



**Environment, Social, Health and Safety
Management System (ESHS MS)**

Project Environmental & Social Standards

**Document Number:
02/ES/PJ/OG/001/A01**

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1.0 INTRODUCTION

The purpose of this document is to summarize the national and international standards and guidelines that are applicable to the Pipeline and Plant projects (including Quarry) and specify the standards that will be adopted for the Project.

The tables contained herein (see Appendices) complement a more detailed description of Peruvian Environmental laws and regulations applicable to the plant, pipeline and quarry (*Analysis of Obligations, 2006*, conducted by Estudio Osterling SC), and International Conventions, International Finance Institution (IFI) Guidelines and Requirements, and selective International Best Practices (conducted by IDP, LLP).

Estudio Osterling SC provided the National input to the tables¹. Collectively the tables and supporting documents form the basis for the “Project Standards” although it should be noted that the international material does not constitute a legal opinion and should be used for guidance only.

The investment decision for PERU LNG was made in December 2006 and the notice to proceed on the LNG plant EPC contract was given in January 2007. Long lead equipment has thus been ordered and is being manufactured to the Project specifications in force at the time, that is, World Bank Pollution Prevention and Abatement Handbook (July, 1998). This Handbook has since been superseded by the IFC Industry Sector Environmental, Health and Safety (EHS) Guidelines (April, 2007)². PERU LNG has performed a review of the adopted Project Standards against these latest IFC EHS Guidelines. The Project complies with most of the IFC EHS Guidelines and with the EHS Guidelines for Liquefied Natural Gas (LNG) Facilities.

2.0 PROJECT COMMITMENTS

The Plant and Pipeline ESIA's both make the following statement:

- *“PERU LNG has committed to comply with industry best practices and the more stringent of limits or standards set by the World Bank Group or Peruvian regulations. According to both of these standards, national and international, PERU LNG will comply with the more strict standards, always maintaining the levels obtained in the baseline analysis as criteria”.* (Plant ESIA, Section 3.6; Pipeline ESIA Section 3.6).

In the absence of relevant Peruvian or World Bank Pollution Prevention Abatement Handbook (WB PPAH) standards or guidelines, the ESIA's also commit the projects to best available technology:

- *“These segregated wastewater sewer systems will be provided for drainage and collection of wastewater sources to allow necessary treatment to meet Peruvian Effluent Standards and World Bank Effluent Guidelines or best available technology where no guideline exists”* (DGAA Obs 2/24/04, Response 20.5).

¹ Some National Standards data not covered by the Estudio Osterling SC review has been included to cover perceived gaps (e.g., Sea water quality).

² The IFC EHS Guidelines were published as a technical reference documents designed to assist managers and decision makers with relevant industry background and technical information. They currently consist of the industry sector environmental guidelines contained in Part III of the World Bank Pollution Prevention and Abatement Handbook (July, 1998) and a series of EHS guidelines published by the IFC between 1991 and 2003. These guidelines were considered during the detailed design of the Project and, as a result, PERU LNG expects to meet most of the numerical standards contained in the new EHS Guidelines.

Other similar statements are made in relation to other aspects of the projects:

- *Appropriate internationally accepted hydrotest practices shall be considered during the development of the Hydrotest Water Management Plan when the proposed test method is known. (Lender Review 2/11/06, Section 5.22 Environmental Standards)*
- *The inspectors will verify that during the execution of the project the best environmental protection practices are being applied in accordance with the specifications established during the assessment process. (Plant EIA Ch. V, 4.2.1.5)*
- *The EMMP specifically addresses the monitoring that will be employed during the dredging operations in Data Sheet SM-2- Monitoring of Water Quality to ensure compliance with the turbidity standards set by IFC for Port and Harbor Facilities and the Best Management Practices that will be employed. (Lender Review 2/11/06, 2.14 Dredging).*

The following tables therefore attempt to set out the range of numeric standards in order that the governing standards can be determined and subsequently used by the design and procurement teams.

3.0 SOURCE MATERIALS

The source materials for this review were as follows:

- ESIA's and their amendments,
- Observations and Responses to Observations,
- Construction Management Plans, and
- Commitments Registers.

As noted above, the individual Peruvian laws and regulations cited in these documents were reviewed as a separate exercise to derive the National Standards.

WB PPAH is the principal reference cited in the above source documents for the international material, as it was the prevailing source of information at the time this work was undertaken (2006).

4.0 STRUCTURE OF DOCUMENT

The document is structured as follows:

- Numerical standards;
- International Financial Institution (IFI) requirements;
- International Convention requirements; and
- International Best Practice.

The content of each of these summaries is expanded upon below.

4.1 NUMERICAL STANDARDS

The WB PPAH are arranged by industrial sectors, with the standards varying accordingly. Where the facility in question is not covered by a specific industry guideline, a set of General Environmental Guidelines apply.

Guidelines that are relevant to the three projects (i.e., Plant, Pipeline and Quarry) are as follows:

- World Bank Pollution Prevention and Abatement Handbook (1998); General Environmental Guideline
- IFC Environmental Health & Safety Guideline-Oil & Gas Development (Onshore)
- IFC Environmental Health & Safety Guideline-Oil & Gas Development (Offshore)
- Thermal Power (Guidelines for New Plants)
- IFC Environmental Health & Safety Guideline-Ports & Harbours
- IFC Oil & Gas (Offshore)
- Environmental Health & Safety Guideline-Waste Management Facilities
- Environmental Health & Safety Guideline-Hazardous Materials Management (2001)
- Environmental Guideline for Liquid Natural Gas (LNG) Liquefaction and Re-gasification Plants

Since LNG plants and thermal power plants utilize similar equipment that is similar in type and size, the quantitative guidelines on emissions and effluents described in the Thermal Power Guideline are used. This is in line with the approach taken by EXIM and is consistent with the data referenced in the ESIA and Contractor Management Plans (CMPs).

It is not always possible to be specific about the governing standard as some depend on plant type and size, power rating, fuel type, etc. In these instances multiple options have been quoted in the tables. Where appropriate a comment is made to clarify conflicts or apparent contradictions, areas of ambiguity or where the governing standard may be difficult to meet if strictly applied. In these instances it is incumbent of the Project to develop a substantiated alternative although it is recognized that the Peruvian authorities are likely to interpret the ESIA's and associated source documents strictly and literally.

In addition to the World Bank, the standards used by other IFIs and international organizations are quoted for guidance purposes, particularly with respect to gauging best practice. For example, there are no World Bank standards for drinking water quality – they refer to WHO. In general, therefore, the 'Project Commitment', as contained in the attached tables, has been determined by comparing the Peruvian regulation or standard with a World Bank equivalent, with the stricter of the two defining the project standard (refer to EIA commitment above). Only where there is no Peruvian or World Bank standard or guideline has it been necessary to revert to an alternative international source.

Tables A-1 to A-15 in Appendix A provide a side by side comparison of the various standards considered applicable to a particular activity, along with the adopted Project standard and the rationale for selection thereof.

In general the World Bank standards are more arduous than Peruvian laws and regulations, but often the difference is small.

4.2 INTERNATIONAL FINANCIAL INSTITUTION (IFI) REQUIREMENTS

In addition to those guidelines noted in Section 4.1 above, a review of the qualitative requirements of those IFIs engaged by the Project was performed. This review incorporated each of the documents listed in Table 1 below.

TABLE 1 - INTERNATIONAL FINANCIAL INSTITUTIONS	
1	IFC Performance Standard 1: Social and Environmental Assessment and Management Systems
2	IFC Performance Standard 2: Labor and Working Conditions
3	Performance Standard 3: Pollution Prevention and Abatement
4	IFC Performance Standard 4: Community Health, Safety and Security
5	IFC Performance Standard 5: Land Acquisition and Involuntary Resettlement
6	IFC Performance Standard 6: Biodiversity Conservation and Sustainable Natural Resource Management
7	IFC Performance Standard 7: Indigenous Peoples
8	IFC Performance Standard 8: Cultural Heritage
9	IFC EH&S Guidelines for Waste Management Facilities, 1998
10	World Bank Pollution Prevention and Abatement Handbook (1998); Industry Sector Guideline - Oil and Gas Development (Onshore)
11	IFC Hazardous Materials Management Guidelines (2001)
12	IDB Environment & Safeguards Policy
13	IFC Good Practice Manual on Doing Better Business Through Effective Public Consultation and Disclosure
14	World Bank Mine Closure Plan
15	IFC Environmental, Health and Safety Guidelines - Oil and Gas Development (Offshore), December 2000
16	Ex-Im Environmental Procedures and Guidelines (2004)
17	Ex-Im Liquefied Natural Gas (LNG) Liquefaction Plants and Re-gasification Facilities
18	IFC Environmental, Health and Safety Guidelines – Port and Harbours
19	World Bank Pollution Prevention and Abatement Handbook (1998); Industry Sector Guideline – Gas systems
20	World Bank Pollution Prevention and Abatement Handbook (1998); General Environmental Guideline

Summaries of the legal requirements from each of the documents listed in Table 1 can be found in Appendix B.

4.3 INTERNATIONAL CONVENTION REQUIREMENTS

Peru is a signatory to numerous international conventions that are of direct relevance to the PERU LNG Project, as illustrated in Table 2 below.

TABLE 2 - CONVENTIONS	
1	Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal (Basel Convention)
2	International Convention on Oil Spill Preparedness, Response and Co-operation, 1990
3	Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (1972), (The London Convention)
4	International Convention for the Prevention of Pollution from Ships, 1973 as amended by the Protocol of 1978 relating thereto (MARPOL 73/78)
5	Convention on the Conservation of Migratory Species of Wild Animals (the Bonn Convention) 1979, and incorporating the African-Eurasian Migratory Water Bird Agreement, 1995, and the Agreement on the Conservation of Bats in Europe, 1991
6	Convention on Wetlands of International Importance Especially on Wildfowl Habitat 1971 (The Ramsar Convention)
7	Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), 1973
8	UN Framework Convention on Climate Change, 1992, and the Kyoto Protocol to the UNFCCC, 1997
9	International Labor Organisation, C169 Indigenous and Tribal Peoples Convention, 1989
10	Vienna Convention on the Protection of the Ozone Layer, Vienna, 1985 including the Montreal Protocol on Substances that Deplete the Ozone Layer (1987)
11	UN Convention on Biodiversity, 1992
12	Protection of the Marine Environment and Coastal Area of the South-East Pacific, Lima 1981
13	Convention for the Protection of the World Cultural and Natural Heritage, Paris 1972
14	International Plant Protection Convention, Rome 1951, including revised text 1991

The legal requirements of each of the conventions listed in Table 2 have been summarized to enable PERU LNG to make environmental and social decisions relating to the Project from an informed position.

These summaries can be found in Appendix C.

4.4 INTERNATIONAL BEST PRACTICE

The source materials reviewed make reference to International Best Practices and where these techniques will be applied in execution of the PERU LNG Project.

Table 3 is a list of all best practices referenced in the source materials.

TABLE 3 - INTERNATIONAL BEST PRACTICE	
1	Texas human health protective concentration levels (PCLs) for chemicals of concern (COCs)
2	Control of Substances Hazardous to (COSHH) Health Regulations, 2002
3	Occupational Safety and Health Standards, Hazardous waste operations and emergency response, 1910.120
4	WHO: Air Quality Guidelines for Europe 2000
5	Californian Ballast Water Discharge Standard
6	WHO standards for drinking water, 2001
7	EU Directives 94/55/EC and associated Directives (for roads), and 96/49/EC associated Directives (for rail) covering transport of dangerous goods
8	Dutch Target values and intervention values for soil remediation
9	International Union for Conservation of Nature and Natural Resources; 2004 IUCN Red List of Threatened Species
10	E&P Forum Waste Management Guidelines, September 1993
11	OECD Guidelines for Multinational Enterprises
12	ILO Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy
13	UN Norms of Responsibilities of Transnational Corporations and Other Business Enterprises with Regard to Human Rights (draft, March 2003)
14	World Bank/IMF core principles for poverty reduction
15	World Health Organisation Guidelines for Community Noise
16	PWBLF/World Bank/UNDP Building Competitiveness and Communities
17	Charter for the Protection and Management of Archaeological Heritage (1990)
18	International Charter for the Conservation and Restoration of Monuments and Sites (The Venice Charter, 1964)
19	IUCN Guidelines for the Prevention of Biodiversity Loss Caused by Alien Invasive Species (2000)

The legal requirements of the best practices listed above have been summarized and can be found in Appendix D.

5.0 OCCUPATIONAL HEALTH AND SAFETY

The design of the liquefaction plant shall be compliant with National Fire Protection Association (NFPA) 59A, *Standard for the Production, Storage, and Handling of Liquefied Natural Gas (LNG)* and all NFPA codes cross-referenced therein or their equivalent as permitted by NFPA, subject to the approval of the Authority Having Jurisdiction (AHJ).

These codes are listed in Table 4 below.

During detailed engineering design of the facility iterative processes established for Process Safety Management (such as HAZID, HAZOP and SIL) will be used to assess the overall safety of the liquefaction plant and identify areas in need of improvement to satisfy the Project requirements.

TABLE 4 – CODES REFERENCED IN NFPA 59A	
NFPA 10	Standard for Portable Fire Extinguishers, 2002 Edition
NFPA 11	Standard for Low-, Medium-, and High-Expansion Foam, 2005 Edition
NFPA 12	Standard on Carbon Dioxide Extinguishing Systems, 2005 Edition
NFPA 12A	Standard on Halon 1301 Fire Extinguishing Systems, 2004 Edition
NFPA 13	Standard for Installation of Sprinkler Systems, 2002 Edition
NFPA 14	Standard for the Installation of Standpipe and Hose Systems, 2003 Edition
NFPA 15	Standard for Water Spray Fixed Systems for Fire Protection, 2001 Edition
NFPA 16	Standard for Installation of Foam-Water Sprinkler and Foam-Water Spray systems, 2003 Edition
NFPA 17	Standard for Dry Chemical Extinguishing Systems, 2002 Edition
NFPA 20	Standard for the Installation of Stationary Pumps for Fire Protection, 2003 Edition
NFPA 22	Standard for Water Tanks for Private Fire Protection, 2003 Edition
NFPA 24	Standard for the Installation of Private Fire Service Mains and their Appurtenances, 2002 Edition
NFPA 30	Flammable and Combustible Liquids Code, 2003 Edition
NFPA 37	Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines, 2002 Edition
NFPA 54	National Fuel Gas Code, 2006 Edition
NFPA 58	Liquefied Petroleum Gas Code, 2004 Edition
NFPA 59	Utility LP-Gas Plant Code, 2004 Edition
NFPA 70	National Electrical Code, 2005 Edition
NFPA 72	National Fire Alarm Code
NFPA 101	Life Safety Code
NFPA 255	Standard Method of Test of Surface Burning Characteristics of Building Materials, 2006 Edition
NFPA 385	Standard for Tank Vehicles for Flammable and Combustible Liquids, 2000 Edition
NFPA 600	Standard on Industrial Fire Brigades, 2005 Edition
NFPA 1221	Standard for the Installation, Maintenance, and Use of Emergency Services Communication Systems, 2002 Edition
NFPA 1901	Standard for Automotive Fire Apparatus, 2003 Edition
NFPA 2001	Standard on Clean Agent Fire Extinguishing Systems, 2004 Edition
NFPA 5000	Building Construction and Safety Code, 2006 Edition

Whereas Engineering follows the codes and standards noted in Table 4, Construction and Operation of the liquefaction plant and associated marine facilities will be performed in accordance with Occupational Safety and Health Administration (OSHA) standards.

Comparative tables for occupational health and safety are not required and have not been developed due to the adoption of a single, complementary set of codes and standards.

APPENDIX A – Summary Tables of Numerical Standards

Table A-1: Air Emissions Sources <50 MWe					
National	Representative International Standards & Guidelines		Project Commitment (more stringent of National & World Bank)	Adopted Project Spec.	Comment/ Rationale
	WB PPAH	Ex-Im Bank			
None applicable	<p>General Environmental Guidelines (Table 1) & Gas Terminal Systems Oil & Gas Development - Onshore (Table 3)</p> <p>NOx (as NO₂) :</p> <ul style="list-style-type: none"> ▪ Oil: 460 mg/Nm³ (15% O₂ dry) ▪ Gas: 320 mg/Nm³ (15% O₂ dry) <p>Sulfur dioxide (SO₂): 2,000 mg/Nm³ (15% O₂ dry)</p> <p>Hydrogen sulphide: 30 mg/Nm³</p> <p>Particulate Matter (PM₁₀): 100 mg/Nm³</p>	<p>Table 6: Thermal, gas turbine, and Diesel Driven Power Plants (Applicable to plant with equivalent heat input >10 million BTU/hr; ca 2.9 MWe)</p> <p>NOx (as NO₂) :</p> <ol style="list-style-type: none"> 1. Steam power plants: <ul style="list-style-type: none"> ▪ Gas: 320 mg/NM³ ▪ Oil: 460 mg/NM³ 2. Combustion turbine Plants: <ul style="list-style-type: none"> ▪ Gas: 125 mg/NM³ ▪ Diesel: 165 mg/NM³ ▪ Fuel oil: 300 mg/NM³ (460 mg/NM³ for Onshore oil & gas guideline; Table 5) 3. Engine plant: 2,000 mg/NM³ <p>SO₂ (per power plant site):</p> <ul style="list-style-type: none"> ▪ 0.2 t/day/MWe (first 500 MWe) ▪ 0.1 t/day/MWe (ea. Additional, MWe > 500 MWe) <p>(1000 mg/NM³ (max. in the flue pipe; Onshore oil & gas guideline, Table 5)</p> <p>PM₁₀: 50 mg/NM³</p>	<p>NOx (as NO₂):</p> <ul style="list-style-type: none"> ▪ Oil: 460 mg/Nm³ (15% O₂ dry) ▪ Gas: 320 mg/Nm³ (15% O₂ dry) <p>SO₂: 2,000 mg/Nm³ (15% O₂ dry)</p> <p>Hydrogen sulphide: 30 mg/Nm³</p> <p>PM₁₀: 50 mg/Nm³</p>	World Bank	Peru has no emission standards except for vehicles (refer EIA Section 3.4.3.2), and while the National review refers to 'Max. Allowable limits' p 76, these have not yet been set by MEM (the authority in charge of regulating the Energy Sector in Peru) for liquefaction plants.

