must ensure that the risks associated with driving, including transport of their workforce to and from the Expo City Dubai site, are evaluated with the following measures implemented:

- Drivers are required to be competent and have completed relevant training for the vehicles they are operating.
- Drivers are required to have clear instructions about how to keep themselves safe while on the road.
- Drivers are required to be sufficiently fit and healthy to drive safely.
- All vehicles are required to be fit for purpose and maintained in a safe condition.
- Realistic work schedules have to be established to allow enough time to complete journeys safely.
- Poor weather conditions, such as fog, heavy rain and high winds, have to be assessed with planning journeys.

All drivers must obey any Expo City Dubai site rules, speed limits, and drive with care and consideration for others. They should also carry correct documentation such as a valid driving licence, and details of insurance. The same requirements will also apply to other forms of transport, such as buggies.

The transport arrangements for Expo City Dubai will be designed to allow for the safe operation of vehicles. Movement of traffic and pedestrians within the same area is to be eliminated, or where not practicable, either isolated by physical separation or controlled through traffic management. This may include one-way systems, segregation of pedestrians from vehicles, protection of high-risk assets and measures to minimise reversing.

Where drivers of vehicles have a restricted view, reversing should be undertaken with the assistance of someone who can guide the vehicle safely, to prevent accidents. All mobile plant must be fitted with 360-degree vision capability.

All vehicles should have suitable permanent / temporary guard rails fitted to prevent the falls of persons / materials. All loads must be checked prior to straps being loosened to ensure that the load has not shifted during transport and that it can be safely offloaded.

All organisations, tenants and those working on their behalf will be expected to take responsibility for the safety of their employees and their vehicles. Prior planning should take place to decide whether the vehicle is a suitable size for the site (there may be Expo City Dubai restrictions on size and weight), and how any loads can be off-loaded safely. Is there a suitable area for setting-down loads?).

Where drivers need to access the top of vehicles, measures must be taken to prevent the risk of falls from height (e.g. safety line, edge protection system).

All organisations, tenants and those working on their behalf must provide method statements and risk assessments for the loading, load distribution and unloading of goods and materials. This will include a safe driving route and safe access to and egress from Expo City Dubai venues.

18.2 Traffic Management

This section applies to all Expo City Dubai areas where there is a risk of traffic colliding with people. Vehicles include:

- All cars, trucks, vans, buses, trains and golf carts.
- Powered mobile plant, such as forklifts, tractors, telehandlers.
- Cyclists, other electrical powered carts and scooters

Where there will be interaction between vehicles and pedestrians, control measures must be established. Deciding what control measures are reasonable and practical should be identified by a risk assessment and must include the various vehicle types encountered, speed and movement/route taken. The risk assessment will assist in the development of the traffic management plan which will communicate how traffic management risks will be managed. A hierarchy of controls should be applied to eliminate pedestrian and traffic movement in the same area, isolation by physical separation, or as a final resort the implementation of a traffic management scheme.

The traffic management risks and control measures for each of these stages should be actively considered and documented in a traffic management plan recognising that any overlay build and/or load in/load out for events involve significant construction activities and the associated vehicle movements.

In general, and outside of any construction phases, issues that need to be considered include:

- Loading and unloading equipment and goods at permanent and temporary venues e.g. temporary devices, building and catering supplies.
- Restricting public access to the area during load in and load out, where possible.
- The type of vehicles and traffic routes and how these may differ during each event phase.
- Public transport, vehicle types and peak periods.
- Walkways and crossings.
- Parking and parking control.
- Crowd control and movement and crowd safety.
- Emergency service access.
- Effective monitoring of and response to traffic management throughout the event.

The most effective way to protect pedestrians is to eliminate traffic hazards. This could be achieved by designing the layout to eliminate interactions between pedestrians and vehicles. Examples could include not allowing vehicles to be used in pedestrian spaces or providing separate traffic routes so pedestrians cannot enter areas where vehicles are used.

18.2.1 Ways to Control Traffic

The interaction between people and vehicles should be avoided where possible. However, where it is not practicable to separate vehicles and pedestrians the following should be considered:

- Barriers or guardrails should be erected at entry and exit points to buildings to stop pedestrians walking in front of a vehicle.
- High impact traffic control barriers.
- Temporary physical barriers.
- Separate and clearly marked footpaths or walkways e.g. using lines painted in the ground or different coloured surfacing.

18.2.2 Walkways and Pedestrian Crossings

If pedestrians have to cross vehicle routes the following should be considered:

- Identify and ensure that the pedestrian crossing is freshly painted, sign posted and well-lit if used at night, and is used by all pedestrian traffic.
- Provide interlock gates or gates with warning devices, physical barriers or rails.
- Implement a traffic light system or have a competent person direct traffic.
- Provide mirrors for pedestrians and vehicles in addition to other controls where the traffic cannot be easily seen.
- Other appropriate measures to mitigate risks associated with people and vehicle interaction.

18.2.3 Vehicle Routes

Where vehicles are required to move around the Expo City Dubai site the following should be considered:

- Restrict, where possible, all vehicle movement to “off hours” or times when visitors are not present.
- Separating pedestrian and vehicle operating areas.
- Reducing speed to that of a walk and enforce as necessary.
- Use a guide to clear the route for vehicles when movement is required in “on- hours”.
- Restrict vehicles from reversing unless the vehicle is fitted with:
  - A reversing camera.
  - Other 360-degree vision aids i.e. additional mirrors
  - Reversing alarms (where applicable) and lights.
  - Or the use of a spotter.

- Use of calming devices such as speed bumps.
- Implementing a one-way flow if possible.
- When entering or exiting buildings sound the vehicle horn and reduce speed until the route is clear or the transition is complete and the route clear of pedestrians.

18.2.4 Night Activities

When undertaking night activities, or working in basements areas or periods of limited visibility, the following shall apply:

- Separation of pedestrian and vehicle movements where practicable.
- Adequate or additional lighting of the general area is provided.
- Pedestrian designated walkways are lit.
- Vehicle movements to be restricted including the use of a spotter when reversing.
- All workforce are to wear high visibility clothing.
- Persons directing vehicles should do so using an approved illuminated wand.

18.2.5 Speed Limits

Expo City Dubai will have a number of vehicles that access or move around the site. Hazards associated with vehicle movements will need to be identified and controlled within all areas and on access roads to and around the site.

Pedestrians and vehicles, where practicable, are to be separated by a physical barrier. A traffic management plan must be developed for all areas that includes routes and timings for vehicles and pedestrians and where barriers are to be provided.

The following maximum limits are applied on Expo City Dubai roads and other traffic routes. Speed limits are monitored and enforced as required:

- Boulevard – 40 km/h as per RTA direction.
- Service Road – 30 km/h.
- Back of house – 15 km/h.
- Golf buggy lane – 15 km/h.
- Basement – 5 km/h.
- Public realm – 8-10 km/h.

18.2.6 Restrictions on Vehicle Use in the Public Realm

Specific routes have been defined within the Public Realm where vehicles shall use the primary route when on the move.

A specific vehicle permit must be in place for vehicles to minimise the number of vehicles within the Public Realm areas. The aim is to give access to only a few essential operational and a limited, pre-agreed number of enhanced service electric vehicles (e.g. buggies, trains) and authorised motor vehicles in case of emergencies only. All vehicle operations in the public realm must comply with the mandatory adherence to the speed limit of 8 - 10km/h.

Expo City Dubai will allow personnel to bring their own bicycles onto the Site. The bicycles must be self-propelled and of two-wheel nature only. Bicycles will be able to be used across some permitted areas of the Expo City Dubai Site and on the Service Road. It is not permitted to ride any bicycle on the running track and users should use the “golf buggy lane” in the Public Realm most times.

At all times bicycles must be roadworthy and safe and must be fitted with working front and rear lights. It is recommended that all users must wear protective equipment associated with the use of bicycles and will be liable for any accidents that they cause, at their own risk. Expo City Dubai accepts no liability towards the users of the bicycle at any time whilst on the Site, or the loss or damage to the bicycle, however, caused, at any time.

Expo City Dubai has the right to cease the operation of any non-emergency vehicles operating in the Public Realm at any time it is deemed to compromise safety or will interfere with a planned Expo City Dubai activity.

Overnight operations present health and safety challenges as the site needs to be replenished and cleaned for the next day in a limited time period. Organisation and safety remain key; therefore, the access of motor vehicles and heavy equipment into public realm areas and the basement will be strictly controlled.

18.2.7 Securing Loads

All vehicle structures, systems, parts and components used to secure loads must be in proper working condition when used to perform that function, with no damaged or weakened components that could affect their performance. Load securing devices must be used and maintained as per manufacturer specifications.

18.2.8 Use of Bicycles

To assist in accessing and moving around site bicycles may be used by restricted groups. Where bicycles are used they are to be operated in accordance with Dubai laws that includes a requirement for riders to wear an appropriate helmet. Bicycle users are to remain on designated routes and comply with site rules and restrictions. Bicycles are to be roadworthy and utilise lights at night or when visibility is reduced.

18.2.9 Autonomous Vehicles

As these vehicles are driverless and often very quiet when in use, care must be taken during operations. No driverless vehicles are to be operated autonomously in the public realm without suitable separation through barriers or other relevant control measures.

All driverless vehicles are to have a backup driver who has a clear view of the vehicle and its surroundings, ensuring 360-degree visibility at all times. Operations are to comply with all relevant site rules including limiting speed to 5km/h.

Table 18-1 Autonomous vehicles types and controls

Type	Control Measures
0 - No automation- regular every day car, cruise control.	Manufactures manual should have measures to mitigate any risk.
1 - Driver assistance – adaptive cruise control, lane assist, ensuring safe distance between you and the car ahead, cameras, automatic breaking with traffic, nudges when veering off lanes.	Only authorized, valid driving licence holding personnel shall operate.
2 - Partial automation- driver has hands on the wheel and ready to take control at any given moment. Assist in controlling speed and steering. Help stop and go traffic.	Operation of vehicle shall be within controlled area with no pedestrian interface.
3 - Conditional automation- limited access, divided highway, human driver required to take over any time.	Operation of vehicles must be within the guidelines provided by the manufacturer.
4 - High level automation- drive themselves without human interactions but restricted use.	Manufacturers must provide information on technology to prevent accidents or failure of technology to control unexpected launches or start-ups, controls to shut down remotely, controls to shut down with lost signal, and protection from cyber security.
5 - During testing phase, only authorized personnel should be in the testing zone with barriers to protect vehicle/pedestrian interface	Full automation, driverless car, should be able to monitor, manoeuvre through road conditions and require no human interventions, eliminating the need for a steering wheel and pedals.

18.2.10 Unmanned Aerial System (UAS)

Unmanned Aerial Systems (UAS) or drones is an innovative industry that has enormous potential for growth. The Dubai General Civil Aviation Authority (GCAA) regulates these vehicles and any use must comply with all relevant regulatory requirements and any Expo City Dubai restrictions, including Expo Airspace Security, on their use.

UAS, Remote Piloted Aerial System (RPAS) is any unmanned aerial system including aircraft and the associated system elements such as radio control transmitted, receiver and cameras. Unmanned Aerial Vehicle (UAV), Remote Piloted Aerial Vehicle (RPAV) or Drone is the actual unmanned aerial vehicle, other than a balloon or kite, which is intended to be operated with no pilot on board.

It is anticipated that any use of such vehicles at Expo City Dubai will follow all local and GCAA requirements.

19 Fire

All organisations, tenants and those working on their behalf must develop a fire risk assessment for their activities which should include arrangements for managing fire hazards, reducing fire risk, fire prevention and detection systems, fire protection systems, emergency arrangements and response, training and competence, key personnel, and responsibilities. The fire risk assessment, can be incorporated within the Emergency Action Plan, the HSE risk assessment or produced as a stand-alone document.

The key fire safety precautions include:

- Eliminating/controlling the use and storage of combustible and flammable material in the premise.
- The removal, isolation and or reduction of ignition sources.
- Ensuring the fire and life safety systems are in good working condition always.
- Selection of fire rated materials: - Fire resistant materials (i.e. to the fire standard LPS 1207) shall be used for the temporary protection of building finishes, materials and plant, such as Monoflex and Correx and for the containment and protection of materials delivered to site.
- Smoking at designated points only, these shall be labelled and completely segregated from any flammable or combustible material storage areas.
- Sufficient personnel trained in the safe use of fire extinguishers.
- Management of fire safety system's impairments with adequate mitigation in place.

19.1 Control Flammable or Combustible Materials

Robust measures should be implemented in relation to the control of flammable and combustible materials:

- Avoid the storage of flammable and combustible materials in venues.
- Any material brought in for installation, decorations, banners and posters etc., must be fire retardant, and certificates have to be submitted along with fire safety plan.
- Fire extinguishers must be deployed based on the materials used and the layout of the venue.
- If the use of any combustible/flammable materials is unavoidable, the details of the requirement (justification for use), specific fire risk assessment and control measures are to be provided for review and storage areas must be labelled noting any hazards.
- The details of flammable materials required to store on site should be included in the fire risk assessment and the quantity required.
- No flammable materials should be stored in any basement areas.
- Any combustible materials, shall be brought to event location and stored using the 'just in time' approach to avoid excessive fire loading of the building.
- Prohibiting or limiting highly flammable substances and gases (hydrogen, acetylene bottles etc.) during periods when the premise is not occupied by the public (all equipment should be removed from the premises before the public are admitted).
- All storage of materials and debris must consider the potential for a fire and the control measures must reflect this. Protection measures for stores should include use of fire resistant materials, sprinklers and smoke detectors.

19.2 Control of Ignition Sources

Expo City Dubai requires effective management of ignition sources to reduce the potential for a fire on site, including during overnight operations:

- Petrol operated plant and tools are not permitted in venues without Expo City Dubai's and DCD's approval.
- Portable halogen lamps are not permitted for use as task lighting (stand lights).
- Unattended sources of potential fire ignition such as space heaters are not permitted.
- A Hot Works Permit procedure shall be in force for all types of hot works such as burning, cutting, welding, and abrasive wheel operations. Use of Acetylene must only be by exception and controlled by means of the permit system.
- Only smoking in designated areas.

- During special events, open fires, flambé lamps, candles or other sources of ignition should be carefully controlled, based on a risk assessment, to minimise the risk of fire.
- Isolation, and regular cleaning of cooking and heating equipment and appliances i.e. kitchen/heating facility extractor fans, filters, air ducts and machinery.
- Arson mitigation provisions i.e. management awareness, fire and security strategy integration, should be implemented.
- Periodic inspection of electrical appliances (Portable Appliance Testing (PAT) policy and procedures).
- Portable gas and liquid fuel, radiant space heaters should not be used (except when supported by a specific fire risk assessment).

19.3 Hot Works

All hot works processes likely to produce sources of ignition such as burning, grinding, heating, welding, and flame cutting must be controlled by the use of a permit system. Fire extinguishers must be available at any location where hot works is being undertaken and a site log for issued permits and locations must be in place.

All organisations, tenants and those working on their behalf must ensure that:

- All flammable and combustible materials are removed from the area where hot works is to take place.
- Timber floors are protected with non-combustible material.
- Non-combustible (flame-proof) screens are used for welding and cutting operations or located in such a way to prevent flashes affecting other site users.
- Suitable fire extinguishers and a fire watcher are provided.
- Follow-up checks are done on completion, a minimum of 60 minutes on completion of the task.
- Appropriate clothing and PPE is worn.
- Only proprietary fittings are used on gas welding equipment.
- All flammable gas or oxygen cylinders are fitted with ‘flash-back’ arrestors and are only moved on a proprietary trolley with a fire extinguisher nearby or moved with the cylinders.
- Full screening to arc welding is available where access to the welding area cannot be entirely restricted.

19.4 Smoking

Smoking is prohibited within all enclosed areas and in the vicinity of combustible materials, explosives, and flammable liquids/gases.

Smoking is not allowed at the following locations:

- In existing buildings or basements
- In company vehicles or in vehicles being driven on site.
- In offices, rest areas, welfare facilities, toilets, and changing rooms.

Smoking is allowed:

- In the designated smoking areas.
- Designated smoking areas must be constructed of non-combustible materials and have sand buckets or other suitable container available to allow cigarettes to be safely extinguished. Adequate signage must be posted to all designated smoking points.

Note: Passive smoking is a risk to the health of other personnel. There must not be any designated smoking areas in areas that could result in other personnel being subject to passive smoking.

19.5 Gas Installations and Equipment

All gas installations must be undertaken by a competent person and must be in accordance with UAE Fire and Life Safety code and approved by Dubai Civil Defence. Gas compliance certificates and Civil Defence approval must be provided to Expo City Dubai.

19.6 Liquefied Petroleum Gas (LPG)

Liquefied petroleum gas (LP gas or LPG) is stored at high pressure so specific requirements apply when storing, using and transporting LP gas cylinders.

- The use of LPG or any other compressed flammable gas is allowed only with purpose-built installation complying to UAE Fire and Life Safety Code (UAE- FLSCP) and approved by Civil Defence.
- Portable LPG Cylinders shall not be used unless purpose-built and approved by Civil Defence (E.g.- food trucks).
- LPG cylinders shall not be stored anywhere in Expo City Dubai's premises.
- Gas leak detection monitors must be installed in all locations.
- Details of any proposed use of LPG must be submitted to Expo City Dubai's Community Operations team well in advance of the proposed use date, as special consent may need to be given.
- If flexible hose is used it must clearly show the year of manufacture, and be no more than 1-year-old, and fitted with integrally threaded end connections.
- All LPG gas appliances, equipment, and installations must be accompanied by a valid safety certificate that is less than 6 months old and from a Dubai Civil Defence approved competent person.
- Appliances shall be fitted with flame failure devices, have an accessible shut-off valve on the pipe work immediately before the appliance, and be adequately ventilated.
- No LPG bottles are permitted to be changed whilst a venue is open to the public.
- A Safety Data Sheet is to be obtained from the gas supplier and kept in a readily available position.
- Every place where LPG is used or stored must have effective and suitable firefighting equipment.
- All LPG installations (cylinders, pipe work, appliances, flues, vents etc.) shall be subject to daily inspection by a competent person before use.
- If the use of LPG is required to carry out maintenance works, an approval should be taken from Expo City Dubai's HSE team to use in the premises.

Expo City Dubai reserves the right to check and inspect all gas and LPG equipment, and prohibit any use where necessary to ensure safety.

19.7 Fire Detection and Alarm Systems

Arrangements must be implemented to detect and raise the alarm in the event of a fire. Alarms must be audible in all parts of the venue where people may be present and must be checked/tested on a weekly basis to ensure they are functional.

Fire alarm initiating and notifying devices must be installed in all venues as applicable by UAE FLS Code of Practice. Fire detection must be provided in all temporary partitions within the building if modified as part of an exhibition.

All temporary facilities at the event location must have automatic fire detection and alarm system connected to central notification system, DCD and the Community Control Room (CCR)

Fire alarm systems must be maintained in an operable condition at all times. Fire alarm devices (smoke and heat), signalling and notification devices, as well as initiating devices (pull stations) shall remain unobstructed.

19.8 Means of Escape

Two alternative means of escape must be provided at all locations. Emergency exit routes must be easily identifiable, kept free from obstruction, have emergency lighting, directional signs and exit points marked and offer some additional level of fire resistance and have fire doors fitted to them where appropriate. Emergency exit routes must be displayed on a plan in each area. Minimum width of each exit shall not be less than 1.5 m. Adequate number of exits must be provided in accordance with UAE FLS Code.

A minimum of two escape routes are required from any floor. The escape routes must be marked and displayed. The venue must be planned to ensure escape routes/staircases are free of obstructions. Fire wardens must walk routes daily.

Exit signage must be provided in accordance with UAE FLSCP Chapter 5. Illuminated exit signs will be provided as indicated on the design layout drawings and in accordance with UAE Fire & Life Safety Code of Practice (FLSCP) Chapter 5.

19.8.1 Emergency Lighting

The following measures should be implemented in relation to emergency lighting:

- Emergency lighting must be provided on all escape routes and staircases with a minimum 3-hour performance.
- The general lighting for the visitor and/or guests must be bright enough to see the aisles leading to the exits to facilitate evacuation and to prevent people from tripping or falling.
- Lighting fixtures that are on the emergency circuit and exit signs shall not be turned off.
- If mood lighting is used during an event, a competent person must be assigned to stay at the control panel so the lights can be turned up immediately if the fire alarm is activated.

19.9 Occupancy Capacity

It is the responsibility of all organisations, tenants and those working on their behalf to ensure that the maximum capacity of a space is not exceeded during an event. Crowd managers should be updated on the current occupant load and must take the necessary control measures to maintain the occupant load within the allowable limits.

19.10 Fire Protection Systems

Sufficient numbers and types of firefighting equipment must be available as determined by the fire risk assessment and correctly located at all times in accordance with Dubai Civil Defence regulations and good practice. Fire extinguishers, hose reels, fire blankets and riser inlet and outlet valves must be readily accessible, unobstructed, clearly signed and regularly checked.

19.10.1 Fire Hydrants

- All hydrants should be free from obstructions.
- A clear space of 1m should be maintained around the hydrant.
- A clear space of 2m shall be provided in front of hydrant connection.

19.10.2 Fire Hose reels

- Fire hose reels must be accessible and reachable to all locations as per the design.
- Any installation, as part of an exhibition shall not obstruct the reach of fire hose reels to the entire space
- Fire hose reel valve keys must be available in each fire hose reel.

19.10.3 Portable Fire Extinguishers

Based on the fire hazard classification of the space and to comply with the UAE Fire & Life Safety Code of Practice the following types of fire extinguishers are required:

- 4kg multi-purpose dry powder type.
- 5kg CO2 type.

Each extinguisher can serve up to approximately 280m2 of the area. The maximum travel distance to an extinguisher shall not be more than 30m, i.e. from any point of the area there shall be one extinguisher within a distance of 30m.

The following must be ensured while planning the placement of extinguishers throughout the site:

- Appropriate and adequate numbers of extinguishers must be provided throughout the space, ideally every 30 metres and nearby any specific risk area as applicable.
- Provide adequate signage on each fire extinguisher for easy visibility.
- A sufficient number of personnel, ensuring the coverage on all shifts, no less than that required by Civil Defence, must be trained in the use of extinguishers.
- Must be serviced at least annually and inspected monthly.
- Provision of equipment must be periodically reviewed

- Ride on plant and club cars must carry an appropriate fire extinguisher.
- Where combustible materials are placed inside a building for a special event, additional fire extinguishers shall be provided and spaced evenly to accommodate the added fuel load in the building.
- Decorations, or displays for the purpose of the special event shall not obstruct fire extinguishers hindering easy access.
- CO2 fire extinguishers shall be provided for all electrical DB boards and other electrical fire risk areas.
- Wet chemical fire extinguishers must be provided in all kitchens.
- Fire extinguishers deployed in external areas should have protection from high temperatures and direct sunlight.

19.11 Fire and Life Safety Systems Layout

A layout with the details for the fire and life system should be prepared for all venues and or events. The following must be included on the plan.

- Manual alarm call points.
- Maximum occupancy capacity.
- Location of fire extinguishers, fire hose reels and hydrants.
- Location of fire blankets.
- Egress routes and exits.
- Emergency vehicle access routes.
- Cooking stations using LPG and electricity as applicable.
- Assembly points.

An evacuation route plan must be installed at staircase landing areas, front lobbies and at fire control panels.

19.12 Inspection, Testing and Maintenance of Fire & Life Safety Systems

All organisations, tenants and organisations working on their behalf must ensure the inspection, testing and maintenance of fire and life safety systems is carried out as per UAE Life Safety Code requirements by a Civil Defence approved contractor.

- A functional test of fire and life safety system to be carried out every month to ensure all interfaces such as elevator, public address system, strobes, escalators, exit doors, fire shutters/curtains and smoke management etc are working as per the cause and effect matrix
- All panels, such as fire alarm panels, gaseous suppression panels and fire pump room panels shall be inspected daily.
- Fire pumps and generators shall be tested every week.

19.13 Fire Safety Coordinator and Wardens

A sufficient number of, ensuring the coverage in all shifts, fire coordinators and marshals/wardens must be trained and appointed. Training courses must be carried out by Civil Defence approved/accredited providers.

19.13.1 General Duties of Fire Coordinator / Incident Fire Commander

- Ensure the fire safety plan is available and up to date.
- Ensure that the requirements of the plan are implemented.
- Ensure fire detection is available of permanent and temporary event installation as applicable by code.
- Ensure that all firefighting equipment is checked and serviced and that fire exits and escape routes are checked on a regular basis.
- Ensure that nominated fire personnel are adequately trained and details recorded.
- Ensure emergency procedures are displayed and fire exit routes clearly marked.
- Arrange a fire drill initially and at least every six months, or in accordance with the fire risk assessment
- In the event of a fire or other emergency evacuation, to assume overall control of and evacuation of the venue, with Fire Marshals reporting to them at the assembly point.

- Liaise with the local Civil Defence requirement as required

19.13.2 General Duties of Fire Marshall/Warden

- Enforce the requirements of the fire plan.
- Complete recorded daily fire checks of extinguishers and fire escape routes.
- Ensure Civil Defence is directed to the scene of the incident.
- Ensure key personnel/emergency list is updated and assist or direct any muster arrangements.
- Assist the emergency services where required, giving information on flammable materials stored on site, high voltage cable routes and other relevant information.

19.14 Emergency Services

Adequate access must be maintained at all times for emergency service vehicles. Access must be clear and well maintained and allow access to firefighting services such as hydrants and to first aid or medical rooms. Access for emergency services must be part of the site logistics and traffic management plans.

- 6 metre clear pathway should be provided for the fire vehicle access in line with approved escape routes.
- 7 metre shall be provided at turning locations.
- 4.5 metre vertical height to be maintained in the civil defence vehicle access route.

19.15 Interior Finishes (Decorating for Events)

It is anticipated that some event programs may require decoration, such as carpets, curtains and walls. The following shall be applicable for any event decorations:

- The details of decoration should be included in the event approval documents.
- Any material brought in for installation, decorations, banners and posters etc., must be fire retardant, and certificates have to be submitted to Expo City Dubai
- Do not decorate exit stairways or corridors.
- Do not hang decorations or extension cords from overhead sprinkler pipes or heads, conduit, other types of pipes, over or under doors.
- Do not attach decorations to/or block the view of any type of fire equipment.
- Inspect light strands for frayed wires, bare spots or gaps in the insulation, broken or cracked plugs/ outlets, and excessive kinking or wear before putting the light strands up.
- Keep lighting equipment (especially high intensity) and other ignition sources 1m away from decorations.
- All lighting shall be of LED type.
- Exit signs and doors must be clearly visible, cannot be obscured or disguised by decorations. Decorations cannot block the exit path. Exit signs cannot be turned off.
- Maintain access to all exit doors, stairs and corridors. Do not obstruct or narrow the path to the exit or the exit door.
- Remove decorations immediately after the event.

