Lusail Real Estate Development Company

Health, Safety, Security, Environment, Logistics & Quality Department

Lusail Construction Safety Management Procedure – Hearing Conservation

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Amendment Record

This document is reviewed to ensure its continuing relevance to the systems and process that it describes. A record of contextual additions or omissions is given below:

Rev .No	Description / Comments	Prepared By	Checked By	Approved By	Issue Date
1	(Pg. 1) Company Propriety Information – Not controlled if printed has been added.	HSE Working Group	Michael Ford	Uwe Krueger	1st April 2015
1	(Pg. 2) Revised Amendment Table	HSE Working Group	Michael Ford	Uwe Krueger	1st April 2015

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1. Description

This element of the LCSMP provides guidelines to reduce or eliminate the risk of occupational noise-induced hearing loss. This element applies to all Lusail personnel, Contractors, Developers, Consultants and Subcontractors working on the Lusail project.

2. Definitions

Term	Description
Job Hazard Analysis (JHA)	A process used to identify hazards or potential hazards associated with each step of a job or work plan to uncover hazards and eliminate, control, or remove them before the work is started.
Audiogram	A graphic record of hearing ability for various sound frequencies that is used to measure hearing loss.
Baseline Audiogram	The audiogram against which future audiograms are compared.
Decibel, A-weighted (dBA)	A unit of measurement for sound level adjusting for the sensitivity of the human ear.
Impulse Noise	Noise levels that involve maxima at intervals greater than 1 second. Impulse noise is measured using the fast response setting on a sound level meter and cannot exceed 140 dB.
Noise reduction rating (NRR)	Rating used to assess hearing protector adequacy. An employee's reduced noise exposure must be 85 dBA or less. The required NRR is based on the calculation: 85 = dBA – [(NRR-7)/2]
Exposure limit value	This is the maximum level of noise to which anyone at work may be exposed. It is set at 87 dB(A) at the ear, measured as a daily or weekly average as appropriate or when a peak sound pressure of 140 dB(C) occurs.
Lower exposure action value	This is reached when a daily or weekly personal exposure average reaches 80 dB(A) or a peak sound pressure of 135 dB(C) occurs.
Upper exposure action value	This is reached when a daily or weekly personal exposure average reaches 85 dB(A) or a peak sound pressure of 137 dB(C) occurs.

3. Responsibilities

The Contractor is fully responsible for the pre-planning, development of Method Statements, Job Hazard Analysis, overall safe work planning and implementation. The Contractor's Project Management is responsible for the assurance that all work is planned and conducted according to the pre-planning document, Contractor and Lusail Health Safety & Environment (HSE) procedures and the Qatar Construction Specifications 2010. Should a conflict occur between procedures/standards or requirements the more stringent will apply.

4. Project Hearing Conservation Plan

The HSE Representative leads the development of a project-specific hearing conservation plan in accordance with Qatar Labor Laws and the LCSMP. The Project Manager reviews and approves the plan. A sample hearing conservation plan is included as (Attachment **LUS-HSE-FM4-446-016**).

The project hearing conservation plan is included in the project safety plan in accordance with the Lusail Construction HSE Safety Manual. Employees must be included in the plan if the upper exposure action value exposure is equal to or greater than 85 dBA or if they are exposed to any impulse noise levels greater than 135 dBA.

The Project Manager facilitates implementation and compliance with the hearing conservation plan and designates competent person(s) to provide training and instruction to employees in the plan, post signs, and maintain a supply of hearing protection.

The HSE Representative is responsible for overseeing the hearing conservation plan and monitors employees to ensure compliance. The hearing conservation plan includes provisions for the following:

- Exposure assessment
- Audiometric hearing tests
- Hearing protection
- Training
- Documentation

5. Exposure Assessment

The HSE Representative uses JHAs to identify potential high noise exposures if reasonable information indicates that employee exposure may equal or exceed 80 dBA or a peak sound pressure of 135 dB(C). Indications of such exposure may include:

- Noise in the workplace that interferes with people speaking, even at close range.
- Information from the manufacturer of equipment used in the workplace that indicates high noise levels for machines in use.
- Reports from employees of ringing in their ears or temporary hearing loss.
- Warning signals or alarms that are difficult to hear.
- Work near abrasive blasting or jack hammering operations.
- Work near or use of tools and equipment, such as:
  - Heavy equipment or machinery
  - Fuel-powered hand tools
  - Compressed air-driven tools or equipment in frequent use
  - Power saws, grinders or chippers
  - Powder-actuated tools

Where potential high noise exposures exist, noise monitoring is conducted to measure employee noise exposure over a representative shift in order to determine inclusion in a hearing protection plan.