Table A-2: Air Emissions Sources >50 - 500 MWe					
National	Representative International Standards & Guidelines		Project Commitment (more stringent of National & World Bank)	Adopted Project Spec.	Comment/ Rationale
	WB PPAH	Ex-Im Bank			
None applicable	<p>Thermal Power Plant Guidelines /LNG Liquefaction Plants</p> <p>Maximum emission levels to be achieved for at least 95% of the time that the plant/unit is operating, to be calculated as a proportion of annual operating hours:</p> <p>NO_x (as NO₂) :</p> <ol style="list-style-type: none"> Combustion Turbine Units: <ul style="list-style-type: none"> Fuel-oil: 300 mg/Nm³ (15% O₂ dry) Diesel: 165 mg/Nm³ (15% O₂ dry) Gas: 125 mg/Nm³ (15% O₂ dry) Engine-driven power units: <2,000 mg/Nm³ Furnaces/heaters Gas: 320 mg/Nm³ (3% oxygen) <p>Sulfur dioxide: 2,000 mg/Nm³ (3% O₂ dry)</p> <p>PM₁₀: 50 mg/Nm³</p>	<p>Table 10: LNG plants</p> <p>NO_x (asNO₂) :</p> <ul style="list-style-type: none"> Combustion turbines, gas fuel: 125 mg/Nm³ dry at 15% oxygen) Furnaces/heaters, gas fuel: 320 mg/Nm³ (3% oxygen) Furnace/heaters: 320 mg/NM³ <p>Sulfur dioxide (when using untreated gas): 2,000 mg/Nm³</p> <p>PM₁₀: 50 mg/Nm³</p>	<p>NO_x (as NO₂):</p> <ol style="list-style-type: none"> Combustion Turbine Units: <ul style="list-style-type: none"> Fuel-oil: 300 mg/Nm³ (15% O₂ dry) Diesel: 165 mg/Nm³ (15% O₂ dry) Gas: 125 mg/Nm³ (15% O₂ dry) Engine-driven power units: <2,000 mg/Nm³ Furnaces/heaters: 320 mg/Nm³ (3% oxygen) for Gas <p>Sulfur dioxide: 2,000 mg/Nm³ (3% O₂ dry)</p> <p>PM₁₀: 50 mg/Nm³</p>	World Bank	<p>World Bank Thermal Power: Guidelines for New Power Plants assumed as relevant reference source, refer EXIM Guideline Table 10.</p> <p>World Bank standards applicable in airsheds with moderate air quality. Plants > 500 MWe in airsheds with moderate air quality are subject to site specific requirements.</p>

Table A-3: Incinerator – Construction and Operational Phases

National	Representative International Standards & Guidelines		Project Commitment (more stringent of National & World Bank)	Adopted Project Spec.	Comment/ Rationale
	WB PPAH	Ex-Im Bank			
No limits exist	<p>IFC Environmental, Health and Safety Guidelines for Waste Management Facilities</p> <p>NO₂:</p> <ul style="list-style-type: none"> ▪ Oil fired: 460 mg/Nm³ ▪ Gas fired: 320 mg/Nm³ <p>SO₂: 2,000 mg/Nm³</p> <p>PM₁₀: 100 mg/Nm³</p> <p>Dioxin: 1 ng/Nm³</p> <p>Furan: 1 ng/Nm³</p>	None specified	<p>NO₂:</p> <ul style="list-style-type: none"> ▪ Oil fired: 460 mg/Nm³ ▪ Gas fired: 320 mg/Nm³ <p>SO₂: 2,000 mg/Nm³</p> <p>PM₁₀: 100 mg/Nm³</p> <p>Dioxin: 1 ng/Nm³</p> <p>Furan: 1 ng/Nm³</p>	World Bank	There are no relevant Peruvian emission standards therefore IFC standards will apply.

Table A-4: General Environmental Quality Standards for Ambient Air

National	Representative International Standards & Guidelines		Project Commitment (more stringent of National & World Bank)	Adopted Project Spec.	Comment / Rationale
	WB PPAH	WHO			
<p>AMBIENT AIR ENVIRONMENTAL QUALITY STANDARDS (Supreme Decree 074-2001-PCM)</p> <p>Nitrogen Dioxide -</p> <ul style="list-style-type: none"> Annual Average: 100 µg/m³ 1 hour: 200 µg/m³ Not to be exceeded more than 24 times per year. <p>Carbon Monoxide -</p> <ul style="list-style-type: none"> 8 hours: 10,000 µg/m³ (average movil) 1 hour: 30000 µg/m³ (not to be exceeded more than one time per year) <p>Sulphur Dioxide -</p> <ul style="list-style-type: none"> Annual Mean: 80 µg/m³ 24 hours: 365 µg/m³ (not to be exceeded more than one time per year) <p>PM₁₀ -</p> <ul style="list-style-type: none"> Annual Mean: 50 g/m³ 	<p>PPAH Industry Sector Guidelines: Thermal Power: Guidelines for New Plants Table C1</p> <p>Requires National ambient air quality standards, and in their absence recommends the following 24 hr and Annual Average standards:</p> <p>PM₁₀: 150 / 50 µg/m³ TSP^a: 230 / 80 µg/m³ NO₂: 150 / 100 µg/m³ SO₂: 150/ 80 µg/m³</p> <p>^a Measurement of PM₁₀ is preferable to measurement of TSP.</p> <p>Oil & Gas Development (Onshore), Table 3</p> <p>Hydrogen sulphide: <5mg/m³ at property boundary</p>	<p>Guidelines for Air Quality, WHO (1999)</p> <p>NO₂ -</p> <ul style="list-style-type: none"> Annual average: 40 µg/m³ Hourly average: 200 µg/m³ <p>CO -</p> <ul style="list-style-type: none"> 8-hr average: 10,000 µg/m³ 1-hr average: 30,000 µg/m³ 30-min average: 60,000 µg/m³ 15-min average: 100,000 µg/m³ <p>SO₂ -</p> <ul style="list-style-type: none"> Annual average: 50 µg/m³ 24-hr average: 125 µg/m³ 1-hr average: 350 µg/m³ 10-min average: 500 µg/m³ <p>PM₁₀ -</p> <ul style="list-style-type: none"> Annual average: 50 µg/m³ 24-hr average: 125 µg/m³ <p>Black smoke -</p> <ul style="list-style-type: none"> Annual average: 40-60 µg/m³ 24-hr average: 120 µg/m³ <p>Total suspended particulates-</p> <ul style="list-style-type: none"> Annual average: 70 µg/m³ 24-hr average: 150-230 µg/m³ 	<p>NO₂:</p> <ul style="list-style-type: none"> Annual average: 100 µg/m³ 24 hr 150 µg/m³ 1 hour: 200 µg/m³ (Not to be exceeded more than 24 times per year). <p>CO:</p> <ul style="list-style-type: none"> 8-hr average: 10,000 µg/m³ 1-hr average: 30,000 µg/m³ (Not to be exceeded more than one time per year) <p>SO₂:</p> <ul style="list-style-type: none"> Annual average: 80 µg/m³ 24-hr average: 150 µg/m³ <p>PM₁₀:</p> <ul style="list-style-type: none"> Annual Mean: 50 µg/m³ 24 hours: 150 µg/m³ (Not to be exceeded more than three times per year) <p>Ozone:</p> <ul style="list-style-type: none"> 8 hours: 120 µg/m³ (Not to be exceeded more than 24 times per year). <p>Lead:</p> <ul style="list-style-type: none"> Annual : 0.5 µg/m³ Monthly average Monthly: 1.5 µg/m³ (Not to be exceeded more than 4 times per year). 	<p>Combination of National and World Bank</p>	<p>WHO stricter than World Bank and National</p> <p>World Bank SO₂ 24-hr average >2x stricter than National std</p> <p>Note the EIA and Plant Pollution CMP quotes the stricter World Bank General Environmental Guidelines (Table 3 and 2.3 respectively):</p> <p>PM₁₀: 70 µg/m³ Ann. Average</p> <p>SO₂: 125µg/m³ 24 hr average, 50 µg/m³ Ann. Average</p> <p>These are likely to be more relevant for the Quarry as no sector guidelines apply</p>

Table A-4: General Environmental Quality Standards for Ambient Air

National	Representative International Standards & Guidelines		Project Commitment (more stringent of National & World Bank)	Adopted Project Spec.	Comment / Rationale
	WB PPAH	WHO			
<ul style="list-style-type: none"> ▪ 24 hours: 150 $\mu\text{g}/\text{m}^3$ (not to be exceeded more than three times per year) Ozone - <ul style="list-style-type: none"> ▪ 8 hours: 120 $\mu\text{g}/\text{m}^3$ (not to be exceeded more than 24 times per year) Lead - <ul style="list-style-type: none"> ▪ Annual : 0.5 $\mu\text{g}/\text{m}^3$ Monthly average ▪ Monthly: 1.5 $\mu\text{g}/\text{m}^3$ (not to be exceeded more than 4 times per year) Hydrocarbons - <ul style="list-style-type: none"> ▪ 24hr av. 15,000 $\mu\text{g}/\text{m}^3$ 			Hydrogen sulphide <ul style="list-style-type: none"> ▪ <5mg/m^3 at property boundary 		

Table A-4: General Environmental Quality Standards for Ambient Air

National	Representative International Standards & Guidelines		Project Commitment (more stringent of National & World Bank)	Adopted Project Spec.	Comment / Rationale
	WB PPAH	WHO			
Refer above to AMBIENT AIR ENVIRONMENTAL QUALITY STANDARDS (Supreme Decree 074-2001-PCM)			Refer above to AMBIENT AIR ENVIRONMENTAL QUALITY STANDARDS (Supreme Decree 074-2001-PCM)	National standards	Refer Quarry EIA S 2.4.2, Table 2-2. Note that there are no Maximum Allowed Limits (LMPs) for non-metallic mining, hence the reference to the General Ambient Air Quality Standards. Note also that the Estudio Osterling review makes reference to the following H&S standards: <ul style="list-style-type: none"> ▪ Dust that could be inhaled: 10mg/m³ ▪ Dust that could be breathed : 3mg/m³ <p>where inhaled taken to mean 10 micron diameter (i.e., PM₁₀) and breathed 2.5 micron diameter</p>

Table A-5: Liquid Effluent Discharge Control Standards
Discharges to Surface Waters and Soak-a-ways

National	Representative International Standards & Guidelines		Project commitment (more stringent of National & World Bank)	Adopted Project Spec.	Comment
	WB PPAH / WHO where specifically referenced)	Ex-Im Bank			
<p>APPLICABLE TO PLANT</p> <p>Maximum Permissible Levels for Liquid Effluents at Liquid Hydrocarbon Activities (Directorial Resolution 030-96-EM/DGAA)</p> <p>pH:</p> <ul style="list-style-type: none"> ▪ Value at any time: 5.5 - 9 ▪ Annual average: 5.5 - 9 <p>Oil and grease:</p> <ul style="list-style-type: none"> ▪ Value at any time: 30 mg/l ▪ Annual Average: 20 mg/l <p>Barium:</p> <ul style="list-style-type: none"> ▪ Value at any time: 5.0 mg/l ▪ Annual average: 3.0 mg/l <p>Lead:</p> <ul style="list-style-type: none"> ▪ Value at any time: 0.4 	<p>Thermal Power: Guidelines for New Plants, Table 1</p> <p>pH: 6 – 9 Oil & grease 10mg/l TSS 50mg/l</p> <p><i>Metals:</i></p> <ul style="list-style-type: none"> ▪ Cr total: 0.5 mg/l ▪ Cu: 0.5 mg/l ▪ Fe: 1.0 mg/l ▪ Zn: 1.0 mg/l <p>Total residual chlorine: 0.2 mg/l</p> <p>Temperature - at edge of designated mixing zone³: Max 3°C above ambient temp of receiving waters</p>	<p>EXIM Environmental Guidelines - Table 5 Oil and Gas - Onshore Development and Table 6 Thermal , Gas Turbine, and Diesel Driven Power Plants, Table 10 LNG Facilities</p> <p>pH: 6-9 BOD₅: 50 mg/l COD: 250 mg/l TSS: 50 mg/l Oil and grease: 10 mg/l</p> <p>Phenols: 1.0 mg/l</p> <ul style="list-style-type: none"> ▪ Total Metals (except Barium): 5 mg/l ▪ Cd: 0.1 mg/l ▪ Cr total: 0.5 mg/l ▪ Cu: 0.5 mg/l ▪ Fe: 3.5 mg/l ▪ Hg:0.01 mg/l ▪ Pb: 0.1 mg/l <p>Residual Cl: 0.5 mg/l Total coliforms: 400MPN/100ml</p>	<p>APPLICABLE TO PLANT AND PIPELINE</p> <p>pH: 6-9 BOD: 50 mg/l COD: 250 mg/l TSS: 50 mg/l Oil & grease: 10 mg/l</p> <p><i>Metals:</i></p> <ul style="list-style-type: none"> ▪ Heavy metals, total: 10 mg/l ▪ As: 0.1 mg/l ▪ Cd: 0.1 mg/l ▪ Cr(6): 0.1 mg/l ▪ Cr total: 0.5 mg/l ▪ Cu: 0.5 mg/l ▪ Fe: 1.0 mg/l ▪ Pb: <ul style="list-style-type: none"> - Value at any time: 0.4 mg/l; - Annual average: 0.1 mg/l ▪ Hg: 0.01 mg/l ▪ Ni: 0.5 mg/l ▪ Se: 0.1 mg/l ▪ Ag: 0.5 mg/l ▪ Zn: 1.0 mg/l <p><i>Cyanide:</i></p>	<p>For Plant/ pipeline: World Bank.</p> <p>For Quarry: National standards</p>	<p>National standards (Directorial Resolution 030-96-EM/DGAA) are virtually the same as World Bank (less stringent in the case of oil & grease, and Pb).</p> <p>National standards for heavy metals very limited therefore World Bank standards prevail</p> <p>The General Environmental Guidelines. Process waters, contaminated storm water and runoff (Table 4) provide a more complete list of parameters than Thermal Power: Guidelines for New Plants, Table 1. Additional parameters are as follows:</p> <p>All limits 95th percentiles of annual operational hours.</p> <p>BOD: 50 mg/l COD: 250 mg/l</p> <p><i>Metals:</i></p> <ul style="list-style-type: none"> ▪ Heavy metals, total: 10 mg/l ▪ As: 0.1 mg/l ▪ Cd: 0.1 mg/l ▪ Cr(6): 0.1 mg/l ▪ Pb: 0.1 mg/l

³ A mixing zone is a limited area or volume of water where initial dilution of a discharge takes place and beyond which applicable water quality criteria should not be exceeded. In the case of a thermal plume, a mixing zone is generally defined as occupying no more than 25% of the cross section of a waterway channel (river, stream, etc.) so as to allow passage of aquatic life and permit other uses of the water. In the case of an open body of water, the mixing zone will be defined on a case-by-case basis taking into account factors such as the existing ecology and in particular, the presence of coral reefs

Table A-5: Liquid Effluent Discharge Control Standards
Discharges to Surface Waters and Soak-a-ways

National	Representative International Standards & Guidelines		Project commitment (more stringent of National & World Bank)	Adopted Project Spec.	Comment
	WB PPAH / WHO where specifically referenced)	Ex-Im Bank			
mg/l <ul style="list-style-type: none"> ▪ Annual average: 0.2 mg/l APPLICABLE TO QUARRY Maximum Permissible Levels for Liquid Effluents at Mining Activities (Ministerial Resolution 011-96-EM/VMM) pH: <ul style="list-style-type: none"> ▪ Value at any time: 6 - 9 ▪ Annual Average: 6 - 9 Suspended Solids <ul style="list-style-type: none"> ▪ Value at any time: 60 mg/l ▪ Annual Average: 25 mg/l Lead <ul style="list-style-type: none"> ▪ Value at any time: 0.4 mg/l 		Temperature - at edge of designated mixing zone ⁴ : Max 3°C above ambient temp of receiving waters	<ul style="list-style-type: none"> ▪ Free: 0.1 mg/l ▪ Total: 1.0 mg/l Nitrogen: 10 mg/l Fluoride: 20 mg/l Phosphorus: 2.0 mg/l Total residual chlorine: 0.2 mg/l Phenols: 0.5 mg/l Sulphide: 1.0 mg/l Coliform bacteria: 400 MPN/100 ml Temperature at edge of designated mixing zone: Max 3°C above ambient temp of receiving waters APPLICABLE TO QUARRY pH: <ul style="list-style-type: none"> ▪ Value at any time: 6- 9 ▪ Annual Average: 6- 9 Suspended Solids: <ul style="list-style-type: none"> ▪ Value at any time: 60 mg/l ▪ Annual Average: 25 mg/l Lead: <ul style="list-style-type: none"> ▪ Value at any time: 0.4 mg/l ▪ Annual average: 0.1 mg/l (World Bank) 		<ul style="list-style-type: none"> ▪ Hg: 0.01 mg/l ▪ Ni: 0.5 mg/l ▪ Se: 0.1 mg/l ▪ Ag: 0.5 mg/l <i>Cyanide:</i> <ul style="list-style-type: none"> ▪ Free: 0.1 mg/l ▪ Total: 1.0 mg/l <i>Nitrogen:</i> 10 mg/l Fluoride: 20 mg/l Total residual chlorine: 0.2 mg/l Phenols: 0.5 mg/l Phosphorus: 2.0 mg/l Sulphide: 1.0 mg/l Coliform bacteria: < 400 MPN/100 ml Note that the Thermal Power standard for iron and zinc (1.0 mg/l) is more stringent than the equivalent General Standard (3.5 and 2.0 mg/l respectively). No World Bank industry sector guidelines for quarries therefore General Environmental Guidelines apply. Only the annual av. World Bank standards for Pb and As are stricter than the National equivalents, as noted in parenthesis in Project commitment column.