19.15.1 Carpets

Carpet and ‘carpet like’ interior floor finishes shall comply with ASTM D 2859, Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials. Floor coverings other than carpet, shall have a minimum critical radiant flux of 0.1W/cm2 or as outlined in Table A.10.2.2 of NFPA 101, whichever is the more onerous, excluding traditional finish floors and floor coverings, such as wood flooring and resilient floor coverings. Material must of class A or class B fire rated.

19.15.2 Furniture and Textile / Vinyl Material

All furniture and textile/vinyl materials used on site must meet the UAE-FLSCP chapter 7 requirements. The components of the upholstered furniture shall meet the requirements for Class I when tested in accordance with NFPA 260, Standard Methods of Tests and Classification System for Cigarette Ignition.

19.15.3 Banners and Posters

Expo City Dubai considers all banner and posters as potential fire hazards, and if their use is required these banners and poster displays shall be made of fire-retardant materials. It is the responsibility of the venue owner and/or event organiser to ensure the following:

- Banners and posters materials shall meet NFPA 701 requirements.
- Use and location of banners and poster displays shall be included in the event approval application for the Expo City Dubai HSE team's review as they are fire hazards.
- Posters or easel stands shall not be located on exit routes.
- Installation of posters and banners shall not obstruct and fire and life safety system or safety signage such as the fire extinguisher, hose reel, exit signs etc.

19.16 Use of Open Flame (including candles)

Open flames are not allowed in Expo City Dubai premises without carrying out a fire risk assessment which has been reviewed and approved by Expo City Dubai's HSE Department and Dubai Civil Defence (if required). Candles are only allowed with special approvals.

Safety requirements include, but are not limited to the following:

- Lit candles must be constantly attended until the candles have burned out or have been extinguished.
- Assign a person to be a fire watch and to ensure that the fire risk assessment is implemented. They would report an emergency and evacuate if necessary. Venue owners and/or event organizers shall appoint a fire watch dedicated without any other responsibilities.
- Use sturdy metal, glass or ceramic holders that are deep enough to protect the flame.
- Keep decorations and any other combustible materials out of a 2m safe zone around the candles.
- Use flame retardant materials near and under the candles.
- Put matches and candles in water before disposal.

Alternative safer methods should be explored, such as:

- Candles with rechargeable batteries and LEDs.
- Battery-operated or electric candles and fragrance warmers, which can look and smell like real candles.
- Flashlights or battery-operated lanterns.

20 Special Effects and Pyrotechnics

20.1 Special Effects

The use of fireworks and special effects is strictly prohibited on the site unless pre-approved by Expo City Dubai, and in consultation with Expo Airspace Security (EAS). The following sections detail requirements to ensure effective risk management during these types of events, however all organisations, tenants and those working on their behalf must request approval from Expo City Dubai prior to transporting, setting up or activating any fireworks or special effects.

The risks associated with the use of special and visual effects during such events must be assessed by a competent person. It must be ensured that:

- Special effects personnel involved are competent for the work they are undertaking.
- Special effects personnel are provided with adequate information regarding the event (i.e. location of the audience, display timings etc.).
- Adequate time and resources are allowed for both rehearsal and preparation.
- Appropriate arrangements have been made for emergencies (such as fire-fighting and first aid).
- Consideration is given to the effects of smoke such as fireworks and pyrotechnics drifting beyond the event venue. Any potential safety risk will depend on factors like the size of the display, its proximity to high risk areas, weather and wind conditions as well as localised micro climate effects.
- The time allocated to the effect allows for delays due to misfire or changes of plan.
- Adequate communication arrangements are in place.
- Secure facilities are available for the assembly, fusing etc. of explosive effects before their use.
- The display firing and control operation area is suitably located at the correct distance for safe operation and with a clear line of sight.
- Consideration is given to air space management to avoid proposed special effects impacting other operations within the air space.

NB: Use of special effects may be subject to approval from DCD.

The person in charge of the special effects should remain responsible at all times for advising on the safe planning and execution of the effect. They are responsible for:

- Ensuring the effect is adequately planned, including conducting a full site-specific risk assessment and communicating the significant findings and controls to the event organiser.
- Liaising with other appropriate people.
- Specification and procurement of all explosives, pyrotechnics and other related materials. Ensuring all materials are fit for purpose and that their use complies with relevant legislation.
- The safe transportation, storage and use of all explosives, pyrotechnics and other materials used in the effects.
- Ensuring only competent people are employed.
- Developing emergency procedures and identifying emergency equipment such as for fire-fighting or providing first aid.

20.1.1 General Requirements

- Flame shows and pyrotechnic shows shall not be conducted without prior approval from Expo City Dubai.
- Expo City Dubai will issue a No Objection Certificate (NOC) to all organisations and tenants upon receiving the approval from Civil Defence (and other relevant government authorities).
- The special effects program is to be planned well ahead of program date, and documents are to be shared to Expo City Dubai's HSE team for review at least 14 days prior with all necessary approvals.
- The indoor and outdoor use of pyrotechnics is strictly regulated and requires proper approval and permits.
- Indoor pyrotechnics and outdoor fireworks display require a Public Display of Fireworks Permit issued by Civil Defence.
- Only the Display Operator's pyrotechnics technicians and licensed staff shall handle and launch the pyrotechnics. Use of remote ignition systems that are not under the direct control of the on-site operators are not permitted.
- The event organiser shall deploy a competent third party to conduct the fireworks and ensure that all staff are competent and approved by Civil Defence.

- Specials effects performed in the indoor space could trigger a fire alarm, a temporary isolation would be required based on the risk assessment and effective mitigation measures being put in place.

20.1.2 Smoke and Vapour Effects

In certain circumstances, smoke and vapour effects can produce toxic or suffocation hazards. A competent person must be involved in managing these effects.

- Fog and haze shall not obscure the visibility of exit signs/ doors, which is prohibited by the UAE Fire and Life Safety Code.
- Fog and haze can set off the smoke detectors and trigger a fire alarm. A temporary isolation would be required based on the risk assessment and effective mitigation measures being put in place.
- Use of fog and haze must be communicated to visitors as it may create irritation of their eyes, noses, respiratory tract and voices.
- If you plan to use a fog machine, full details of the use must be included in event approval documentation and this must be approved prior to the event.
- It is responsibly of the event organizer to provide adequate resources for the implementation of the mitigation plan.
- Any last-minute request to use fog machines will not be allowed as it requires Fire and Life Safety system isolation and implementation of a mitigation plan.

20.1.3 Flame Effects

There are risks with all types of flame effects used in entertainment which should be carefully assessed and managed to ensure their safe use. The risks are not only with fire but also with the materials (such as gas) used to produce these effects. The flame effect system installation shall be in accordance with NFPA-160.

A competent person must be involved in managing these and all organisations, tenants and those working on their behalf must follow their advice.

LPG Systems used for flame shows.

- Flame effect shows, both indoors and outdoors, to entertain audiences using LPG must have approval from Expo City Dubai's HSE team.
- The event organizer must obtain the Civil Defence approval for LPG installation and flame effect control mechanism.
- Flame effect shall be tested daily to verify that they operate in accordance with their design.
- Indoor flame effect shows will not be permitted if the building is not fully sprinkler protected and provided with an automatic fire detection and alarm system.
- Indoor flame effect shows will not be permitted if the room does not comply with occupancy loads, exit widths and have a minimum of two emergency exits.

20.1.4 Display Lasers

Most lasers that are used in entertainment have outputs high enough to cause a significant risk of eye injury and sometimes skin burns.

Display laser safety assurance is mainly about hazardous laser beam identification and, where required, personal access restriction.

A safe display laser installation should have the following features:

- Protective housings for laser systems and effects heads.
- Masking around laser apertures to restrict errant beams should they arise.
- Robust and rigidly mounted laser system(s) and external optical components, so that emission misalignments cannot occur.
- Controlled emissions that do not expose people above the applicable maximum exposure limits, even when reasonably foreseeable faults occur.
- Emergency safety cut off devices that terminate a display when problems occur.
- Key control for tamperproof operation.

Suppliers should provide information on equipment safety checks and maintenance procedures for users and safety information for installers who set up their products.

Suppliers who are also installers should provide information on the administrative safety arrangements the user needs to make, for example:

- Laser controlled area demarcation requirements.
- Supervision requirements.

Suppliers who are also installers need to make proper installation commissioning arrangements.

20.1.5 High Power (Scenic) Projectors

Xenon and Hydrargyrum Medium-arc Iodide (HMI) Lamp Systems

Both of these lamp systems carry significant risks to people from a number of sources if misused. Operators must be competent in the special handling procedures when using xenon and/or HMI lamps.

Xenon lamps can burst violently when cold, so gauntlets covering wrist arteries, chest protection and a full-face visor covering neck arteries should be worn while handling them. Xenon and HMI lamps reach high pressures around 30 bar and high temperatures (around 95˚C) when energised.

A lamp burst is possible in either lamp type when fully energised, resulting in danger from flying glass, burns and fire. When xenon lamps are being installed, warn other workforce of the dangers and ask them to leave the area for the few minutes it takes to install the lamps.

The lamp housings of commercial high-power projectors are designed to withstand a lamp burst and to contain the glass within the housing, even if the burst happens when energised, so they should pose no danger to the audience if installed and operated properly.

The arc of xenon and HMI lamps is very bright and housings are designed so that the arc cannot be viewed directly by the operator. Ensure people are not put at risk by ‘blinding’ them with the light, especially if they are moving around in otherwise dark environments (e.g. while entering or leaving a venue or on stairs).

20.1.6 High Power Projectors

Projectors for displaying moving or static images should be positioned so they are not accessible to the general public. Follow the manufacturer’s instructions for any exclusion zones in front of the projection lens, taking account of applicable exposure limits.

20.1.7 Projectors - General Requirements

Sufficient dry powder or carbon dioxide fire extinguishers must be provided to ensure coverage of all the areas that house scenic projectors. Staff should be trained in their use.

Projection towers should be stable and suitable for the loading to be placed on them and there must be sufficient working space around systems.

Inspection and maintenance must only be carried out by a competent person in accordance with the manufacturer’s requirements.

Projectors must be housed in weather proof projection structures, particularly where there is a risk of water entering the projectors during operations.

Lamps must be used correctly to restrict exposure to ultraviolet (UV) radiation which, in extreme circumstances, can cause retinal or skin damage. UV lamp operators should be briefed about the emission characteristics of the lamps so that applicable exposure limits are not exceeded.

When replacing lamps or other components that could affect the radiation output, it is important that the manufacturer’s advice is followed and that the correct lamps are installed. To avoid installing incorrect replacement lamps, the manufacturer’s lamp specification must be identified as otherwise mistakes can be made (e.g. germicidal units could be used in an entertainment application by mistake).

Designated personnel must be provided access to an emergency cut off switch for the power supply.

20.1.8 Strobe Lights and Equipment Capable of Strobing

Careful consideration on the use of strobe lights and any equipment capable of strobing (e.g. video displays and LED screens) must be ensured as they may act as a trigger for flicker or photosensitive epilepsy in some people.

Whenever strobe lights are used, arrange for a prior warning to be given at the entrance to the event or in the programme.

If strobe lights are used, keep flicker rates at or below four flashes per second. Where more than one strobe light is used, the flashes should be synchronised. Light frequencies between 3-30Hz are the primary risk area, but this can also go as high as 60Hz in extreme circumstances and where possible these frequencies should be avoided. Dark and light geometric patterns such as black and white stripes or checks, and any high flash rates should be avoided. It is also possible that red colours can cause issues and should be managed accordingly.

Care should also be taken with LED lighting systems, which are capable of being switched on and off in effectively the same manner as strobe lights.

To reduce risk further, mount lights as high above head height as is practical. Where possible, the lights should be bounced off walls and ceilings or diffused by other means so that glare is reduced. These lights should not be used in corridors or on stairs.

20.1.9 Fire Performers

- Performance involving fire, on the stage or any other area, must be included in the Operating Plan submitted for Expo City Dubai's HSE Department for review.
- The event organiser must carry out a fire risk assessment and an appropriate mitigation plan must be in place.
- The fire performance shall be in accordance with National Fire Prevention Agency (NFPA) Section 160, Standard for Flame Effects before an Audience and NFPA-30 as applicable for the event.
- Each performance and lit practice must have at least one spotter ready to meet fire emergency needs, with additional spotters and guards as needed to help prevent accidents or meet safety requirements based on a risk assessment.
- Spotters are in charge of onstage and backstage fire safety including emergent and intentional wick extinguishing. All spotters and guards should have an extinguisher available to them.
- Before each use, the troupe leader should inspect each device to ensure that all parts are in good condition and stable.

Fuelling - Tools shall be soaked, splashed or basted so that excess fuel can be completely recovered and sealed or returned to proper containers.

Storage and transport

- The original retail container for fuel is usually the best choice for storage and transport.
- Fuels shall be kept out of direct sunlight, heat and away from sparks or flame (source of possible ignition).
- Insure all fuel containers are accurately and clearly labelled.
- If petrol is used the container shall be clearly marked 'PETROL' and 'HIGHLY FLAMMABLE'.
- The amount of fuel taken to a performance must be restricted to the amount required for that performance alone and shall be no more than 5 litres.
- The fuel used shall not be left unattended or unguarded at any time.

Backstage Fuel

- All primary fuelling shall take place in a backstage fuelling area.
- Backstage fuel stations shall be manned by the troupe leader, guard or spotter.
- Always seal fuel containers and dip buckets when not in use.
- When at all possible, place the fuel area outside, behind a hard wall; and have a clear corridor from the fuel area to the stage. Never move wet wicks through the audience without escort. Audience and smoking shall be restricted within 10 metres of fuel station.
- If a hard wall between fuel and fire is not available, place a spotter between and insure that fuel containers are sealed before any ignition.

Open Onstage Fuel

- If an onstage fuel reserve is needed, all efforts must be made to restrict quantity and capability of accidental spills.
- Highly stable metal containers with self-closing lids are to be used.
- Unused must be removed immediately.

Performance Area

- The performance area must be inspected and cleared of all flammable materials, or flammable materials must be treated with approved fire-retardant chemicals and tested for combustibility in a safe manner before a performance.
- The area of the performance or activity must be inspected for any signs of previous combustion or ignition before the performance.
- Props and other terrain features must be considered when designing a performance; performers must not be in danger of contact with foreign objects.
- Careful note of active fire safety systems must be made to determine proximity to a performance, possible triggers and other specifics.
- The performance area must be checked at the end of the performance for any debris and or other flammable material related to the performance and for any residual combustion or sources of ignition.

20.2 Pyrotechnics and Fireworks

All organisations, tenants and those working on their behalf must request approval from Expo City Dubai prior to transporting, setting up or activating any pyrotechnics and fireworks.

The event organiser must submit the following documents to obtain a NOC from Expo City Dubai.

- Civil Defence approval copy.
- A detailed method statement and operating plan for the event program.
- A detailed fire risk assessment.
- Detailed drawings which must include firing locations and fall out areas.
- Timings and durations of the pyrotechnics and fireworks.
- A copy of their applicable licenses, a certificate of insurance and material safety data sheets for the products being used.
- Safe procedure of how to carry the explosive materials.
- Safety Data Sheets (SDS) of the explosive fuels of fireworks.
- Storage requirements and details of fire protection provided for the storage both prior to and during the event.
- Information concerning the disposal of by-products from displays.
- The physical and chemical hazards.
- Properties of hazardous debris.
- Fire watch requirement and their location plan.
- Building assessment details for additional protection.
- Emergency plan.
- Environmental impact assessment report.

20.2.1 Theatrical and Stage Pyrotechnics

Pyrotechnics typically include stage gerbs, stage fountains, stage mines, flames, fireballs, and smoke effects. Typical hazards arising from these effects include:

- Flash, heat or fire.
- Blast effects due to pressure waves, projectiles and other debris.
- Noise.
- Toxic effects.
- Improper operation due to damage in transit. Partial or premature functioning or misfires.
- Spurious radio signals (e.g. mobile phone emissions interfering with firing and control systems).

- Flashover from high tension electrical lines due to the presence of ionised particles in the air following the firing of an effect.

It must be ensured that appropriate measures are in place to prevent or control the risks to employees (including volunteers), other contractors and the audience from special effects.

There are a number of methods for reducing the risk to employees and the audience from special effects. These include:

- Reducing flash or radiated heat to the lowest possible level. Substituting hazardous substances with less hazardous ones. Minimising noise and blast to the lowest possible level.
- Minimising the level of fragmentation particles and other debris.
- Determining and enforcing exclusion zones. The dimensions of the exclusion zone and any other controls needed should be determined by a risk assessment.
- Providing appropriate firefighting equipment and training in the use of this equipment.
- Putting in place safe methods of work and procedures for firing the display, including appropriate cueing arrangements.
- Establishing a procedure for dealing with safe partial functions or misfires.
- Having a good and reliable communication system in place and ensuring that all involved know what is happening and are fully aware of their responsibilities.
- Ensuring all those on the firing site are provided with the appropriate Personal Protective Equipment (PPE). Banning or screening mobile or other radio transmitting equipment from the exclusion zone(s).
- Not completing the firing circuit until the last possible moment to prevent accidental firing.
- Ensuring that emergency arrangements are in place for dealing with effects that do not go according to plan.

There should be effective means to warn and exclude people from any danger area. All organisations, tenants and those working on their behalf are responsible for ensuring that adequate arrangements are in place for managing and policing the controls, such as any exclusion zone.

There should be agreed systems to stop the effect immediately if there is any risk to people.

Nominated special effects personnel must be responsible for:

- The specification and procurement of the explosives, pyrotechnics and other materials to be used in the effect. Ensuring that all materials are fit for purpose and comply with all legislation relevant to their safe transportation, storage, handling and use.
- Managing procedures for partial functions or misfires.
- Safe removal/disposal of unused materials.

There should be an agreed, clear and unambiguous system for cueing an effect. This may need to incorporate both sound and vision.

The special effects person responsible for setting off any explosive, pyrotechnic or fire effect should have clear sight of it and its immediate surroundings.

The cueing arrangements should be rehearsed in situ before the effect is performed.

Procedures and equipment should be in place to ensure that the person supervising the effect receives clear and unambiguous confirmation that danger areas are clear before setting off the effect. That person should have a direct line of sight to the effect and exclusion zone. They must also be in direct communication with all key personnel.

In the event of a partial function or misfire, no one should approach the area until the person in charge of special effects has checked the area and declared it safe.

The safety procedures for dealing with partial functions or misfires should be detailed in the risk assessment. These should include:

- Steps to be taken to make the effect safe, including PPE required.
- The exclusion zones required.
- The steps to be taken for disposing of the effect (e.g. explosives).

20.2.2 Fireworks

Robust planning and risk assessment is required prior to the use of fireworks and only competent operators are to deploy and initiate the release of any fireworks associated at site, subject to approval from Expo City Dubai.

20.2.3 Suitable Site

A suitable site must be selected for the use of fireworks. Every site, irrespective of the scale of the event should have the following areas, which may collectively be regarded as the “Display Site”:

- The firing area itself – where the fireworks are rigged and fired.
- The safety area – between the display and the audience, performers, buildings or other hazards.
- The fallout area – where the debris will land from the firing of the fireworks.

Ideally there should only be audience on one side of the display site with the prevailing wind coming from behind them across the firing area to the fallout area. It must be considered that the wind on the night of a display may not be in the prevailing direction or there may be topological features which cause the wind to vary at different heights. These factors should be considered at the event planning stage and suitable contingencies identified, which could include:

- Moving the display site.
- Removing certain items from the display.
- Cancelling the fireworks entirely.

It is vital that unauthorised access to the display site is prevented. Often this will require the use of barriers and stewarding. During the display itself (usually in the dark) it is important that the all organisations, tenants and those working on their behalf ensure that no one is able to encroach into the display area.

20.2.4 Planning the Display

Once the display site is agreed and the requirements of the event are decided the process of planning the display may begin, including the choice of suitable fireworks for that display at that site on that date.

All organisations, tenants and those working on their behalf must not apply pressure to the display company to fire the show in any conditions, such as adverse weather, which may create a health and safety risk to visitors.

20.2.5 Smoke Issues

All organisations, tenants and those working on their behalf must consider the possible effects of smoke, particularly on traffic routes nearby and put into place systems that:

- Identify areas that may be at risk.
- Determine the likely weather conditions at the display date, especially with respect to very high humidity conditions where fog is likely to form and sources of such humidity.
- Provide means of monitoring smoke movement and dispersion, especially in still conditions.
- Establish means of halting a display once started.
- Provide means of informing the emergency services if smoke does threaten local roads.

20.2.6 Inspection (Pre & Post Use of Fireworks and Pyrotechnics)

All organisations, tenants and those working on their behalf must ensure that all areas of the venue, building and surrounding premises are checked, considering all safety precautions before starting the display. The following areas must be checked:

- Tops of the building and any openings.
- Any items if it is hanging, decorative elements or used in the building facades
- Protection of fresh air supply inlet.
- The surrounding areas are cleared of all potential hazardous or combustible materials and substances.

20.2.7 Contingencies

As a result of all the planning phases of the event, the event organiser and those working on their behalf should produce, in a form which is proportionate to the risks of the display and the site and the scale of the display, some form of contingency planning to identify:

- When items should not be fired or the display should be curtailed.
- Alternative firing arrangements if appropriate.
- When the display should be cancelled.

These plans should be shared with Expo before the event so that expectations are both accurate and realistic.

20.2.8 Emergency Plan

The event organiser must provide an emergency plan which includes all possible incidents, the potential consequences, the required actions, and the resources available. Detailed lists of personnel including their contact numbers, their duties and responsibilities. The plan must also give guidance for unplanned events such as a flare miss, back fires or wrong trajectory.

20.2.9 Transport

Transportation of fireworks to the display site must be undertaken in accordance with civil defence requirements. The responsibility for legal transport rests with the event organiser and those working on their behalf and may, depending on the scale of the event and the fireworks selected, involve the use of specialist vehicles and formally trained drivers.

All of the fireworks used in the display should:

- Be classified (i.e. have been assigned a hazard Code according to the UN Recommendations).
- Be packaged correctly.
- Be loaded safely onto the vehicle.

In addition, vehicles used for transportation should be:

- Appropriate for the types and quantities of fireworks being carried.
- Marked with emergency signs as appropriate, with information for the emergency services available.
- Operated by a driver who is suitably trained.

If, after the display it is necessary to transport any unfired fireworks or duds away from the display site, all the transport provisions still apply.

20.2.10 On Site Storage

Explosives shall not be stored on the site without approval from Expo City Dubai's HSE team. All organisations, tenants and those working on their behalf should look to avoid the storage of fireworks on site. However, if fireworks are to be stored on site they must be brought onto the display site well ahead of the event, ensuring appropriate storage and separation from other hazards and activities.

The display company will be able to advise on the local requirements and must gain all relevant approvals for the storage on site.

20.2.11 Rigging and On Site Working

During the rigging phase of the event it is important to ensure that there is no unauthorised access to the firing area. It may be permissible to allow other people to work in the safety and fallout areas during this phase, as the risks from the fireworks is extremely low before they are fired. Consideration of appropriate measures during the rigging phase should form part of the overall risk assessment.

The display company may need to manipulate the fireworks on the display site (e.g. fusing items together or fitting electric igniters) and it is important that this is done in as low risk way as possible, preferably away from any bulk holding of fireworks (i.e. not on the vehicle where the fireworks are stored prior to rigging). In most cases the preferred approach is to carry out any such manipulation prior to arrival at the displays site but if this

is not possible then it should be done once fireworks have been loaded into their firing tubes so that the effects of any accidental ignition are minimised.

The following general principles should apply:

- All firing equipment should be setup in such a manner that it should “fail safe” wherever possible.
- The firing tubes for each firework with a projectile effect (e.g. mines, roman candles and shells) should have at least two independent methods of fixing and support.
- The failure of a single firework should not compromise the structural integrity of adjacent fireworks or their firing equipment (e.g. mortars within racks) causing it to fire at an undesirable angle or function prematurely.

Adequate monitoring of the display must be undertaken to identify any potential failures and alert the firer to any issues that require action.

20.2.12 Communications

At all times it is important to maintain adequate communication, not only between firers on the display site but also any 'spotters' and event managers. Adequate and appropriate communications must be maintained to enable the issue of a 'STOP' order if required.

20.2.13 Fallout

All fireworks functioning normally produce debris which is carried on the wind downwind of the firing site. The distances may be several hundreds of metres in some firing scenarios, depending on the wind strength and direction as well as the firing angles used. This type of debris may be regarded as 'Low Hazard/High Frequency' in most cases and should be considered in the Risk Assessment process with respect to falling on the audience, structures or other vulnerable sites, especially where long duration effects are used which may reach the ground still alight.

The other major factor in the Risk Assessment process should be the 'Low Frequency/High Hazard' events, such as the projection of a firework in an undesired direction, or a dud firework falling to the ground, or ultimately an incident where both of these occur together.

Display companies should tailor their displays to suit the site and to consider both types of 'fallout'.

20.2.14 Derigging

After a sufficient 'cooling off' period the display site should be checked by the event organiser and those working on their behalf and any duds or misfires identified. The event organiser must have in place procedures to make safe any fireworks that have failed to function properly.

During this period there should be no admittance to the display site and any barriers and stewards should remain in place until the 'all clear' is given.

The derigging of the display site and loading of equipment and fireworks back onto vehicles must also be addressed within risk assessments with suitable control measures implemented, including maintaining suitable access for vehicle movements.

20.2.15 Environmental Requirements

Applicable Standards

The main applicable laws and regulations concerning pyrotechnics are listed below. For more information, refer to the HSE Legal Register.

- UAE Fire and Life Safety Code of Practice 2018.
- Cabinet - Resolution No. 24 of 2012 Concerning Regulating Civil Defence Services in the State.