- Noise monitoring should be conducted for representative jobs and areas over an 8-hour work shift using personal noise dosimetry or using representative short-term sound level monitoring to estimate exposure average values. Personal noise dosimetry is the preferred method and must be used for jobs with high worker mobility or exposure to impact noise.
- If the project is not equipped to conduct noise monitoring, contact a HSE Representative. The HSE Representative can provide guidance, as necessary.
- Monitoring must be conducted initially and again when conditions significantly change the noise levels that workers are being exposed to.

Include employees in the hearing conservation plan if upper exposure action value is equal to or greater than 85 dBA or if they are exposed to any impulse noise levels greater than 135 dBA.

Within fifteen (15) days of receiving results of the noise assessment, notify employees who must be included in the hearing conservation plan of monitoring results. The HSE Representative shares the relevant exposure monitoring results with all potentially exposed personnel.

6. Noise Control

Controls must be used to reduce employee exposures to noise to less than 85 dBA.

Engineering controls that eliminate or minimize noise at the source, or establish a permanent barrier to noise are the preferred method of control. Agency regulations require the use of engineering control measures as much as feasible to control noise. Engineering controls include:

- Replacing noisy equipment with quiet equipment
- Using silencers and mufflers
- Installing enclosures
- Damping noisy equipment and parts

Administrative controls may also be useful for reducing noise exposures. Administrative controls include:

- Employee rotation
- Limiting use of noisy equipment
- Rescheduling work
- Altering work practice

6.1 Hearing Protection

Lusail and Contractor employees who are required to wear hearing protection are provided hearing protection devices at no cost to the employee.

- Hearing protection must include at least two distinct types. Employees are given the opportunity to select their hearing protection from a variety of suitable protection provided by the employer, for example:
  - Molded earplugs
  - Foam earplugs
  - Custom-molded earplugs
  - Earcaps
  - Earmuffs
- Hearing protection must have an adequate Noise Reduction rating (NRR) value to reduce exposures to less than 85 dBA.
- Dual hearing protection (i.e., earplugs and earmuffs) may be employed to reduce exposure to less than 85 dBA.
- The employer must provide training in the use and care of all hearing protectors provided to employees.
- The employer must ensure proper initial fitting and supervise the correct use of all hearing protectors.
- Contractor supervisors are responsible for enforcing the use of employee hearing protection.

7. Signs

Warning signs must indicate clearly defined areas with noise levels greater than 85 dBA as high noise areas and state that hearing protection is required. Dual hearing protection is generally required in areas that exceed 114 dBA. The HSE Representative designates the person who is responsible for ensuring that warning signs are posted, when required.

8. Audiometric Hearing Tests

A certified person must conduct audiometric testing for all employees included in the hearing conservation plan, in accordance with Qatar Labor Laws and LUS-HSE-WG3-446-001, Medical Qualification and Surveillance.

Audiometric testing must include initial baseline and annual audiograms.

The Contractor's Human Resources Department and the HSE Representative review audiometric test results and will be responsible for comparison with future test results for identification of changes in worker hearing acuity.

The HSE Representative (or designee) schedules the audiometric tests with the local health care provider or other entity.

9. Training

The Contractor shall train all employees who are included in the hearing conservation plan on the hazards associated with exposure to noise.

The HSE Representative arranges employee training at the time that employees are included in the hearing conservation plan, annually, and when a new noise hazard is introduced to the jobsite. This training can be organized and presented to groups or on a work area by work area basis, depending on the operation.

Based on their duties, employees are to be trained if they:

- Use hearing protection
- Supervise employees who use hearing protection
- Issue, repair, or adjust hearing protection

Information provided in the training plan must be updated to be consistent with changes in protective equipment and work processes. Each training session includes the following discussions:

- The effects of noise on hearing (including both occupational and non-occupational exposures)
- Noise controls used in the workplace
- The purpose of hearing protection: advantages, disadvantages, and attenuation of various types
- Instructions about selecting, fitting, using, and caring for hearing protection
- The purpose of audiometric testing and an explanation of the hearing test procedures

Supervisors address and communicate appropriate worker hearing protection at daily huddles before beginning work. Supervisors are responsible for identifying training needs during risk mitigation planning (2-week look-ahead), in accordance with Lusail requirements.

Using an acceptable training form, the records custodian maintains a record of all training or instruction given to employees.

10. Documentation

The records custodian documents all instruction and training. The HSE Representative maintains the safety training records at the site for the duration of the project and archives them for a minimum retention time of 10 years from creation date.

11. References

Qatar Construction Specifications 2010- Section 11 Part 1.2.9 "Control of Noise"

12. Attachment

LUS-HSE-FM4-446-016	Sample Hearing Conservation Plan