⁴ A mixing zone is a limited area or volume of water where initial dilution of a discharge takes place and beyond which applicable water quality criteria should not be exceeded. In the case of a thermal plume, a mixing zone is generally defined as occupying no more than 25% of the cross section of a waterway channel (river, stream, etc.) so as to allow passage of aquatic life and permit other uses of the water. In the case of an open body of water, the mixing zone will be defined on a case-by-case basis taking into account factors such as the existing ecology and in particular, the presence of coral reefs.

⁵ Equivalent to 0.1 mg/l CNfree and 0.2 mg/l CNwad

Table A-5: Liquid Effluent Discharge Control Standards
Discharges to Surface Waters and Soak-a-ways

National	Representative International Standards & Guidelines		Project commitment (more stringent of National & World Bank)	Adopted Project Spec.	Comment
	WB PPAH / WHO where specifically referenced)	Ex-Im Bank			
<ul style="list-style-type: none"> ▪ Annual average: 0.2 mg/l Copper <ul style="list-style-type: none"> ▪ Value at any time: 1.0 mg/l ▪ Annual average: 0.3 mg/l Zinc <ul style="list-style-type: none"> ▪ Value at any time: 3.0 mg/l ▪ Annual average: 1.0 mg/l Iron <ul style="list-style-type: none"> ▪ Value at any time: 2.0 mg/l ▪ Annual average: 1.0 mg/l Arsenic <ul style="list-style-type: none"> ▪ Value at any time: 1.0 mg/l ▪ Annual average: 0.5 mg/l Total Cyanide 3 : <ul style="list-style-type: none"> ▪ Value at any time: 1.0 mg/l ▪ Annual average: 1.0 mg/l 			Copper: <ul style="list-style-type: none"> ▪ Value at any time: 1.0 mg/l ▪ Annual average: 0.3 mg/l Zinc: <ul style="list-style-type: none"> ▪ Value at any time: 3.0 mg/l ▪ Annual average: 1.0 mg/l Iron: <ul style="list-style-type: none"> ▪ Value at any time: 2.0 mg/l ▪ Annual average: 1.0 mg/l Arsenic: <ul style="list-style-type: none"> ▪ Value at any time: 0.1 mg/l ▪ Annual average: 0.1 mg/l (World Bank) Total Cyanide ⁵ : <ul style="list-style-type: none"> ▪ Value at any time: 1.0 mg/l ▪ Annual average: 1.0 mg/l 		World Bank specifies 'surface waters' and doesn't distinguish between freshwater and marine

Table A-6: Liquid Effluent Discharge Control Standards
Wastewater Reuse

National	Representative International Standards & Guidelines		Project commitment (more stringent of National & World Bank)	Adopted Project Spec.	Comment
	WB PPAH / WHO where specifically referenced)	Ex-Im Bank			
None applicable	<p>WHO</p> <p>Intestinal nematodes (arithmetic mean no. of eggs /L) 0.1</p> <p>Faecal coliforms (geometric mean no. per 100 ml) <1000</p>		<p>Intestinal nematodes (arithmetic mean no. of eggs /L) 0.1</p> <p>Faecal coliforms (geometric mean no. per 100 ml) <1000</p>	WHO	

Table A-7: Liquid Effluent Discharge Control Standards
Marine Outfalls

National	Representative International Standards & Guidelines		Project commitment (more stringent of National & World Bank)	Adopted Project Spec.	Comment
	WB PPAH / WHO	Ex-Im Bank			
<p>Maximum Permissible Levels for Liquid Effluents at Liquid Hydrocarbon Activities (Directorial Resolution 030-96-EM/DGAA)</p> <p>pH:</p> <ul style="list-style-type: none"> Value at any time: 5.5- 9 Annual average: 5.5- 9 <p>Oil and grease</p> <ul style="list-style-type: none"> Value at any time: 50 mg/l Annual average: 30 mg/l <p>Barium</p> <ul style="list-style-type: none"> Value at any time: 5.0 mg/l Annual average: 3.0 mg/l <p>Lead</p> <ul style="list-style-type: none"> Value at any time: 0.4 mg/l <p>Annual average: 0.2 mg/l</p>	<p>General Environmental Guidelines, Table 4 All limits are for the 95th percentiles of annual operational hours</p> <p>pH: 6 – 9 BOD: 50 mg/l COD: 250 mg/l Oil and grease: 10 mg/l Total suspended solids: 50 mg/l</p> <p><i>Metals:</i></p> <ul style="list-style-type: none"> Heavy metals, total: 10 mg/l As, Cd, Cr(6), Pb, Se: 0.1 mg/l Cr total: 0.5 mg/l Cu: 0.5 mg/l Fe: 3.5 mg/l Hg: 0.01 mg/l Ni: 0.5 mg/l Ag: 0.5 mg/l Zn: 2.0 mg/l <p><i>Cyanide:</i></p> <ul style="list-style-type: none"> Free: 0.1 mg/l Total: 1.0 mg/l <p>NH₃: 10 mg/l Fluoride: 20 mg/l Total residual chlorine: 0.2 mg/l Phenols: 0.5 mg/l</p>	<p>EXIM Environmental Guidelines - Table 5 Oil and Gas - Onshore Development and Table 6 Thermal , Gas Turbine, and Diesel Driven Power Plants, Table 10 LNG Facilities</p> <p>pH 6-9 BOD₅ 50 mg/l COD 250 mg/l TSS 50 mg/l Oil and grease 20-40 mg/l Phenols 1.0 mg/l</p> <p><i>Metals:</i></p> <ul style="list-style-type: none"> Total Metals (except Barium) 5 mg/l Cd: 0.1 mg/l Cr total: 0.5 mg/l Cu: 0.5 mg/l Fe: 3.5 mg/l Hg 0.01 mg/l Pb: 0.1 mg/l <p>Residual Cl: 0.5 mg/l</p> <p>Total coliforms: <400MPN/100ml</p> <p>Temperature – at edge of designated mixing zone⁶:</p>	<p>pH: 6-9 BOD: 50 mg/l COD: 250 mg/l TSS: 50 mg/l Oil & grease: 10mg/l</p> <p><i>Metals:</i></p> <ul style="list-style-type: none"> Heavy metals, total: 10 mg/l As: 0.1 mg/l Cd: 0.1 mg/l Cr(6): 0.1 mg/l Cr total: 0.5 mg/l Cu: 0.5 mg/l Fe: 1.0 mg/l Pb: 0.1 mg/l Hg: 0.01 mg/l Ni: 0.5 mg/l Se: 0.1 mg/l Ag: 0.5 mg/l Zn: 1.0 mg/l <p><i>Cyanide:</i></p> <ul style="list-style-type: none"> Free: 0.1 mg/l Total: 1.0 mg/l <p>Nitrogen: 10 mg/l Fluoride: 20 mg/l Total residual chlorine: 0.2 mg/l</p>	World Bank	World Bank std for oil & grease is three times tighter than National std

⁶ A mixing zone is a limited area or volume of water where initial dilution of a discharge takes place and beyond which applicable water quality criteria should not be exceeded. In the case of a thermal plume, a mixing zone is generally defined as occupying no more than 25% of the cross section of a waterway channel (river, stream, etc.) so as to allow passage of aquatic life and permit other uses of the water. In the case of an open body of water, the mixing zone will be defined on a case-by-case basis taking into account factors such as the existing ecology and in particular, the presence of coral reefs.

Table A-7: Liquid Effluent Discharge Control Standards
Marine Outfalls

National	Representative International Standards & Guidelines		Project commitment (more stringent of National & World Bank)	Adopted Project Spec.	Comment
	WB PPAH / WHO	Ex-Im Bank			
	Phosphorus: 2.0 mg/l Sulphide: 1.0 mg/l Coliform bacteria: < 400 MPN/100 ml Thermal Power: Guidelines for New Plants Same as above except: Fe: 1.0 mg/l Zn: 1.0 mg/l	Max 3 deg C above ambient temp of receiving waters.	Phenols: 0.5 mg/l Phosphorus: 2.0 mg/l Sulphide: 1.0 mg/l Coliform bacteria: < 400 MPN/100 ml		

Table A-8: Liquid Effluent Discharge Control Standards
Hydrotesting Water

National	Representative International Standards & Guidelines		Project commitment (more stringent of National & World Bank)	Adopted Project Spec.	Comment
	WB PPAH / WHO	Ex-Im Bank			
<p>ESIA Amendment</p> <p>pH: 6 – 9 BOD: 50 mg/l COD: 250 mg/l Oil & grease 10mg/l TSS 50mg/l</p> <p>Total heavy metals (As, Cr, Pb, Hg, Ni, Zn): 10 mg/l</p> <p>Nitrogen: (NH₃): 10 mg/l Phenols: 0.5 mg/l Phosphorus: 2.0 mg/l Temperature increase: < 3°C</p>	<p>General Environmental Guidelines, Table 4</p> <p>pH: 6 – 9 BOD: 50 mg/l COD: 250 mg/l Oil & grease 10mg/l TSS 50mg/l</p> <p>Total heavy metals (As, Cr, Pb, Hg, Ni, Zn): 10 mg/l Nitrogen: (NH₃): 10 mg/l Phenols: 0.5 mg/l Phosphorus: 2.0 mg/l</p>	<p>None specified</p>	<p>pH: 6 – 9</p> <p>BOD: 50 mg/l COD: 250 mg/l</p> <p>Oil & grease 10mg/l</p> <p>TSS 50mg/l</p> <p>Total heavy metals (As, Cr, Pb, Hg, Ni, Zn) total: 10 mg/l</p> <p>Nitrogen: (NH₃): 10 mg/l Phosphorus: 2.0 mg/l</p> <p>Phenols: 0.5 mg/l</p> <p>Temperature increase: <3 °C</p>	<p>Combination of National and World Bank</p>	

Table A-9: Environmental Quality Standards for Surface Waters (i.e. Ambient) <i>Freshwater</i>					
National	Representative International Standards & Guidelines		Project commitment (more stringent of National & World Bank)	Adopted Project Spec.	Comment/ Rationale
	WB PPAH	Ex-Im Bank			
<p>AMBIENT WATER PRESERVATION STANDARDS ⁷ (REGULATIONS TO THE GENERAL WATER LAW)</p> <p>BACTERIOLOGICAL LIMITS ⁸ (Maximum value in 80% of five or more monthly samples):</p> <p>Total coliforms</p> <ul style="list-style-type: none"> ▪ Class I: 8.8 MPN/100mL ▪ Class II: 20000 MPN/100mL ▪ Class III: 5000 MPN/100mL ▪ Class IV: 5000 MPN/100mL ▪ Class V: 1000 MPN/100mL ▪ Class VI: 20000 MPN/100mL <p>Fecal coliforms</p> <ul style="list-style-type: none"> ▪ Class I: 0 NPM/100mL ▪ Class II: 4000 NPM/100mL 	None specified	None specified	As per National ambient preservation standards (Column 2)	National	<p>Clarify whether Class I includes criteria for drinking water</p> <p><i>Class I:</i> Domestic supply water with simple disinfection. <i>Class II:</i> Domestic supply water with treatment equivalent to combined processes involving mixture and coagulation, sedimentation, filtering and chlorination, approved by the Ministry of Health. <i>Class III:</i> Irrigation water for vegetables to be consumed raw and animal drinking water. <i>Class IV:</i> Water of recreational areas of primary contact (toilets and similar).</p> <p><i>Class V:</i> Water of bivalve seafood fishing areas.</p> <p><i>Class VI:</i> Water of fauna preservation areas and recreational or commercial fishing.</p>

⁷ Each water body –continental or marine- is classified (Classes I-VI) by Dirección General de Salud Ambiental –DIGESA (Health Authority), according to the use given to the water body. Please refer to endnote for a description of each class. Maximum temperatures shall be determined by the Health Authority in terms of short and/or weekly exposition.

⁸ Expressed in Most Probable Number (MPN) / 100 ml

Table A-9: Environmental Quality Standards for Surface Waters (i.e. Ambient)					
<i>Freshwater</i>					
National	Representative International Standards & Guidelines		Project commitment (more stringent of National & World Bank)	Adopted Project Spec.	Comment/ Rationale
	WB PPAH	Ex-Im Bank			
<ul style="list-style-type: none"> ▪ Class III: 1000 NPM/100mL ▪ Class IV: 1000 NPM/100mL ▪ Class V: 200 NPM/100mL ▪ Class VI: 4000 NPM/100mL 					
<p>BIOCHEMICAL OXYGEN DEMAND AND DISSOLVED OXYGEN LEVELS (Five days, 20°C):</p> <p>Dissolved Oxygen</p> <ul style="list-style-type: none"> ▪ Class I: 3 mg/L ▪ Class II: 3 mg/L ▪ Class III: 3 mg/L ▪ Class IV: 3 mg/L ▪ Class V: 5 mg/L ▪ Class VI: 4 mg/L <p>BOD</p> <ul style="list-style-type: none"> ▪ Class I: 5 mg/L ▪ Class II: 5 mg/L ▪ Class III: 15 mg/L ▪ Class IV: 10 mg/L ▪ Class V: 10 mg/L ▪ Class VI: 10 mg/L <p>Oils and Grease</p> <ul style="list-style-type: none"> ▪ Class I: 1.5 mg/L ▪ Class II: 1.5 mg/L ▪ Class III: 0.5 mg/L 	None specified	None specified			Note: EIA quotes DO for Class I as 5 mg/l EIA Section 3, Table 3.2

Table A-9: Environmental Quality Standards for Surface Waters (i.e. Ambient)					
<i>Freshwater</i>					
National	Representative International Standards & Guidelines		Project commitment (more stringent of National & World Bank)	Adopted Project Spec.	Comment/ Rationale
	WB PPAH	Ex-Im Bank			
<ul style="list-style-type: none"> ▪ Class IV: 0.2 mg/L ▪ Class V: 10 mg/L ▪ Class VI: 10 mg/L 					
<p>LEVELS OF POTENTIALLY HAZARDOUS SUBSTANCES (Not applicable to Class IV use)</p> <p>Selenium</p> <ul style="list-style-type: none"> ▪ Class I: 0.01 mg/L ▪ Class II: 0.01 mg/L ▪ Class III: 0.05 mg/L ▪ Class V: 0.005 mg/L ▪ Class VI: 0.01 mg/L <p>Mercury</p> <ul style="list-style-type: none"> ▪ Class I: 0.002 mg/L ▪ Class II: 0.002 mg/L ▪ Class III: 0.01 mg/L ▪ Class V: 0.0001 mg/L ▪ Class VI: 0.0002 mg/L <p>PCB</p> <ul style="list-style-type: none"> ▪ Class I: 0.001 mg/L ▪ Class II: 0.001 mg/L ▪ Class III ⁹: ▪ Class V: 0.002 mg/L 	None specified	None specified			Note: EIA quotes DO for Class I as 5 mg/l EIA Section 3, Table 3.2

⁹ Value to be determined; in case of suspecting presence of this substance, values assigned to Class V shall be applied provisionally.

¹⁰ 96 hours LC50 x 0.02 test

¹¹ 96 hours LC50 x 0.1 test

¹² As modified by Supreme Decree No. 003-2003-SA.