Control Measures

- A method statement and a risk assessment must be developed and approved by Expo City Dubai.
- All required permits/NOCs, from e.g. Dubai Civil Defence, Dubai Civil Aviation Authority, Dubai South, etc. must be obtained in time and prior to the display event.
- Any dangerous goods / chemicals mixing and storage, if applicable, must be in line with the Hazardous Materials section.
- Air quality must be tested prior to commencement of the display, to establish a baseline, and post display to monitor the potential impact. Locations and frequency of air quality monitoring to be agreed with the Organiser.
- Neighbouring communities must be informed as needed, and noise levels must be monitored during the display event to ensure minimum nuisance.
- Any residues and waste generated from the show, must be managed as per the Waste Management Policy.

21 Electricity

21.1 General Requirements

Expo City Dubai expects that robust arrangements are implemented to manage the risks associated with electricity. All organisations, tenants and those working on their behalf must ensure:

- All electrical installations are fully compliant with BS 7671, or an equivalent international standard.
- All site temporary electrical systems are inspected on a regular basis and tested at three monthly intervals.
- A competent person is appointed to oversee the design, installation, testing and maintenance of temporary electrical systems.
- All electrical equipment used on the site is manufactured in accordance with internationally recognised standards and installed in accordance with BS 7671, or an equivalent international standard.
- Cables, sockets, connectors and splitters will be of an industrial type. Domestic type cabling, connectors and sockets are prohibited in construction areas. Jointing of all electrical cables and wires shall be by means of proprietary terminations or connectors/splitters.

No electrical work is to be undertaken without first proving that the item to be worked on is de-energised or isolated from all sources of supply.

21.2 Temporary Supply

Arrangements must be put in place to ensure the safety of any infrastructure and facilities used for the temporary supply of electricity:

- Transformers, distribution boards and supply panels must be sufficient in number, and secured to prevent unauthorised access, earthed and inspected before use by a competent person.
- All switchgear installed on-site must be positioned as to be freely accessible at all times with an isolating switch readily available on the equipment or immediately adjacent.
- All main switchgear must be provided with a facility to be locked in the open (off) position.
- Wherever possible free-standing mains distribution units must be used to house site switchgear.
- Where it is not possible to house switchgear in this manner, it must be installed and protected in a manner that does not expose it to any adverse or hazardous conditions and secured to prevent unauthorised access.
- If power is to be generated on-site, then generators must be earthed and covered, preferably packaged, to reduce noise.
- All generators must be bunded with an internal drip tray in place.
- Fuel stores must be located in a bunded store with foam fire extinguishers provided.
- All distribution units must be lockable, IP rated where water ingress is likely, elevated, fire resistant, identified with a serial number and checked by a competent electrician.

21.3 Circuit Breakers

All electrical circuits must be protected by protection devices which must be regularly checked. Electrical designs must consider the use of multiple circuits all with protective devices to reduce the likelihood of tripping and to ease in the identification of any faults.

All sockets in use in a construction area with a voltage in excess of 110 volts will be protected by means of individual RCDs with a maximum sensitivity of 30 mA with zero-time delay.

21.4 Cable Protection

All electrical supply boards, cables, cords, plugs and sockets must be safe by design for use, located or protected so as to avoid becoming a trip hazard or being physically damaged by vehicles, water, and similar (for example, by elevation or armour).

Trailing cables across walkways must be avoided in areas where members of the public access the area and in designated evacuation routes. Where this cannot be avoided clearly visible protection devices must be used and the area is to be well lit at all times.

Any cables elevated above pedestrian or vehicle routes must be clearly marked to avoid being struck. Consideration shall be given to armoured cables in work areas or areas where they may become damaged.

Cables must not hang directly from steel structures. All extraneous metalwork and exposed conductive parts must be bonded and earthed.

Contractor and service providers are responsible for temporary distribution must place safety signage on all power distribution systems and equipment to highlight electrical hazards.

21.5 Electrical Fires

All organisations, tenants and those working on their behalf must assess the risk of potential electrical fires and take appropriate precautions and undertake suitable mitigation strategies to address any issues, including the provision of an adequate number of CO_2 extinguishers.

All organisations, tenants and those working on their behalf are to operate a permit-to-work system for all works involving connection into and/or isolation of the existing electrical system or incoming power supply.

21.6 Portable Electrical Equipment and Power Tools

All organisations, tenants and those working on their behalf must implement robust precautions for the use of all portable electrical equipment:

- All electrical portable tools and equipment should operate from a 110-volt supply.
- Where this is not possible, all such equipment must be protected by a residual current device and armoured cable where necessary and be checked by an approved electrician before commencing work.
- All electrical portable tools and equipment shall be inspected ahead of first use and regularly in accordance with industry best practice and be labelled to show the date of last test. Any item of equipment that can be connected to an electrical supply by means of a removable plug shall be tested, including both site equipment and office appliances as well as extension cables.
- Testing must be completed by a competent person and records of testing must be maintained.
- Users of equipment shall be trained and undertake a visual inspection prior to use.

All portable electrical equipment and power tools are to be inspected in accordance with the table below:

Table 21-1. Portable Electrical Equipment and Power Tools

Type of Equipment	User Checks	Formal Visual Inspection	Combined Inspection and Test (PAT)
Hire Equipment.	Yes - prior to use.	Before Issue /after return.	Before Use.
High Risk of Equipment Damage (e.g. production & ceremony equipment).	Yes, daily.	Yes, weekly.	Yes, minimum every 12 months.
Office information technology rarely moved.	No.	Yes, 2 - 4 years.	No if double insulated, otherwise up to 5 years.
Double insulated (Class II) equipment moved occasionally (not hand held) e.g. fans, table lamps.	No.	2 - 4 years.	No.
Hand held, double insulated (Class II) equipment e.g. some	Yes.	Yes, minimum every 12 months.	No.

Type of Equipment	User Checks	Formal Visual Inspection	Combined Inspection and Test (PAT)
floor cleaners and some kitchen equipment.			
Earthed equipment (Class I) e.g. kettles, some floor cleaners.	Yes.	Yes, minimum every 12 months.	Yes, minimum within 2 years if new, otherwise every 12 months.
Cables, leads and plugs connected to Class I equipment, extension leads.	Yes.	Yes, minimum within 4 years if new, otherwise every 6 months depending on type of equipment it is connected to.	Yes, minimum within 5 years if new, otherwise every 12 months depending on equipment it is connected to.

21.7 Competency of Electricians

Only competent electricians are to be permitted to work on electrical circuits and equipment and all organisations, tenants and those working on their behalf must implement the following.

- Proof of qualification must be readily available.
- Inspection of proof of competence is to be undertaken to ensure that persons are not placed at risk due to unqualified persons conducting electrical repairs or installations.
- A licensed electrician must check all electrical equipment, including distribution boards in accordance with an inspection schedule and such inspection shall be recorded in a register of electrical tests.
- Where no licensed electrician is available, the electrical equipment shall be suitably quarantined until such a time that it has been inspected.

21.8 Lighting Safety

Lighting installations must be installed to avoid the risks of electric shock, burns and glare. An emergency back-up system must be provided to ensure sufficient lighting is available to aid escape in emergency situations.

As a provision for emergencies, all organisations, tenants and those working on their behalf must ensure that emergency lighting is in place on all escape routes and staircases. Emergency lighting is often best achieved by use of the temporary lighting systems with strategically placed battery-operated fluorescent tubes or bulkhead fittings providing a minimum three-hour performance. Emergency lighting must be inspected with inspections recorded on a register and any actions from inspections must be progressed immediately.

21.9 Lock Out Tag Out (LOTO)

Works on live electrical and mechanical systems must be prohibited, unless required for testing and commissioning, and a LOTO and Permit to Work system used to ensure energised systems are locked off and de-energised before work is conducted on them.

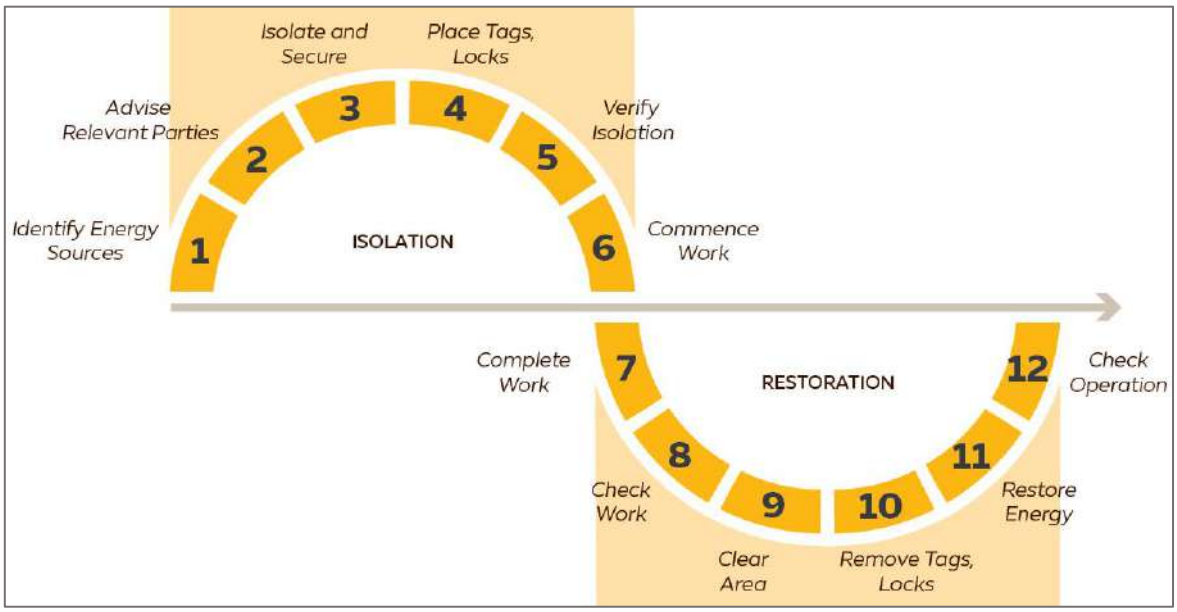
Where works cannot be avoided, a specific LOTO procedure must be implemented. The procedure shall cover, as a minimum, the following points:

- Scope of procedure.
- Definitions of terms (energy sources/isolation/system).
- Key personnel (names), roles and competencies.
- Responsibilities/authority.
- Permit to work system controls.
- Arrangements for planning, communication and coordination.

- LOTO equipment to be used.
- Procedures prior to isolation.
- Isolation procedures for all types of equipment.
- Completion of task and restoration of energy procedures.
- Procedures for incomplete tasks.
- Training and competency requirements.
- Register of equipment requiring isolation.

All works must follow the LOTO process model shown below.

Figure 21-1. Lock Out Tag Out Process Model



The LOTO system requires two or more padlocks fitted to the isolation switch with keys being held by the operator/maintenance personnel. Their name(s) and reason for the lock-out is written on the tags attached to the padlock. When the task is completed, the locks and tags are removed and power can be restored. The following points must be considered:

- To be effective, tags must be legible and understandable.
- Any person working within an energized area shall ensure that the energy sources are positively isolated.
- Tags may evoke a false sense of security, and their purpose needs to be communicated within training programmes.

21.10 Solar / PV Units

Where solar / PV units are installed these are to be clearly identified in the relevant switch board and must be effectively de-energised prior to commencing any electrical work on the system. All solar / PV units are to be maintained in accordance with the relevant manufacturer's instructions.

22 Temporary Demountable Structures (TDS)

Temporary demountable structures (TDS) can be widely used for a variety of events. No temporary structure is to be erected without prior approval from Expo City Dubai.

TDS include viewing facilities (including temporary seating), shelter (fabric structures such as tents and marquees), platforms and supports for performers (such as stages), media facilities (such as supports for floodlights, loudspeakers, TV cameras, video screens and press boxes), creative installations (such as art work and exhibition style installs) and even temporary playgrounds.

All organisations, tenants and those working on their behalf must have a defined risk based procedure describing how the risks and hazards associated with temporary structures are identified, classified and controlled. These procedures must include design or engineering details of the specific structure including relevant information on items such as wind loading and positioning.

All organisations, tenants and those working on their behalf are responsible for adhering to these requirements and where trigger points (e.g. maximum wind speed) are anticipated to take relevant actions as required.

22.1 Temporary Structure Stability

To ensure the stability of a structure during erection and use, its location and orientation must be considered. The following factors must be considered:

- Information about the load-bearing capacity of the ground or floor.
- The possible effects of ground elevation and prevailing winds.
- Drainage of the area.
- Flat ground conditions or the ability to establish level ground.
- Presence of underground services.
- Proximity of surrounding buildings, structures and vegetation creating risks in relation to the possible spread of fire.
- Restrictions on access of plant and equipment.
- Any other known hazards.

22.2 Branding / Scrim and Fixings

Attaching branding / scrim to a structure can affect its wind loadings and so increase the risk of a collapse or overturn. Where a structure is likely to carry branding, this requirement should be included in the design concept, specification and structural assessment.

The installer should make it clear which structures are suitable for carrying branding and what forms of branding / signage are permissible.

22.3 Structural Design

Temporary structures must be suitably designed for the intended use. Designers should have specific knowledge and understanding of the:

- Type of loads likely to be experienced by a temporary structure and their effect upon the foundations or supports that need to be designed/used onsite.
- Properties of the materials normally used in their construction.
- Properties of the proprietary systems (and their structural elements) used in their construction.
- Work techniques necessary for construction, and the health and safety risks involved with these techniques.

The designer should ensure any design:

- Is in accordance with recognized international best practice i.e. British Standards (BS), European Standards (EN) or other equivalent national standards (ANSI etc).
- Maintains stability and structural integrity (including the likely effects of dynamic loading) at all times during erection, use and dismantling.

- Takes workforce safety during construction and deconstruction into account.
- Includes materials whose properties and performance will maintain the integrity of the structure, for example during a fire has considered factors that, although not directly related to safety, could affect audience behaviour and therefore potentially have safety implications, e.g. audience sight lines and climbing structures.
- Provides adequate exits for intended occupancy.

All relevant parties should ensure that any design is realistic in terms of the timescales and intended use of the structure.

22.4 Design Verification

All temporary structures must have an approved design and where necessary an independent design check carried out by a suitably qualified engineer having sufficient skill and experience and be accredited by Dubai Municipality.

22.5 Planning for Erecting and Dismantling Safely

It must be ensured that the installer of a temporary structure can:

- Demonstrate knowledge and understanding of the work and the health and safety hazards involved.
- Provide evidence on the competence of key staff for the project and trained workforce.
- Ensure crew undertaking specialist roles, such as rigging, are able to prove that they have the appropriate competencies.
- Confirm they have sufficient resources to undertake the work.
- Provide evidence of previous successful work, which shows they can adopt and develop safe systems of work in the absence of experience of previous work and demonstrate an appropriate level of technical ability.

22.6 Build / Dismantling

Before work starts, the temporary structure installer should inform Expo City Dubai of any significant health and safety issues or requirements that may occur during the build, use of, and dismantling of the structure.

Risk assessments and method statements should be drawn up by the Contractor for the erection, dismantling and removal of any structure. They should be submitted to the Contract Owner and should include relevant drawings and structural calculations. The RAMS should be specific to the structure and should include the method of founding the structure adequately on the ground. If there are modifications to the RAMS or Safe System of Work documents (SSoWs), these should be communicated to the relevant parties.

Upon completion of the structure and prior to use, an independent erection check must be carried out. This ensures that the structure has been built in accordance with the engineering documentation. It should be carried out by a competent person, who may be an employee of the supplier of the structure or a person nominated to carry out such checking by the Contractor. Where the check is carried out by a member of the erection team, evidence of that person's competence should be made available.

As a minimum, the check should detail the:

- Type and location of the structure.
- Date of the inspection.
- Name, position and signature of the competent person making the inspection.
- Reference numbers or methods of identifying the design or erection drawings.
- Nature of the inspection (physical, visual, etc.).

The erection check documents (also known as a 'completion certificate') should be submitted to the Contract Owner, who in turn should keep them for inspection by statutory authorities and/or Expo City's Health and Safety team. Ongoing co-operation and co-ordination among all relevant parties and any adjacent areas must be undertaken.

22.7 Monitoring and Review

There are to be systems in place to monitor implementation of the erection and dismantling plan, and intervene in the event of any deviation from the plan that puts people's safety at risk. Any system will require appropriate levels of supervision onsite.

22.8 Management of Adverse Weather Conditions

Temporary structures will be susceptible to the effects of constantly changing weather conditions and so appropriate management systems should be in place to:

- Monitor and measure the local weather conditions.
- Define and deliver a plan to deal with variable loading conditions that can affect the structure and exceed the safe working parameters of the structure.
- Take action if required.

Wind is a significant hazard to structures such as marquees, big tops, stages. Most of these structures are designed to be safe for use up to a certain wind speed. The event organiser and those working on their behalf should be clear as to the level of this wind speed and the wind management plan required, to ensure stability at all times.

The adverse weather conditions section in these Standards should be referred to and the adverse weather management plan must address all potential adverse weather.

22.9 Alterations and Modifications

Once a completion certificate has been signed and issued, alterations and modifications to the details shown on the design drawings and calculations should be avoided. If structural modifications are required after the completion certificate has been issued, the following course of action should be followed:

- A competent designer should re-design the structure to take account of the modifications.
- This should then be subjected to an independent design check.
- An erection check should be carried out.
- A new completion certificate should be prepared once the modifications have been made.
- In all cases, the structure should comply fully with the design criteria, either before it is used or before the public are admitted.

22.10 Maintenance and Inspection

A suitable system of maintenance and inspection is to be conducted. Any issues are to be addressed and rectified as soon as possible.

A thorough check of the structure should take place following removal of any secondary fixtures (banners, lights, audio cabinets or tables, chairs and internal fit-out in the case of marquees). This is to check that no components have been inadvertently damaged or removed that could affect the safe dismantling of the structure.

22.11 Temporary Structures (including amusement and inflatable structures)

- All temporary structures must be appropriately secured in accordance with manufacturer's, or where applicable any designer specific, instructions or specifications.
- Amusement structures are not used or operated unless the supplier can prove the device meets relevant standards and a current certificate of registration/electrical safety can be provided.
- Appropriate space and suitable ground surface is allocated for each amusement ride, including access and egress for patrons.
    - Suitable fencing surrounding rides.

  - Appropriate soft-fall area for inflatable structures.

- Ground is assessed to ensure it had the relevant load bearing capacity of the structure.
- A documented thorough check of inflatable structures and accessories is carried out prior to use.
- All tie down ropes attached to inflatable structures are fastened to adequate anchorage points as per specific design requirements.
- Operators of inflatable structures monitor prevailing wind conditions.
- An adverse weather plan is developed and monitored, and relevant actions are implemented as required.

22.12 Pop-up Tent Wind and Safety Requirements

Unless otherwise approved or documented by manufacturer's instructions or guidelines, all pop-up tents and similar temporary structures, must be setup to withstand a wind speed of 40 km/h, a weight / ballast not less than 35 kg must be secured to each of the four (4) corners / legs.

Pop-up tent structures must not be used where the wind speed exceeds 60 km/h.

Periodic assessments should be undertaken where high wind is forecast, records are be documented within a wind speed log.

22.13 Other Equipment

Equipment such as umbrellas and gazebos etc. must be appropriately secured in accordance with manufacturer's instructions or specifications.

A Temporary Demountable Structure (TDS) Guide is available from Expo City's HSE Department at hsqe@expocitydubai.ae.

23 Working at Height

Specific requirements regarding the management of working at height must be implemented. Requirements apply to all fall hazards from one level to another, regardless of the distance from the ground, including the use of low-level platforms and ladders.

23.1 General Requirements

All working at height must be:

- Properly planned and organised, including planning for emergencies and rescue.
- Assessed for risks using the hierarchy of control measures.
- Appropriately supervised.
- Always done by competent people including managers and supervisors, who are appropriately trained and supervised.
- Undertaken using appropriate equipment that is regularly inspected and maintained.

23.2 Documentation (Fall Prevention Plan)

Due to the high-risk nature of working at height, in addition to method statements and risk assessments the use of working at height permits must be used for high risk works such as rope access or working from lifelines, plus the development of a specific fall prevention plan. The fall prevention plan shall form part of the Health, Safety and Environment Management Plan or be included within a separate working at height procedure. All organisations, tenants and those working on their behalf must submit their fall prevention plan for review and approval. The fall prevention plan must incorporate the following:

- Identification of potential working at height tasks and the associated standards and expectations for each scenario to control the risk.
- Clear use of the working at height hierarchy where collective fall prevention measures are considered before personal measures.
- Training required for supervisors and operatives who work at height on a task by task basis, e.g. riggers.

23.3 Hierarchy of Control

All working at height must be managed in accordance with the following hierarchy of control:

- Avoid the need to work at height, for example by using extending equipment from the ground.
- Prevent falls using appropriate access equipment such as work platforms or rope access.
- Reduce the distance and consequences of a fall should one occur.

Collective measures must be used over other measures to prevent falls, such as mobile elevating work platforms (MEWPs) as other measures may only mitigate the distance and consequences of a fall (such as fall protection systems), or may only provide personal protection from a fall.

Any selection of equipment for working at height must take account of:

- The working conditions and the risks to the safety of persons at the place where the work equipment is to be used.
- In the case of work equipment for access and egress, the distance to be negotiated.
- The distance and consequences of a potential fall.
- The duration and frequency of use.
- The need for easy and timely evacuation and rescue in an emergency.
- Any additional risk posed by the use, installation or removal of that work equipment or by evacuation and rescue from it.

23.4 Working at Height Requirements

23.4.1 Metal Frame Erection

Metal frame structures must be erected from MEWPs and where access to the steel cannot be avoided, personnel are to use beam gliders for access. Safety nets and guard rail systems must be incorporated during metal decking operations.

To ensure that metal frame structures are erected in accordance with this Standard, the following items are necessary for mitigating risks:

- During the design process an opportunity to pre-assemble all steel work must be considered either off-site at the factory or on-site but always at ground level. This must also include painting of the frame.
- MEWPs are to be used in preference to all other methods, provided that a suitable operating base is available. The nature of the base must be determined prior to any operation taking place. MEWPs shall be fitted with secondary anti-entrapment protective devices to prevent crushing, such as cages, pressure bars and alarms.
- Nets shall be placed in the position to minimise the distance any fall can occur.
- All steel erection shall occur within an exclusion zone.

Note: Anchorage and life line systems shall be prefabricated and/or installed on the ground prior to lifting or installed from a MEWP.

23.4.2 Loading Platforms

All loading platforms must be assessed before installation and fitted with guard rails to all sides. Loading platform systems shall be assessed as temporary structures and be part of a pre-use and regular inspection regime. Chains and wire cables are not an acceptable means of guarding the front/exposed edge of loading platforms – guardrails or gate systems (e.g. pivot type up and over gates), which provide full edge protection, must be used.

23.4.3 Vehicle Off-loading

Vehicle loading or off-loading must be covered by a suitable method statement and risk assessment. Access platforms or decks along with safer access points must be provided where there are regular activities in the same location. Edge protection should be installed on vehicles and loads must be pre-slung to remove or reduce the need to access the rear of any vehicle.

23.5 Perimeter and Edge Protection Standards

On floors above ground level and at roof level, fixed guard rail edge protection is to be provided comprising double guard rails as a minimum.

Where personnel are working at leading edges, distance barriers are to be erected with appropriate signage to protect others. Leading edge personnel must be provided with suitable fall restraint or fall protection/fall arrest arrangements.

All edges where a person or materials can fall will be protected in accordance with the minimum requirement of standard perimeter protection, the edge protection will:

- Be provided to a minimum height following local legislation (at least 95 cm) and incorporate a toe board with a minimum height of 15 cm capable of preventing materials falling, with no gaps below.
- No vertical gaps between any guardrails or toe board are permitted to be greater than 47 cm.
- Be of continuous construction and robust.
- Where items of mobile equipment are likely to be used, provide physical stops to prevent the mobile equipment reaching the edge of a structure and/or impacting the edge protection, where applicable.
- Be erected, maintained and dismantled by competent persons and be inspected prior to use and after alteration, repair, maintenance, and adverse weather.

- Be provided to a standard proportional to risk and include; vertical netting or mesh, where additional hazards are identified, e.g. adjacent public areas (walkways, roads, and offices) or specific work activities.
- Where edge protection measures cannot be installed, due to type of nature of the structure (e.g. stage) a safe system of work must be implemented.

Any other edge protection system other than guard rails must ensure that appropriate elements are in place to ensure that materials cannot fall as they can slide through or under the edge protection system element in use.

23.6 Vertical Access

Access to general work floors is to be provided by the full permanent solution wherever possible. Where this is not possible, temporary staircases of adequate width and complete with handrails are to be provided.

All staircases permanent/or temporary will be provided and protected in accordance with the following minimum standards:

- Have permanent handrails installed at both sides to provide protection.
- Have top guardrails at a minimum height of approximately 100 cm, with intermediate rails fitted to prevent excessive gaps.
- Have landing platforms protected with appropriate and suitable collective edge protection.
- On metal staircases, all temporary guardrails must be installed before the stairs are erected or put into position.
- Have sufficient lighting so as to provide a uniform lighting level throughout and to prevent shadows/dark areas. Stairwell access within buildings must also provide suitable 3-hour battery powered emergency lighting.
- Where temporary protection is provided, be inspected prior to use and after alteration, repair, adverse weather (external) or periods of use in excess of seven days. Inspections must be conducted by a competent person and a record kept.

23.7 Access Equipment Requirements

The following requirements apply to all access equipment including scaffolding, Mobile Elevating Working Platforms, Mobile Towers and Podiums, Access Steps, Ladders etc:

- All access equipment must be stable with sound footings, wheels locked (where fitted) and tied into the structure where specification or design requires, or where height/base ratio is greater than 3:1.
- General and emergency access routes must be clearly defined, signed, barricaded and lit paying particular attention to emergency routes.
- Access equipment shall be selected in accordance with the working at height hierarchy.
- All equipment shall be erected/installed/altered/dismantled by a competent person who is trained in the use of the specific system or equipment in line with the manufacturers specifications.
- Where equipment is provided in way of working platforms or temporary access is required between floors, this shall be by staircase wherever possible. Selection of any other equipment must be covered by risk assessment then installed in line with best practice, such as ladders secured, 1 m above level, cleaned, and maintained.
- All equipment shall be subject to a pre-use and regular and documented inspection regime in line with industry best practice.
- All equipment must be free from visible defects, built in accordance with the manufacturer's specification or with a specific design.
- All tools must be tethered when working from MEWPs, Mobile Towers and Podiums.

