



# Lusail Real Estate Development Company

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

### STANDARD OPERATION PROCEDURE – ENVIRONMENTAL ASPECTS AND IMPACTS PROCEDURE & REGISTER

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## 1.0 ENVIRONMENTAL ASPECTS AND IMPACTS PROCEDURE AND REGISTER

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### 1.1 Purpose of the Procedure & Register

The purpose of this Procedure & Register is to document the main Environmental Aspects and Impacts and to list the respective mitigation measures used by Lusail Real Estate Development Company (LREDC) within their respective Projects during Construction and Operation in order to achieve Environmental best Practice. The Register is not meant to replace the respective EIAs which are elaborated upfront to any Project launch in order to obtain an Environmental Permit from the Environmental Authority in charge (MoE in Qatar). The EIAs list and assess all possible Environmental Aspects and Impacts in much greater detail than this Register.

The Register is also to be applied as support for determining the respective Environmental risks linked to respective Construction, workplace or Operational.

### 1.2 Environmental Policy

LREDC are committed to set standards that comply with all environmental legislation.

The Project's Environmental Management Plans (OCEMP, OOEMP and CEMPs of single Projects) describe the Methods and Procedures to be adopted in order to meet state of the art requirements for the protection of our Environment and to fulfil LREDC Environmental Policy.

Being fully aware of LREDC various responsibilities concerning the natural Environment LREDC adopts a holistic approach which is conveyed to all staff and operators in order to preserve the Environment and its biodiversity. This approach included planning in the design stage to avoid impacts where ever possible as well as assessing and mitigating all unavoidable changes in the most advanced and sustainable manner that is technically feasible and economically viable.

## 2.0 SCOPE OF THE PROCEDURE AND REGISTER

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A similar individual Register has to be elaborated for each and applied to all LREDC construction and operations, both purely terrestrial or on a coastline, as applied to normal construction and operating conditions, abnormal operating conditions (e.g. commissioning, testing, start-up & shutdown) and potential emergency conditions.

### 2.1 Definitions

- Environmental Aspect - Element of LREDC's activities, products or services that can interact with the environment
- Environmental Impact - Any change to the environment, whether adverse or beneficial, wholly or partially resulting from LREDC activities, products or services.
- Significant Impact: - (As per ISO14001) being those Environmental Impacts having the greatest effect on the environment and which are to be appropriately managed and mitigated by LREDC to achieve state of the art environmental performance.

## 3.0 RESPONSIBILITIES

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The LREDC HSE Department is responsible for maintaining a Register of Environmental Aspects and Impacts. It is responsible for updating the Register, amending it accordingly and publicizing any relevant changes.

The Environmental Manager shall inform relevant personnel of any changes that may affect them.

## 4.0 RELATED DOCUMENTS

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OCEMP Overall Construction Environmental Management Plan

OOEMP Overall Operation Environmental Management Plan

Environmental Risk Assessment Form

EIA(s) of the respective Project

## 5.0 REGISTER

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### 5.1. Determination of Environmental Aspects and Impacts

LREDC determines Environmental Aspects and their potential Impacts in their respective Projects using the following process:

Environmental Aspects are determined by LREDC to consist of any element of LREDC construction and / or operation activities that can interact with the environment. The relevant inputs and outputs categories are as follows:

- I. Emissions to atmosphere
- II. Emissions to water
- III. Emissions to land
- IV. Use of raw materials and other natural resources
- V. Other local environmental and community issues, e.g. noise, odour, flora and fauna, archaeology and visual impact.

This allows the identification of the aspects of LREDC business.

Once identified, the relevant aspect is catalogued in P-LUS-EMS-003 Environmental Aspects and Impacts Procedure & Register having its potential Environmental Impact determined. The impact is then subjected to a significance review in order to prioritize Aspects in developing Environmental Objectives and Targets.

### 5.2 Determining Environmental Impact Significance

Environmental Impact Rating – Each identified impact must first have an Environmental Impact Rating for each applicable receptor. This rating is selected using the categories given in Appendix A.

Frequency Rating – The Impact must also have a Frequency Rating determined by the individually assessed probability of occurrence.

Environmental Impact Significance Matrix – Utilizing the Environmental Impact and Probability ratings, each Aspect/Impact combination shall have a numerical value developed based on the following matrix:

	PROBABILIT Y				
		0- Almost no Probability	1 – Minor Probability	2 – Average Probability	3 - Major Probability
CONSEQUENCE	0 – No Env. Impact	0	0	0	0
	1 – Minor Impact	0	1	2	3
	2 – Average Impact	0	2	4	6
	3 – Major Impact	0	3	6	9

Risk categories:

Green – Low

Orange – Average

Red – Major

The matrix calculates a simple multiple of Impact rating and Probability rating. From the matrix, any outcome with a value of greater than four (i.e. those items rating in the red boxes) is considered by LREDC as being significant for planning purposes. All such Impacts need to be mitigated in order to be reduced to a low risk.