Table A-9: Environmental Quality Standards for Surface Waters (i.e. Ambient)					
<i>Freshwater</i>					
National	Representative International Standards & Guidelines		Project commitment (more stringent of National & World Bank)	Adopted Project Spec.	Comment/ Rationale
	WB PPAH	Ex-Im Bank			
<ul style="list-style-type: none"> ▪ Class VI: 0.002 mg/L <p>Estalate Esters</p> <ul style="list-style-type: none"> ▪ Class I: 0.0003 mg/L ▪ Class II: 0.0003 mg/L ▪ Class III: 0.0003 mg/L ▪ Class V: 0.0003 mg/L ▪ Class VI: 0.0003 mg/L <p>Cadmium</p> <ul style="list-style-type: none"> ▪ Class I: 0.01 mg/L ▪ Class II: 0.01 mg/L ▪ Class III: 0.05 mg/L ▪ Class V: 0.0002 mg/L ▪ Class VI: 0.004 mg/L <p>Chromium</p> <ul style="list-style-type: none"> ▪ Class I: 0.05 mg/L ▪ Class II: 0.05 mg/L ▪ Class III: 1.00 mg/L ▪ Class V: 0.05 mg/L ▪ Class VI: 0.05 mg/L <p>Nickel</p> <ul style="list-style-type: none"> ▪ Class I: 0.002 mg/L ▪ Class II: 0.002 mg/L ▪ Class III: 6 ▪ Class V: 0.002 mg/L ▪ Class VI ¹⁰: <p>Copper</p> <ul style="list-style-type: none"> ▪ Class I: 1.0 mg/L ▪ Class II: 1.0 mg/L ▪ Class III: 0.50 mg/L ▪ Class V: 0.01 mg/L ▪ Class VI ¹¹: <p>Lead</p>					

Table A-9: Environmental Quality Standards for Surface Waters (i.e. Ambient)					
<i>Freshwater</i>					
National	Representative International Standards & Guidelines		Project commitment (more stringent of National & World Bank)	Adopted Project Spec.	Comment/ Rationale
	WB PPAH	Ex-Im Bank			
<ul style="list-style-type: none"> ▪ Class I: 0.05 mg/L ▪ Class II: 0.05 mg/L ▪ Class III: 0.1 mg/L ▪ Class V: 0.01 mg/L ▪ Class VI: 0.03 mg/L <p>Zinc</p> <ul style="list-style-type: none"> ▪ Class I: 5.0 mg/L ▪ Class II: 5.0 mg/L ▪ Class III: 25.0 mg/L ▪ Class V: 0.02 mg/L ▪ Class VI: 7 <p>Cyanide (CN) ¹²</p> <ul style="list-style-type: none"> ▪ Class I: CN WAD 80 mg/l ▪ Class II: CNWAD 80 mg/L ▪ Class III: CNWAD 100 mg/L ▪ Class V: CN Free 22 mg/L ▪ Class VI: CN Free 22 mg/L <p>Phenols</p> <ul style="list-style-type: none"> ▪ Class I: 0.0005 mg/L ▪ Class II: 0.001 mg/L ▪ Class III: 6 ▪ Class V: 0.001 mg/L ▪ Class VI: 0.1 mg/L <p>Sulphides</p> <ul style="list-style-type: none"> ▪ Class I: 0.001 mg/L ▪ Class II: 0.002 mg/L ▪ Class III: 6 ▪ Class V: 0.002 mg/L 					

Table A-9: Environmental Quality Standards for Surface Waters (i.e. Ambient)					
<i>Freshwater</i>					
National	Representative International Standards & Guidelines		Project commitment (more stringent of National & World Bank)	Adopted Project Spec.	Comment/ Rationale
	WB PPAH	Ex-Im Bank			
<ul style="list-style-type: none"> ▪ Class VI: 0.002 mg/L Arsenic <ul style="list-style-type: none"> ▪ Class I: 0.1 mg/L ▪ Class II: 0.1 mg/L ▪ Class III: 0.2 mg/L ▪ Class V: 0.01 mg/L ▪ Class VI: 0.05 mg/L Nitrates (N) <ul style="list-style-type: none"> ▪ Class I: 0.01 mg/L ▪ Class II: 0.01 mg/L ▪ Class III: 0.1 mg/L ▪ Class V: Not applicable ▪ Class VI: Not applicable Pesticides: US EPA limits apply.					
LEVELS FOR POTENTIALLY HAZARDOUS PARAMETERS AND SUBSTANCES HEM ¹³ <ul style="list-style-type: none"> ▪ Class I: 1.5 mg/L ▪ Class II: 1.5 mg/L ▪ Class III: 0.5 mg/L ▪ Class IV: 0.2 mg/L ▪ Class V: ----- ▪ Class VI: ----- SAAM ¹⁴	None specified	None specified			

¹³ Hexane extractable material (principally grease).

¹⁴ Hexane extractable material (principally grease).

Table A-9: Environmental Quality Standards for Surface Waters (i.e. Ambient)					
<i>Freshwater</i>					
National	Representative International Standards & Guidelines		Project commitment (more stringent of National & World Bank)	Adopted Project Spec.	Comment/ Rationale
	WB PPAH	Ex-Im Bank			
<ul style="list-style-type: none"> ▪ Class I: 0.5 mg/L ▪ Class II: 0.5 mg/L ▪ Class III: 1.0 mg/L ▪ Class IV: 0.5 mg/L ▪ Class V: ----- ▪ Class VI: ----- <p>CAE¹⁵</p> <ul style="list-style-type: none"> ▪ Class I: 1.5 mg/L ▪ Class II: 1.5 mg/L ▪ Class III: 5.0 mg/L ▪ Class IV: 5.0 mg/L ▪ Class V: ----- ▪ Class VI: ----- <p>CCE¹⁶</p> <ul style="list-style-type: none"> ▪ Class I: 0.3 mg/L ▪ Class II: 0.3 mg/L ▪ Class III: 1.0 mg/L ▪ Class IV: 1.0 mg/L ▪ Class V: ----- ▪ Class VI: ----- 					

¹⁵ Carbon, alcohol extractable (according to “método de flujo lento”).

¹⁶ Carbon, chloroform extractable (according to “método de flujo lento”).

Table A-10: Environmental Quality Standards for Surface Waters (i.e. Ambient)
Marine

National	Representative International Standards & Guidelines		Project commitment (more stringent of National & World Bank)	Adopted Project Spec.	Comment/ Rationale
	WB PPAH	Ex-Im Bank			
Sulfates: 0.002 mg/L Total cyanide 0.005 mg/l Hg: 0.002 mg/l Se: 0.010 mg/l As: 0.050 mg/l Cd: 0.004 mg/l Cr: 0.050 mg/l Pb: 0.03 mg/l Phenols: 0.100 mg/l BOD: 10 mg/l DO: 4 mg/l Total Coliforms: 20,000 NMP/100 ml Faecal Coliforms: 4,000 NMP/100 ml	None specified	None specified	Sulfates: 0.002 mg/L Total cyanide: 0.005 mg/l Hg: 0.002 mg/l Se: 0.010 mg/l As: 0.050 mg/l Cd: 0.004 mg/l Cr: 0.050 mg/l Pb: 0.03 mg/l Phenols: 0.100 mg/l BOD: 10 mg/l DO: 4 mg/l Total Coliforms: 20,000 NMP/100 ml Faecal Coliforms: 4,000 NMP/100 ml	National	National standards not covered by Estudio Osterling SC review. As per Data sheet SM2.5 in the Amendment EIA and Compliance Monitoring CMP, Table 3.4 Note that the National review quotes Standards for Water Classes 1 to V1 (as specified for fresh water) as the applicable standard for marine waters

Table A-11: Environmental Quality Standards for Surface Waters (i.e. Ambient)
Drinking Water

National	Representative International Standards & Guidelines		Project commitment (more stringent of National & World Bank)	Adopted Project Spec.	Comment/ Rationale
	WB PPAH	Ex-Im Bank			
Total Coliforms: 8.8 NPW/100 ml Faecal Coliforms: 0 NPW/100 ml Refer also to "Resolucion Suprema de 17 Diciembre 1946, Reglamento de Agua Potable".	None specified	WHO Color: 15.0 Pt-Co Turbidity: 5 NTU TDS: 1000 mg/l Free residual: Cl 5 mg/l Hardness: 300 mg/l CaCo ₃ Iron: 0. 3 mg/l pH: <8 Chlorides: 250 mg/l Sulphates: 250 mg/l Total coliforms: 0 NPW/100 ml Faecal coliforms: 0 NPW/100 ml	Color: 15.0 Pt-Co Turbidity: 5 NTU TDS: 1000 mg/l Free residual: Cl 5 mg/l Hardness: 300 mg/l CaCo ₃ Iron: 0. 3 mg/l pH: <8 Chlorides: 250 mg/l Sulphates: 250 mg/l Total coliforms: 0 NPW/100 ml Faecal coliforms: 0 NPW/100 ml		The WHO Guidelines for Water Quality (2004) have been adopted as the project standard, notwithstanding the "Resolucion Suprema de 17 Diciembre 1946, Reglamento de Agua Potable". This reflects the advances in public health since the 1946 regulation was formulated and reflects the project commitment to comply with industry best practices (see above). For a full list of WHO standards for drinking water refer INT 6 (as amended) of the International Standards Review, prepared for PLNG by IDP July 2006)

Table A-12: Noise Emissions Control Standards <i>General Project Guidelines</i>					
National	Representative International Standards & Guidelines		Project commitment (more stringent of National & World Bank)	Adopted Project Spec.	Comment/ Rationale
	WB PPAH	Ex-Im Bank			
<p>Regulations of the National Environmental Quality Standards for Noise (DS No 085-2003-PCM)</p> <p>AMBIENT NOISE ENVIRONMENTAL QUALITY STANDARDS (Supreme Decree 085-2003-PCM)</p> <p>Special Protection Area Sound Level L_{AeqT}</p> <ul style="list-style-type: none"> ▪ Day time: 50 ▪ Night time: 40 <p>Residential Area Sound Level L_{AeqT}</p> <ul style="list-style-type: none"> ▪ Day time: 60 ▪ Night time: 50 <p>Commercial Area Sound Level L_{AeqT}</p> <ul style="list-style-type: none"> ▪ Day time: 70 ▪ Night time: 60 <p>Industrial Area Sound Level L_{AeqT}</p> <ul style="list-style-type: none"> ▪ Day time: 80 ▪ Night time: 70 	<p>Oil & Gas Development (Onshore), p 362</p> <p>Thermal Power: Guidelines for New Plants: p 419</p> <p>Noise abatement measures should achieve either the levels given below or a maximum increase in background levels of 3 decibels:</p> <p>Residential/institutional, educational:</p> <ul style="list-style-type: none"> ▪ 07.00-22.00 hrs: 55 dB(A) ▪ 22.00-07.00 hrs: 45 dB(A) <p>Commercial / industrial: 70 dB(A)</p>	<p>Table 5: Oil & Gas Development</p> <p>Table 10: LNG Plants</p> <p>Steady state noise levels from the project's operation measured outside the project property boundary, should not exceed the following:</p> <p>Residential , institutional, educational:</p> <ul style="list-style-type: none"> ▪ Day time: 55 dB(A) ▪ Night time: 45 dB(A) <p>Commercial / industrial:</p> <ul style="list-style-type: none"> ▪ Day time: 70 dB(A) ▪ Night time: 70 dB(A) 	<p>Residential , institutional, educational:</p> <ul style="list-style-type: none"> ▪ 07.00-22.00 hrs: 55 dBA ▪ 22.00-07.00 hrs: 45 dBA <p>Commercial</p> <ul style="list-style-type: none"> ▪ Day time: 70 dBA ▪ Night time: 60 dBA <p>Industrial: 70 dBA 24 hrs</p> <p>Special Protection Area Sound Level L_{AeqT}</p> <ul style="list-style-type: none"> ▪ Day time: 50 ▪ Night time: 40 	<p>Residential , institutional, educational:</p> <ul style="list-style-type: none"> ▪ 07.00-22.00 hrs: 55 dBA ▪ 22.00-07.00 hrs: 45 dBA <p>Commercial</p> <ul style="list-style-type: none"> ▪ Day time: 70 dBA ▪ Night time: 60 dBA <p>Industrial: 70 dBA 24 hrs</p> <p>Special Protection Area Sound Level L_{AeqT}</p> <ul style="list-style-type: none"> ▪ Day time: 50 ▪ Night time: 40 	<p>National review concludes that regulations for the National Environmental Quality Standards for Noise do not apply to the Quarry (p37).</p> <p>The National review states that PLNG must not exceed current maximum allowed limits (LMPs) but that since MEM has not approved the LMPs as defined under Supreme Decree 085-2003-PCM, PLNG may use other standards while giving consideration to those parameters defined in the National Regulations of Noise, and specifically the Environmental Quality Standards (not defined in the National Review); p78, but presented here.</p>

Table A-12: Noise Emissions Control Standards <i>General Project Guidelines</i>					
National	Representative International Standards & Guidelines		Project commitment (more stringent of National & World Bank)	Adopted Project Spec.	Comment/ Rationale
	WB PPAH	Ex-Im Bank			
<p>PERMISSIBLE LEVELS FOR NOISE AT HYDROCARBON PROCESSING PLANTS (Supreme Decree No. 051-93-EM)</p> <p>OSHA 1910.95 levels applicable within the Plant Facilities: 85db(A)</p>					
<p>PERMISSIBLE LEVELS FOR NOISE AT GAS PIPELINE STATIONS (Supreme Decree No. 041-99-EM, Annex 1)</p> <p>Noise emission must not exceed 60 decibels measured within station limits</p>					
<p>Permissible levels for mine (Mining Health & Safety Regs Supreme Decree 046-2001-EM) If noise levels or time of exposure exceed the following limits, the holder should provide workers with ear protection</p>	<p>The World Bank Industry Guidelines do not address occupational health issues as they relate to noise</p>		<p>Noise levels "A" Scale / Exposition Time :</p> <p>82 decibels/ 16hours/ d 85 decibels/ 8 hours/ d 88 decibels/ 4 hours/ d 91 decibels/ 1 hour/ d 94 decibels/ 1 hour/ d 97 decibels/ 1 hour/ d</p>		

Table A-12: Noise Emissions Control Standards <i>General Project Guidelines</i>					
National	Representative International Standards & Guidelines		Project commitment (more stringent of National & World Bank)	Adopted Project Spec.	Comment/ Rationale
	WB PPAH	Ex-Im Bank			
<p>Noise levels "A" Scale / Exposition Time :</p> <p>82 decibels/ 16hours/ d 85 decibels/ 8 hours/ d 88 decibels/ 4 hours/ d 91 decibels/ 1 hour/ d 94 decibels/ 1 hour/ d 97 decibels/ 1 hour/ d 100 decibels/ 1 hour/ d</p> <p>Employees should not be exposed to constant, intermittent or impact noise above an average of 140 dB.</p>			<p>100 decibels/ 1 hour/ d</p> <p>Employees should not be exposed to constant, intermittent or impact noise above an average of 140 dB.</p>		

TABLE A-13: REMEDIATION CRITERIA FOR SOILS			
Media	Parameter **	Residential soils PCL (mg/kg) *	Industrial soils PCL (mg/kg) *
Soil	TPH C6 – C12	1,600	3,900
	TPH C12 – C28 o C12 – C35	2,300	12,000

TPH – Total Petroleum Hydrocarbons

* Protective concentration limits (PCL) for surface soils and areas smaller than 0.5 hectares

** Based on Regulatory Guide TNRCC RG-366/TRRP-27 June 2000

TABLE A-14: REMEDIATION CRITERIA FOR GROUNDWATER			
Media	Parameter	PCL Drinking Water (mg/l)*	PCL Non-Drinking Water (mg/l) *
Groundwater	Benzene	0.005	0.5
	Toluene	1	100
	Ethylbenzene	0.7	70
	Xylene	10	1,000

* Protective concentration limits (PCL)

TABLE A-15: MAXIMUM ALLOWABLE LIMITS OF MOTOR VEHICLE CONTAMINANT EMISSIONS					
Type of Vehicle	CO Volume %	HC	CO+CO ₂ % minimum	Opacity	
				%	K(m ⁻¹)
Major vehicles propelled by gas, liquefied petroleum gas and natural gas Vehicles (light, medium and heavy)					
Up to 1995	3.0	400	10		
From 1996	2.5	300	10		
From 2003	0.5	100	12		
Major vehicles propelled by diesel (light, medium and heavy)					
Up to 1995				3.0	72
From 1996				2.5	65
From 2003				2.1	60
Minor vehicles with two-cycle engines using gas and oil mix as fuel (Greater than 50 cc)	2.5	800			
Minor vehicles with four-cycle engines using gas as fuel (Greater than 50 cc)	4.5	600			
Minor Vehicles with four-cycle engines using diesel as fuel (Greater than 50 cc)				2.1	60

Source PLANT ESIA, Datasheet SM 3.1

APPENDIX B – Summaries of International Financial Institutions (IFI) Requirements

NAME: IFC Performance Standard 1: Social and Environmental Assessment and Management Systems

ID: IFI 1

PURPOSE:

- To identify and assess social and environment impacts, both adverse and beneficial, in the project's area of influence
- To avoid, or where avoidance is not possible, minimize, mitigate, or compensate for adverse impacts on workers, affected communities , and the environment
- To ensure that affected communities are appropriately engaged on issues that could potentially affect them
- To promote improved social and environment performance of companies through the effective use of management systems

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

1. Establish and maintain a Social and Environmental Management System appropriate to the nature and scale of the project and commensurate with the level of social and environmental risks and impacts. The Management System will incorporate the following elements:

(i) Social and Environmental Assessment- consider in an integrated manner the potential social and environmental (including labor, health, and safety) risks and impacts of the project.

(ii) Management program - establish and manage a program of mitigation and performance improvement measures and actions that address the identified social and environmental risks and impacts

(iii) Organizational capacity - establish, maintain, and strengthen as necessary an organizational structure that defines roles, responsibilities, and authority to implement the management program, including an Action Plan

(iv) Training - train employees and contractors with direct responsibility for activities relevant to the project's social and environmental performance so that they have the knowledge and skills necessary to perform their work, including current knowledge of the host country's regulatory requirements and the applicable requirements of Performance Standards 1 through 8.

(v) Community engagement - an on-going process involving the client's disclosure of information, especially when local communities may be affected by risks or adverse impacts from a project

(vi) Monitoring- designed to monitor and measure the effectiveness of the management program

(vii) Reporting – involving internal and external reporting

NAME: IFC Performance Standard 2: Labor and Working Conditions

ID: IFI 2

PURPOSE:

- To establish, maintain and improve the worker-management relationship
- To promote the fair treatment, non-discrimination and equal opportunity of workers, and compliance with national labor and employment laws
- To protect the workforce by addressing child labor and forced labor
- To promote safe and healthy working conditions, and to protect and promote the health of workers

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

1. The requirements set out in this Performance Standard have been in part guided by a number of international conventions negotiated through the International Labour Organization (ILO) and the United Nations (UN). The conventions are listed below and summarised in terms of their relevance to the project:

- ILO Convention 98 on the Right to Organize and Collective Bargaining
- ILO Convention 29 on Forced Labor
- ILO Convention 105 on the Abolition of Forced Labor
- ILO Convention 138 on Minimum Age (of Employment)
- ILO Convention 182 on the Worst Forms of Child Labor
- ILO Convention 100 on Equal Remuneration
- ILO Convention 111 on Discrimination (Employment and Occupation)
- United Nations Convention on the Rights of the Child, Article 32.1

2. Adopt a human resources policy appropriate to its size and workforce that sets out its approach to managing employees consistent with the requirements of this Performance Standard. The policy will provide employees with information regarding their rights under national labor and employment law, including:

- Their rights related to wages and benefits
- Working conditions and terms of employment
- A grievance mechanism

3. Provide workers with a safe and healthy work environment, taking into account inherent project risks and specific hazards including physical, chemical, biological, and radiological hazards.