23.7.1 Scaffolding

- A scaffold coordinator must be appointed to oversee and manage all scaffolding arrangements on-site, ensuring maintenance of a scaffold register, inspections, competence of the team and continued support to provide access.

- Scaffolds must have guard rails, mid-rails and toe boards installed on all open sides of platforms from which people or materials may fall. Where materials may fall over toe boards guards, fencing or weighted (designed) netting shall be provided.
- All working platforms are to be closely boarded. Boards must be secured, free from defective and/or damaged boards and debris. Damaged boards shall be quarantined and not available for use. Boards must be placed close together with no gaps in the system. Where smaller gaps exist, boards present a trip hazard or walkway is under heavy usage, the platform must be fully boarded with plywood.
- Where a guard rail system is required either in situ or as an added element, the working platform must have a top rail, mid-rail and toe board fitted on all four sides of the platform.
- Toe boards must rise at least 15 cm above platform level.
- Guardrails must be between 95 cm and 105 cm above platform and there must be no vertical gaps between any guardrails or toe boards which exceeds 47 cm, there must be no gaps below the toe boards.

23.7.2 Mobile Elevating Working Platforms

- Specific IPAF operator training is required for operation of MEWPs including both boom and scissor lift types. Additional training is required where the MEWP has any attachments or specialist features.
- Managers and supervisors responsible for deploying MEWPs on site must undergo the IPAF MEWPs for Managers training course.
- All organisations, tenants and those working on their behalf must conduct familiarisation training specific to the type of MEWP in use. This is normally delivered by the provider; however, where this is not possible then an individual or group of individuals must be nominated who are deemed to be more experienced than a standard operator, e.g. “MEWP champions”.
- Fall restraint shall be worn when working in boom type lifts or where identified by risk assessment. Manufacturer installed anchor points must be used.
- Instructions and certificates of examination (or copies of) shall be held in each MEWP.
- A fire extinguisher will be provided for each MEWP.
- Minimum clearance distances are to be preserved whenever operating plant and equipment are used in the vicinity of overhead hazards or buried services. Risk assessments shall consider the use of secondary protection devices e.g. cages, anti-crush, and sky-siren. Banksman or spotters may reduce risk but must be considered where other physical options are not available/suitable.
- Emergency arrangements must cover descent arrangements for MEWPs from the ground.

23.7.3 Mobile Towers and Podiums

- Height to base ratio for free standing towers is normally given as no more than 3:1 except where demonstrable by manufacturers guidance and specifications. Stabilisers or outriggers can be used to increase the effective base size of towers.
- Mobile towers and podiums must be fully boarded with toe boards where these have been specified by the manufacturer or where any materials (tools or equipment) are on the tower. Materials on the platform shall be kept at a minimum, stored in appropriate containers and any risk of dropped objects must be assessed and mitigated.
- Climbing end horizontals are not permitted and designated ladders internal of the structure must be used. Trapdoors and gates shall be closed when not in use.
- The maximum recommended free-standing height for mobile towers is 9.6 m and for static towers is 12 m.
- No person shall remain on a mobile tower or podium whilst it is being moved.
- Wheels must be locked when in use.
- The number of people using any tower or podium shall be in line with the manufacturer’s guidance.
- Towers and podiums must have an in-date inspection tag on display on the equipment.

23.7.4 Ladders

Expo City Dubai aims to minimise the use of all types of ladders and incorporate the use of safer means of working at height (e.g. MEWPs, scaffold towers and podium steps). All ladders in use must be structurally sound, safely installed and used only as a means of access.

Ladders must be used for access and not as a place of work unless three-points of contact can be maintained. Ladders, step ladders and extension ladders can only be considered for a place of work if all of these requirements are met:

- All other safer alternatives such as, MEWPs, mobile scaffold, platform steps, podium steps have been considered and deemed 'not reasonable' or 'not practicable'.
- The task is of a light nature, short duration (i.e. less than 10 minutes) and non-repetitive.
- Location cannot be closer than 3 m to an additional fall hazard i.e. edge, stairs.

Platform ladders can be used; however, they must be at the correct height for the work to be undertaken and have an appropriate guard at the rear of the platform.

Note: A ladder is permitted as a form of access to working decks on platforms/scaffold if there will be no requirement for workforce to manually handle tools or material to work area.

The following applies when using ladders:

- Ladders are only to be used as a means of access from one level to another.
- The ladder will project a minimum of 1.05 m above the top landing point unless sufficient handholds are provided.
- If ladders rise more than 9 metres in height, suitably guarded and protected intermediate landing platforms must be provided.
- Separate provision must be made to avoid carrying materials up or down a ladder such as stairs, hoist, and satchel bags.
- Aluminium ladders are not to be used where live electrical facilities are present.
- Only one person may use a ladder at any time.
- Ladders must be inspected prior to use and weekly inspections must be conducted and a record kept by a competent person who is able to verify the condition of the ladders.
- Ladders must not be subject to any side loading.
- Ladders must not be used adjacent to building edges.
- Gates must be closed and wheels must be locked on access steps where installed.

23.8 Rope Access

Rope access work should be planned (and managed) by a competent person. Rope access is a specialist access technique, and should only be undertaken by appropriately audited, accredited, certified companies employing qualified technicians.

Rope access is a system that specifically uses two static (i.e. non-moving relative to the anchor) separately secured sub-systems with one of these subsystems a means of support and the other a safety backup.

- Depending on the assessment of the risk, where work will take place for a reasonable time in one position, rope access workers should be provided with a seat for comfort.
- During rope access work All organisations, tenants and those working on their behalf should consider:
  - Proper management and supervision of the rope access worksite.
  - Managers responsible for rope access sites should be competent in management skills and have adequate knowledge of rope access technical procedures to enable them to manage the rope access work site competently.
  - Worksites using rope access require the on-site supervision of rope access safety supervisor (e.g. under the International Rope Access Trade Association (IRATA) training, assessment and certification scheme, only Level 3 rope access technicians are permitted to be rope access safety supervisors).
  - Rope access technicians should be trained and competent to carry out any access tasks, including workmate rescue/retrieval and should only be allocated tasks appropriate to their level of training.

Double Rope Working (This is the minimum requirement when undertaking rope access activities)

- The working line must be equipped with a device or system to stop or slow an uncontrolled descent if a worker loses control. Similar devices to arrest the fall of a worker must also be in place on the safety line.
- In all rope access work there should be a minimum of two workers, one of whom is competent to supervise (i.e. IRATA Level 3, supervisor).

- Contingency plans should be in place in the event of a rescue being required, especially in circumstances where someone is left hanging motionless.
- An effective communication system should be in place between all workers and, where necessary, third parties. This system should ensure that all those involved in the task are visible to one another and in audible range. Where this is not possible or suitable, an alternative safeguard, such as an extra banksman or a radio system, should be in place, in accordance with the risk assessment.
- Rope Access workers should be trained to IRATA 1 standard as a minimum requirement.
- Rope Access Supervisors trained to a minimum of the level of IRATA Level 3 standard (additional supervisory / management and /or trade skill is advantageous).
- Rope access operations should only be undertaken by specialist and certified companies, IRATA Audited and Compliant with the requirements of Dubai Municipality for undertaking such works. The companies which provide operational Rope / Specialist Access services, are subject to a check of both technical and quality assurance aspects of procedures and equipment.

Single Rope Working (can be used for Work Positioning and Restraint Only)

- Single rope working is only permitted where use of another line would entail higher risk and where appropriate measures have been taken to ensure safety.
- Example: harness, lanyard or rope system adjusted so that it prevents the user from getting to the edge of a roof.

23.9 Use of Harnesses

A safety harness cannot be used to provide primary fall prevention or protection unless the following conditions have been met:

- All other reasonable and practicable options to provide adequate fall prevention at a higher level have been reviewed and eliminated.
- Harnesses must be managed in accordance with international standards, inspected, maintained, certified and labelled.
- Users must be competent and trained in the use of their harness including but not limited to daily inspection, proper fitting, care and storage, maintaining 100% tie-off with two lanyards and rescue procedures and emergency arrangements.
- Fixed length restraint preferred to fall arrest.
- Inspections must be conducted by a competent person, at intervals not exceeding one month.

23.10 Rigging

Rigging includes the installation, removal, or other activity using lifting, or suspension equipment, or accessories used in tension for lifting or supporting display, production, performance, or event technical requirements. The following measures should be implemented for all rigging activities:

- A competent person employed to carry out rigging.
- Climb or non-supervisor riggers are to be competent and hold a Level 2 NRC or suitable and recognized equivalent standard
- A supervisor being present at all times throughout work activity.
- Riggers employed as a supervisor or managers are to be competent and hold a Level 3 NRC or suitable or recognised equivalent standard.

Competency requirements for Riggers

Riggers should have knowledge and experience in the following areas:

- Understanding of basic legal requirements and personal responsibilities in rigging work.
- Knowledge and understanding of the requirements for entertainment rigging.
- Working from plans and marking out rigging points.
- Making pre-use checks of equipment.
- Preparing and assembling rigging.
- Making attachments to structures at height and at ground level.

- Controlling the lift.
- Knowledge of basket and choke hitches.
- Knowledge of dead-hangs and bridles.
- Using electric chain hoists (motors) and controllers safely.
- Using steel, chain and fibre slings, shackles and master links correctly.
- Safe working at height, including using personal fall protection systems (PFPS) and PPE.
- Assembling, slinging and lifting trusses.
- Terminating steel wire rope using industry-standard methods.
- Using hauling lines and the knots used for safe lifting.

23.11 Inspection and Authorisation for Use (Scaffolding)

Before any access equipment is taken into use it will be inspected by a competent person or nominated inspector to manufacturer's instructions or to the planned design. Nominated inspectors for scaffolding must hold a valid third-party inspection certificate and must be familiar with the scaffold system in use.

A competent scaffolding supervisor or nominated inspector must inspect the scaffold on a daily basis.

Scaffolding that has been constructed in accordance with the planned design will be authorised for use by displaying a notice at all access points detailing the following information:

- The unique identification and location of the scaffolding.
- The name of the person making the check.
- The date that the check was completed.
- The intended loading capacity of the scaffold.

Scaffold tags must be updated on a weekly basis (seven days) or when a scaffold is deemed unfit for purpose through the daily inspection regime.

23.12 Falling Objects

All organisations, tenants and those working on their behalf must ensure that risk assessments consider and mitigate the risk of falling objects. In addition to the risk assessment, the following additional requirements apply.

Tool Tethering

Work conducted at height must have lanyards used to tie-off tools and equipment including whilst working on platforms or access equipment. Exclusion zones are required in addition to tool tethering wherever possible.

All organisations, tenants and those working on their behalf are required to carry out a risk assessment, following the hierarchy of fall prevention measures that will identify and specify the measures necessary to control the risk of tools from falling. Tools tethers must be:

- Designed specifically for tethering.
- Matched to a tool that has been individually weighed to confirm it is within the maximum allowable limits of the tether. Heavier items shall be tethered to fixed anchor points rather than to an individual.
- Provided with a locking mechanism at the connection points or suitably fixed in irreversible manner.
- Inspected and maintained in accordance with the manufacturer's guidance. This must include a daily pre-use inspection by the user.

Securing Material at Height

All materials that might be blown or swept off of roofs, exposed floors or temporary structures or accidentally dislodged must be secured at all times.

To comply with this requirement, it is important to be aware of the wind speed at the time of work activity and the forecast wind condition. All roofing materials, plant and equipment etc. must be stored/positioned in a way that they cannot fall. Items must be fastened down or stored securely and away from the building's edge. Specific walk rounds are required at the end of each shift to ensure the safety of the site. The walk round must include storage areas and is of importance when adverse weather is imminent.

24 Mobile Plant and Equipment

All organisations, tenants and those working on their behalf are required to ensure that any plant or equipment they use is fit-for-purpose and appropriate for the activity being undertaken. All organisations, tenants must ensure all mobile plant and equipment used on site is approved by Expo City Dubai and suitable controls are implemented.

Key measures for the safe use of mobile plant and equipment include:

- Ensuring the correct plant and equipment for the task is selected and maintained.
- Records of inspections and maintenance including any certification shall be available locally and must be easily accessible by those using the equipment. Equipment must be marked with basic details of in date certification.
- Operative training and competency, typically including relevant accredited training provider cards, must be available.

All organisations, tenants and those working on their behalf are responsible for safely using and maintaining all plant and equipment provided on-site. Table 23-1 identifies the key safety issues for consideration and compliance.

Table 24-1. Plant and Equipment - Key Health and Safety Considerations

Typical Plant and Equipment	Key Safety Considerations
1. Lifting Equipment e.g. Cranes, Hiabs.	Compliance with BS7121 - Part 1 - The Safe Use of Cranes. • The appointed person will be responsible for the following: – Plan crane lifting operations and ensure adequate control of crane lifting operations. – Coordinate with other appointed Crane Coordinators where required. – Provide Lifting Operations Plans and method statements for control of crane lifting operations. – Allocate adequate competent resources to ensure control of lifting operations. – Plan temporary works (outrigger loadings/positions, etc.) – Provide and implement statutory. tests/examinations/inspections regime.
2. Other Lifting Equipment (other than cranes) e.g. Telehandlers, Forklifts, Mobile Elevating Work Platforms, Cradles.	• The appointed person will be responsible for the following: – Plan lifting operations and ensure adequate control of lifting operations using lifting equipment (other than cranes). – Provide a Lift Plan for control of lifting operations. – Allocate adequate and competent resources to ensure control of lifting operations. – Plan temporary works (where necessary). – Provide and implement statutory. tests/examinations/inspections regime.
3. Other Plant and Equipment e.g. access equipment, power tools, cartridge tools, abrasive wheels, woodworking machinery etc.	• Use only by trained, competent personnel. • Provide and implement statutory tests/examinations/inspections regime. • Protect and maintain machinery.

24.1 General Requirements

All organisations, tenants and those working on their behalf must ensure that their plant and equipment and all of their subcontractor's plant and equipment meet the following requirements:

- All items of mobile plant must be capable of 360-degree vision, or fitted with 360-degree visibility aids so that the driver can see a one-metre high object, one metre from all sides of the vehicle. Curtains or cardboard that can restrict vision must not be installed.
- All mobile plant and vehicles must be manufactured and maintained to internationally recognised standards.
- All mobile plant, vehicles, and powered access equipment must only be supplied with parts and fittings approved by the manufacturer. Unapproved or untested parts and fittings are prohibited.
- Mobile plant and vehicles used on-site will be fitted with working lights, horns, reverse alarms, and amber flashing beacons. Risk assessments must consider plant/pedestrian segregation and banksmen must only be provided where necessary.
- All plant and equipment deployed to the site will undergo an initial inspection prior to first use on-site.
- Operators shall only use designed safe means of access to the vehicle cab (ladders, steps, stairs etc.).
- Noise produced by mobile plant and vehicles must be reduced at the source to a minimum. Persons performing work around noisy plant must wear hearing protection, and, where applicable, protective clothing.
- Traffic rules must be followed at all times, e.g. speed limits, crossing points, etc.
- Passengers must not be carried on items of plant except where the equipment has a manufacturer's fitted passenger seat.
- Engines must be switched off and keys removed when plant is not in use or left unattended.
- Where the risk of rollover and falling objects is present, all mobile plant and equipment must be fitted with manufacturer approved Roll Over Protections Systems (ROPs) and Falling Object Protections Systems (FOPs) plus seat belts.
- All enclosed cabs must be fitted with fully functioning air conditioning units.
- All mobile plant shall carry a fully functional fire extinguisher.
- Fuel and oil spillages must be reported and cleaned up as soon as practicably possible.
- All mobile plant and vehicles in use must have daily user inspections and weekly inspections.
- A maintenance schedule must be established, implemented and maintained for all mobile plant and vehicles.
- Routine maintenance and repairs may be carried out by an in-house plant department. Records shall be maintained. Only manufacturer approved spare parts shall be used.
- Mobile plant and equipment deployed full time must be provided with an equipment tag system showing details of inspection and maintenance plus details of the owner and unique identifier. This tag must never be removed while the equipment is on the Expo City Dubai site.

24.2 Third-party Training, Licencing, and Certification

Operator training/certification and license requirements, as well as inspection/certification and licensing requirements for mobile plant and vehicles are detailed in Table 23-2. The Organiser will verify the equipment and operator certification and will not permit any operations that do not meet these standards.

Definitions

- Assessment: Service/inspection of vehicle by an accredited third-party for registration purposes. A competent in-house plant department may carry out this assessment where no national registration is required.
- Examination: Visual inspection by a competent and accredited third-party.
- Test: Test by competent third-party.

Table 24-2. Plant and Equipment - Training, Licencing, and Certification Requirements

Type of Mobile Plant and Vehicles	Operator Requirements		Vehicle Registration	Inspection/ Certification
	Driving Licence	Training Certification		
• Telehandler.	Required.	• Valid DM Accredited Third-party Training Certificate.	Required.	• 12 monthly Assessment (Vehicle). • 6 monthly third-party thorough examination (lifting gear/accessories) 48 monthly third-party test.
• Forklift.	Required (if used on public roads).	• Valid DM Accredited Third-party Training Certificate.	Required (if used on public roads).	• 12 monthly Assessment (Vehicle). • 6 monthly third-party thorough examination (lifting gear/accessories) • 48 monthly third-party test.
• Mobile Crane.	Required.	• Valid DM Accredited Third-party Training Certificate.	Required.	• 12 monthly Assessment (Vehicle). • 6 monthly third-party thorough examination (lifting gear/accessories) • 48 monthly third-party test.
• Truck Mounted Crane.	Required.	• Valid DM Accredited Third-party Training Certificate (crane operation). • Valid third-party Operator Assessment for truck.	Required.	• 12 monthly Assessment (Vehicle). • 6 monthly third-party thorough examination (lifting gear/accessories). • 48 monthly third-party test.
• Articulated Truck (including Water Tankers, Fuel Tankers.	Required.	• Valid third-party Operator Assessment.	Required.	• 12 Monthly Assessment.

Type of Mobile Plant and Vehicles	Operator Requirements		Vehicle Registration	Inspection/ Certification
	Driving Licence	Training Certification		
• MEWPS (scissor lift/cherry picker).	Not Required.	• IPAF accredited 2-day training course Certificate.	Not Required.	• 12 Monthly assessment (Vehicle) 6 monthly third-party thorough examination.

24.3 Exclusion Zones

All organisations, tenants and those working on their behalf must establish and maintain exclusion zones around operating plant and equipment, including heavy machines, to prevent people being struck by the machine, tool or any ejected or falling material. These exclusion zones must consider the protection of any banksmen should they be present, i.e. physical segregation must be in place between equipment and pedestrians wherever practicable.

The following performance standards must be implemented:

- As a minimum, no unauthorised persons must be allowed to work within three metres of an operating machine or under any load or part of an operating machine at any time. Any exceptions must be covered by a detailed risk assessment.
- Hitch systems must have locking mechanisms which physically prevent the attachment from accidentally falling out (i.e., manual or semiautomatic quick hitch systems with safety bars inserted and retaining pins in place and method statements are provided for the specific tasks).

25 Lifting

All organisations, tenants and those working on their behalf are required to ensure that any lifting operations are planned and coordinated effectively. All organisations, tenants must ensure all lifting equipment used on site is approved by Expo City Dubai and suitable controls are implemented.

The following considerations have to be considered:

- Lifting is to be overseen by a component team of trained and experienced personnel.
- Contractors and services providers are required to nominate a trained and competent Appointed Person with overall responsibility for the safety of lifting operations.
- Lifts are required to be planned and documented with the level of detail proportionate to the complexity of the lift.
- Appropriate documentation is to be provided covering arrangements for lifting, including a schedule of common lifts, approved risk assessment and method statement.
- Lifting equipment and accessories (lifting gear) are required to be colour-coded on a monthly basis to ensure that only certified equipment is in use. Coloured tags are required to only be attached to equipment or accessories that have a valid test or inspection certificate.
- Exclusion zones are required to be implemented in loading/unloading zones and lifting areas and clearly signed and demarcated with warning tape or hard barriers to prevent inadvertent access.
- A copy of third-party inspection and testing certificates is required to be available on-site for all lifting equipment and lifting accessories.
- Safe working loads are to be displayed on the equipment.
- Where lifting persons, specific safety requirements are to be implemented and monitored including six monthly third-party examination of equipment and a specific risk assessment and method statement for the lifting operations.

For more information regarding lifting requirements, refer to Expo City Dubai’s Construction Health and Safety Assurance Standards.

26 Underground Services

26.1 Breaking Ground

No breaking ground, including driving stakes into the ground is permitted unless in exceptional or emergency cases and approved by Expo City Dubai. In such cases a specific is to be undertaken, and relevant information obtained related to existing unground infrastructure.

For exceptional cases when breaking ground is permitted (e.g. emergency repairs to underground services), the following requirements are to be met:

- Use facility records and a visual inspection to gather site information to determine hazards and potential safety concerns.
- Identify any site characteristics that may impact health and safety.
- Dig trial holes to prove actual locations of underground infrastructure.
- Locate potentially dangerous physical obstructions and plan how to work around them.
- Implement a safe system of work, including permit to work and an approved risk assessment and method statement.

For more information regarding breaking ground, excavations and underground services, refer to Expo City Dubai's Construction Health and Safety Assurance Standards.

27 Performer Safety

Significant health and safety risks are associated with events and entertainment. Event organisations and those working on their behalf must ensure the risks from performances are assessed and robust precautions implemented. This section provides a detailed overview of health and safety requirements that relate to performer safety.

27.1 Risk Management Strategy

27.1.1 Performance Risk Management – Design and Development Phase

- Artist profiles based on the theme, expected levels of performance and known parameters (time; capacities; human and technological resources; lifecycle; environment) must be documented.
- The acro-artistic design and architecture of the act must be planned and documented.
- Rigging and acrobatic equipment must be designed or adapted as agreed upon by the acrobatic performance designer and the acrobatic equipment and rigging designer.
- The teaching methodologies and coaching procedures must be planned and documented.
- The human performance limitations and intended use of the equipment and mechanical systems must be documented as part of performance risk assessment.
- Human performance risks and elimination or mitigation measures needed to reduce the residual risk in performance to an acceptable level. This shall be established based on the performance management company's history, experience, specific knowledge and know-how. This includes rehearsal and training spaces and show specific condition measures that are to be complied with.
- Medical standards and practices must assess the physical stress, and develop and document emergency response plans and injury prevention strategies, related to acrobatic and dance performances.

27.1.2 Performance Risk Management – Operation Phase

- Safe performing conditions must be reviewed and implemented by the members of the artistic department in collaboration with the technical department for all show performances as well as for training and rehearsals.
- Initial performance risk assessments must be followed, reviewed and documented by the artistic department for all acts, images and physical performances.
- It is expected that performers will be sharing concerns about their safety and their readiness to perform. Employment status of an artist or type of role (i.e. house troupe, a guest act, a character, a back-up artist, or an artist on-call) must not influence the human risk management process; all artists must be treated with the same duty of care.
- Performance risk management cannot be delegated to an artist unless this artist has been deemed competent to act as an artist coach. In the context of an artist coaching assignment, the artistic lead has the responsibility of validating the coaching assignment and oversees human performance risk management. This includes the coaching process, safety measures, choice of skills, learning progression, methodology.

27.1.3 Management of Daily and Regular Performance Operations

Performances may vary over time due to multiple circumstances such as, but not limited to artistic/natural mastery progression, state of readiness, training or other unforeseen external circumstances, such as heat and humidity.

- All performance based decisions made on daily basis such as rotation, choice of skills or cues and artist reintegration shall be assessed and documented. This includes the assessment of performance context, content and requirements as well as artists' day-to-day performance state of readiness.
- Key decisions in human performance risk management must fall under the accountability of the artistic lead designated by the performance management contractor. These should be made in conjunction with other members of the artistic team such as the head coach and head therapist.

- The artistic team will assess performance context, content and requirements as well as artist performance readiness (psychological, physical fitness, technical mastery) daily. A process for tracking and validating this should be documented.
- The lead therapist will assess the physical state of an artist and will be responsible of sharing his/her professional opinion regarding musculoskeletal abilities, limitations or restrictions with artistic leadership.

27.1.4 Management of Performance Evolution

Specific circumstances may require for an act to change or evolve in its lifecycle. Evolutions may include performance (act) content change, refresh, change of equipment impacting performance. If an evolution is required, a formal Management of Change (MoC) process for risk management decision making must be used.

The performance management contractor shall initiate a performance design review process in the following situations:

- Any type of major changes that may have an impact on the acro-artistic architecture of the performance-act.
- Demands for performance content change (new skill or figure either new to an artist or new to an act) considered to be outside the current ability and competences of the artist and/or outside of the coaching capacity and current expertise.
- Major change in the acrobatic equipment of an act.
- New act(s) integrated into an existing show.

All involved parties including artistic designer, coaching, artistic leads, therapists and technical should be consulted during this process to assess, validate and advise the artistic team on the course of action to be taken for the particular case brought up to the process review.

Performance alterations and evolutions resulting from the design review process must not be reintroduced until:

- All parties are in acceptance and the decision is communicated to all relevant parties involved in delivering the execution of the decision.
- Relevant documentation must accordingly be revised by the performance management contractor to reflect the changes such as:
  - Modification to the performance risk assessment of the act.
  - Modification to the artists' profile, teaching methodologies, performance training plans or coaching orientations.
  - Modification of performance or measures in work procedures such as artist training, written plans and procedures, supervision with the goal of reducing exposure to hazards.

27.1.5 Performer Integration

A performer integration plan is required for all high level performances. High level performances include any performance that has the possibility of life changing injury or outcome if there was a human performance error. This includes, but in not limited to: artist flying; artist working with fire; artist at heights without engineered tie-offs; porters, catchers and flyers in banquine or ground acrobatics.

Factors such as experience, performer fitness, injury history, medical fitness should all be included. A schedule and steps of integration should be built by coaching or artistic design leaders. There should be supporting documentation with this plan.