Cataloging of Impact Significance – Once the significance for each Aspect/Impact combination is determined using the matrix, the values for each rating and the significance value are entered in to the Register of Environmental Aspects and Impacts.

### 5.3 Review Period

The Register of Environmental Aspects and Impacts shall be reviewed annually or as needed due to operational changes.

### 5.4 Objectives and Targets

The Register of Environment Aspects and Impacts shall be used to develop and maintain LREDC Environmental Objectives and Targets as recorded in the OCEMP and OOEMP.

## 6.0 APPENDIX

Appendix A – Aspects and Impacts

Appendix B – Safety Leadership System

**APPENDIX A : Environmental Aspects and Impact Rating / Register**

The relevant Environmental Aspects are listed and the Impacts of each emission are rated and registered in the below Table. The consequent impact rating applied is given based on experience.

**Environmental Aspects and Impacts Register**

Aspect	Environmental Impact	Impact Rating
<b>Emission to Atmosphere</b>		
Local Air Quality	Photochemical reaction with sun light to produce low level ozone, which contributes to poor air quality (e.g. hydrocarbons)	1
	Dust nuisance and hazard to workers and nearby residents	2
	Constant release of dust off site	3
	Cement, Micro Silica nuisance to workers, staff, nearby residents	2
Greenhouse Gas	Greenhouse gas, which contributes to global warming (e.g. CO <sub>2</sub> )	1
Ozone Depletion	Persistent pollutant that causes depletion of stratospheric ozone and therefore permitting an increase in the amount of harmful UV radiation getting through to the earth's surface	3
Toxic	Toxic gas which has potential acute health effects for employees who come into direct contact and could cause fatalities at high concentrations (e.g. H <sub>2</sub> S, CO)	3
<b>Emission to Water</b>		
Inert, suspended or settling material	Reduces available light in water or settles and smothers life on bottom	0
Biodegradable suspended solids	Increases biological oxygen demand (BOD) in seawater (e.g. kitchen / sewage waste)	1
Chemical oxygen demand (COD) increasing pollutants	Increases COD in sea water (e.g. drilling chemicals, water treatment chemicals, run-off from roads, run-off, spills from barges )	2
Nitrifying chemicals	Increases algal activity in water to the detriment of other organisms	3
Toxic releases	Toxic to aquatic life (e.g. chlorine forming chlorinated hydrocarbons or organo-chlorides, oil)	3
Marine habitat destruction	Impact on Benthic fauna, Marine mammals (e.g. dugong, dolphin), turtles, fish and shrimp through marine works	2
<b>Emission to Land (including Contamination, solid and liquid Waste Disposal)</b>		
Waste spills	Deteriorating terrestrial environment through uncontrolled disposal of e.g. excess concrete, construction waste, tyres, sewage etc.	1
Domestic waste	Taking up non-hazardous waste landfill space; attracting pest; possible health hazard to workers, staff, residents	1
Clinical waste	Hazardous emissions to the environment with potential of health hazard to workers, staff, residents	2
Hazardous waste	Unsuitable disposal in non-hazardous waste landfill where special waste facilities do not exist, or long term storage pending the development of facilities	2
Ground and Groundwater pollution	Spillage of material leading to ground and / or groundwater contamination and affecting organic life	3

Aspect	Environmental Impact	Impact Rating
<b>Other Local Environmental and Community Issues</b>		
Visual Impact	Each of the following attracts one point; visible maintenance equipment, discoloured or missing cladding, incomplete lagging, discoloured or poorly aligned over ground utilities.	0-3
Odour	Intermittent odour in plant or any operation(<12 times per year)	1
	Persistent odour in plant or any operation	2
Noise	Noise level in plant operation or on roads 70-75 dB(A)	0
	Noise level in plant operation or on roads 75-80 dB(A)	1
	Noise level in plant operation or on roads 80-85 dB(A)	2
	Noise level in plant operation or on roads >85 dB(A)	3
Flora and Fauna	Damage up to complete loss of fauna and flora	1-3
Archaeology, historical sites, heritage, nature preserves	Eventual damage up to complete loss of national heritage	1-3
<b>Use of Raw Materials and other Natural Resources</b>		
Energy Usage	0 – 1 MWh	0
	1 – 2 MWh	1
	2 – 3 MWh	2
	> 3 MWh	3
Potable Water Usage	0 – 10m3	0
	10 - 100 m3	1
	100 - 1000 m3	2
	1000– 10,000 m3	3

Note: where more than one impact applies to any one aspect, just the environmental impacts should be recorded that have average or above impact ratings.

Note: where a positive sustainability initiative is noted, e.g., use of solar panels used to generate electricity and thereby not using non-renewable fossil fuels, a value of zero is allocated making the overall environmental impact zero.