4. Take steps to prevent accidents, injury, and disease arising from, associated with, or occurring in the course of work by minimizing, so far as reasonably practicable, the causes of hazards, including the identification of:

- potential hazards to workers, particularly those that may be life-threatening
- provision of preventive and protective measures, including modification, substitution, or elimination of hazardous conditions or substances
- training of workers
- documentation and reporting of occupational accidents, diseases, and incidents
- emergency prevention, preparedness and response arrangements.

5. Employment of children in a manner that is economically exploitative, or is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development, is prohibited

6. Employment of forced labor, which consists of any work or service not voluntarily performed that is exacted from an individual under threat of force or penalty, is prohibited. This covers any kind of involuntary or compulsory labor, such as indentured labor, bonded labor or similar labor-contracting arrangements.

7. Ascertain that non-employee workers (i.e., workers who are (i) directly contracted, or contracted through contractors or other intermediaries; or (ii) perform work directly related to core functions essential to products or services for a substantial duration) are reputable and legitimate enterprises, and apply the requirements of this Performance Standard.

NAME: Performance Standard 3: Pollution Prevention and Abatement

ID: IFI 3

PURPOSE:

- To avoid or minimize adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities
- To promote the reduction of emissions that contribute to climate change

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

1. During the design, construction, operation and decommissioning of the project (the project lifecycle), consider ambient conditions and apply pollution prevention and control technologies and practices (techniques) that are best suited to avoid or, where avoidance is not feasible, minimize or reduce adverse impacts on human health and the environment while remaining technically and financially feasible and cost-effective.

2. Avoid the release of pollutants or, when avoidance is not feasible, minimize or control the intensity or load of their release. This applies to the release of pollutants due to routine, non-routine or accidental circumstances with the potential for local, regional, and Transboundary impacts. In addition, examine and incorporate in its operations resource conservation and energy efficiency measures, consistent with the principles of cleaner production.

3. Avoid or minimize the generation of hazardous and non-hazardous waste materials as far as practicable. Where waste generation cannot be avoided but has been minimized, recover and reuse waste; where waste can not be recovered or reused, treat, destroy, and dispose of it in an environmentally sound manner.

4. If the generated waste is considered hazardous, explore commercially reasonable alternatives for its environmentally sound disposal considering the limitations applicable to its transboundary movement. When waste disposal is conducted by third parties, use contractors that are reputable and legitimate enterprises, and that are licensed by the relevant regulatory agencies.

5. Be prepared to respond to process upset, accidental, and emergency situations in a manner appropriate to the operational risks and the need to prevent their potential negative consequences. This preparation is to include a plan that addresses the training, resources, responsibilities, communication, procedures, and other aspects required to effectively respond to emergencies associated with project hazards.

6. Adverse project impacts on existing ambient conditions require consideration of a number of factors, including the finite assimilative capacity of the environment, existing and future land use, existing ambient conditions, the project's proximity to ecologically sensitive or protected areas, and the potential for cumulative impacts with uncertain and irreversible consequences.

7. Promote the reduction of project-related greenhouse gas (GHG) emissions in a manner appropriate to the nature and scale of project operations and impacts. (The threshold for this Performance Standard is 100,000 tons CO₂ equivalent per year for the aggregate emissions of direct sources and indirect sources associated with purchased electricity for own consumption). During the development or operation of projects that are expected to or currently produce significant quantities of GHGs, direct emissions from the facilities owned or controlled within the physical project boundary and indirect emissions associated with the off-site production of power used by the project shall be quantified

8. Quantification and monitoring of GHG emissions is to be conducted annually in accordance with internationally recognized methodologies, and technically and financially feasible and cost-effective options require evaluation to reduce or offset project-related GHG emissions during the design and operation of the project.

9. An integrated pest management (IPM) and/or integrated vector management (IVM) approach is required for pest management activities.

NAME: IFC Performance Standard 4: Community Health, Safety and Security

ID: IFI 4

PURPOSE:

- To avoid or minimize risks to and impacts on the health and safety of the local community during the project life cycle from both routine and non-routine circumstances
- To ensure that the safeguarding of personnel and property is carried out in a legitimate manner that avoids or minimizes risks to the community's safety and security

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

1. Evaluate the risks and impacts to the health and safety of the affected community during the design, construction, operation, and decommissioning of the project and establish preventive measures to address them in a manner commensurate with the identified risks and impacts. These measures will favor the prevention or avoidance of risks and impacts over minimization and reduction.

2. At a minimum prepare and disclose an Action Plan where there is a risk to, or adverse impact on, the health and safety of affected communities

3. Adopt good international industry practice (defined as the exercise of that degree of skill, diligence, prudence and foresight that would reasonably and ordinarily be expected from skilled and experienced professionals engaged in the same type of undertaking under the same or similar circumstances globally) in the design, construction, operation and decommissioning of the structural elements or components of the project in accordance with, giving particular consideration to potential exposure to natural hazards, especially where the structural elements are accessible to members of the affected community or where their failure could result in injury to the community.

4. Prevent or minimize the potential for community exposure to hazardous materials that may be released by the project. Where there is a potential for the community (including workers and their families) to be exposed to hazards, particularly those that may be life-threatening, exercise special care to avoid or minimize their exposure by modifying, substituting or eliminating the condition or substance causing the hazards.

5. Avoid or minimize the exacerbation of impacts caused by natural hazards, such as landslides or floods that could arise from land use changes due to project activities. Also, avoid or minimize adverse impacts due to project activities on soil, water, and other natural resources in use by the affected communities

6. Prevent or minimize the potential for community exposure to water-borne, water-based, water-related, vector-borne disease, and other communicable diseases that could result from project activities.

7. Prevent or minimize transmission of communicable diseases that may be associated with the influx of temporary or permanent project labor.

8. Assist and collaborate with the community and the local government agencies in their preparations to respond effectively to emergency situations, especially when their participation and collaboration are necessary to respond to such emergency situations. If local government agencies have little or no capacity to respond effectively, play an active role in preparing for and responding to emergencies associated with the project.

9. If employees or contractors are retained directly to provide security to safeguard personnel and property, assess risks to those within and outside the project site posed by these security arrangements. In making such arrangements, adhere to the principles of proportionality, good international practices in terms of hiring, rules of conduct, training, equipping and monitoring of such personnel, and applicable law.

10. Where government security personnel are to be deployed to provide security services, assess the risks arising from such use, communicate the expectation that these personnel will act in a manner consistent with paragraph 9 above, and encourage the relevant public authorities to disclose the security arrangements for the client's facilities to the public, subject to overriding security concerns.

NAME: IFC Performance Standard 5: Land Acquisition and Involuntary Resettlement

ID: IFI 5

PURPOSE:

- To avoid or at least minimize involuntary resettlement wherever feasible by exploring alternative project designs
- To mitigate adverse social and economic impacts from land acquisition or restrictions on affected persons' use of land by: (i) providing compensation for loss of assets at replacement cost; and (ii) ensuring that resettlement activities are implemented with appropriate disclosure of information, consultation, and the informed participation of those affected
- To improve or at least restore the livelihoods and standards of living of displaced persons
- To improve living conditions among displaced persons through provision of adequate housing with security of tenure at resettlement sites

KEY DUTIES / COMPLIANCE GUIDE/ REQUIREMENTS

1. Consider feasible alternative project designs to avoid or at least minimize physical or economic displacement, while balancing environmental, social, and financial costs and benefits
2. When displacement cannot be avoided, offer displaced persons and communities compensation for loss of assets at full replacement cost and other assistance to help them improve or at least restore their standards of living or livelihoods
3. Where livelihoods of displaced persons are land-based, or where land is collectively owned, offer land-based compensation, where feasible and provide opportunities to displaced persons and communities to derive appropriate development benefits from the project.
4. Following disclosure of all relevant information, consult with and facilitate the informed participation of affected persons and communities, including host communities, in decision making processes related to resettlement. Continue consultation during the implementation, monitoring, and evaluation of compensation payment and resettlement to achieve required outcomes
5. Establish a grievance mechanism consistent to receive and address specific concerns about compensation and relocation that are raised by displaced persons or members of host communities including a recourse mechanism designed to resolve disputes in an impartial manner.
6. Where involuntary resettlement is unavoidable, carry out a census with appropriate socio-economic baseline data to identify the persons who will be displaced by the project, to determine who will be eligible for compensation and assistance, and to discourage inflow of people who are ineligible for these benefits.
7. Where land and associated rights are acquired through the exercise of eminent domain) or through negotiated settlements that involve the physical displacement of people, develop a resettlement action plan or a resettlement framework, regardless of the number of people affected.

8. The plan or framework will be designed to mitigate the negative impacts of displacement, identify development opportunities, and establish the entitlements of all categories of affected persons (including host communities), with particular attention paid to the needs of the poor and the vulnerable.
9. Document all transactions to acquire land rights, as well as compensation measures and relocation activities.
10. Establish procedures to monitor and evaluate the implementation of resettlement plans and take corrective action as necessary.
11. Where transactions involve negotiated settlements and economic (but not physical) displacement of people, develop procedures to offer to the affected persons and communities compensation and other assistance as appropriate.
12. Where land acquisition and resettlement are the responsibility of the host government, collaborate with the responsible government agency, to the extent permitted by the agency, to achieve outcomes that are consistent with the objectives of the Performance Standard.

NAME: IFC Performance Standard 6: Biodiversity Conservation and Sustainable Natural Resource Management

ID: IFI 6

PURPOSE:

- To protect and conserve biodiversity
- To promote the sustainable management and use of natural resources through the adoption of practices that integrate conservation needs and development priorities

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

1. Assess the significance of project impacts on all levels of biodiversity as an integral part of the Social and Environmental Assessment process, focusing on the major threats to biodiversity, which include habitat destruction and invasive alien species, while also taking into account the differing values attached to biodiversity by specific stakeholders, as well as identify impacts on ecosystem services.
2. Do not significantly¹⁷ convert or degrade natural habitat unless the following conditions are met:
 - There are no technically and financially feasible alternatives
 - The overall benefits of the project outweigh the costs, including those to the environment and biodiversity
 - Any conversion or degradation is appropriately mitigated
3. Design mitigation measures to achieve no net loss of biodiversity where feasible, and consider a combination of actions, such as :
 - Post-operation restoration of habitats
 - Offset of losses through the creation of ecologically comparable area(s) that is managed for biodiversity
 - Compensation to direct users of biodiversity
4. In areas of critical habitat¹⁸, do not implement any project activities unless the following requirements are met:
 - There are no measurable adverse impacts on the ability of the critical habitat to support the established population of species or the functions of the critical habitat
 - There is no reduction in the population of any recognized critically endangered or endangered species
 - Any lesser impacts are mitigated
5. In instances where legally protected areas are involved, the following additional actions are required:
 - Act in a manner consistent with defined protected area management plans
 - Consult protected area sponsors and managers, local communities, and other key

¹⁷ Significant conversion or degradation is: (i) the elimination or severe diminution of the integrity of a habitat caused by a major, long-term change in land or water use; or (ii) modification of a habitat that substantially reduces the habitat's ability to maintain viable population of its native species.

¹⁸ Critical habitat includes areas with high biodiversity value, including habitat required for the survival of critically endangered or endangered species; areas having special significance for endemic or restricted-range species; sites that are critical for the survival of migratory species; areas supporting globally significant concentrations or numbers of individuals of congregatory species; areas with unique assemblages of species or which are associated with key evolutionary processes or provide key ecosystem services; and areas having biodiversity of significant social, economic or cultural importance to local communities.

- stakeholders on the proposed project
- Implement additional programs, as appropriate, to promote and enhance the conservation aims of the protected area
6. Do not intentionally introduce any new alien species (not currently established in the country or region of the project) unless this is carried out in accordance with the existing regulatory framework for such introduction, if such framework is present, or is subject to a risk assessment.
7. Do not deliberately introduce any alien species with a high risk of invasive behavior or any known invasive species, and exercise diligence to prevent accidental or unintended introductions.

NAME: IFC Performance Standard 7: Indigenous Peoples

ID: IFI 7

PURPOSE:

- To ensure that the development process fosters full respect for the dignity, human rights, aspirations, cultures and natural resource-based livelihoods of Indigenous Peoples
- To avoid adverse impacts of projects on communities of Indigenous Peoples, or when avoidance is not feasible, to minimize, mitigate, or compensate for such impacts, and to provide opportunities for development benefits, in a culturally appropriate manner
- To establish and maintain an ongoing relationship with the Indigenous Peoples affected by a project throughout the life of the project
- To foster good faith negotiation with and informed participation of Indigenous Peoples when projects are to be located on traditional or customary lands under use by the Indigenous Peoples
- To respect and preserve the culture, knowledge and practices of Indigenous Peoples

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

1. Identify all communities of Indigenous Peoples who may be affected by the project within the project's area of influence, as well as the nature and degree of the expected social, cultural (including cultural heritage), and environmental impacts on them, and avoid adverse impacts whenever feasible.
2. When avoidance is not feasible, minimize, mitigate or compensate for these impacts in a culturally appropriate manner, involving the informed participation of affected Indigenous Peoples and as described in a plan.
3. Establish an ongoing relationship with the affected communities of Indigenous Peoples from as early as possible in the project planning and throughout the life of the project. In projects with adverse impacts on affected communities of Indigenous Peoples, the consultation process will ensure their free, prior, and informed consultation and facilitate their informed participation on matters that affect them directly, such as proposed mitigation measures, the sharing of development benefits and opportunities, and implementation issues
4. The process of community engagement is to be culturally appropriate and commensurate with the risks and potential impacts to the Indigenous Peoples. In particular, the process is to include the following steps:
 - Involve Indigenous Peoples' representative bodies (for example, councils of elders or village councils, among others)
 - Be inclusive of both women and men and of various age groups in a culturally appropriate manner

- Provide sufficient time for Indigenous Peoples' collective decision-making processes
 - Facilitate the Indigenous Peoples' expression of their views, concerns, and proposals in the language of their choice, without external manipulation, interference, or coercion, and without intimidation
 - Ensure that a grievance mechanism is established for the project, and is culturally appropriate and accessible for Indigenous Peoples
5. Seek to identify opportunities for culturally appropriate development benefits. Such opportunities should be commensurate with the degree of project impacts, with the aim of improving their standard of living and livelihoods in a culturally appropriate manner, and to fostering the long-term sustainability of the natural resource on which they depend.

NAME: IFC Performance Standard 8: Cultural Heritage

ID: IFI 8

PURPOSE:

- To protect cultural heritage from the adverse impacts of project activities and support its preservation
- To promote the equitable sharing of benefits from the use of cultural heritage in business activities

KEY DUTIES / COMPLIANCE GUIDE /REQUIREMENTS

1. Protect and support cultural heritage by undertaking internationally recognized practices for the protection, field-based study, and documentation of cultural heritage.

2. Site and design projects to avoid significant damage to cultural heritage. If the proposed location of a project is in an area where cultural heritage is expected to be found, either during construction or operations, will implement chance find procedures

3. Do not disturb any chance finds further until an Assessment by a competent specialist is made and actions consistent with the requirements of this Performance Standard are identified.

4. Where the project has the potential to affect cultural heritage, consult with affected communities within the host country who use, or have used within living memory, the cultural heritage for long-standing cultural purposes to identify cultural heritage of importance, and to incorporate into the decision-making process the views of the affected communities on such cultural heritage.

5. Cultural heritage will be left *in situ* unless the following conditions are met:

- There are no technically or financially feasible alternatives to removal
- The overall benefits of the project outweigh the anticipated cultural heritage loss from removal
- Any removal of cultural heritage is conducted by the best available technique

6. Except in exceptional circumstances, do not significantly alter, damage, or remove any critical cultural heritage (defined as (i) the internationally recognized heritage of communities who use, or have used within living memory the cultural heritage for long-standing cultural purposes; and (ii) legally protected cultural heritage areas).

7. Where a project may significantly damage critical cultural heritage, and its damage or loss may endanger the cultural or economic survival of communities within the host country who use the cultural heritage for long-standing cultural purposes, it is necessary to consult with the affected communities (see above), and conduct a good faith negotiation with, and document the informed participation of the affected communities, and the successful outcome of the negotiation.

8. If any components of the projects are located within a legally protected area or a legally defined buffer zone, it will also be necessary to meet the following requirements:

- Comply with defined national or local cultural heritage regulations or the protected area management plans
- Consult the protected area sponsors and managers, local communities and other key stakeholders on the proposed project

- Implement additional programs, as appropriate, to promote and enhance the conservation aims of the protected area

NAME: IFC EH&S Guidelines for Waste Management Facilities, 1998

ID: IFI 9

PURPOSE: To provide guidelines for the design, construction and operation of facilities for the management of hazardous and non-hazardous wastes.