27.1.6 Competent Person (designer/coach/performer/automation)

All phases of performance, from development through operations must be supervised by competent persons. This includes, but is not limited to performance designers, coaches, artist/performers, medical personnel and the technicians operating the show. It is expected that the contractors and operators of the performances will assess and document the competencies of their supervisors (key role staff). Contractors and operators should

us a combination of education, training and experience to demonstrate that the personnel provided can properly assess, use sound judgment and have the authority to sign-off on the abilities to create a safe performance for not only the performers, but also the audience, event staff and all involved.

27.1.7 Rehearsals and Training

Rehearsals and training are classed as a high-risk time in the process. This is the time when things are being tested and validated which creates higher risks. Performance risk assessments should reflect and detail these risks. Additional control measures should be implemented during this period. This period should also be closely supervised by performance designers and coaching.

The rehearsal space is where the majority of risks that will confront a performer will have been identified and control measures will have been put in place. It is important to also extend these to the performance venue.

27.1.8 Auditions

Prior to any audition, parameters must be set by the person/persons hosting the audition for what constitutes acrobatics and higher risk presentations. This could include, but is not limited to: performer flying, aerial arts, ground acrobatics, pole performances, marital arts, and fire manipulation. There will need to be limitations on the performers presentation to ensure their own safety.

- Artist and performers must submit a detailed plan of the performance audition if they intend to present acrobatics or high-risk elements. This plan should have specific details of the intent and acrobatic figures within their repertoire. The performer must stay within the pre-determined and approve parameters.
- The person/persons hosting the auditions must do what is reasonably practicable to confirm the abilities and skills of the artist presenting. Best judgment needs to be used to determine if the artist has the ability and skills match the intended presentation. This can be, but in not limited to using training and marketing videos, resume, discussion with coaching or management teams representing the artist.
- There will be no improvisation allowed unless the performance design is that of an improvised nature. Parameters will still need to be set to these improvised style presentations. This does not apply to dance auditions as long as they not in a parkour or aggressive dance nature more in line with ground acrobatics. Also, this is not applicable to signing, musical, theatrical or other low risk presentations.
- All performance standards that are in place for training, rehearsals and show operations apply to the audition phase. There is still duty of care and an obligation to keep the safety of these prospective performers and artist safe.

27.1.9 Life Critical System Design and Fabrication

A life-critical system or structure is defined as one whose failure or malfunction may result in death or serious injuries to people. (i.e.: single component failure systems, lighting, rigging, automations systems, etc.)

The system design shall be validated by an engineer as required. Construction and manufacture of the system will insure ability to safely install, utilize, inspect and thoroughly maintain the system. Individuals responsible for the design and fabrication of life-critical system/equipment shall clearly observe and document the following specifications:

- Intended use of the equipment and mechanical or human performance limitations shall be defined and documented.
- Technical specifications of the system shall be reflected in the as-designed and as-built technical drawings.
- Specific standard operating procedures, inspection and maintenance requirements shall be defined and documented.
- Proficiency certifications and requirements ensuring adequate competencies to operate and maintain the systems shall be determined.
- Engineering approvals ensuring the structural integrity and safety of the systems and equipment shall be obtained in documentation form and handed over to the operating teams.
- Only high quality traceable components shall be used in the design and fabrication of life critical systems

- System designs shall provide approved safety factors or a fixed design allowance that limits to an acceptable level, possibilities of structural failure sufficient to cause mishaps. Calculated safety factors shall follow a defined standard method of calculation (including a minimum of 10-1 safety factor for all flying systems) and will be documented.

27.1.10 System Installation and Validation

- A competent team of individuals shall be used to install each system. The system will be tested to insure it meets the safety requirements stipulated in documented specifications.
- Acceptance testing methodologies will be used and documented to insure the system delivers the capacities required of it per the specifications documents provided to the supplier.
- A content/system expert will be present as appropriate for the validation of life critical systems.

27.1.11 System Operation

Following appropriate training, operations staff will operate, inspect and maintain each system. Operations manuals will be created to insure written documentation exists on site for each system. Operations staff shall be trained on the limitations of each system and these limitations will be documented thoroughly.

- The technical show operations management company shall be responsible for strictly respecting the design and fabrication specifications of the equipment or system in the way they are operated, inspected and maintained.
- The technical show operations management company shall be authorized to handle the operation (including show trouble shooting), inspection, maintenance and component replacements of equipment or systems as long as the system specifications are respected.
- The technical show operations management company are responsible for informing Expo City Dubai EVE Contract Management of any following: Equipment breakage, premature wear and tear, system errors, automation system technical miscues, out of scope maintenance requirements.

27.1.12 System Inspections and Maintenance

The cycle for inspection, maintenance and identical replacement of parts should be established along with a description for how and what to inspect. All work of this nature should be documented.

27.1.13 System Modifications and Alterations

Whenever modifications may affect the integrity of the system the technical show operations management company is responsible for initiating a design review process as outlined in the following points:

- A review process of requested modifications to life critical systems and equipment and shall involve the appropriate competent resources in the review process.
- Structural and theatrical engineered systems and equipment shall not be modified without advance authorization by a competent system engineer or equipment manufacturer.
- The technical show operations management company are responsible for informing Expo City Dubai Contract Manager of the requirements for any changes, enhancement and alterations to any systems or equipment.
- Modified systems or equipment may not be reintroduced into show operations until all required approvals from manufacturers, engineers, certifications and documentation are obtained, reviewed. System and/or equipment risk assessment has been revised to reflect the modifications of the system or equipment.

27.2 General Performance Hazards

27.2.1 Venue/Stage Hazards

The diversity of stage layouts and designs may generate numerous hazardous situations for personnel and artists. Regulations and safe work practices alone cannot cover the entire range of potential hazards.

Risk assessments are an effective way of identifying these specific hazardous elements or situations and clearly identifying the control or corrective measures required to properly manage the stage-related safety matters.

27.2.2 Working in Hot Temperatures

Consideration of the temperatures and the level of exertion a performer will be under need to be factored on a daily basis, including adequate breaks and hydration will be available.

The heat must be included as part of the performer integration plan. This should include details of how performers will build up to tolerance to these conditions. This should be a gradual integration with input from the artists, coaching and medical team.

Expo City Dubai has a developed a Working in the Heat Guide which can be provided by the HSE team at hsqe@expocitydubai.ae.

27.2.3 Working Below Stages

- All below-stage pits and traps must be barricaded and/or indicated with appropriate signage.
- Consideration must be given to the possibility of objects falling from above and how overhead activities could affect below stage activities.
- Loose materials must be removed.
- Access points and exits must be adequate to accommodate costumed performers.
- Emergency and rescue requirements must be in place.

27.2.4 Working in Darkness and Diminished Lighting Conditions

Working in darkness or diminished lighting conditions is a risk associated with specific performances. The following measures should be addressed:

- Risk assessments must identify procedures to reduce the associated risks.
- Consideration must be given to the use of blues and other work lights, the use of fluorescent tape markings on floors, steps and edges, etc.
- Consideration must be given to those who need to move from areas of bright lighting to low lighting. Appropriate stage access and egress points must be maintained through the wings.
- Appropriate warning or cue must be used prior to reducing light levels.
- Exit and safety lighting must be maintained and visible at all times.

27.3 Specific Policies

27.3.1 Performer Flying

Performer Flying is an industry standard term for the practice of elevating a person during a theatrical performance. This can include vertical lift of a person only or also incorporate horizontal traversing.

27.3.2 Performer Flying Categories

There two main sub groups for Performer Flying - manual and automated.

Manual Performer

Flying is defined when a person achieves vertical lift, under their own power or body weight, utilizing a system of apparatus such as tissue, silks, ropes and mechanical devices to assist them. This would also include the introduction of another person to the same system to act in the role of counterweight.

Performances undertaken in this space should conform to a recognised Standard such as:

- ANSI E1.4-2014 Manual Counterweight Rigging Systems.

Automated Performer Flying

This is a system designed to move a performer around a defined space that has electrical control components to control mechanical devices that facilitate this movement.

There is no one standard in this space, as Automated systems can use a wide variety of equipment and in some instances, components specifically manufactured for this purpose. In any case, each component utilized in this system must be fit for purpose, must have a manufacturer rating and engineering design.

The following Standards relate to Performer Flying Systems should be followed, or compliance with an equivalent international standard:

- ANSI E1.2-2012 Design Manufacture and Use of Aluminium Trusses and Towers.
- AWS D1.1-10 Structural Welding Code – Steel.
- AWS D1.2-08 Structural Welding Code – Aluminium.
- ASCE 19-10 Structural Applications of Steel Cables for Buildings.
- ANSI E1.6-1-2012 Powered Hoist Systems.

27.3.3 Planning

Good planning is essential to ensure a safe, fit for purpose system is designed and built encompassing safety of performers, crew assisting and audiences.

A site survey by a competent person should be conducted in the first instance to ensure there are sufficient rated points of attachment for any proposed system. This should be completed in conjunction with the creative design element, so a concept can be formulated that achieves the creative desire but is also technically achievable.

The system's operational restrictions (distance travelled, heights, speeds etc.) need to be identified and documented. It is imperative that the designers, directors and choreographers be acutely aware of these restrictions.

Once this initial work is completed a complete technical design needs to be undertaken.

27.3.4 Design

Overall design of the performer flying system shall promote redundancy in design to mitigate single point failure and cascading failures. In situations where, single points or cascading failure points of support are unavoidable, or where redundant systems may create additional hazards the system design shall use an increased design factor to mitigate risks based on a specific risk assessment.

- Single Point Failure is a part of a system that, if it fails, will stop the entire system from working.
- Cascading Failure is a process in a system of interconnected parts in which the failure of one or few parts can trigger the failure of other parts.
- Rated Capacity (RC) the maximum gross load which may be applied to the crane or hoist or lifting attachment while in a particular working configuration and under a particular condition of use.
- Working Load Limit (WLL) is the maximum working load specified by the manufacturer. This load represents a mass or force that is much less than that required to make the lifting equipment fail. WLL is calculated by dividing the RC by a safety factor.
- Safety Factor (SF) A normally accepted Safety Factor for general lifting is said to be a factor of six (6). For any system that is used to support people this Safety Factor must be increased to a SF of TEN (10).
- Breaking Strain (BS) is the gross load applied to a crane or hoist or lifting attachment that will cause it to fail or break. No calculations for Performer Flying should ever be used, utilizing Breaking Strain.

Calculation considerations:

- Each component of a performer flying system, (manual or automated) must have a Rated Capacity by the components manufacturer.
- The Performer Flying Designer must then calculate the maximum load that the total system will be required to support.

- Once these two factors are known the WLL calculation for each piece of the system can be made ensuring a Safety Factor of 10 is achieved with all components. Any component piece not achieving a safety factor of 10 must be replaced by a higher rated component. This will ensure that the risk of single point failure is minimized.
- Static vs Dynamic Load – Another critical factor in the above calculations is that an allowance for performer movement is made.
- The main difference between a static and dynamic load lies in the forces produced by the weight of an object. When static, the load remains constant and doesn't change over time. With a dynamic load, some outside factor, such as movement, causes the forces of the weight of the load to change.
- Tension is another factor that must be factored for performer flying. The resulting movement will cause tension to occur at different times, on different parts of the system, and must be considered.
- Communications Plan In the design phase a communications plan must be devised so that there is a means of uninterrupted communications between all nominated key personnel in support of the performers flying.
- This would include a procedure and means to communicate the implementation of the rescue plan if required.
- Communications failure should be risk assessed and the requirement for redundant communications method assessed. A minimal requirement would be an action plan for loss of communications during a performance.

27.3.5 Emergency Actions

As performer flying systems can be complex, sufficient planning for emergency actions must form part of the initial planning stage and continue as a live document throughout the performance life cycle.

Emergency Stop function (E-Stop) Automated systems must have a designated E-Stop button for the operator to stop all system movement instantly, if required.

- A study should be made if it is prudent for stage crew to have access to an additional e-stop/s on stage.
- Manual flying systems need to have an emergency action plan, as it is not possible to have an emergency stop function.
- Line of Site - Design must include ability for end use operator to be in visual line of site of the performer at all times they are flying. Preferably by situating the controls for performer flying in a position the operator has direct line of site OR by installation of CCTV cameras of the performance area.
- A member of stage crew acting as a spotter, who is in constant communication with the operator, is a good backup but should not be relied upon as sole means of ensuring performer safety.
- Rescue Plan - Design must include a detailed rescue plan – an assisted rescue but also rescue of an incapacitated person. If the system has differing zones of operation, rescue plan must include rescue from all zones.
- Immediate Action Plan – Given that performer flying is conducted in front of a live audience, the person in charge of the performance should develop an immediate action plan. This is to be commenced immediately following the rescue plan being implemented.
- This plan will detail how stage crew manage the rescue situation with respect to the stage and viewing audience.
    - Is there a stage curtain that can be closed to restrict public viewing of the rescue?
    - Stopping/ redirecting any broadcast that may be present.
    - Additional crowd control required?
    - Is there a need for a public announcement and the means to do this?
    - Implications of the rescue plan –partial or total evacuation of an area required?

27.3.6 Rehearsal

Depending on the complexity of the performer flying system, the performer/s must undertake sufficient training to master the required movement for the performance.

Additional Safety Measures consideration should be made if the addition of any safety equipment would be of benefit to the performers just starting rehearsals with a new system. Such as safety net, safety line or mats on the ground.

Initial rehearsals should be undertaken in comfortable clothing and under good white light conditions.

Once the performer gains experience with the system, costumes and show lighting effects/special effects can be added to the training in a gradual fashion.

Performers should undertake dress rehearsals in full show mode and conditions prior to opening to the public.

If the complexity of the system warrants a practice or test rescue shall be completed.

27.3.7 Performances

Prior to each performance appropriate checks of the performer flying system need to be undertaken by a competent person. Specifically checking items including:

- Points of attachment – connections.
- Steel Wire Rope - signs of wear, kinks, discoloration.
- Fibre/Synthetic rope – signs of wear, discoloration.
- Intermediate connections – shackles, carabineers, etc fastened correctly but never overtightened. All connections must be moussed and a visual check made.
- Spans, Strops, Slings – under correct even load, discoloration, in good serviceable condition.
- Pulleys, diverters are in correct travel alignment, not overloaded, or damaged.
- Cable drum/s- in good order, runs are correct and drum has sufficient reeving.

Depending on the length of the performance duration a periodical maintenance schedule may need to be developed, to be conducted during performance area dark times.

Should the performer require a harness for performer flying, in show timings and blocking for a competent person to visually confirm the harness has been correctly fitted to the performer and is in perfect working order. Ensuring any swivels and/or other attachments or connections are made properly to the harness. Visual or verbal cues should be introduced between performer, technician and stage management to confirm the harness is properly attached.

Should physical connection be required to the performer flying system, in-show timings and blocking to allow a competent person to ensure a positive connection has been made between the harness and the system. That the system ready to take weight and confirm to the operator the performer is ready to fly. Visual or verbal cues should be introduced between performer, technician and stage management to confirm the attachment is properly complete.

Due to nature of the show, if it is not possible for a competent person to undertake either of these steps, sufficient training of the performer must be undertaken. This training should occur in a gradual process leading to being performed in show conditions. Any performer undertaking these tasks must be deemed competent, prior to show performances to undertake these tasks.

Prior to performances being held, all personnel who has a role in the performer flying operation, must have been previously suitably trained in all their specific tasks by a competent person.

At the commencement of the performance all crew must be in their assigned positions and prepared to undertake their performer flying tasks. It is good practice to have this verbally confirmed through the communications plan.

Whenever there are performers using the system, properly trained and equipped rescue personnel should be standing by.

27.3.8 Makeup and Hair

The use of makeup in performing arts can also pose hazards for the performers and makeup artists if not safely selected, applied, removed, or stored.

A directory of informational sheets and Safety Data Sheets (SDS) that accompany any makeup or hairstyling product and should be on hand at the location of application.

Any artists that have an adverse reaction to makeup or hair products should immediately cease applying or wearing the product. It should be removed and medical attention should be sought depending on the severity of the reaction. Alternatives will need to be assessed.

Sharing makeup and makeup applicators may result in the transmission of diseases. A primary key to makeup application safety is keeping it clean. This is true whether the makeup supply is a personal supply or a communal/shared makeup supply; and whether the performer applies his or her own makeup or a makeup artist applies the makeup.

Sharing wigs and hairbrushes should be discouraged unless adequate sanitization has occurred.

27.3.9 Costumes and Wardrobe

Full character costumes present additional hazards. The length of time the performer has to wear the costume will play a large part as to how the risks from these hazards are eliminated or minimized.

Designed in a manor to not create additional risk to the performer or other cast, technicians or audience. Restrictiveness of movement, weight (ergonomics), breathability, and sharp or pointy edges should all be considered.

Considerations include the points noted above as well as:

- Air flow.
- Temperature and general comfort of the performer.
- Sight lines out of the costume.
- Food and drink access for the performer.
- Ease of removal.
- Bathroom breaks – accessibility.
- Audience reaction to the costume (especially children).
- Repetitive strain injuries due to increased resistance and limited range of motion.
- Any reduction in Sound and or Visual awareness of the performer.
- Stability and control.

Performing choreographed sequences in a character suit or exaggerated costumes introduces additional risks. These will not be confined to the performer, as crew and or audience may contribute other elements of risk associated with the hazardous routine.

An appropriate amount of rehearsal time must be allocated, this must be in proportion to the level of risk created by the suit or costume. The nature and extent of these risks can vary, dependent upon the action required. The staging of a hazardous routine should be risk assessed on a case-by-case basis.

27.3.10 Puppeteering (including Giant Mignonette)

Working as a puppeteer, including large-scale exposed puppetry and prop manipulation should also be considered as a high-level performance.

An appropriate amount of time must be dedicated to rehearsals and be in proportion to the level of risk involved with the use of puppets or large-scale props. The nature and extent of these risks can vary, dependent upon the action required, therefore, a risk assessment shall be completed with the following hazards and control measures considered:

Hazards relating to puppets and large prop manipulation:

- Sight lines around the puppet or prop.
- Audience reactions to the puppet (especially children).
- Repetitive strain injuries due to increased resistance and limited range of motion.
- Any reduction in Sound and or Visual awareness of the performer.
- Lack of stability and control.
- Injury from impact and contact with puppet/large scale prop.
- Risk to public if the puppet or giant mignonette is not in a controlled environment.

Control measures for puppets and large prop manipulation:

- Ensuring a qualified person is employed to develop and choreograph the routine and a puppet maker/designer monitors the build and fit.
- Ensuring there are dedicated personnel monitoring the performance and handling of the puppet /prop. element in training, rehearsal and performance if the visibility of the performer is limited.
- Stretching and appropriate warm up for puppeteers prior to training, rehearsals and performance.
- Ergonomic assessment for weight loads and body positioning.
- Communication plan, emergency stop measures and exclusion zone strategy for any giant mignonette not in a secured performance zone.

27.3.11 Audience / performer interaction

As a result of the COVID-19 pandemic there should be limited audience interaction or participation. This applies to masked or unmasked performers with masked or unmasked audience members. A 4m distance from the audience should be maintained at all times. In the event of a physical performance (increased or heavy breathing), projection (signing or yelling), the distance should be increased to a minimum of 5m.

If a performer (such as a roving performer, a performer on a same stage or an unguarded stage), is engaged at a distance closer than the aforementioned distance recommendations, the performer should disengage even if this means a break of character or a pause in the performance.

If an event or performance is that of a tutorial or interactive nature, all local and Expo City Dubai guidelines for distancing, masks and exposure times will be factored in the design. This should be documented as part of the risk assessment process.

27.3.12 Performance Drones

Performance drones will not be flown over the audience at any time. A calculation of safety buffer zone needs to be completed and documented. A GPS hard zero point must be identified and automatic shutdowns programmed into the system at these points.

Only drones with a magnetic brushless propellers will be utilized in a performance setting.

Drones for performance use may be flown over performers and cast providing the following is in place:

- A specific ratio of performers to space.
- Weight of the drone is factored.
- Fail rate from the manufacture or operator.

Battery storage and charging plan is required. Appropriate fire suppression and/or warning system needs to be in place. Batteries must be stored in a cool area away from direct sun exposure and high temperatures. Batteries should be segregated as to not create a “run-away” battery fire situation.

27.3.13 Low Fog and Smoke Effects (CO2) Systems

For all CO2 and smoke effect systems, the following must be in place or factored in the risk assessment:

- Low lying or pooling areas identified and increased air flow or ventilation added. CO2 monitors installed in identified areas and near the system tank location.
- No direct sunlight or heat on tanks storage or mounting locations.
- Storage, handling and transportation plan should be developed.
- Bottle certification as well as inspection and maintenance schedule.
- Distribution system lines should be inspected and documented as per manufactures recommendation.

27.3.14 Child Performers

There are many areas that need to be considered when children are required for a performance. The content of the show, the working conditions and environment of productions and events, hours of work and other factors can present a risk to the children themselves and other performers. The suitability of content, working

conditions and environment should be assessed in consultation with the parents and or coaches of the child and any relevant authorities.

The role of a cast chaperone is also to be considered as part of the risk assessment. The benefits of having a responsible adult on staff to protect the welfare of young company members should be considered. It may be possible for member of cast or crew to take in this role, but the responsibilities should not be underestimated and at no time should the child performer be unsupervised when backstage in a production.

Children do not have the same hazard and risk understanding as adults. With this said, all performance hazards and mitigations should be reassessed if children are part of the performance. This should be done as an addition to the performance risk assessment. Additional controls will likely be required to maintain the safety of these young performers.

A safety discussion should be held with all child performers individually or in small groups early in the development phase. This should also be done prior to show condition rehearsals and the performance itself. A simplified method of explaining the hazards and controls should be used.

28 Occupational Health

All organisations, tenants and those working on their behalf must ensure sufficient focus in given to occupational health, including:

- Fitness to Work. Basic health checks are to be carried out of personnel (in addition to those required for visa purposes).
- Safety Critical Roles. Where ill health of an individual may compromise their ability to undertake a safety critical task, additional checks must be undertaken to manage this risk. Examples of personnel undertaking safety critical tasks may include mobile plant operators, drivers, scaffolders, slingers/signallers, traffic marshals, confined space workers or those working at height. Additional checks shall be identified through risk assessments or in line with appropriate guidance.
- Medical Surveillance. Occupational health monitoring should be undertaken of operatives exposed to high risk operations such as noise, manual handling, hand arm vibration, etc.
- Well-being. An ongoing programme of health awareness to educate the workforce.
- Hygiene. Arrangements are required to educate and ensure workforce adopt good hygiene practices, such as personal hygiene standards, protection against dermatitis, use of PPE etc.

All organisations, tenants and those working on their behalf must ensure relevant health risks are identified through risk assessments as well as recorded in health and safety plans with controls identified and implemented.

Employers are reminded of the requirement to obtain an Occupational Health Card from Dubai Municipality Clinic and to ensure employees undergo medical surveillance where they are directly exposed to health hazards.

Any prescribed medication must be declared to the employer and an occupational health assessment put in place where there is an identified increased risk. Similarly, any person suffering an injury or illness where they require additional support or attention including in the event of an emergency must have a risk assessment in place.

28.1 Fitness for Work

It is important that all workforce are fit to conduct the task for which they are engaged so they can conduct this safely without risk to themselves or others. Fitness for work may be affected by such items as illness, fatigue, drugs and alcohol. It is strictly prohibited for any worker to report to work in an unfit state and this should be discussed with their supervisor as required.

If you are not assessed as being in a fit state to conduct your daily activities, you will be requested to immediately cease work and leave the site and only return when sufficiently recuperated.

If you are taking prescribed medication that may affect work performance, the supervisor must be informed prior to commencement of work.

All organisations, tenants and those working on their behalf are required to ensure that sufficient attention is given to the management of risks related to mental health and wellbeing, including fatigue and shift working, including the following measures:

- Engage with workforce to understand concerns and issues associated with shift work.
- Review accommodation (where provided to workforce) to optimise sleep quality (e.g. window coverings, avoiding workforce on different shifts in the same room).
- Plan meals to help workforce to stay alert and to relax /sleep when they need to rest.
- Ensure all shifts are adequately supervised.
- Ensure overnight activities are planned with effective hand arrangements in place.

28.2 Fatigue Management

In a work context, fatigue is a state of mental and/or physical exhaustion that reduces a person's ability to perform work safely and effectively. It can occur because of prolonged or intense mental or physical activity, sleep loss and/or disruption of the internal body clock.

Signs of fatigue include:

- Tiredness even after sleep.
- Reduced hand-eye coordination or slow reflexes.
- Short term memory problems and an inability to concentrate.
- Blurred vision or impaired visual perception.
- A need for extended sleep during days off work.

Whilst fatigue is a shared responsibility, Expo City Dubai expects that all organisations, tenants and those working on their behalf implement effective arrangements for managing the risks from fatigue, with particular consideration for periods when the likelihood of fatigue is increased. These arrangements shall include:

- Operating a working-hour shift limit and mandating days off.
- Establishing a process to manage persons who exceed the shift limit.
- Assessing and monitoring the effects of working hours and shift patterns in terms of their effect on the workforce health and safety.
- Establishing a process to identify safety critical works when working evening or night shifts.
- Ensuring suitable welfare provisions for overnight workers.
- Maintaining records of working hours shift patterns, including records of subcontractors.

28.3 Shift Working

A range of health and safety hazards are associated with shift work, including:

- Shift work can disrupt the internal body clock leading to difficulty sleeping and fatigue.
- Fatigue can impact response times and concentration levels which increases the likelihood of incidents.
- Levels of supervision can often be lower at night and some hazards may be more difficult to detect.

All organisations, tenants and those working on their behalf must assess and manage the risks associated with shift work and fatigue. Specific attention should be given to the following controls:

- Engage with workforce to understand concerns and issues associated with shift work.
- Review accommodation (where provided to workforce) to optimise sleep quality (e.g. window coverings, avoiding workforce on different shifts in the same room).
- Plan meals to help workforce stay alert and to relax/sleep when they need to rest.
- Ensure all shifts are adequately supervised.
- Ensure all night works are notified and planned with effective handover arrangements in place.
- Evaluate environmental hazards (such as lighting, dust and noise), particularly at night.
- Monitor working hours to ensure legal limits are not exceeded.

28.4 Stress

Stress is the adverse reaction people have to excessive pressures or other types of demands placed on them. Work-related stress is a major cause of occupational ill-health which can cause severe physical and psychological conditions.