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

1. Select waste management sites through a systematic, documented process that includes consideration of alternatives and their environmental impacts
2. Develop an erosion and sediment control plan to minimise erosion in construction areas and along access areas, reduce the risk of sediment discharge to nearby streams, and provide for long term maintenance and operation practices that will control erosion and sedimentation.
3. Conduct a survey to assess the waste management requirements of the project's service area and develop a compatible program for the collection, handling and transportation of wastes.
4. Ensure that project facilities have separate receiving and handling areas for hazardous and non-hazardous wastes
5. Analyse wastes prior to disposal for compatibility with treatment and disposal methods
6. Adequate and environmentally sound and contained storage areas must be available for materials that cannot be treated or disposed of immediately upon arrival at a facility
7. Implement appropriate monitoring programs to detect groundwater contamination or gas migration as a result of project operations
8. Develop an Employee Health and Safety Program
9. Personnel involved in the construction and operation of the project must be trained on the hazards, safety procedures and emergency response plans associated with their tasks, as well as environmental, health and safety matters.
10. Maintain records of significant environmental matters, including monitoring data, spills, occupational accidents and illnesses, fires and other emergencies, public complaints and accidents involving the general public.

NAME: World Bank Pollution Prevention and Abatement Handbook (1998); Industry Sector Guideline - Oil and Gas Development (Onshore)

ID: IFI 10

PURPOSE:

To provide guidance for the onshore oil and gas sector in relation to:

- the protection of human health
- reduction of mass loadings to the environment
- current regulatory trends, as well as setting out numerical targets for reducing pollution as part of the production process, as well as maximum emission levels that are normally achievable through a combination of cleaner production and end-of-pipe treatment

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

1. Crude processing wastewater (e.g., applicable with respect to the generation of sludges containing heavy metals arising from pigging operations):
 - a. Oil and grease: 7-1,300 mg/l (average 200)
 - b. Total Organic Carbon: 30-1,600 mg/l (average 400)
 - c. Total Suspended Solids: 20-400 mg/l (average 70)
 - d. Total Dissolved Solids: 30,000- 200,000 mg/l (average 100,000)
 - e. BOD₅: 120-340 mg/l
 - f. COD: 180-580 mg/l
 - g. Phenols: 50 mg/l
 - h. Cadmium: 0.7 mg/l
 - i. Chromium: 2.3 mg/l
 - j. Copper: 0.4 mg/l
 - k. Lead: 0.2 mg/l
 - l. Mercury: 0.1 mg/l
 - m. Nickel: 0.4 mg/l
2. Maximum air emission limits set for general application (e.g., emissions to air from pump stations)
 - a. Particulates (<10 microns aerodynamic diameter) 50 mg/Nm³
 - b. VOCs (including benzene) - 20 mg Nm⁻³
 - c. SO₂: 1000 mg/Nm³ Maximum level of SO₂ in the flue gases
 - d. hydrogen sulphide - 30 mg Nm⁻³
 - e. nitrogen oxides - 320 mg Nm⁻³ (gas-fired) and 460 mg Nm⁻³ (oil-fired)
 - f. odour - not offensive at the receptor end.
3. Maximum allowable daytime and night-time noise levels are set as follows (dB(A) L_{eq} hourly); e.g., above ground installation siting, design and operation
 - a. residential/institutional - 55 (07.00 - 22.00 hrs), 45 (22.00 - 07.00 hrs)
 - b. industrial/commercial - 70 all day
4. Discharges to water must comply with relevant effluent limits and not result in breach of any agreed water quality standards. Release limits for direct discharges to surface waters are set for parameters as follows
 - a. pH - 6 – 9

- b. COD - 250 mg l⁻¹
 - c. BOD₅ - 50 mg l⁻¹
 - d. totals suspended solids - 50 mg l⁻¹
 - e. oil and grease - 20 mg l⁻¹ (production >10,000tpd); 40 mg l⁻¹ (production <10,000tpd)
 - f. phenol - 1 mg l⁻¹
 - g. sulphide - 1 mg l⁻¹
 - h. total toxic metals (An, As, Be, Cd, Cu, Pb, Mg, Ni, Se, Si, Th, V, Zn) 5 mg l⁻¹
 - i. temperature increase - less than 3°C ambient temperature of receiving waters¹⁹
 - j. Maximum residual chlorine level before discharge: 0.5 mg l⁻¹; 0.2 mg l⁻¹ in areas of sensitive ecology
 - k. Coliforms, Total: <400 MPN/100 ml (MPN - Most Probable Number)
5. Ambient Air Quality²⁰
- a. Particulates (<10 microns): 150 mg Nm⁻³ (maximum 24 hr average); 50 mg Nm⁻³ (annual mean)
 - b. NO_x : 150 mg Nm⁻³ (maximum 24 hr average)
 - c. SO₂: 50 mg Nm⁻³ (annual mean)
6. Monitoring and Reporting:
- a. Air emission should be assessed on an annual basis
 - b. Liquid effluents from production operations should be analysed for the above-listed parameters on a daily basis except for metals which can be monitored on a monthly basis
 - c. Monitoring data should be analysed and reviewed on a regular basis and compared with operating standards so that any corrective action can be taken
 - d. Monitoring results should be kept in an acceptable format and made available to the responsible authorities as required.

¹⁹ A mixing zone is a limited area or volume of water where initial dilution of a discharge takes place and beyond which applicable water quality criteria should not be exceeded. In the case of a thermal plume, a mixing zone is generally defined as occupying no more than 25% of the cross section of a waterway channel (river, stream, etc.) so as to allow passage of aquatic life and permit other uses of the water. In an open body of water, the mixing zone will be defined on a case-by-case basis taking into account factors such as the existing ecology, particularly the presence of coral reefs. Where the zone is not defined, 100m from the discharge point is used.

²⁰ For projects containing emission sources that exceed 200 million BTU/hour (>58 MWe), refer to the less stringent those limits for Thermal Power Plants, ref. IFI 18

NAME: IFC Hazardous Materials Management Guidelines (2001)

ID: IFI 11

PURPOSE: To provide guidelines for the management of facilities and activities involving the transportation, production, handling, storage and disposal of hazardous materials (Hazmats).

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

IFC-funded projects involving Hazmats must fulfil the following three requirements:

1. Screen the type and quantity of Hazmats involved to determine the characteristics and thresholds of each hazmat. The results of this screening will determine the level of detail for Requirement #2.
2. Prepare a *Hazardous Materials Management Program* to manage the risks associated with the all Hazmat facilities and activities through:
 - a. Management Actions: training, worker health and safety, record keeping, and reporting
 - b. Preventive Plans: for transportation, processes and operations, and hazardous wastes.
 - c. Emergency Preparedness and Response Plans: response activities, medical assistance, communications and incident reporting
3. Undertake *Community Involvement and Awareness* activities (which can be incorporated in the *Hazardous Materials Management Program*) to inform the potentially affected community and provide for public feedback.

NAME: IDB Environment & Safeguards Policy

ID: IFI 12

PURPOSE:

- To enhance long-term development benefits to its members countries by integrating environmental sustainability outcomes in all Bank operations and activities and strengthening environmental management capacities in its borrowing member countries;
- To ensure that all Bank operations and activities are environmentally sustainable as defined in this Policy
- To foster corporate environmental responsibility within the Bank.

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

1. Ensure that project is designed and carried out in compliance with environmental laws and regulations of the country where the operation is being implemented, including national obligations established under ratified Multilateral Environmental Agreements.
2. Assess project in terms of the governance capacity of executing agencies/borrower and of third parties, sector-related risks, risks associated with highly sensitive environmental and social concerns, and vulnerability to disasters.
3. Complete an Environmental Impact Assessment including as a minimum: screening and scoping for impacts; timely and adequate consultation and information dissemination process; examination of alternatives including a no project scenario. The EIA should be **supported by economic analysis of project alternatives and, as applicable, by economic cost-benefit assessments of the project's environmental impacts and/or the associated protection measures.**
4. Due consideration to be given to analyzing compliance with relevant legal requirements; direct, indirect, regional or cumulative impacts, using adequate baseline data as necessary; impact mitigation and management plans presented in an ESMP; the incorporation of Environmental Assessment (EA) findings into project design; measures for adequate follow-up of the ESMP's implementation.
5. An EIA report must be prepared with its ESMP and disclosed to the public.
6. The ESMP must include: a presentation of the key direct and indirect impacts and risks of the proposed operation; the design of the proposed social/environmental measures to avoid, minimize, compensate and/or mitigate the key direct and indirect impacts and risks; the institutional responsibilities to implement these measures, including, where necessary, institutional development, capacity building and training; the schedule and budget allocated for the implementation and management of such measures; the consultation or participation program agreed for the operation; and the framework for the monitoring of social and environmental impacts and risks throughout the execution of the operation, including clearly defined indicators, monitoring schedules, responsibilities and costs.
7. Any operation that is likely to cause significant negative environmental and associated social impacts, or have profound implications affecting natural resources, (Category "A" operations) will require consultations with affected parties and consideration of their views. Consultations with other interested parties may also be undertaken in order to consider a broader range of expertise and perspectives. Category "A" operations will be consulted at least twice during project preparation, during the scoping phase of the environmental assessment or due diligence processes, and during the review of the assessment reports.
8. Safeguard requirements, such as those in an ESMP must be incorporated into the project contract documents, its operating or credit regulations, or the project bidding documents, as appropriate, setting out as necessary milestones, timeframes and

corresponding budgetary allocations to implement and monitor the plan during the course of the project. Safeguard indicators, as appropriate, should be clearly defined in the logical/results framework, followed-up in project monitoring reports and reviewed in mid-term reviews and project completion reports.

9. The EA process for operations with potentially significant transboundary environmental and associated social impacts, such as operations affecting another country's use of waterways, watersheds, coastal marine resources, biological corridors, regional air sheds and aquifers, will address the following issues: (i) notification to the affected country or countries of the critical transboundary impacts; (ii) implementation of an appropriate framework for consultation of affected parties; and (iii) appropriate environmental mitigation and/or monitoring measures.
10. Whenever feasible, operations and activities will be sited on lands already converted and avoid the significant conversion or degradation of natural habitats unless: (i) there are no feasible alternatives acceptable to the Bank; (ii) comprehensive analysis demonstrates that overall benefits from the operation substantially outweigh the environmental costs and; (iii) mitigation and compensation measures, including, as appropriate, minimizing habitat loss and establishing and maintaining an ecologically similar protected area that is adequately funded, implemented and monitored.
11. Avoid adverse impacts to the environment and human health and safety occurring from the production, procurement, use, and disposal of hazardous material, including organic and inorganic toxic substances, pesticides and Persistent Organic Pollutants.
12. Include as appropriate, measures to prevent, reduce or eliminate pollution emanating from their activities by follow source-specific emission and discharge standards recognized by multilateral development banks. Taking into account local conditions and national legislation and regulations, the EA report or environmental and social management report will justify the standards selected for the particular operation.
13. Reduce and control greenhouse gas (GHG) emissions in a manner appropriate to the nature and scale of operations. Operations that produce significant quantities of greenhouse gases will annually quantify direct GHG emissions.

NAME: IFC Good Practice Manual on Doing Better Business Through Effective Public Consultation and Disclosure

ID: IFI 13

PURPOSE:

- To provide step-by-step practical guidance on how to prepare a constructive public consultation programme and effectively disclose information.

KEY DUTIES/ COMPLIANCE GUIDE / REQUIREMENTS

1. Information about the project should be disclosed as early as possible
2. Disclosure of project environmental and social information should be an integral part of the public consultation process, with information being provided about both benefits and disadvantages of the project
3. Information should be clearly presented in appropriate local languages and dialects and in modes that are sensitive to local communities
4. Information should be disclosed in locations that are open to the public and that are readily accessible to project affected people

NAME: World Bank Mine Closure Plan

ID: IFI 14

PURPOSE:

The main objectives of a closure plan are to:

- Return the land to conditions capable of supporting prior land use or uses that are equal to or better than prior land use, to the extent practical and feasible
- Eliminate significant adverse effects on adjacent water resources.

KEY DUTIES/ COMPLIANCE GUIDE / REQUIREMENTS

1. The closure plan must include the reclamation of the slurry deposits, any open pit, sedimentation pools and camps, milling yards or other associated facilities (not all relevant to quarry operations)
2. Mine reclamation plans shall incorporate the following components:
 - a. Conserve, stockpile and use topsoil for reclamation purposes.
 - b. Slopes of more than 30% should be contoured to minimize erosion and runoff.
 - c. Native vegetation should be planted to prevent erosion and encourage self-sustaining development of a productive ecosystem on the reclaimed land.
 - d. Budget and schedule for pre-and post-abandonment reclamation activities.
 - e. Plan views that show areas cleared, mined, refilled and re-vegetated during each of the next 5 years and estimated activities at subsequent 5 year intervals.

NAME: IFC Environmental, Health and Safety Guidelines - Oil and Gas Development (Offshore), December 2000

ID: IFI 15

PURPOSE: To provide a standard in project design, conception and project operations for offshore activities including **tanker loading**.

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

1. Prepare an Environmental, Health and Safety Management System
2. Develop formal procedures, programs, plans, strategies, budgets and pollution reduction targets to identify potential hazards, assess risks and to eliminate or minimize the potential impacts on the environment and to humans.
3. Develop an Action Plan containing details on:
 - a. The mitigation, management, monitoring, and institutional measures to be taken during implementation and operation to eliminate adverse environmental, health, safety and social impacts, offset them, or reduce them to acceptable levels.
 - b. Risks or legal/monitoring requirements, what action is needed to manage the requirement or risk, who is responsible for the action, the frequency of the action, and the budget.
4. Management of operations must establish and maintain emergency preparedness so that incidents can be mitigated effectively and without delay. Appropriate emergency preparedness is considered to include the following:
 - a. Risk analyses to identify reasonable and worst case potential accidents followed by design of preparedness requirements
 - b. Identify gaps in information, such as mapping, currents, and weather, and obtain recent data sets from appropriate sources to increase usefulness of preparedness and response tools and the amount of dilution
 - c. Use of industry standard modeling systems
 - d. Inclusion of emergency preparedness in the design of operations and in the environmental health and safety programs
 - e. Plans for the immediate securing of sources of oil pollution and effective containment and collection of spilled/leaked oil
 - f. Protection of emergency response personnel and affected populations
 - g. Effective communications systems and notification
 - h. Training of response personnel
 - i. Assessing the capability of the public sector in assisting in an emergency and coordinating with other agencies and organizations that may be involved in responding to an emergency
 - j. Exercise preparedness elements at a frequency commensurate with the project risk
5. Anticipated abnormal conditions and emergencies associated with the operations must be addressed in an Emergency Response Plan. Examples include: injuries and loss of life, fires and explosions, collision, flooding and loss of ballast, release of flammables and toxic gases, and loss of support craft. An effective Emergency Response Plan should contain at least the following:
 - a. Identifying priorities in response with input from potentially affected or concerned parties, and developing procedures to address priorities
 - b. A description of the response organization (structure; roles; responsibilities; decision makers)
 - c. Strategies for managing small spills from the installation, shore base or loading operations and for cleanup and containment of onshore areas

- d. Policies defining measures for limiting or stopping events in question and conditions for termination of action
 - e. Easy-to-follow procedures for responding (details of response equipment and location, procedures, training requirements, duties, etc.)
 - f. Descriptions and procedures for alarm and communications systems
 - g. Precautionary measures for securing the well
 - h. Evacuation procedures
 - i. A list, description and use of on-site and off-site response equipment
 - j. A description of how recovered oil and oil contaminated materials will be transported, stored, and disposed.
 - k. List of: on-site first aid supplies and available backup medical support, MEDEVAC facilities, and other emergency facilities such as emergency fueling sites. List to include survival equipment and gear, alternate accommodation
6. An oil spill response plan is required to addresses potential spill volume, loss of a tanker or barge, and damage to a pipeline as appropriate. The plan is to be developed with the involvement of response parties and those communities/people who may be impacted by an incident and include information on the following:
- a. A description of the operations, site conditions, water depth, weather patterns, and logistical support
 - b. Identification of those responsible for managing oil spill response efforts, their qualifications and training, and authority
 - c. Oil spill trajectory with oil fate and environmental impact prediction: model to be used and ability to input wind and current data, maps identifying sensitive ecological areas seasonal/monthly)
 - d. Clear demarcation of Tier I, Tier II, and Tier III
 - e. The project sponsor should define where it sets Tier I, II, and III levels and demonstrate that there are no gaps between tiers
 - f. Response time for deploying equipment
 - g. Identifying priorities in response with input from potentially affected or concerned parties, and developing procedures to address priorities
 - h. Strategies for managing small spills from the installation, shore base or loading operations and for cleanup and containment of onshore areas
 - i. A list, description and use of on-site and off-site response equipment
 - j. A description of how recovered oil and oil contaminated materials will be transported, and disposed

NAME: Ex-Im Environmental Procedures and Guidelines (2004)

ID: IFI 16

PURPOSE:

- To provide guidance to exporters for assessing potential environmental impacts in the following areas: air quality, water use and quality, management of toxic materials and waste, natural hazards, socio-economic and socio-cultural effects, ecological effects and noise.

KEY DUTIES / COMPLIANCE GUIDE/ REQUIREMENTS:

1. Adhere to the following seven Environmental Principles:

- *Air Quality.* Protection of air quality through available technologies and good practices by controlling or reducing emissions to quantitative limits set forth in the applicable international guidelines.
- *Water Use and Quality.* Protection of fresh, marine and groundwater resources from over demand and from project related contamination through methods of controlling and treating project effluent discharges to quantitative limits set forth in the applicable international guidelines.
- *Waste Management.* Management, recycling, storage, treatment and disposal of solid, hazardous and toxic materials and wastes, in accordance with provisions of the applicable international guidelines.
- *Natural Hazards.* Designing the project and locating it so as to reduce environmental risks from natural hazards, in accordance with good engineering practices such as designing to seismic criteria, and in accordance with the provisions of the applicable international guidelines.
- *Ecology.* Protection of ecological resources and biodiversity, encouragement of conservation, and support for restoration of critical natural habitats containing endangered and rare species, in accordance with the provisions of the applicable international guidelines.
- *Involuntary Resettlement, Indigenous Peoples, Cultural Property.* Development of the project to reduce or mitigate the effects of involuntary resettlement, adverse impacts to indigenous peoples and adverse impact to cultural property in accordance with the provisions of the applicable international guidelines.
- *Noise.* Controlling and reducing the level of noise from projects to quantitative limits set forth in applicable international guidelines.