All organisations, tenants and those working on their behalf must assess the risks from stress associated with activities, in consideration of the following factors:

- Demands – issues such as workload, work patterns and the work environment.
- Control – how much say people have in the way they work.
- Support – includes encouragement, sponsorship, and resources provided by the organisation, line management and colleagues.
- Relationships – includes promoting positive working to avoid conflict and dealing with unacceptable behaviour.
- Role – do people understand their role within the organisation and does the organisation ensure roles are not conflicting.
- Change – how is organisational change (small and large) managed and communicated.

All organisations, tenants and those working on their behalf must ensure control measures are implemented to manage stress and to promote positive mental health and well-being, including consideration of the following:

- Communication and open conversations to raise awareness of stress and reduce any perceived stigma.
- Develop actions plans for people suffering from stress.
- Provide mechanisms for raising concerns and grievances in a confidential manner.

28.5 Noise

All organisations, tenants and those working on their behalf must have arrangements in place for those exposed to noise associated with their works. Collective protection must be chosen ahead of personal protection wherever possible.

Areas and activities producing noise levels above 80 dB (A) must have appropriate signage posted and hearing protection must be available. Above 85 dB (A) hearing protection is mandatory and signage stating that hearing protection must be worn should be displayed.

The hearing protection mitigation factor should be rated to reduce dB levels under 85 dB (A). For example, if the dB (A) level is 97 the dB (A) mitigation factor of the hearing protection should be a minimum of 12 dB(A).

Training and information with regards to the risk and control measures in place is required by space owners to workforce in these areas and staff should be given an understanding of the 8-hour equivalent exposure level and how different levels of sound exposure can affect them.

Also, a key suggestion/requirement is the rotation of staff in areas of high noise level exposure.

Equipment brought on-site shall have noise emission levels identified. Where the emission levels exceed the legislated exposure standard for noise, the equipment must be identified as a noise hazard and steps taken to adequately control exposure to workforce and others. This may include the provision of appropriate hearing protection.

As a rule, a person should be able to hear a conversation at a distance of 1 metre from the noise source and therefore would not need hearing protection. If noise levels are excessive then a noise assessment should be undertaken.

Expo City Dubai is to be advised of identified noise hazards by venue operators to ascertain the impact on workforce and others within the site. Expo City Dubai reserves the right to prohibit or restrict use of such equipment depending on the outcomes of consultation with impacted stakeholders.

The use of devices with headphones (for example, iPods, mobile phones) shall not be used where it is assessed that the use of these items may pose a risk to safety.

All performances and other related activities are to adhere to the requirements of the Dubai Municipality Technical Guideline – Requirements for the Control of Entertainment Noise.

Where noise levels exceed the allowable limits, Expo City Dubai has the authority to make the necessary noise reductions to ensure minimal disturbance across the site.

28.6 Hazardous Substances

Any work activity involving a hazardous substance must have an accompanying Control of Substances Hazardous to Health (COSHH) assessment undertaken for the associated task, which considers the exposure to operatives and others who may be affected.

All organisations, tenants and those working on their behalf must consider the following control measures for hazardous substances in hierarchical order:

- Elimination of the hazardous substances.
- Modification of the substance, process and/or workplace.
- Applying controls to the process, such as enclosures, splashguards and Local Exhaust Ventilation (LEV).
- Working in ways that minimise exposure, such as using a safe working distance to avoid skin exposure.
- PPE or devices worn by exposed individuals.

The assessment itself must be based on the information contained within the Material Safety Data Sheet (MSDS) relating to the hazardous substance to be used. All employees involved in the use of hazardous substances must be briefed on the contents of the COSHH assessment prior to undertaking the operation.

COSHH assessments and MSDS shall be included as part of the method statement.

All organisations, tenants and those working on their behalf must ensure employees are trained, licensed (where applicable) and competent in the nature of work and briefed before starting work.

Warning signs must be provided in all potentially dangerous areas, such as chemical/gas cylinder storage areas.

All hazardous materials stored on-site must be stored in accordance with the guidance contained in the supporting MSDS. All organisations, tenants and those working on their behalf must submit a register of hazardous substances along with copies of the relevant MSDS to the Organiser.

An MSDS shall be provided by the manufacturer or supplier, dated within the last five years and to a recognised standard.

28.7 Display Screen Equipment

All organisations, tenants and those working on their behalf should control the risks that may arise from the use of Display Screen Equipment (DSE) e.g. VDUs, computers etc. Workstations should be designed to minimise the risks from upper limb disorders. Workstations should be assessed, and in carrying out the assessment the employer should consider both the requirements of the job and the needs of the individual.

29 Other Health and Safety Considerations

29.1 Public Safety

Expo City Dubai aims to maintain the safety and wellbeing of the public. All organisations, tenants and those working on their behalf are responsible to ensure that members of the public are not injured or otherwise affected during their operations.

In accordance with UAE legal and other requirements, Expo City Dubai has adopted a pro-active approach to crowd safety in order to ensure potential crowd related risks are identified and managed. Expo City Dubai will continuously monitor crowd densities and visitor flow rates to maintain throughput and avoid potential pinch points.

All organisations, tenants and those working on their behalf must develop a Crowd Management Plan, either as a separate plan or within their Health, Safety and Environment Plan. The plan must include crowd density/capacity thresholds, visitor throughput assumptions and queueing space requirements. Any risks to crowd safety should also be highlighted along with mitigating measures to address the risks. The plan should also include comprehensive staffing details, training plans, PPE requirements, associated crowd management tool requirements (barriers) and communication structure/methods.

29.2 Child Safety

All organisations, tenants and those working on their behalf must ensure that suitable controls are implemented where events or activities involve children. Risks increase in areas where children are involved due to lack of proper parental(s) supervision, limited communication skills and general behaviours.

Venues with interactive activities or games are required to provide a safe environment for people of all ages. Therefore, the following controls must be put in place:

- Visible posted signage communicating the age and any physical ability the activity or game requires or limits.
- Adequate supervision present in the area by a competent person with proper training to respond to incidents and unforeseen occurrences.

Controls must be implemented to prevent misuse of equipment, especially loose items that are part of the experience and to prevent climbing of structures, trees, fences, barriers and other objects. Child crafting areas must have only child safe equipment for use. No child can be admitted to the area without appropriate supervision.

Specific arrangements should also be implemented to ensure the protection of school groups. Schools, teachers and accompanying adults have a responsibility to ensure the health and safety of school groups visiting the Expo City Dubai site.

Playgrounds

Play areas or play parks are indoor or outdoor spaces designed for children to play involving structures and different equipment.

- All playgrounds must be compliant with Dubai Municipality health and safety requirements.
- Playground operators must obtain a permit from the appropriate authorities prior to opening it to the public. A risk assessment and a detailed rescue plan is required, especially for play areas that have play at height.
- The permit will outline all the restrictions with the specific play area.
- Outdoor play areas must be shaded and the structure and equipment must not heat up during high temperatures thereby causing a burn or injury to children.
- All poles must be padded to at least 6 meters off the floor.
- No sharp edges must be present in the play area.
- Parks must remove all sources of entrapment, crushing, falling, collision, entanglement, and trip, slip and falls. E

- Elevators, escalators, and travellators pose additional risk to children. Controls must be in place to ensure children do not get injured from the belt or the steps.

Water Features

Children are more likely to interact with water features than adults, therefore additional controls must be in place to prevent injury.

Factors to consider in relation to water features include:

- The depth of the water feature in areas that are easily accessible.
- The presence of loose objects such as rocks, statues, attachments.
- The splash areas especially on windy days causing a larger area for slips and wet floors.
- Water quality to ensure it's not harmful to human contact.
- Electrical safety from lights, cables, and water pumps that are part of the water feature.
- Maintenance, operation and emergency shut down procedures and plans.

29.3 Food and Beverage Safety

A variety of food trucks and carts will be available across the Expo City Dubai site and operators must ensure suitable precautions are implemented. Food trucks often incorporate a trailer that needs to be pulled by a separate vehicle while the truck has its own motor and drivetrain to manoeuvre. Food carts are typically push carts and moved manually by a person or a vehicle.

When deciding on the location and positioning of the food truck the following points must be considered:

- Parking on level, even ground; if the ground is uneven, additional controls must be added to ensure the truck is level and stable.
- The use of jacks or wheel chocks/stops at all time during operation.
- Positioning must be 3 meters away from any building, vehicles, structures, fire hydrants or combustible material.
- Exhausts are directed away from any building and other cooking vehicles and at least 3.5 meters away from any openings, air intakes, and means of ingress and egress.
- Locations of emergency vehicle access (EVA) routes, and access to fire hydrants.

Mobile food facilities rely on power to be able to run their operations. Electricity can be through a fixed supply or a generator. When operating food truck generators:

- Generators must be in an open, ventilated with proper air flow area and never in an enclosed or partially closed area.
- Refuelling generators must be done when the generator is off, cooled down, and off hours. Not hot refuelling is permitted.
- Signage showing "hot surface" on generators.
- Exhaust directed out of the truck and away from access/egress, air intakes, other trucks and public realm.

Mobile food facilities must be equipped with a working fire suppression system. A fire management plan is required as part of the operations plan. The fire management plan must be suitable for the operation which includes but is not limited to:

- Smoke/ heat detectors.
- Fire suppression system (water mist, CO2, FM200).
- Fire extinguishers compatible with the operation.
- Fire blanket.
- Administrative controls to ensure inspections, maintenance and cleaning schedules.

All staff must be trained on:

- Proper use of fire extinguishers and extinguishing systems.
- Proper method of shutting off fuel sources.
- Proper procedure for regular inspections including how to repair a simple leak on a gas connection.
- Proper emergency response.

Food preparation, storage, and disposal must follow food safety regulations set by Dubai Municipality. All establishments must have the correct permit and license to operate.

In cases of using brick ovens, charcoal, or other fire related material to cook, closing procedures must include a 60-minute additional waiting time to cool down the cooking area. Ash, cinders and fire debris should be removed from the fire box at regular intervals, at least once a day, and must be placed in a closed metal container.

Steps and stairs to the order window must be stable, placed on even ground, and if possible fixed. Any steps with more than 2 steps will require handrails.

Mobile food facilities are required to identify the eight major food allergens: milk, egg, fish, crustacean shell fish, tree nuts, wheat, peanuts, and soybeans. Warning signs and labels must be clearly visible to the public and preferably with a pictogram. Menu signs and boards used for advertising are considered a temporary structure and shall follow the provision listed in that section.

Expo City Dubai will continue to showcase innovation and new ideas. Travelling or mobile vending machines and robots might be used to deliver food and beverages to customers around the Expo City Dubai site. In addition to complying with robot safety, these machines

- Must have warning signs advising the temperature of the content.
- A flashing lift to alert pedestrians whilst in transit.

All organisations, tenants must provide the F&B layout along with a risk assessment that includes cooking station and kiosk counters. Use of Portable LPG cylinder is not permitted in Expo City Dubai premises (external and internal areas) unless purpose built and approved by Civil Defence and approved by the Expo City Dubai's HSE team.

Food Truck Fire Safety

The use of food trucks at Expo City Dubai must be in accordance with UAE Fire & Life Safety Code requirements, with consideration of the following measures:

- Food truck used for events must be Civil Defence approved.
- LPG Leak detectors must be installed at the enclosure and inside the truck near cooking platform.
- Heat detectors shall be installed for the truck interior covering the cooking platform.
- Kitchen hood suppression system shall be provided for the hood.
- Maximum quantity allowed is 2 cylinders of 12 kg in one group in the enclosure.
- 1 cylinder shall be main and 1 cylinder shall be reserve in a common manifold with isolation valves.
- Additional / spare LPG cylinders are not allowed to be stored in the truck.
- The staff must have received fire safety training which includes the use of fire extinguishers and communication/escalation/reporting of incidents.

Use of Sterno (Alcohol Burner)

The use of sterno (canned heat) for serving hot food is allowed provided adequate safety precautions are taken:

- Catering staff are to appoint a dedicated fire watcher. The fire watcher is to be constantly available when the sterno is lit to monitor it and ensure that safety precautions are followed.
- The sterno must be in a fuel holder with an attached snuffer paddle for use.
- Do not move equipment whilst the sterno is lit.
- Keep decorations and other paper/plastic items at least 30cm away from a lit sterno.

Restaurants

Comprehensive measures apply to the operations of food and beverage restaurants across the site. The following key measures relate to fire safety:

- The restaurant kitchen installations must be in accordance with UAE Fire & Life Safety Code.
- Inspection, testing & maintenance must be carried out in accordance UAE Fire and Life Safety Code.
- Kitchen hood fire suppression must be installed and maintained in good working order.
- An adequate number of portable wet chemical fire extinguishers must be provided in the kitchen.

29.4 Working at Night

During overnight operations activities will be undertaken when visibility levels are reduced. A risk assessment should be undertaken to decide on appropriate control measures for working at night. All organisations, tenants and those working on their behalf must ensure that suitable precautions are implemented for all work at heights, including:

- Suitable lighting for task to be undertaken.
- High visibility vests when operating outside of venues, particularly when there is moving plant and equipment.
- Vehicles fitted with lights and warning devices.
- Appropriate levels of supervision, particularly for high risk activities.

29.5 Lone Working

Lone working refers to work that is isolated from the assistance of other people because of the location, time or nature of the work being undertaken. Assistance from other people includes rescue, medical assistance and emergency services. Lone working is most likely to occur during overnight operations.

A specific risk assessment must be conducted and a procedure for monitoring and communication established for workforce members required to work remotely or in isolated locations. When conducting the risk assessment, the following control controls should be considered:

- Communications systems selected depending on the location and nature of the work.
- Personal security alarms; mobile phones; satellite communication; distress beacons.
- Buddy systems arranged for situations in which a worker should not work alone.
- Movement records to monitor staff whereabouts.
- Training.

29.6 Working On / Near / Over Water

Due to the nature of some events or venues (e.g. where the design of a venue includes a water feature), there could be water at areas within the site which may create a risk of drowning, exposure or water-borne infection.

All organisations, tenants and those working on their behalf that are required to work on the water (e.g. in boats), over the water (e.g. pontoons), or next to the water must be aware of the venue specific arrangements, or where they have been engaged to conduct this work must have a MSRA for this task.

For water features and fountains there must be suitable arrangements in place to manage associated risks. Consideration should also be given to extraction from water within emergency planning. Close consideration should be given to the safety of children in these areas.

For outdoor water, life jackets are required where persons could be at risk from drowning, and they must be suitable for the activity taking place.

29.7 Confined Spaces

Where there is a requirement for work in a confined space (i.e. underneath stages, temporary water tanks, manholes, or similar space in which, by virtue of its enclosed nature, there arises a reasonably

foreseeable significant risk), these works must be carried out under the conditions specified within a confined space entry permit, method statement and risk assessment.

The main hazards associated with confined spaces are:

- Lack of oxygen.
- Poisonous gas, fume or vapour.
- Liquids and solids which can suddenly fill the space, or release gases into it, when disturbed. Free-flowing solids can also solidify or 'bridge' causing blockages which can collapse unexpectedly.
- Fire and explosions (e.g. from flammable vapours, and excess oxygen).
- Residues left in tanks, vessels and similar containers, or remaining on internal surfaces, which can give off gas, fume or vapour.
- Dust present in high concentrations, e.g. in silos.
- Hot conditions leading to a dangerous increase in body temperature.

The level of risk created by these situations may be significantly increased by poor means of egress.

Measures must be in place to ensure workers in confined spaces have adequate ventilation and lighting and are issued with appropriate Personal Protective Equipment (PPE).

Any work conducted in a confined space must ensure that a permit is obtained prior to any work commencing.

All organisations, tenants and those working on their behalf will be responsible for the following:

- Supply all safety equipment including portable gas detection devices, self-contained breathing apparatus, harnesses and other escape equipment (including a rescue tripod for work in holes), which must be certificated, and in good order.
- Ensure all personnel who enter a confined space are trained.
- Implement a Confined Space Permit System including emergency plan.

Prior to any work being undertaken in a confined space, the following must be considered:

- Personnel selection.
  - Suitable size and fitness for the task.
  - Medically fit.
  - Experienced.
  - Trained by third party in entry and rescue.
  - Familiar with all necessary procedures.
  - Suitable attendants.
  - Confirmation of the above by the production of an in-depth risk assessment.
- Supervision of the operation.
- PPE and emergency equipment provision.
- Communications, ensuring devices are intrinsically safe.
- Atmospheric monitoring before and during entry.

For more information regarding lifting requirements, refer to Expo City Dubai's Construction Health and Safety Assurance Standards.

29.8 Material Storage and Distribution

All organisations, tenants and those working on their behalf must have in place appropriate management arrangements to ensure the safe offloading, storage and distribution of materials. All materials must be safely stacked, away from fences and hoardings, and located to minimise double handling and reduce transport distances. Areas should be maintained, site access routes kept clear and segregated from other areas and all surplus packaging should be removed.

Deliveries should be planned to minimise materials stored on-site. Materials should be stored in appropriate receptacles and secured to prevent collapse. Materials should not be leaned against walls or other items where there is a potential to fall.

29.9 Surface Loadings and Limitations

Throughout the site there are restrictions on the loads that can be supported by the ground. Prior to the commencement of any work that involves the introduction of significant loads approval is required from Expo City Dubai, involving an assessment of the impact of the load to ensure that it can be supported. Where the ground cannot support the imposed load, additional controls should be implemented.

29.10 Tools and Equipment

Tools and equipment including hand tools (screwdrivers, hammers etc.), power tools (drills, angle grinders, etc.), and other items are to be suitable for the task, in a safe condition and the user must be competent. All tools and equipment must be visually checked on a daily basis prior to use and inspected at suitable intervals to ensure that maintenance or replacement takes place.

All organisations, tenants and those working on their behalf must provide training to workforce to ensure that they can use the tools and equipment safely, and any specific Personal Protective Equipment that may be necessary (e.g. eye protection, gloves, hearing protection) is provided.

There may be specific requirements at the site that certain tools and equipment can only be used if authorised by the venue management team (e.g. “Hot works” – welding, soldering, use of lifting equipment).

29.11 Mobile Phone Usage

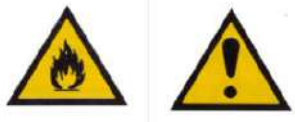
All organisations, tenants and those working on their behalf must ensure that mobile phones are only used in safe areas, such as walkways or designated areas on site. Controls required to prevent personnel wandering across roads or into hazardous work areas whilst on their mobile phones must be considered. Any activity which creates a distraction when driving is not permitted when in control of a vehicle.

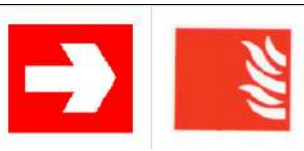
29.12 Safety Signage

The primary importance of displaying safety signs is to ensure staff and visitors are aware of the possible dangers and hazards in certain situations and/or environments.

BS:5499 – Safety Signs including Fire Safety Signs sets out the requirements for the design and use of safety signs intended for use in the occupational environment. These signs are designed to regulate and control safety related behaviour, to warn of hazards and to provide emergency information including fire protection information.

Table 29-1. Key Signs

Sign Type	Pictorial	Sign Use
Mandatory Signs.		These signs require actions or activities that will contribute towards safety. White graphical symbol on a blue circle.
Prohibited Signs.		These signs prohibit actions detrimental to safety. Black graphical symbol on a white circle with a circular red band and behind a red cross bar.
Warning Signs.		These signs give warnings of potential risks. Black graphical symbol on a yellow triangle that has a strong black border.

Sign Type	Pictorial	Sign Use
Fire Equipment Signs.		These signs are used to indicate the location of fire equipment. White graphical symbol and a red square.
Safe Condition Signs.		These signs indicate exit routes in the event of a fire or emergency.
Supplementary Information Signs.		Supplementary signs are determined by the appropriate sign.

29.13 Personal Protective Equipment (PPE)

Personal Protective Equipment (PPE) comprises clothing, equipment and/or substances used to protect part or all of the body from foreseeable work-related injury or illness. Depending on the tasks undertaken, staff may require a range of PPE, including: sun safe clothing, protective footwear, hearing protection, eye protection, sunscreen lotion, hat or gloves.

The nature and type of PPE is to be selected based on a risk assessment and suitable for the environment and hazards present.

Where PPE is to be used, all organisations, tenants and those working on their behalf must cover the costs associated with the provision of PPE and provide training in its use.

All items must have the CE mark (the recognised mark) for PPE tested and approved to International Standards (as below).

Table 29-2. PPE Requirement

PPE	Requirement
1. Hard Hat.	BS EN 397 or equivalent.
2. Safety footwear, toe and midsole protection with ankle support.	BS EN ISO 20345:2011:SB-P (label should include one of SB-P, SB & P, S1-P, S3, S5, P3, P5).
3. High Visibility clothing.	BS EN 20471 Class 2.
4. Light Eye Protection.	BS EN 166 F.
5. Gloves suitable for the task.	BS EN 420.
6. Face masks (medical or surgical type).	BS EN 14683 Type 1.

29.13.1 Task Specific PPE

Where a risk assessment determines additional items of PPE are required for a task, this must be provided and subjected to the same controls as above.

The following items must be considered when selecting additional task PPE:

- The environment where the PPE is to be used.
- The risks involved with the operation.
- The operatives using the PPE.
- Whether specialist training is required for the fitting/use of the PPE.
- Rescue/emergency procedures.
- Other control measures.

In addition to the minimum standards for all personnel, the following task specific minimum PPE is likely to apply and must be appropriately risk assessed:

- Ankle protection on uneven ground.
- A full body safety harness with lanyard for scaffolders and riggers.
- Risk assessments must consider climbing helmets (no peak helmets) and chin-straps for scaffolders/riggers and those working at height, including rescue team members and crane drivers.
- Boom type MEWP operators and suspended access platform (cradle) users must use a full body safety harness with lanyard.
- Users of grinders must wear full face masks.
- Workforce exposed to ongoing high levels of noise must wear ear protection.

Workforce undertaking activities at night and within the basement area must wear a high visibility vests or equivalent at all times.

Workers dealing with hazardous substances must wear protective clothing as prescribed by Material Safety Data Sheets and COSHH assessments.

29.14 Clothing and Footwear

The level and type of clothing and footwear required for workforce will depend on the nature of the hazards that they work with or which they can encounter in their work area. The type of clothing and footwear that is required must be determined by undertaking a risk assessment for the specific work activity. In general, Expo City Dubai expects that clothing and footwear worn will be clean and suitable for the work task.

30 Environmental Requirements

There are a number of significant environmental aspects associated with Expo City Dubai Community operations. All organisations, tenants and those working on their behalf must comply with all environmental laws and implement sound environmental practices and control measures that will minimise environmental impacts.

30.1 Air

Air emissions can lead to direct and indirect health impacts when air pollutant allowable limits are exceeded. Air emissions will be primarily emitted from operation of combustion sources such as generators, fuel-powered equipment and vehicles. Lack of maintenance, use of poor quality fuel, unnecessary idling periods, improper storage of waste/sewage/fuel and absence of emission control may result in increased pollutants concentration emissions.

Dust emissions are also expected to be high during construction activities and depending on the prevailing weather conditions due to the UAE desert nature.

Expo City Dubai will continue to monitor ambient air quality across the site and the indoor air quality in the basement to ensure adherence with the legal requirements of Dubai and the UAE.

30.1.1 Applicable Standards

Ambient Air Quality

Contractors and service providers must ensure the air emissions from their activities comply with the ambient air quality standards and the maximum allowable emission limits of air pollutants stipulated in the Cabinet Decree No. (12) of 2006 on “Protection of Air from Pollution”. For more information, refer to the HSE Legal Register.

Indoor Air Quality

While most of the new buildings on Expo City Dubai pursued the LEED rating system for their design, all organisations, tenants and those working on their behalf must ensure safe and comfortable indoor air quality for visitors and workforce by implementing control measures to avoid/reduce air emissions.

Parameters for indoor air quality must not exceed the Dubai Green Building Regulations and Specifications (GBRS) for buildings and office spaces. For more information, refer to the HSE Legal Register.

30.1.2 Control Measures

- Machinery and equipment must be procured in compliance with the relevant national and/or international standards on exhaust gaseous emissions.
- A maintenance program must be developed and implemented for all equipment, vehicles, and machinery as per manufacturer specifications (schedules and logbooks to be maintained).
- Any vehicles/ equipment with excessive exhaust emissions or visible black smoke, must be stopped until maintained and serviced.
- All engines must be switched off when not in use.
- Where applicable, biodiesel or “low NOx” diesel must be used to reduce emissions.
- Dangerous goods must be stored in accordance with DM requirements to avoid any toxic fumes from entering through the buildings’ air intake systems.
- Heating, Ventilation and Air Conditioning (HVAC) systems must be maintained in accordance with DM guidelines to maintain indoor air quality.
- Smoking must only take place in designated areas away from the building entrances, operable windows and ventilation system outdoor air intakes.
- Dust suppression techniques must be implemented to limit the dust emissions from construction works.

30.2 Noise

Noise is expected to be generated from event activities, operation of generators, vehicle movement and construction works, causing nuisance to sensitive receptors.

Expo City Dubai will continue to monitor ambient noise levels across the site to ensure adherence with the legal requirements and protection of the sensitive receptors.

All organisations, tenants and those working on their behalf are encouraged to implement control measures and conduct noise monitoring, where possible, to ensure emission levels are within specified values.

30.2.1 Applicable Standards

All organisations, tenants and those working on their behalf must ensure noise levels do not exceed maximum allowable noise limits stipulated in the Dubai Municipality regulation for Noise Control (2013), noting the following:

- Within and at Expo City Dubai site, maximum allowable noise limits for *"Commercial areas and downtown"* will be applicable [65 dBA day-time and 55 dBA night-time], when measured outside the premise's boundary.
- For residential areas such as Expo Village and the Rove Hotel, maximum allowable noise limits for *"Residential areas which include workshops and commercial business or residential areas near a highway"* will be applicable [60 dBA day-time and 50 dBA night-time], when measured outside the premise's boundary.

For more information, refer to Expo City Dubai's HSE Legal Register:

30.2.2 Control Measures

- All machinery and equipment must conform to national and/or international standards and must be operated and maintained as per manufacturer specifications (schedules and logbooks to be maintained and checked) to safeguard normal noise levels.
- All equipment that emit loud noises must be fitted with engine covers, silencers, mufflers and other forms of acoustic linings.
- Sensitive receptors such as Expo Village and the Rove Hotel must be informed of high noise events or activities as required and awareness signs should be displayed in areas where high noise generating activities are being undertaken.
- Vehicles must only operate at allowable vehicular speed limits.
- Noise barriers should be erected around the noisy areas, where practical.
- Noise monitoring is encouraged, where applicable, to ensure noise emission levels are within the specified values.

30.3 Water

Water management plays an important role in preserving water quality and consumption. Expo City Dubai has set sustainability targets for water which requires a 40% reduction in water consumption against the Dubai Water and Electricity Authority (DEWA) baseline Refer to the Sustainability Strategy for more information.

30.3.1 Applicable standards

A few applicable laws/ regulations concerning water management are listed below. For more information, refer to the HSE Legal Register:

- Law No. (15) of 2008 Concerning Protection of Groundwater in the Emirate of Dubai.
- Local Order No. (11) of 2003 Concerning Public Health and Safety in the Emirate of Dubai.

Where applicable, prior authorisation from Dubai Municipality and other concerned government agencies must be obtained for water sourcing and consumptions, e.g. groundwater wells. Refer to the Section on Environmental Permits.

30.3.2 Control Measures

- Where smart metering is not in place and water is provided by tankers, data on potable water consumption must be monitored, recorded, and reported to Expo City Dubai.
- Efficient irrigation systems (i.e. drip irrigation) should be installed and over watering avoided.
- Watering in several short sessions instead of long ones is advised to allow for better absorption and less evaporation.
- Timers on automatic sprinklers must be adjusted according to seasonal water demands and weather conditions.
- Plumbing fixtures and valves must be checked periodically for leaks to avoid water wastage.
- Permits for groundwater well drilling and groundwater use must be obtained and renewed as needed from DM NRCS.
- Groundwater quality should be sampled and monitored as per the relevant permit conditions.

30.4 Energy

Expo City Dubai has set sustainability targets for energy which requires venues to outperform the ASHRAE 90.1 standard for building efficiency (min. 20% improvement). Refer to the Sustainability Strategy for more information.

While most assets at Expo City Dubai will be connected to the DEWA grid, some will not and will require the use of fuel generators. In cases like these, alternative energy sources (e.g. solar energy, biodiesel, etc.) are encouraged to be used where feasible. Additionally, all organisations, tenants and those working on their behalf are responsible to ensure energy is conserved in buildings and cooling systems.

30.4.1 Control Measures

- Where smart metering is not in place and energy is provided by generators, data on fuel consumption must be monitored, recorded, and reported to Expo City Dubai.
- Alternative energy sources (e.g. solar energy, biodiesel, etc.) must be used whenever feasible.
- Smart lighting system (sensor controlled) must be used whenever feasible.
- Induction lamps and light-emitting diode (LED) must be used for outdoor lighting and LED/ Compact Fluorescent Lamp (CFL) for indoor lighting.
- Lights and electronic equipment when must be turned off when not in use.
- Computers, monitors, photocopiers and other equipment must be set to energy saving mode.
- Air conditioner filters must be cleaned regularly.
- Drapes, shades, and reflective materials must be used to reduce the heat entering through glass.
- Windows and doors must remain closed when the air conditioner is in use.

30.5 Waste and Cleaning

All organisations, tenants and those working on their behalf must comply with the Waste Management Policy and Procedure which can be obtained from the HSE Team at hsqe@expocitydubai.ae.

30.5.1 Applicable standards

Management of waste across the UAE is regulated by Federal Laws and across the Dubai Emirate by Local Laws as issued by DM EPSS, ECS and WMD. The detailed description, respective to each regulatory document is provided in the HSE Legal Register.

30.5.2 Non-Hazardous Solid Waste

All organisations, tenants and those working on their behalf must collectively work together to meet Expo City Dubai's commitment in achieving a minimum of 85% diversion of waste from landfill.

To ensure that the Expo City Dubai site remains clean and waste is recycled effectively, All organisations, tenants and those working on their behalf must ensure that operational waste is:

- Segregated into the following three streams (see Figure 30-1), using colour-coded bins.
- Food waste skips/bins must be properly covered and sealed to control dispersion of odour.
- Waste must be properly scheduled for collection to avoid waste accumulation.
- All relevant waste management records and manifests are kept for future references.

Figure 30-1. Operation Waste Streams

30.5.3 Non-Hazardous Liquid Waste (Wastewater)

While the majority of the generated wastewater is discharged through the Dubai Municipality sewage network, some temporary structures/venues/assets will use septic tanks or temporary toilets.

When septic tanks are used, they must be:

- Placed downwind and far from any sensitive receptors, where applicable.
- Designed to accommodate the expected volume of wastewater to avoid overflows or leakages.
- Leak proofed and placed in secondary containment to avoid groundwater contamination.
- Inspected regularly to ensure that no leaks are occurring from the tank or associated piping.
- Mounted with audible alarm level indicators to alert whenever a septic tank is nearing full capacity.
- Regularly emptied by an Expo City Dubai appointed waste service provider and transported to a Dubai Municipality treatment facility and sewage tankers must be available on standby to prevent risks from septic tanks overflow.
- Where smart metering is not in place and wastewater is collected by tankers, data on wastewater generation must be monitored, recorded, and reported to Expo City Dubai.

When considering temporary toilets, the following must be considered:

- Perceived peak usage of the toilets and the time taken to fill the cisterns to avoid blockages or overflow of wastewater.
- Provision of sanitary waste bins (and associated servicing) in all female toilets, including in overlay spaces, to prevent blockages or overflow of wastewater.
- Maintenance and regular cleaning of toilet and welfare facilities.

30.5.4 Hazardous and Special Waste

Hazardous or Special Waste must be managed and disposed of in accordance with the legal and Expo City Dubai's requirements. Hazardous or Special Waste may include:

- Cooking oil, grease trap material.

- Paints/solvents/gases/chemicals.
- Electronic items e.g. lamps, batteries, Information and Communications Technology (ICT). equipment and white goods.
- Sanitary waste.
- Medical waste.
- Printer ink cartridge.
- Bulky waste e.g. furniture, equipment, etc.
- Green waste.
- Brine and/or Waste from polishing or groundwater treatment processes.
- Pyrotechnic waste (if any).

Hazardous and special waste must not be mixed with operational waste.

30.5.5 Water and Wastewater Treatment

All organisations, tenants and those working on their behalf must ensure that valid permits are obtained from DM EPSS for the following, and prior to operation of any treatment facility within their venues or pavilions.

- Wastewater (black water) treatment and reuse.
- TSE Polishing for cooling systems (if reject water is discharged outside DM sewer network).
- Groundwater treatment and reuse.

The operation and reuse of treated water must be in accordance of the conditions listed in the relevant DM EPSS Permit. The treated effluent must be regularly tested in certified laboratories to ensure that the quality complies with the applicable discharge limits/standards enforced by the concerned DM Departments.

Brine, or special waste generated from polishing processes (e.g. TSE Polishing or Groundwater Treatment), must be considered as special waste. It can be disposed after obtaining the right approvals from DM WMD.

Otherwise, if the brine waste will be diluted and discharged into the sewer network, the quality must be tested to ensure it complies with Dubai Municipality standards and permitted by DM-DID in order to connect to the sewer line.

30.5.6 Pest Control

To ensure Expo City Dubai remains a hygienic and safe environment and that the minimum required sanitation conditions for visitors and staff are met, Expo City Dubai has appointed a service provider to provide Pest Control Services across the public realm areas of the site and the Expo City Dubai venues.

If not provided by Expo City Dubai, all organisations, tenants and those working on their behalf must:

- Appoint a DM approved pest control company and implement their own pest control detection and periodic management regime within their pavilion, venue or plot boundary in accordance with the DM – Public Health Services Department.
- Minimise the use of harmful chemicals and the associated impacts on people and the environment, therefore alternative methods for pest control must be applied where possible.
- All pest control products must follow ISO 14001 for Environmental Management, ISO 9001 for Quality Management, and/or a relevant eco label.

Refer to the Pest Control Policy, Sustainability Strategy and Sustainable Materials Guidelines for more information.

30.5.7 Cleaning Services

If not provided by Expo City Dubai, all organisations, tenants and those working on their behalf will be responsible for the cleaning and public health within their pavilion, venue or plot boundary.

- When housekeeping waste areas, hardscapes are clear of waste prior to washing down as there are no gullies with interceptors in these areas.
- Cleaning activities must include all floor cleaning and mopping, wall and window cleaning, toilet cleaning, heating, ventilation and air conditioning cleaning, specialist cleaning and external cleaning.
- Sustainable cleaning products and materials must be used. Further details of sustainable products and materials are provided in the RISE Guide for Sustainable Operations.

30.6 Hazardous Materials

The transporting, handling, and storage of hazardous materials must be implemented in an environmentally sound and sustainable manner to minimize environmental impacts such as soil and groundwater contamination from accidental spills and leaks of improperly managed chemicals and hazardous materials.

30.6.1 Applicable Standards

A few applicable laws/ regulations concerning management of chemicals and hazardous materials are listed below. For more information, refer to the HSE Legal Register.

- Federal Regulations for Handling of Hazardous Materials and Medical Waste issued by Cabinet Decree No 37 of 2001.
- General and specific conditions in the Dangerous Goods Permits Application Form (DM-EDP8-F05) – attached.

All organisations, tenants and those working on their behalf must obtain a permit from DM ED to store Dangerous Goods (DG) if the capacities of the tanks storing these goods exceed the limits below.

To assess the need for a permit, refer to the Table 30-1 which lists down the limits for each DG Hazard Class. Once a permit application is submitted through the DM ED website, a DM inspection of the chemicals will follow and the permitting conditions will be issued accordingly.

Table 30-1: Storage of Dangerous Goods Limits

SDG New Limits (adopted from DM-Environment Department)			
Hazard Class	**Description**	**Limits (Permit Required when = or > in quantity)**	
2.1	Flammable Gas	200 Kg or Litres	
2.2	Non Flammable Gas	1,000 Kg or Litres	
2.3	Toxic Gas	50 Kg or Litres	
3	Flammable Liquid	1,000 L	
4.1	Flammable Solid	1,000 kg	
4.2	Self-reactive substances	250 kg	
4.3	Dangerous When Wet	1,000 kg or Litres	
5.1	Oxidizer	1,000 kg or Litres	
5.2	Organic Peroxide	250 kg or litres	
6.1	Toxic substances	1,000 kg or Litre	For Mercury – any quantity
6.2	Infectious Substances	Any quantity	
8	Corrosive	1,000 kg or Litre	
9	Miscellaneous or Environmentally Hazardous Substance	1,000 kg or Litre	

30.6.2 Control Measures

- An inventory assessment of the stored dangerous goods must be undertaken against Table 30-1 above to determine the need to obtain a permit from DM - Environment Department.

- Strict adherence to the lists of Restricted Chemicals must be maintained as per Expo City Dubai's Sustainable Materials Guidelines.
- MSDS and adequate signage must be present in the storage facility to identify all hazardous materials and chemicals with the associated hazards. Signage, where needed, are to be written in different language(s).
- Secondary containment / bund must be installed around fuel and chemical storage areas, lined with an impervious surface coating to prevent chemical spills.
- The gross capacity of the bund or secondary containment must be 110% of the capacity of the biggest tank/ container or 25% of the total capacity of all tanks/ containers within the bund, whichever is greater.
- Double skin diesel tanks must be used.
- Handling and storage of chemicals must be in line with the MSDS requirements.
- Cylinders containing hazardous materials must be positioned up-right (where applicable).
- Entry to the chemical storage area must be regulated and issuance of materials controlled and monitored.
- Incompatible materials must be stored separately.
- Spill response procedures must be in place, along with a spill kit to be inspected for missing or damaged items on a monthly basis.
- Spills must be cleaned up immediately and contaminated materials disposed as hazardous waste.

30.7 Ecology and Biodiversity

In the aim to protect terrestrial ecology, all vegetation, wildlife species and habitats should be left undisturbed and must be reported to Expo City Dubai via the Community Control Room (CCR). The CCR will coordinate with Expo City Dubai's Environment team and the relevant authorities to safeguard any wildlife species or habitats.

The types of fauna typically identified on site include, but are not limited to, wild honeybees, avifauna, reptiles, mammals, and arthropods.

As pollinators, bees play an important part in every aspect of the ecosystem. Increased efforts have been put in place to ensure all beehives on Expo City Dubai site are protected and if necessary, relocated to a safer part of the site so as not to compromise the livelihood of the bees.

Whenever feral cats are spotted on site, the Trap-Neuter-Return (TNR) approach is followed, whereby the cat is humanely trapped, neutered and returned to the same location where they were found in collaboration with DM Veterinary section.

Identified sick animals will be taken to the vet. Dogs will be rehomed and wildlife species (i.e. gazelles, snakes, foxes, falcons, reptiles, etc.) will be relocated to a safe location outside the site in coordination with DM-NRCS.

30.7.1 Applicable Standards

A few applicable laws/ regulations concerning the protection of fauna and flora in the UAE and the Emirate of Dubai are listed below. For more information, refer to the HSE Legal Register.

- Local Law No. 11/2003 on Setting up Nature Reserves in the Emirate of Dubai.
- DM Technical Guideline for Translocation, Handling, and Restoration of Wildlife.
- Federal Law No. 16 of 2007 Concerning Animal Protection.
- Local Order No. 61 of 1991 DM Environment Protection in Dubai.

30.7.2 Control Measures

- In the event of any wildlife species or habitats identified on site, the species/habitat must be left undisturbed and their location must be immediately reported to the CCR
- Exercise all due care not to disturb any natural vegetation unnecessarily that may exist within their site.
- Destruction of beehives is strictly prohibited and removal of bird nests is illegal before the eggs are hatched or before the hatchlings leave the nest.

- Prohibit any activity that could directly or indirectly harm any animal, including indigenous or introduced species. Any animals found on the site must not be handled and/or killed.
- The CCR must be contacted immediately to notify the concerned teams who will conduct the necessary relocation.
- All organisations, tenants and those working on their behalf must only reach out to the approved Expo City Dubai service provider as they are the only pest control company authorised to relocate bees to a safer location.

30.8 Animal Welfare

Animal welfare is a key priority for Expo City Dubai. Animals are prohibited from site unless the animal is an assistance animal or guide dog, or part of an approved event. All organisations, tenants and those working on their behalf who intend to bring animals to site as part of their exhibition and programming, must apply for approval from Expo City Dubai, including the submission of an animal welfare plan that captures relevant hazards and controls and that complies with the Use of Animals Policy. The following measures must be considered:

- Suitable accommodation, rest periods with protection against sun and heat, adequate food and water, and veterinarian services are all required.
- The public must be factored in the risk assessment process to be protected against the sometime unpredictable nature of an animal. Mitigations such as barriers, restraints should be considered.
- Animal handlers should take care to avoid blind spots and approach animals slowly so that they are always aware their presence. Sudden movements and loud noises should be avoided if possible.
- Handlers should avoid all distractions and be conscious of the animal and surroundings at all times
- Handlers should be trained and experienced in behavioural signals of the species they are working with.
- Zoonotic diseases are those that can be transmitted directly from animals to humans. Examples of zoonotic diseases include ringworm, salmonella, herpes B, rabies, hepatitis, and tuberculosis. Handlers should be familiar with the basic signs of an infected animal and be aware of how transmission can occur so they can take the proper precautions to avoid infection.
- Sharp edges, slippery floors, improper lighting, and other structural hazards should be identified and mitigated to protect the animal and the handler.
- Personal protective equipment when working with animals can include a variety of options such as safety glasses, latex gloves, masks, steel toed footwear, helmets, coveralls, and lead aprons. These should be identified in the risk assessment process and available for the personnel working with the animals.
- Large animals, such horses and camels, should secured at all times when not in stocks or stalls. Halters, hobbles or other restraints should be utilized when large animals are out of designated “no restraint areas”.

Where animals are introduced as part of the event an animal welfare plan should be prepared. As a minimum the animal welfare plan should consider the requirements of and address the following five freedoms:

- Freedom from hunger and thirst by ready access to fresh water and a diet to maintain full health and vigour.
- Freedom from discomfort by providing an appropriate environment, including shelter and a comfortable resting area.
- Freedom from pain, injury or disease by prevention or rapid diagnosis and treatment.
- Freedom to express normal behaviour by providing sufficient space, proper facilities and company of the animal’s own kind.
- Freedom from fear and distress by ensuring conditions and treatment that avoid mental suffering.

Appendix A

Health, Safety and Environment Plan Guidance and Template

Health, Safety and Environment Management Plan Guidance

This appendix provides detailed guidance on the expectations of Health, Safety and Environment (HSE) Management Plans for use by all venue owners and operators and when planning and delivering events located within Expo City Dubai. The guidance is in the form of a template which can be used by the event organisers and those working on their behalf.

Each section should comply with the relevant requirements contained within these Expo City Dubai HSE Assurance Standards.

Overview of Template

Event organisers and those working on their behalf must develop and submit a Health, Safety and Environment Management Plan (HSEMP) in accordance with the following guidance and requirements.

Development of the EHSEMP

The level of detail in the HSEMP must be proportionate to the scope of the activity and the associated risks of the event / activity.

Persons preparing, completing, reviewing and amending the HSEMP must be competent to do so and must have the prerequisite knowledge, skills, awareness and training.

Review and Amendments

The HSEMP must be prepared for all events and kept under review throughout the life cycle of the venue. The HSEMP must be prepared for all event venues and submitted for review prior to the venue commencing operations.

The HSEMP is suitable for all ad hoc, small events as well as major events held at Expo City Dubai. The HSEMP must be submitted at least 5 working days prior to the event or activity and have Expo City Dubai's written approval as being suitable for the event / activity to commence.

The HSEMP is a 'live' document. The event organisers and those working on their behalf must ensure that the HSEMP is kept up-to-date and must be available for review during the event / activity.

Event organisers and those working on their behalf must ensure that the HSEMP is reviewed in consultation with all interested parties and changes to the HSEMP must be communicated to all parties affected by the change.

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Appendix B

Health and Safety Risk Management Process

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HSE Risk Management Process

This appendix provides detailed guidance on the HSE Risk Management process used for operations at Expo City Dubai. This appendix is intended for use by all organisations, tenants and those working on their behalf and is considered a minimum standard. All organisations, tenants and those working on their behalf can utilise their existing risk management system providing that it satisfies the following requirements.

Risk Management Process

Expo City Dubai will govern and monitor all risks associated with the operational delivery of Expo City Dubai. Expo City Dubai, as part of its commitment to ensuring health and safety requires all organisations, tenants and those working on their behalf to implement a risk management approach to managing the health and safety of persons in the workplace that ensures:

- Hazards in the workplace are identified.
- An assessment is conducted to determine the risk (likelihood and consequence of injury or harm to a person) resulting from such hazards.
- Consideration is given to how the risk may be eliminated and if not then how it can be reduced by implementing relevant controls based on the hierarchy of controls.

Expo City Dubai expects that hazards and risks are identified before an activity is undertaken to ensure that controls are implemented to reduce the risk as low as reasonably practicable.

Expo City Dubai follows the 5 steps to risk assessment process. These 5 steps lead the assessor through the process and enables risks to be kept under review and current. The 5 steps are:

- Look for hazards.
- Decide who may be harmed and how.
- Evaluate the risk and decide whether existing precautions are adequate or more should be done.
- Record the findings.
- Review the assessment and advise if necessary.

Consultation

A risk assessment should not be done in isolation as this has the potential to become focussed on specific issues and not encompass all of the elements that affect the risk. When identifying hazards or assessing risks, relevant workforce personnel should be consulted. Where a hazard has a potential to affect other duty holders or personnel, these also should be consulted.

When to Undertake a Risk Assessment

Managing HSE risks is an ongoing process that is triggered when planning for a task or when any changes affect work activities. The HSE risk management approach should be applied when:

- Establishing new work practices or procedures.
- Planning for stages of Expo City Dubai.
- Changing work practices, activities, procedures or the work environment.
- Purchasing or hiring new or used equipment or using new substances.
- New information about workplace risks becomes available.
- Responding to workplace incidents or near misses.
- Responding to concerns raised by Workforce or others at a workplace.
- Introducing a new event / demonstration / activity within the event site outside of business as usual activities.

Risk Registers

All organisations, tenants and those working on their behalf must maintain an HSE Risk Register that will record the identified hazards, their risk score and other relevant information.

Specific activity HSE risk assessments are to be undertaken using this process and must be recorded. These risk assessments will be monitored onsite by Expo City Dubai's HSE team for implementation and effectiveness.

Look for Hazards

Identifying hazards within the workplace involves finding items or situations that could potentially cause harm to people. These can be through processes such as audits or inspections, as a result of an incident or an issue raised by workers within the environment. Potential hazards and risks should be identified within the Venue planning process, or as part of activity planning. The table below lists some of the common hazards that may be present and should be considered as part of the risk management process.

Hazard	Potential harm / Expo City Dubai potential exposure
Manual handling tasks.	Overexertion or repetitive movements causing muscular strain. Delivery of all packaging and equipment. Movement of equipment and set up of workspaces. Ergonomics and work areas.
Work at height and falling objects.	Falling objects, slips, trips or falls, causing fractures, bruising, injuries or death. Working at heights in all work areas. Moving around the site and office spaces without clear access or egress.
Temporary structures.	Collapse of structure, loose items and maintenance, inadequate surfaces, physical supports and bars, causing bruising, injuries of death. All overlay structures and fixtures, scaffolding, seating stands, platforms etc., access and egress from structures, working on, around or underneath structures.
Electricity.	Potential ignition source or exposure to live electricity causing shocks, burns or death. Unprotected circuits and unsafe connections. Unapproved use or introduction of equipment, adapters and piggyback plugs. Temporary connections and increased load on network.
Machinery and equipment.	Being hit by moving vehicles, or caught in moving parts that causes fractures, bruising, injuries or death. All Worksites especially in overlay, bump in and out and logistic operations where separation of plant and people may not be possible. Vehicle operations and mobile plant and equipment.
Hazardous chemicals.	Chemicals and dusts that can cause respiratory illness and long term effects from exposure. Hazardous chemicals on venues and fuel areas. Problems with dusts when conducting building and maintenance works.
Extreme temperatures.	Heat exposure from natural and man-made sources causing heat illness and sunburn. Exposure to outside operations with little shade and insufficient water. Workforce such as traffic management, guides and officials in exposed environments.
Noise.	Exposure to loud and continuous noise from plant and machinery and events. All worksites where generators are used, plant and equipment movement and impulse noise associated with events and demonstrations.
Radiation.	All sources of radiation that can cause burns, cancer and blindness.

Hazard	Potential harm / Expo City Dubai potential exposure
	Tools used within the construction phases and equipment within venues that emit laser light. Welding, microwave and communication equipment.
Biological.	Micro-organisms that can cause specific infections such as hepatitis, legionnaires' disease or allergies. Building permanent and temporary HVAC systems, exposure to infected blood and blood products in medical and drug testing.
Psychosocial.	Effects of work related stress and violence and work related fatigue causing acute and ongoing problems. Interaction with customers at venues and transports areas, working hours within Expo 2020 related activities and release from stress in contact and customers centres.

Decide Who May be Harmed and How

For each hazard you need to be clear about who might be harmed to help identify the best way of controlling the risk. This requires identifying groups of people who may be at risk. Remember:

- Some workers may have particular requirements, e.g. new and young workers, migrant workers, new or expectant mothers, people of determination, temporary workers, contractors, homeworkers and lone workers.
- Think about people who might not be in the workplace all the time, such as visitors, contractors and maintenance workers.
- Take members of the public into account if they could be harmed by work activities.
- If you share a workplace with another organisation, consider how your work affects others and how their work affects you and your workers. Talk to each other and make sure controls are in place.
- Ask your workers if there is anyone you may have missed.

Evaluate the Risk

All hazards have a potential to cause different types and severities of harm. Risk assessment is the process of determining the 'level of risk' associated with a hazard. In determining the level of risk, the following must be taken into account:

- The experience of the person exposed to the hazard.
- The frequency and / or duration of the person's exposure to the hazard.
- Any existing control measures (treatments).
- Contributing environmental conditions.
- Pre-existing hazards.

Where a similar hazard is present for multiple work areas a generic risk assessment can be applied. Where this is the case the generic risk assessment must be assessed against any contributing environmental conditions.

Risk assessments can be documented using the HSE Risk Assessment form supporting this Appendix. When a risk assessment is conducted the table at the end of the risk assessment form is to be used to determine the risk score.

When conducting a risk assessment:

- Determine the most likely consequence of a risk occurring using the impact table.
- Evaluate the likelihood of that impact occurring according to the likelihood descriptors.
- Calculate the risk score by finding the intersection between the impact and likelihood.

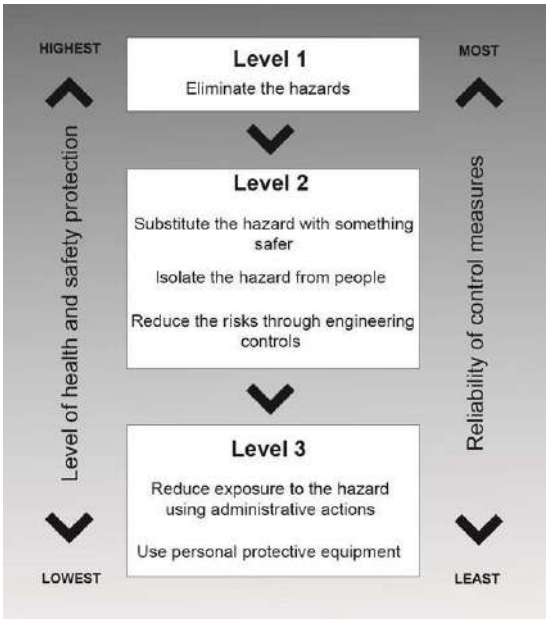
When conducting a risk assessment, the inherent and residual risk scores are to be calculated. The inherent score is the risk level of the hazard in the absence of any controls. The residual score is the

risk score associated with the hazard with the current controls and proposed actions in place. The residual risk level should be monitored to ensure the controls implemented are working. When determining the risk score the selected consequence must not be changed in the current risk assessment. Any additional consequences identified can be assessed separately.