2. Conformance with the guidelines as set forth in the World Bank Group Pollution Prevention and Abatement Handbook (PPAH) as well as those World Bank Operational Safeguard Policies (and now specifically IFC's 2006 Performance Standards), as summarised in EXIM's International Environmental Guidelines - Annex A (Table 1: [Industrial Projects and General Infrastructure](#); Table 5: [Oil and Gas Development](#); Table 6: Thermal, Gas Turbine and Engine Driven Power). In the case of ambiguity between information contained within a Table of Annex A and the relevant section of the PPAH and referenced World Bank Operational Policies, the information and guidelines stated in the PPAH and referenced Operational Policies shall prevail for purposes of Ex-Im Bank's review and its determination of a project's compliance with the applicable international guidelines of the World Bank Group.

3. General Environmental Requirements

- Monitors for hydrogen sulfide must be installed wherever this gas may accumulate. The monitors should be set to activate warning signals whenever detected concentration levels of H₂S exceed 5 ppm.
- An assessment of oil spill risks and potential impacts must be conducted, and an oil-spill prevention response plan and pollution control plan must be developed and implemented.
- Minimization, to the extent practical, of flaring to reduce greenhouse gases and harmful emissions must be practiced.
- A reclamation and closure plan for the site should be developed early in the process to address the removal and disposal of facilities and restoration of the site in an environmentally sensitive manner.
- Minimize (avoid where possible) the use of toxic additives in drilling fluids.
- Maximize the use of water based mud systems.
- Recycle/reuse drilling mud decant fluids.

4. Environmental Guidelines Specific to Oil Pipelines (and therefore generally relevant to gas/liquids lines):

- Positive pipe corrosion control measures;
- Program of periodic inspection and maintenance;
- Automatic leak detection systems and where practical automatic pump shutdown systems;
- Adequate engineering design providing adequate protection from water currents, storm events, likely external physical forces;
- Accurate and complete records of all inspections, leak incidents, unusual events, and safety measures taken;
- Emergency response plans and provisions (preparedness) for leaks and spills;
- Minimization of disturbance to natural vegetation, soils, hydrological regimes, and topography.

5. Solid and Liquid Non-Hazardous Wastes

Develop a waste management plan that incorporates environmentally safe waste management and disposal practices. Recycling or reclamation of materials is encouraged where possible. If recycling or reclamation is not practical, wastes must be disposed of in an environmentally safe manner that incorporates best management practices, as well as in compliance with applicable local laws and regulations.

6. Hazardous and Toxic Materials and Wastes

Develop a management plan for those materials which contain the following elements:

- Existing equipment and systems involving PCBs or CFCs should be phased-out and disposed of in a manner consistent with the requirements of the host country and in accord with the recommendations set forth in the PPAH (refer IFI 10)
- Storage and liquid impoundment areas for fuels, raw and in-process materials, solvents, wastes, and finished products should be designed with secondary containment or liners, where required, to prevent the contamination of soil, groundwater and surface waters.
- Maintenance of all hazardous materials in clearly labelled containers or vessels
- Storage and handling of all hazardous materials appropriate to their hazard characteristics: reactivity; flammability; corrosivity; radioactivity; and toxicity

- Fire prevention systems and secondary containment for storage facilities, where required, to prevent fires or the release of hazardous materials to the environment
- Hazardous wastes must be treated and disposed of in a manner to prevent the contamination of soil, groundwater and surface waters and to avoid the release of toxic substances in the environment.
- A suitable remediation plan will be developed to address the clean-up, as necessary, of contamination on soil and water as appropriate, for the specific site conditions.

7c. Quantitative Standards - Summaries
Stack Emissions

Parameter	Oil & Gas (Onshore) (Table 5)	Thermal, Gas Turbine & Diesel-driven Power Plants (Table 6)	LNG Liquefaction Plant (Table 10)
Particulates	PM ₁₀ : 50 mg/NM ³	PM ₁₀ : 50 mg/NM ³	PM ₁₀ : 50 mg/NM ³
NO _x	Gas fired: 320 mg/NM ³	1. Steam power plants a. Gas: 320 mg/NM ³ b. Oil: 460 mg/NM ³	1. Combustion turbines Gas: 125 mg/NM ³
	Oil fired: 460 mg/NM ³	2. Combustion Turbine Plants a. Gas: 125 mg/NM ³ b. Diesel: 165 mg/NM ³ c. Fuel oil: 300 mg/NM ³	2. Furnace/heaters Gas: 320 mg/NM ³
		3. Engine driven plant: 2,000 mg/NM ³	
SO ₂	1000 mg/NM ³ (max. in the flue pipe)	Per power plant site: 0.2 t/day/MWe (first 500 MWe) 0.1 t/day/MWe (ea. additional. MWe > 500 MWe)	2,000 mg/NM ³ max. in flue pipe
H ₂ S	30 mg/NM ³	-	-

Ambient Air Quality¹

Parameter	Oil & Gas (Table 5)	Thermal, Gas Turbine & Diesel-driven Power Plants (Table 6)	LNG Liquefaction Plant (Table 10)
Particulates (<10 µm)	Max. 24hr average: 150 mg/Nm ³ Annual mean: 50 mg/Nm ³	24hr average: 150 mg/Nm ³ Annual average: 50 mg/Nm ³	24hr average: 150 mg/Nm ³ Annual average: 50 mg/Nm ³
NO _x	Max. 24hr average: 150 mg/Nm ³	24hr average: 150 mg/Nm ³ Annual average: 100 mg/Nm ³	24hr average (as NO ₂): 150 mg/Nm ³ Annual average (as NO ₂): 100 mg/Nm ³
SO ₂	Annual mean: 50 mg/Nm ³	24hr average: 150 mg/Nm ³ Annual average: 80 mg/Nm ³	24hr average: 150 mg/Nm ³ Annual average: 80 mg/Nm ³

¹ Unless defined by local legislation, the airshed refers to the local areas around the plant whose ambient air quality is directly influenced by plant emissions

Liquid effluents

Parameter	Oil & Gas (Onshore) (Table 5) ¹ Mg/L	Thermal, Gas Turbine & Diesel-driven Power Plants ¹ (Table 6)	LNG Liquefaction Plant (Table 10) ²
pH	6-9	6-9	6-9
COD	250	250	250
BOD ₅	50	50	50
TSS	50	50	50
Oil & Grease	>10,000 tpd production: 20 <10,000 tpd production: 40	10	10
Phenol	1.0	-	-
Metals (total)	5.0 ³	5.0	5.0
Cadmium		0.1	
Chromium, total		0.5	
Copper		0.5	
Lead		0.1	
Mercury		0.01	
Nickel		1.5	
Zinc		1.0	
Arsenic		0.1	
Iron		1.0	
Chlorine	Max. residual Cl before discharge: 0.5 In areas of sensitive ecology: 0.2	0.2	0.2
Coliforms, total	<400 MPN/100 ml (most probable number)	400	400
Temperature (edge of designated mixing zone)	3 ⁰ C	3 ⁰ C	3 ⁰ C

¹ Process wastewater, domestic sewage and contaminated stormwater should be treated to meet these specified limits before being discharged to surface waters.

² Liquid effluent discharges to a public or private central wastewater treatment system may be subject to pre-treatment requirements

³ Antimony, arsenic, beryllium, cadmium, chromium, copper, iron, lead, mercury, nickel, selenium, silver, thallium, zinc

Noise (same emission level limits for Tables 5, 6 and 10)

Location/category	Limits in dB(A)	
	Daytime (0700 -22.00 hrs)	Night time (2200 - 0700 hrs)
Residential, Institutional, Educational	55	45
Commercial/industrial	70	70

NAME: World Bank Pollution Prevention and Abatement Handbook (1998); Industry Sector Guideline - Liquefied Natural Gas (LNG) Liquefaction Plants and Re-gasification Facilities

ID: IFI 17

PURPOSE:

To provide guidance for the LNG sector in relation to:

- the protection of human health
- reduction of mass loadings to the environment
- current regulatory trends, as well as setting out numerical targets for reducing pollution as part of the production process, as well as maximum emission levels that are normally achievable through a combination of cleaner production and end-of-pipe treatment

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

Note that since LNG plants and thermal power plants utilize equipment that is similar in type and size, the quantitative guidelines on emissions and effluents set forth below for LNG plants track those contained in the PPAH "Thermal Power: Guidelines for New Plants". In addition it should be noted that these Guidelines apply to sources larger than 50 MWe or with an equivalent heat input of 170 million BTU/hr (PPAH, General Environmental Guidelines, pp 437).

All of the maximum emission levels described below should be achieved for at least 95% of the time that the plant or unit is operating, calculated as a proportion of annual operating hours.

1. AIR QUALITY

a) STACK EMISSIONS - Concentration of contaminants emitted from the process equipment should not be diluted nor exceed the following limits during normal operating conditions (refer PPAH, pp 418):

Particulates (<10 microns aerodynamic diameter):- 50 mg/Nm³

Note: Nm³ refers to a cubic meter at 0°C and pressure of 1,013 millibars under dry conditions.

SO₂ when using untreated gas: 2,000 mg/Nm³ maximum level of SO₂ in exhaust gas

NO_x (as NO₂):

Engine driven power plants

<2,000 mg Nm³ (g/kWh dry at 15% oxygen)

Combustion Turbines

Gas fuel- 125 mg/Nm³ (dry at 15% oxygen); 86 ng/j or 0.20 lb/million BTU

Furnaces/Heaters

Gas fuel- 320 mg/Nm³ (3% oxygen); 86 ng/j; 155 ppm; 0.20 lb/million BTU

b) AMBIENT AIR QUALITY - aggregate emissions should not result in ambient air conditions that exceed local standards or the values set forth below (refer PPAH, pp 424, Table C1):

Pollutant	24 hr. average	Annual Average
Particulates (<10 ⁻⁶ m dia)	150 µg/Nm ³	50 µg/Nm ³
NO ₂	150 µg/Nm ³	100 µg/Nm ³
SO ₂	150 µg/Nm ³	80 µg/Nm ³

**Unless defined by local legislation, the airshed refers to the local areas around the plant whose ambient air quality is directly influenced by the plant emissions.*

2. WATER QUALITY

a. LIQUID EFFLUENTS – The liquid effluent levels presented below should be achieved daily without dilution (refer PPAH, pp 491, Table 1):

Parameter	Maximum value (mg/l except pH and temperature)
pH	6 to 9
TSS	50
Oil and Grease	10
Total Residual Chlorine	0.2
Chromium, Total	0.5
Copper	0.5
Zinc	1.0
Iron	1.0

Temperature (edge of a designated mixing zone) Max 3°C > ambient temp of receiving water

A mixing zone is a limited area or volume of water where initial dilution of a discharge takes place and beyond which applicable water quality criteria should not be exceeded. In the case of a thermal plume, a mixing zone is generally defined as occupying no more than 25% of the cross section of a waterway channel (river, stream, etc.) so as to allow passage of aquatic life and permit other uses of the water. In the case of an open body of water, the mixing zone will be defined on a case-by-case basis taking into account the existing ecology and in particular, the presence of coral reefs. Where zone is not defined, 100m from the point of discharge is used.

3. NOISE

The Project boundary or fence-line is the commonly accepted location for evaluating Project related noise impacts, although the outer edge of a buffer zone or other uninhabited area may be appropriate in selected cases.

AMBIENT NOISE: Steady-state noise levels from the Project's operation, measured at noise receptors located outside the Project property boundary, should not exceed the following limits:

Location Category	Limits in Decibels, dB(A)	
	Day Time	Night Time
	07:00 – 22:00 hrs	22:00 – 07:00 hrs
Residential, Institutional, Educational	55	45
Commercial/Industrial	70	70

NAME: IFC Environmental, Health and Safety Guidelines – Port and Harbours

ID: IFI 18

PURPOSE: To provide guidance in the design, construction, and use of ports, harbours and associated facilities, and **specifically dredging**

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

1. Develop a dredging program to minimise impacts on the environmental resources as a result of:
 - a. changes in water quality and circulation, including depletions in dissolved oxygen
 - b. re-suspension of toxic contaminants from existing sediment deposits
 - c. contaminants taken up by and accumulation in fish and shell fish
 - d. increased turbidity causing decreased photosynthetic activity
 - e. disposal of dredged material
2. The dredging program is to based on field measurements of physical and chemical parameters
3. Develop disposal options and employ management techniques to minimise the environmental effects of dredging, including disposal.
4. Employ a monitoring program and focusing specifically on turbidity (not to exceed 200 mg/l, subject to local conditions).
5. Take into account seasonal ecological constraints

NAME: World Bank Pollution Prevention and Abatement Handbook (1998); Industry Sector Guideline – Gas systems

ID: IFI 19

PURPOSE:

To provide guidance for the Gas systems sector in relation to:

- the protection of human health
- reduction of mass loadings to the environment
- current regulatory trends, as well as setting out numerical targets for reducing pollution as part of the production process, as well as maximum emission levels that are normally achievable through a combination of cleaner production and end-of-pipe treatment

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

All of the maximum emission levels described below should be achieved for at least 95% of the time that the plant or unit is operating, calculated as a proportion of annual operating hours.

1. AIR QUALITY- STACK EMISSIONS

Concentration of contaminants emitted from the process equipment should not be diluted nor exceed the following limits during normal operating conditions:

Particulates (PM₁₀):

- >50MWe: 50 mg/Nm³
- <50MWe 100 mg/ Nm³

(Note: Nm³ refers to a cubic meter at 0⁰C and pressure of 1,013 millibars under dry conditions).

SO₂ when using untreated gas: 2,000 mg/Nm³ maximum level of SO₂ in exhaust gas

NO_x (as NO₂):

- Oil fired: 460 mg/Nm³
- Gas fired: 320 mg/NM³

2. WATER QUALITY- LIQUID EFFLUENTS

The liquid effluent levels presented below should be achieved daily without dilution:

Parameter	Maximum value (mg/L except pH)
pH	6 to 9
BOD ₅	50
TSS	50
Oil and Grease	10
Cyanide (Free)	0.1
Cyanide (Total)	1.0
Heavy metals (total)	10

3. NOISE

Noise abatement measures should achieve either the following levels or a maximum increase in background levels of 3 dB(A). Measurements are to be taken at noise receptors located outside the project property boundary.

Location Category	Limits in Decibels, dB(A)	
	Day Time 07:00 – 22:00 hrs	Night Time 22:00 – 07:00 hrs
Residential, Institutional, Educational	55	45
Commercial/Industrial	70	70

4. SOLID AND LIQUID WASTE

- a) The project should recycle or reclaim materials where possible.
- b) If recycling or reclamation is not practical, wastes must be disposed of in an environmentally acceptable manner and in compliance with local laws and regulations.
- c) All hazardous materials, process residues, solvents, oils, sludges from raw water, process waste water and domestic sewage treatment systems must be disposed of in a manner to prevent the contamination of soil, groundwater and surface waters.

NAME: World Bank Pollution Prevention and Abatement Handbook (1998); General Environmental Guideline

ID: IFI 20

PURPOSE:

- To minimize resource consumption, including energy use, and to eliminate or reduce pollutants at the source.

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

1. Concentrations of contaminants emitted from the stacks of significant sources with an equivalent heat input of more than 10 million British thermal units per hour (Btu/hr), including boilers, furnaces, incinerators, and electrical generating equipment, should not exceed the limits presented below. (Note, concentration of contaminants emitted from the process equipment should not be diluted nor exceed the following limits during normal operating conditions).

Particulates (PM₁₀):

>50MWe: 50 mg/Nm³
<50MWe 100 mg/ Nm³

(Note: Nm³ refers to a cubic meter at 0°C and pressure of 1,013 millibars under dry conditions).

SO₂ when using untreated gas: 2,000 mg/Nm³ maximum level of SO₂ in exhaust gas

NO_x (as NO₂):

Oil fired: 460 mg/Nm³
Gas fired: 320 mg/NM³

2. The project sponsor is required to demonstrate compliance with the emissions limits specified above. The following methods may be used to demonstrate compliance:

a) For sources less than 100 million Btu/hr, compliance with the guidelines for particulate matter may be demonstrated by maintaining the stack emissions opacity below 20%. Opacity can be determined visually by a qualified observer, with a continuous opacity meter, or with a mobile light detection and ranging (LIDAR) system.

b) The sulfur content of fuels may be used to demonstrate compliance with the sulfur dioxide (SO₂) emissions guidelines. The guidelines are met by the use of liquid fuels with a sulphur content of 0.5% or less or of solid fuels with a sulfur content of 0.8% or less and a heat content of 7,000 kilocalories per kilogram (kcal/kg). The use of solid fuels burned in underfiredfeed stoker units meets the SO₂ emissions guideline if the sulfur content of the solid fuel is 1.0% or less. The sponsor must maintain records of fuel analyses to demonstrate that the sulfur content of the fuel is at or below the specified levels.

c) Manufacturers' performance guarantees can be used to demonstrate that the emissions guidelines for nitrogen oxides (NO_x) are met. The performance guarantees must be verified by conducting an initial performance test after the equipment has been commissioned. The sponsor must maintain records to demonstrate that the equipment is operated within manufacturers' specifications.

d) Alternatively, stack emissions can be monitored for specified contaminants. The monitoring must be sufficiently frequent to demonstrate continued compliance with the guidelines. source sizes.