Once hazards have been identified and assessed, a control strategy needs to be developed and implemented to either eliminate or control the risk. Within this process reference must be made to the hierarchy of controls depicted in the in the diagram below:

For all health and safety risks the hierarchy of control must be applied in order, but effective control may require the use of different controls from several levels. Before implementing the controls, it should be ensured that the controls do not introduce additional hazards which will also need to be considered and managed.

The effectiveness of the controls needs to be considered prior to implementation to see if there is anything more that can be done to reduce the risk. There also needs to be reference made to the



inherent and residual risks to ensure that appropriate and effective controls are being implemented.

Controls identified within the risk process must be effectively implemented and communicated to all affected Workforce.

Record the Findings

Findings of the risk assessment must be recorded with a template enclosed in this Appendix for recording risks. However, where organisations, tenants and those working on their behalf have an existing risk process, that at least meets this minimum requirement, this can be used.

Relevant work instructions including method statements (MS) and safe work instructions should be completed to include the controls identified within the risk assessment process. Controls are to be implemented and discussed at the commencement and monitored throughout associated tasks and activities. Work instructions, MS and safe work instructions are to be maintained by the relevant venue or Contractor and be available on-site for reference and review. Expo City Dubai's HSE team will monitor the implementation of controls on-site as part of the HSE assurance process.

Review the Assessment

The final step is to monitor and review the effectiveness of the control measures that have been implemented. Control measures should be reviewed at regular intervals to make sure that they have had the desired effect in reducing the likelihood or consequence of the risk occurring.

HSE Risk Assessment Table

Identify Task Think about the work area and each stage of the work to be performed.	**Identify Hazards** Against each stage / item list the hazards that could cause injury / incident when performed.	**Inherent Risk Score** I = Impact; L = Likelihood; RS = Risk Score			**Risk Control Measures** List the control measures required to eliminate or minimise the risk.	**Residual Risk Score** I = Impact; L = Likelihood; RS = Risk Score		
		I	L	RS		I	L	RS

HSE Risk Assessment Matrix.

	Impact	Negligible (1)	Minor (2)	Moderate (3)	Major (4)	Catastrophic (5)
Likelihood		Negligible injury to staff or visitor. First aid treatment.	Minor injury or illness, onsite medical treatment. Reportable breach of regulations. Minor fines, regulatory scrutiny.	Significant injury to staff or visitor requiring medical treatment. Requiring hospital treatment.	Single fatality or multiple significant injuries. Major injury, long term incapacity or disability requiring medical treatment.	Multiple fatalities; permanent incapacity / disability of more than 5 people. Event cancellation due to serious criminal activities.
Very Likely (5)	Will almost definitely occur, could occur many times during the project / event.	5	10	15	20	25
Likely (4)	High probability, likely to arise a few times during the project / event.	4	8	12	16	20
Possible (3)	Reasonable likelihood to occur once during the project / event.	3	6	9	12	15
Unlikely (2)	Plausible, could occur once during the project / event.	2	4	6	8	10
Very Unlikely (1)	Extremely unlikely during the project / event.	1	2	3	4	5

Sample HSE Risk Assessment

Identify Task **Think about the work area and each stage of the work to be performed.**	**Identify Hazards** **Against each stage / item list the hazards that could cause injury / incident when performed.**	**Inherent Risk Score** **I = Impact; L = Likelihood; RS = Risk Score**			**Risk Control Measures** **List the control measures required to eliminate or minimise the risk.**	**Residual Risk Score** **I = Impact; L = Likelihood; RS = Risk Score**		
		I	**L**	**RS**		**I**	**L**	**RS**
Working outdoors.	Workforce operating in the outdoors are exposed to the sun and heat causes heat injury / illness such as sunstroke, sunburn, heat exhaustion, resulting in an injury.	3	3	M	Arrange work / activity for cool parts of day. Covered / shaded areas identified for breaks. Provision of information on personal protective measures to reduce exposure to radiation from the sun. Adequate supply of drinking water and sun screen available.	3	2	L
Working on or adjacent to roads.	Workforce operating on or adjacent to roads causes an accident that results in a serious injury.	4	3	M	Work task designed to limit working on or adjacent to road. Traffic management implemented to control traffic and work area. Workforce briefed on traffic hazards. Wearing high visibility vest.	4	2	M
General movement.	Uneven surfaces in the area causes a slip, trip or fall resulting in injury.	2	3	M	Uneven surfaces identified and briefed to all Workforce. Workforce to identify hazards and avoid. Suitable points identified for safe access, egress and circulation.	2	2	L
Accidents.	Inadequate first aid arrangements, difficult/delayed access to first aid or inadequate understanding of arrangements causes delays in treatment resulting in an injury.	3	3	M	Awareness of first aid/emergency arrangements. No lone working, good communications. Suitable numbers of First Aid trained workforce on duty.	3	2	M

Identify Task **Think about the work area and each stage of the work to be performed.**	**Identify Hazards** **Against each stage / item list the hazards that could cause injury / incident when performed.**	**Inherent Risk Score** **I = Impact; L = Likelihood; RS = Risk Score**			**Risk Control Measures** **List the control measures required to eliminate or minimise the risk.**	**Residual Risk Score** **I = Impact; L = Likelihood; RS = Risk Score**		
		I	**L**	**RS**		**I**	**L**	**RS**
					Security to provide Emergency First Aid trained staff for 'off hours'. First aid kits located at each workforce check-in. Onsite Medical and Emergency Services during 'On Hours'.			
Movement of equipment and set up of workspaces.	Overexertion or repetitive movements causing muscular strain.	3	1	L	Utilise appropriate mechanical handling equipment where possible. Use correct lifting techniques. Ensure weight of item is manageable. Use teamwork.	3	1	L
Working at heights.	Falling objects, slips, trips, falls causing harm or injury.	3	4	M	Do not work at heights unless proper training and equipment has been provided and/or are certified in the activity being undertaken. Use teamwork [spotting &/or assessing area and setup prior to undertaking activity]. Ensure crew are a safe distance from equipment being manoeuvred by mechanical handling equipment. Create a safe work area if required.	3	2	M
Working with client groups, primarily spectators.	Dealing with confrontational and potentially aggressive people due to dissatisfaction or disagreement resulting in stress and potential injury.	2	4	M	Provision of post specific briefings and escalation procedures. Provision of workforce training and education.	2	2	L

Identify Task **Think about the work area and each stage of the work to be performed.**	**Identify Hazards** **Against each stage / item list the hazards that could cause injury / incident when performed.**	**Inherent Risk Score** **I = Impact; L = Likelihood; RS = Risk Score**			**Risk Control Measures** **List the control measures required to eliminate or minimise the risk.**	**Residual Risk Score** **I = Impact; L = Likelihood; RS = Risk Score**		
		I	**L**	**RS**		**I**	**L**	**RS**
Working with crowds – facilitating mass egress.	Large numbers of spectators moving through narrow spaces and separately located exit gates on mass egress resulting in crowd confusion, contraflow and potential crowd crush with multiple injuries.	1	4	L	Adequate workforce in place to facilitate crowd management. Adequate workforce and wayfinding signage to direct spectators towards the correct exits. Provision of workforce training and education.	1	1	L
Working in spaces with vehicles.	Spaces with shared pedestrian and vehicle movements and inadequate separation leading to a vehicle accident with a person resulting in injury.	4	4	H	Implementation of a Traffic Management Plan for venue including maximum speed limits enforced on venue. Vehicles stopped at pedestrian crossings and during peak pedestrian movement. Provision of workforce training and education.	4	2	M

Appendix C

Method Statement Guidance

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Method Statement Guidance

Purpose of a Method Statement

The primary purpose of a Method Statement (MS) is to help supervisors, workforce and any other persons at the workplace to understand the requirements that have been established to undertake activities in a safe and healthy manner. A MS will typically be accompanied by a risk assessment for the activity.

Expo City Dubai acknowledges that a MS also provides a valuable tool for all high-risk work. It therefore must be completed and used for:

- Construction and maintenance work.
- High risk work, including work requiring a permit to work.
- Work deemed high risk from a risk assessment where approval is required to undertake the work.

Both simple and complex activities can be broken down into a series of basic steps that will allow for full analysis of each part of the activity for hazards and potential incidents. The level of detail associated with the MS should be proportionate in relation to the risk.

A MS can also be completed for any other work as required, however, if a MS is not deemed necessary by the nature of that activity, a documented safe system must still be prepared and communicated to those undertaking the activity.

A MS should set out in a logical order the work or other activities to be carried out, the hazards arising from these activities and the measures to be put in place to control the risks. A MS is generally different from other documents that focus on specific tasks or processes, such as a Job Safety Analysis (JSA) or a Safe Operating Procedure (SoP). A MS is not intended to be a procedure, rather it is a tool to help supervisors and workforce confirm and monitor the control measures required at the workplace.

A MS is classed as an administrative control and is used to support higher order controls to eliminate or minimise risks to health and safety, for example engineering controls.

Preparation of Method Statements

A person who has received training in completing a risk assessment and is responsible for carrying out the work is best placed to prepare the MS in consultation with workforce, who will be directly engaged in the work. Generally, this means a MS is prepared by the manager / supervisor for their workforce, or by the subcontractor for their workers.

Information to be Included in Method Statements

A MS must:

- Specify hazards relating to the work and risks to health and safety associated with those hazards.
- Describe how the control measures are to be implemented to control the risks.
- Describe how the control measures that have been implemented will be monitored and reviewed.

A MS should be short and focus on describing the specific hazards identified for the work or other work activity to be undertaken and the control measures to be put in place so the work is carried out safely. A lengthy, overly detailed MS can be difficult to understand, apply at the workplace and monitor or review.

Generic Method Statements

It is important to ensure that the MS reflects the specific task, circumstances and environment of the workplace. Where a generic MS is to be used at another workplace, the contents of the MS must match the scope of work to be undertaken and the work environment.

Implementing and Reviewing a Method Statement

All work must be carried out in accordance with the MS. If work is not being undertaken in accordance with the MS it must be stopped as soon as it is safe to do so and the MS reviewed to reflect the safest way to undertake the work.

The MS must be communicated to the workers undertaking the task in a language that they understand. This may require the use of translators and visual aids when communicating to workers with low levels of literacy. The MS should be communicated at the start of the task and covered within the pre-task briefing.

A copy of any MS is to be kept on site and made available as required for review.

Appendix D

Training Standards

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Training Standards

This standard outlines the health and safety training that must be undertaken by those leading, managing operations, along with specific requirements for Contractors and Service Providers.

This standard details the minimum training expected for individuals to undertake their roles at Expo City Dubai. The requirement for individuals to be able to demonstrate formal health and safety training is in addition to any competency requirements.

All organisations, tenants and those working on their behalf must select appropriate health and safety training that reflects the needs of their organisation, scope of works and client requirements.

Expo City Dubai recognises comparable training courses. These will be subject to review against set criteria.

Training registers should be maintained stating the topic of training conducted, attendees' details, dates of presentations and trainer details.

Leading Health and Safety Training Standard

Expo City Dubai requires that all organisations, tenants and those working on their behalf can demonstrate that they have the necessary knowledge and skills to effectively lead health and safety strategy.

Definition of Leader

For the purpose of this standard, the definition of a leader will be determined based on the duties they undertake and not their job title.

An individual responsible for the strategic business direction of an organisation and the implementation of its corporate governance, who makes decisions that determine success. This may include an Executive, Director, Senior Manager or others in leadership roles.

Leaders who carry out day to day management of work activities must also comply with the Managing Health and Safety Training Standard as detailed below:

Training Standard

- Leaders must be able to demonstrate they have sufficient knowledge of health and safety.
- Leaders must be able to demonstrate that they have met the training standard.

Suitable Courses

Expo City Dubai recognises the following courses as being suitable and meeting the required standard:

- IOSH Leading Safely.
- IOSH Directing Safely.
- IOSH Managing Safety for Senior Executives.

Comparable internally developed training may be recognised where the employer has demonstrated that the training course has content and outcomes at least equivalent to these course types.

Duration

The course duration must be no less than 4 hours.

Assessment

Courses must incorporate a form of assessment.

Certification

Leaders should possess a certificate that details the training provider, date awarded, course title and confirmation stating whether or not the delegate has passed the examination.

Refresher Training

Leaders should attend refresher courses as defined by the training provider. This must not exceed five yearly intervals. If a refresher course is not available, the original course or similar must be retaken at five-year intervals.

Managing Health and Safety Training Standard

Introduction

Expo City Dubai requires that all organisations, tenants and those working on their behalf can demonstrate they have the necessary knowledge and skills to manage workplace health and safety standards.

Definition of Manager

For the purpose of this standard, managers are defined as those persons managing or having a direct influence on the management of related work activities at Expo City Dubai. They are typically site based or visiting personnel with direct responsibility for planning and managing operations. Examples include Venue Managers, Logistics Managers and other Managers performing operational roles.

Training Standard

- Managers must be able to demonstrate they have sufficient knowledge of health and safety.
- Managers must be able to demonstrate they have met the training standard.

Suitable Courses

Expo City Dubai recognises the following courses as being suitable and meeting the required standard:

- IOSH Managing Safely.

Comparable internally developed training may be recognised where the employer has demonstrated that the training course has content and outcomes at least equivalent to these course types.

Duration

The course duration must be no less than 4 hours.

Assessment

Courses must incorporate a form of assessment.

Certification

Managers should be in possession of a certificate that details the training provider, date awarded, course title and confirmation stating whether or not the delegate has passed the examination.

Refresher Training

Managers should attend refresher courses as defined by the training provider. This must not exceed five yearly intervals. If a refresher course is not available, the original course or similar must be resat at five yearly intervals.

Supervising Health and Safety Training Standard

Introduction

Expo City Dubai requires that Contractors and Service Providers and those working on their behalf demonstrate they have the necessary knowledge and skills to supervise their workers effectively. This is essential if they are to ensure that workers carry out their tasks with due regard to health and safety.

Definition of Supervisor

For the purpose of this standard, supervisors are defined as those persons directly supervising work activities at Expo City Dubai. They are the front-line supervisors with direct responsibility for putting people to work and who will typically brief their workers on how to carry out their work and ensure they are carrying out their work safely.

Training Standard

Supervisors must be able to demonstrate they have sufficient knowledge of health and safety and skills to be an effective supervisor of their workers. Following the course, they will have sufficient knowledge of operational health and safety.

The course will allow the delegate to demonstrate sufficient skills to be an effective supervisor of their workers. They will need to demonstrate having attended training which includes an understanding of behavioural issues, leadership and effective intervention skills. This training must include role-play, have a form of testing, and successful candidates must be issued with a certificate to demonstrate a suitable standard has been achieved.

Supervisors must be able to demonstrate they have met the training standard.

Suitable Courses

Expo City Dubai recognises the following course as being suitable and meeting the required standard:

- IOSH Supervising Safety.

Comparable internally developed training may be recognised where the employer has demonstrated that the training course has content and outcomes at least equivalent to this course type.

Duration

The course duration must be no less than 6 hours.

Assessment

Courses must incorporate a form of assessment.

Certification

Supervisors must be in possession of a certificate that details the training provider, date awarded, course title and confirmation stating whether or not the delegate has passed the examination.

Refresher Training

Supervisors must attend refresher courses as defined by the training provider. This must not exceed five yearly intervals. If a refresher course is not available, the original course or similar must be resat at five yearly intervals.

Worker Health and Safety Training Standard

Introduction

Expo City Dubai requires that Contractors and Service Providers and those working on their behalf ensure their workers possess the necessary knowledge and skills to undertake their work with due regard to health and safety.

Definition of a Worker

For the purpose of this standard, workers are those persons attending site to undertake operational activities who do not have any management or supervisory responsibilities.

Employers must be able to demonstrate that workers meet the training standard commensurate with their task and activities they are undertaking.

Training Standard

Employers must be able to demonstrate that their workers have suitable health and safety knowledge to undertake their work safely.

Suitable Courses

Expo City Dubai recognises the following course as being suitable and meeting the required standard for all workers, excluding volunteers:

- IOSH Working Safely.

Comparable internally developed training may be recognised where the employer has demonstrated that the training course has content and outcomes at least equivalent to this course type.

Note: A general site specific induction does not constitute health and safety training.

Refresher Training

Workers must attend refresher courses as defined by the training provider or by the employer, this must not exceed five yearly intervals.

Other Health and Safety Training

- All organisations, tenants and those working on their behalf are required to develop specific induction training for their specific area of responsibility.
- Expo City Dubai general training, role specific training and venue specific training will address the requirements for induction for all workers.

  Outside of the above training.
- All personnel are required to attend the relevant Induction Training Course.
- All personnel must attend the relevant course or induction prior to commencing work.
- Where personnel are not inducted to a specific area, and induction cannot be provided, they are to be escorted by an inducted person at all times.
- Personnel found to be on-site without a relevant induction or escort will be removed from site until such time as they have been inducted.

Skills Training

- Contractors must maintain relevant 'operative training certificates' (see below)
- Copies of training certificates must be available for audit/inspection by the Expo City Dubai HSE team.
- Personnel found not to be in compliance with skills training requirements will be suspended from performing the relevant operation/task until such time that their employer can produce the necessary training certificate.
- Where training is provided internally the trainer must carry appropriate certification from a third party or other arrangements must be in place to ensure competence.

Table D-1. Schedule of Required Training Standards

Plant and Equipment Operators/Users	Required Training Certificates
Appointed persons (cranes, temporary demountable structures).	DM accredited third party/Recognised training establishment.
Mobile crane operators.	DM accredited third party.
Mobile elevated work platforms operators.	IPAF accredited training course of a minimum 2 days' duration.
Forklift operators.	DM accredited third party/Recognised training establishment.
Telescopic handler operators.	DM accredited third party/Recognised training establishment or equipment supplier.
Cradle (powered or manual) operators.	Certificate of Competence issued by DM approved third party and/or cradle supplier.
Cartridge tool operators.	Recognised training establishment and tool supplier.
Wood-working machine operators.	Equipment supplier.
Aluminium scaffold users.	PASMA/DM accredited third party.

Plant and Equipment Operators/Users	Required Training Certificates
Crane lifting supervisor.	DM accredited third party/Recognised training establishment.
Slingers/Signaller.	DM accredited third party.
Abrasive wheel operators.	DM accredited third party/Equipment supplier/Employer.
Scaffolders.	DM accredited third party training certificate.

Equivalent Accredited Training Standards

Where an organisation, tenant or those working on their behalf believes that its personnel hold an equivalent form of training certificate issued by a training organisation other than those identified above, this must be brought to the attention of Expo City Dubai who will give a decision on the matter.

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Appendix E

Health & Safety Incident Classification

Health and Safety Incident Classification

This appendix provides guidance on the health and safety incidents that need to be reported within Expo City Dubai and the classification of these incidents.

Incidents to be classified into the below categories based on their significance:

- Minor Incidents
- Serious / Major Incidents

Definitions of each category are given in the below table:

Incident Type	Minor	Serious / Major
First Aid Injury.	1. Cleaning, flushing or soaking wounds on the surface of the skin, including any pre-existing conditions; 2. Using wound coverings such as bandages, Band-Aids™, gauze pads, etc.; or using butterfly bandages or Steri-Strips 3. Use of any non-rigid means of support e.g. bandages, wraps, non-rigid back belts, etc. 4. Using hot or cold therapy or massages; 5. Drinking fluids for relief of heat stress; 6. Using a non-prescription medication at non-prescription strength 7. Administering tetanus immunizations 8. Using temporary immobilization devices while transporting an accident victim (e.g., splints, slings, neck collars, back boards, etc.). 9. Drilling of a fingernail or toenail to relieve pressure, or draining fluid from a blister; 10. Using eye patches; 11. Removing foreign bodies from the eye using only irrigation or a cotton swab; 12. Removing splinters or foreign material from areas other than the eye by irrigation, tweezers, cotton swabs or other simple means; 13. Using finger guards.	

Incident Type	Minor	Serious / Major
Medical/ Hospital Treatment Injury.	An injury that receives medical treatment by a third party medical provider and is more severe than first aid but does not result in restricted days or days away from work. Where evaluation is completed for the purpose of diagnosis this is not regarded as a Medical Treatment Injury.	
Restricted Work Case.	The employer or a licensed health care professional keeps an employee from performing one or more of the routine functions of his or her job, or from working the full workday that he or she would otherwise have been scheduled to work.	
Major Injury.		1. Broken bones excluding fingers/toes and including fracture of the skull, spine, pelvis or any bone in the wrist, arm, leg or ankle. 2. Amputation of a hand, arm, foot, finger, thumb or any body organ. 3. Unconsciousness resulting from electric shock, heat stroke, lack of oxygen, etc. 4. Second or third degree burns because of any reason. 5. Any other injury which results in the admission of an injured employee to hospital for more than 24 hours for medical treatment.
Lost Time Injury (LTI).		1. An injury arising out of, or in connection with work which leads to an employee absence from work for more than three days in addition to the day of injury (LTI).
Fatality.		Death of any person
Non Work Related.	Relates to a non-work related incident with outcome similar to a minor incident.	Relates to a non-work related incident with outcome similar to a serious incident.
Welfare (Off-site).	Verified Worker complaint of non-compliance with the Worker Welfare Minimum Standard or UAE Law.	Third-party or media contact of non-compliance with the Worker Welfare Minimum Standard or UAE Law.

Incident Type	Minor	Serious / Major
Near Miss.	An occurrence that under slightly different circumstances would be likely to result in a Minor incident of a different incident type.	An occurrence that under slightly different circumstances would be likely to result in a Major incident of a different incident type.
Property Damage.	Incidents including but not limited to plant and construction equipment, facilities, buildings and other tangible property resulting in minor damage that requires minimal cost or time to repair.	Incidents including but not limited to plant and construction equipment, facilities, buildings and other tangible property resulting in significant damage.
Fire.	A fire where the consequences result in no risk to the life and only minor risk or damage to property, e.g. fire in an outside area, local fire of an item of manned plant immediately extinguished or burned out, fire in an external smoking shelter.	Any fire where there was a risk to life or where there was significant damage to property, e.g. fire within a building, fire requiring evacuation of more than immediately local personnel.
Occupational Health.	Any mild exposure to an occupational hazard resulting in a skin condition or another minor outcome.	Any acute or chronic illnesses or diseases which may be caused by inhalation, absorption, ingestion or direct contact; exposure to chemical, biological or infections agents and radiological hazards; and/or stress.
Security.	Arson. Assault. Opportunity Crimes including minor thefts. Unauthorised vehicles in restricted areas. Deranged, unstable, discontented individual. Failure of essential services resulting in an impact on security systems.	Theft of a motor vehicle, attack to property causing damage requiring investment to replace. Theft of significant items of property. Trafficking, Smuggling. Industrial action, civil protest or unrest. Overcrowding of building internal spaces or immediate building footprint.
Road Traffic Collision (RTC).	An incident where there is an impact with another vehicle or structure causing damage.	A collision involving a motor vehicle being driven on site, or offsite on work related business, regardless of the type of vehicle (personal, leased, rental, borrowed, company-owned, etc.) that results in personal injury or the vehicle being immobilised or requiring recovery.

Appendix F

Incident Report Card

Incident Report Card

Please complete for all incidents and email to **HSQE@expo2020.ae**.

All incidents involving injury / illness, including near misses, are to be reported to your supervisor immediately.

Incident Information		**Ref:**	TEM-HSE-Incident Report Card-R2
Incident Type:	☐ Injury ☐ Illness ☐ Environment Incident ☐ Property Damage ☐ Near Miss ☐ Vehicle Accident		
Date of Incident:	DD/MM/YY	**Zone:**	
Time of Incident:	HHMM (24hr)	**Venue:**	
Exact Location:			
Description of the Incident / Injury:			
Injured Person:	☐ Visitor ☐ Expo City Staff ☐ Service Provider ☐ Contractor ☐ Other		
Name:		**Contact No:**	
Immediate Corrective Actions:			
Reported By:		**Contact No:**	

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Appendix G

Observation Report Card

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Observation Report Card

Please complete for all Observations and deposit in the Observation Boxes or email to **HSQE@expo2020.ae**.

Observation Information			**Ref:**	TEM-HSE-Observation Report Card-R1
Date of Observation:	DD/MM/YY	**Zone:**		
Venue:				
Category:	☐ Positive ☐ Negative			
Observation Type:	☐ Health & Safety		☐ Environment	

Health & Safety	**Environment**
☐ Slips, Trips and Falls	☐ Waste Management
☐ Working in the Heat	☐ Hazardous Material
☐ Manual Handling	☐ Waste Water Management
☐ Driving	☐ Air Emissions
☐ Fire	☐ Water Management
☐ Electrical Connections	☐ Flora/Fauna
☐ Temporary Structures	☐ Energy Management
☐ Working at Height	☐ Noise
☐ Mobile Plant & Equipment	☐ Other
☐ Lifting	
☐ Underground Services	
☐ Infectious Diseases	
☐ Other	

Description of the Observation:

Immediate Corrective Actions:

Reported By:		**Contact Number:**	

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Appendix H

Health and Safety Investigation Report

Health and Safety Investigation Template

Incident Type:	Injury / Illness:	Near miss:
Incident date time and location		
Date of incident:		
Time of incident:		
Investigation Team Leader:		
Date of Investigation:		
Summary of Investigation Findings: Outline the event, who was involved, what happened, the scope of the investigation, the analysis and outcomes and any recommendations to prevent recurrence.		
Investigation Analysis: In completing this template reference should be made to the IRC for the incident details. This report is intended to capture your findings and analysis of the investigation.		
Contributing events: what were the events that contributed to the incident? It may be worth constructing a timeline of the events leading up to and post incident.		
Causes of the incident: What were the possible cause/s of the incident? Use the 5 why's and timeline to establish any causes.		
Identified failures: Which of the possible causes are in control of the workplace? Explain what failed, to enable the incident to occur.		

Actual and potential consequence: Describe what the actual and potential consequence (impact) of the incident was and could have been.
Corrective Actions: What corrective actions (solutions) could be implemented to eliminate of reduce the risk of the identified cause/s? Explain how and why this would prevent recurrence.
Investigation Outcomes:
Immediate controls: Outline any controls that were immediately implemented to eliminate or reduce the risk of recurrence of the incident.
Recommendations:
Corrective actions: Outline recommended corrective actions to prevent recurrence of the incident. This should be aligned with the hierarchy of controls and the task risk assessment should be reviewed.
Follow up actions: Outline any relevant follow up actions that are required to ensure the further recurrence of this type of incident.

Lead investigator signature:		Date:
Manager Health and Safety signature:		Date:

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