3. Ambient Air Quality

To ensure that ambient air conditions are not compromised, concentrations of contaminants, measured immediately outside the project property boundary, should not exceed the limits shown below (mg/NM³).

Particulate matter

- Annual arithmetic mean 50
- Maximum 24-hour average 70

Nitrogen oxides

- Maximum 24-hour average 150

Sulfur dioxide

- Annual arithmetic mean 50
- Maximum 24-hour average 125

Pollutants such as dioxins and furans, toxic organics, and toxic metals should not exceed risk-specific doses or reference air concentrations at the receptor end. The dioxin emissions level for 2,3,7,8-TCDD equivalent should be less than 1 nanogram per normal cubic meter.

4. Liquid Effluents (Process Wastewater, Domestic Sewage, and Contaminated Stormwater Discharged to Surface Waters, for General Application)

Process wastewater, domestic sewage, and contaminated stormwater and runoff must meet the maximum limits shown below before being discharged to surface waters (mg/L, except for pH, bacteria, and temperature).

pH 6–9
BOD 50
COD 250
Oil and grease 10
TSS 50
Ammonia 10
Fluoride 20
Chlorine, total residual 0.2
Phenols 0.5
Phosphorus 2.0
Sulfide 1.0
Coliform bacteria ¹ < 400 MPN/100 ml
Temperature increase < 3°C

Metals
Heavy metals, total 10
Arsenic 0.1
Cadmium 0.1
Chromium
Hexavalent 0.1
Total 0.5
Copper 0.5
Iron 3.5
Lead 0.1
Mercury 0.01
Nickel 0.5
Selenium 0.1
Silver 0.5
Zinc 2.0
Cyanide (Free 0.1), (Total 1.0)

Where there is a leachate from a solid waste disposal site, the toxic metals contained in the leachate should not exceed the levels shown in the table for pollutants in liquid effluents. Levels of pesticides, dioxins, furans, and other toxics, such as polynuclear aromatic hydrocarbons (PAHs), in effluent discharges should not exceed either 100 times the WHO guidelines for drinking water or 0.05 mg/l. Liquid effluent may be discharged to a public or private central wastewater treatment system. Where this is the case, information from the local authority or private central wastewater treatment company is to be provided to confirm that the treatment system has the capacity and is managed to adequately treat the project’s liquid effluents. Pre-treatment prior to such discharge may be required.

APPENDIX C – Summaries of International Convention Requirements

NAME: Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel Convention)

ID: CON 1

PURPOSE: To a) reduce transboundary movements of hazardous wastes to a minimum, b) dispose of these wastes as close as possible to where they were generated and c) minimise their generation.

KEY DUTIES / COMPLIANCE GUIDE/ REQUIREMENTS

1. Ensure that the generation of hazardous wastes is reduced to a minimum, taking into account social, technological and economic aspects
2. Ensure the availability of adequate disposal facilities for the environmentally sound management of hazardous wastes and other wastes
3. Ensure that the transboundary movement of hazardous wastes and other wastes is reduced to the minimum, and where necessary, is conducted in a manner which will protect human health and the environment against the adverse effects which may result from such movement
4. Disallow the export of hazardous wastes or other wastes to a State which has prohibited by their legislation all such imports, or may not be able to manage the wastes in an environmentally sound manner
5. Require that information about a proposed transboundary movement of hazardous wastes and other wastes be provided to the States concerned
6. Prohibit the transportation or disposal of hazardous wastes or other wastes without appropriate authorization
7. Ensure that hazardous wastes and other wastes that are to be the subject of a transboundary movement be packaged, labelled, and transported in conformity with generally accepted and recognized international rules and standards
8. Require that hazardous wastes and other wastes be accompanied by a movement document from the point at which a transboundary movement commences to the point of disposal.
9. Inform the appropriate authorities in the case of an accident occurring during the transboundary movement of hazardous or other wastes

NAME: International Convention on Oil Spill Preparedness, Response and Co-operation, 1990

ID: CON 2

PURPOSE: To prevent marine pollution incidents by oil; to advance the adoption of adequate response measures in the event that an oil pollution incident does occur; to provide for mutual assistance and co-operation between these States for these aims

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS¹

1. Ensure that ships of over 400 gross tons and above involved in the delivery of goods and materials required for construction carry a shipboard pollution emergency plan to deal specifically with incidents involving hazardous and noxious substances, as defined by the various IMO Conventions and Codes².

¹ Ratified by Peru

² Includes oils, other liquid substances defined as noxious or dangerous; liquefied gases; liquid substances with a flashpoint not exceeding 60° C; dangerous, hazardous and harmful substances carried in packaged form; and solid bulk materials defined as possessing chemical hazards

NAME: Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (1972), (The London Convention)

ID: CON 3

PURPOSE: To eliminate pollution of the sea by oil, chemicals, and other harmful substances which might be discharged in the course of operations; to minimise the amount of oil which could be released accidentally in collisions or strandings by ships, including also fixed or floating platforms; to improve further the prevention and control of marine pollution from ships, particularly oil tankers.

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

1. Obtain a permit prior to and for the dumping of dredge material²¹
2. This permit shall be issued only after careful consideration of all the factors set forth in Annex III, including prior studies of the characteristics of the dumping site, as set forth in sections B and C of that Annex, namely:

Section B - Characteristics of dumping site and method of deposit

- 1 Location (e.g. co-ordinates of the dumping area, depth and distance from the coast), location in relation to other areas (e.g. amenity areas, spawning, nursery and fishing areas and exploitable resources).
- 2 Rate of disposal per specific period (e.g. quantity per day, per week, per month).
- 3 Methods of packaging and containment, if any.
- 4 Initial dilution achieved by proposed method of release.
- 5 Dispersal characteristics (e.g. effects of currents, tides and wind on horizontal transport and vertical mixing).
- 6 Water characteristics (e.g. temperature, pH, salinity, stratification, oxygen indices of pollution-dissolved oxygen (DO), chemical oxygen demand (COD), biochemical oxygen demand (BOD) - nitrogen present in organic and mineral form including ammonia, suspended matter, other nutrients and productivity).
- 7 Bottom characteristics (e.g. topography, geochemical and geological characteristics and biological productivity).
- 8 Existence and effects of other dumpings which have been made in the dumping area (e.g. heavy metal background reading and organic carbon content).
- 9 In issuing a permit for dumping, Contracting Parties should consider whether an adequate scientific basis exists for assessing the consequences of such dumping, as outlined in this Annex, taking into account seasonal variations.

C - General considerations and conditions

- 1 Possible effects on amenities (e.g. presence of floating or stranded material, turbidity, objectionable odour, discolouration and foaming).
- 2 Possible effects on marine life, fish and shellfish culture, fish stocks and fisheries, seaweed harvesting and culture.
- 3 Possible effects on other uses of the sea (e.g. impairment of water quality for industrial use, underwater corrosion of structures, interference with ship operations from floating materials, interference with fishing or navigation through

²¹ As per Article V1a.....matter listed in Annex II (i.e., Section D....'Materials which, though of a non-toxic nature, may become harmful due to the quantities in which they are dumped, or which are liable to seriously reduce amenities').

deposit of waste or solid objects on the sea floor and protection of areas of special importance for scientific or conservation purposes).

- 4 The practical availability of alternative land-based methods of treatment, disposal or elimination, or of treatment to render the matter less harmful for dumping at sea.

NAME: International Convention for the Prevention of Pollution from Ships, 1973 as amended by the Protocol of 1978 relating thereto (MARPOL 73/78)

ID: CON 4

PURPOSE: To eliminate pollution of the sea by oil, chemicals, and other harmful substances that might be discharged in the course of operations; to minimise the amount of oil that could be released accidentally in collisions or strandings by ships, fixed or floating platforms; to improve further the prevention and control of marine pollution from ships, particularly oil tankers.

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS¹

1. Ensure that relevant ships engaged by or associated with the project carry an International Oil Pollution Prevention Certificate, as defined in the 1978 Protocol and report any discharges as outlined in Article 8 (and the related Protocol I), and Annex I (Regulation 9)
2. Ensure that relevant ships engaged by or associated with the project are able to meet the general provisions MARPOL
3. Ensure that the port facilities associated with the project are able to accommodate ballast water discharges in appropriate retention facilities, as specified in MARPOL.

¹ Peru is a signatory to MARPOL Annex I/II, III, IV, V but not MARPOL Protocol 97 (AnnexVI)

NAME: Convention on the Conservation of Migratory Species of Wild Animals (the Bonn Convention) 1979, and incorporating the African-Eurasian Migratory Water Bird Agreement, 1995, and the Agreement on the Conservation of Bats in Europe, 1991

ID: CON 5

PURPOSE:

- To conserve terrestrial, marine and avian migratory species and their habitats throughout their range by providing strict protection for endangered migratory species, by concluding multilateral agreements for the conservation and management of migratory species, and by undertaking co-operative research activities.

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

1. Where possible and appropriate, promote, cooperate in or support research relating to the conservation and management migratory species, including bats
2. Avoid disturbance to the habitats of endangered migratory species
3. Minimise the adverse effects of activities or obstacles that impede the migration of species
4. To the extent feasible and appropriate, prevent, reduce or control factors that are endangering or are likely to further endanger migratory species
5. Prohibit the taking of animals listed as endangered migratory species (refer Annex 1 of the Convention)
6. Where possible and appropriate, support research into the biology and ecology of migratory water birds including the harmonization of research and monitoring methods and, where appropriate, the establishment of joint or cooperative research and monitoring programmes
7. Prohibit the deliberate capture, keeping or killing of bats by employees and contractors
8. Avoid disturbance to any sites identified as important to the conservation of bats
9. Where possible and appropriate, promote public awareness in relation to bats
10. Consider the potential effects of pesticides on bats, when assessing pesticides for use, and endeavour to replace timber treatment chemicals which are highly toxic to bats with safer alternatives.

NAME: Convention on Wetlands of International Importance Especially on Wildfowl Habitat 1971 (The Ramsar Convention)

ID: CON 6

PURPOSE:

- To conserve and promote the wise use of wetlands by national action and international cooperation

KEY DUTIES / COMPLIANCE GUIDE/ REQUIREMENTS

1. Encourage research and the exchange of data and publications regarding wetlands and their flora and fauna
2. Avoid transgression onto wetlands included on the *List of Wetlands of International Importance*. Where such transgression is unavoidable, the project should, as far as possible, compensate for any loss of wetland resources, and in particular it should support the creation of additional nature reserves for waterfowl and for the protection, either in the same area or elsewhere, of an adequate portion of the original habitat.
3. Promote the conservation and, as far as possible, the wise use¹ of wetlands through the recognition of the benefits and values of wetlands, as reflected in the design, construction and operation of the project, for:
 - a. Sediment and erosion control
 - b. Flood control
 - c. Maintenance of water quality and abatement of pollution
 - d. Maintenance of surface and underground water supply
 - e. Support for fisheries, grazing and agriculture
 - f. Outdoor recreation and education for human society
 - g. Climatic stability

¹ The wise use of wetlands is ***their sustainable utilization for the benefit of mankind in a way compatible with the maintenance of the natural properties of the ecosystem.*** "At the same time, "sustainable utilization" of a wetland was defined as: "***Human use of a wetland so that it may yield the greatest continuous benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations.***" Natural properties of the ecosystem" are defined as: "***Those physical, chemical and biological components, such as soil, water, plants, animals and nutrients, and the interactions between them***"

NAME: Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), 1973

ID: CON 7

PURPOSE:

- To ensure, through international co-operation, that the international trade in species of wild flora and fauna does not threaten the survival in the wild of the species concerned, and to protect endangered species from over-exploitation by means of a system of import-export permits

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

1. Prohibit employees and contractors from engaging in the trade of wild flora and fauna¹

¹ This requirement goes beyond the provisions of CITES, as restricted trade under licence is permitted, however, compliance with the Convention will be assured if outright prohibition is adopted.

NAME: UN Framework Convention on Climate Change, 1992, and the Kyoto Protocol to the UNFCCC, 1997

ID: CON 8

PURPOSE:

UNFCCC: To stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system, within a timeframe sufficient to allow ecosystems to adapt naturally to climate change; to ensure that food production is not threatened; to enable economic development to proceed in a sustainable manner

Kyoto: Contains obligations to reduce greenhouse gas emission by an average of 5.2% below 1990 levels by 2008-2012. The reductions apply to developed countries, and country-specific targets have been set.

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

1. Assist Peru, as a signatory to the Convention²², and a **Non Annex I party**²³ fulfil their obligations, through the development of an annual emissions inventory of Greenhouse gases (CO₂, CH₄, NO₂, hydrofluorocarbons, perfluorocarbons, and sulphur hexafluoride)
2. Minimise the emissions of GHGs
3. Promote and cooperate in the development, application and diffusion of technologies, practices and processes that control, reduce or prevent GHG emissions
4. Promote sustainable management, and promote and cooperate in the conservation and management, as appropriate, of all sinks and reservoirs of GHGs

²² **United Nations Framework Convention on Climate Change** (New York, 1992); Peru Date of signature: 12 June 1992; Date of ratification: 07 June 1993, Date of entry into force: 21 March 1994. **Kyoto** (Protocol to the UNFCCC, 1997); Peru Date of signature: 13 November 1998, Date of ratification: 12 September 2002, Date of entry into force: 16 February 2005

²³ **Non Annex I Parties** are mostly developing countries. Certain groups of developing countries are recognized by the UN FCCC as being especially vulnerable to the adverse impacts of climate change, including countries with low-lying coastal areas and those prone to desertification and drought. Others (such as countries that rely heavily on income from fossil fuel production and commerce) feel more vulnerable to the potential economic impacts of climate change response measures. The Convention emphasizes activities that promise to answer the special needs and concerns of these vulnerable countries, such as investment, insurance and technology transfer.

NAME: International Labor Organisation, C169 Indigenous and Tribal Peoples Convention, 1989

ID: CON 9

PURPOSE:

- To protect the rights of indigenous peoples and to guarantee respect for their integrity

KEY DUTIES / COMPLIANCE GUIDE/ REQUIREMENTS

1. Indigenous and tribal peoples shall enjoy the full measure of human rights and fundamental freedoms without hindrance or discrimination.
2. No form of force or coercion shall be used in violation of the human rights and fundamental freedoms of the peoples concerned.
3. Special measures shall be adopted as appropriate for safeguarding the persons, institutions, property, labour, cultures and environment of the peoples concerned.
4. Such special measures shall not be contrary to the freely-expressed wishes of the peoples concerned.
5. Enjoyment of the general rights of citizenship, without discrimination, shall not be prejudiced in any way by such special measures the social, cultural, religious and spiritual values and practices of these peoples shall be recognised and protected, and due account shall be taken of the nature of the problems which face them both as groups and as individuals;
6. The integrity of the values, practices and institutions of these peoples shall be respected;
7. The peoples concerned shall have the right to decide their own priorities for the process of development as it affects their lives, beliefs, institutions and spiritual well-being and the lands they occupy or otherwise use, and to exercise control, to the extent possible, over their own economic, social and cultural development. In addition, they shall participate in the formulation, implementation and evaluation of plans and programmes for national and regional development which may affect them directly.
8. These peoples shall have the right to retain their own customs and institutions, where these are not incompatible with fundamental rights defined by the national legal system and with internationally recognised human rights.
9. The special importance for the cultures and spiritual values of the peoples concerned of their relationship with the lands or territories, or both as applicable, which they occupy or otherwise use, and in particular the collective aspects of this relationship, shall be respected.
10. The rights of ownership and possession of the peoples concerned over the lands which they traditionally occupy shall be recognised. In addition, measures shall be taken in appropriate cases to safeguard the right of the peoples concerned to use lands not exclusively occupied by them, but to which they have traditionally had access for their subsistence and traditional activities. Particular attention shall be paid to the situation of nomadic peoples and shifting cultivators in this respect.

11. The rights of the peoples concerned to the natural resources pertaining to their lands shall be specially safeguarded. These rights include the right of these peoples to participate in the use, management and conservation of these resources.
12. Where the relocation of these peoples is considered necessary as an exceptional measure, such relocation shall take place only with their free and informed consent. Where their consent cannot be obtained, such relocation shall take place only following appropriate procedures established by national laws and regulations, including public inquiries where appropriate, which provide the opportunity for effective representation of the peoples concerned. Whenever possible, these peoples shall have the right to return to their traditional lands, as soon as the grounds for relocation cease to exist.
13. When such return is not possible, as determined by agreement or, in the absence of such agreement, through appropriate procedures, these peoples shall be provided in all possible cases with lands of quality and legal status at least equal to that of the lands previously occupied by them, suitable to provide for their present needs and future development. Where the peoples concerned express a preference for compensation in money or in kind, they shall be so compensated under appropriate guarantees.
14. Persons thus relocated shall be fully compensated for any resulting loss or injury.
15. Adopt special measures to ensure the effective protection with regard to recruitment and conditions of employment of workers belonging to these peoples, to the extent that they are not effectively protected by laws applicable to workers in general.
16. Prevent any discrimination between workers belonging to the peoples concerned and other workers.

NAME: Vienna Convention on the Protection of the Ozone Layer, Vienna, 1985 including the Montreal Protocol on Substances that Deplete the Ozone Layer (1987)

ID: CON 10

PURPOSE: To protect human health and the environment against adverse effects resulting from human activities that modify or are likely to modify the ozone layer, and to adopt agreed measures to control human activities found to have adverse effects on the ozone layer

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

1. Ensure that ozone depleting substances or equipment requiring their use, are not used on the project (fully halogenated CFCs, halons, carbon tetrachloride, 1,1,1,-trichloroethane and hydrobromofluorocarbons)

NAME: UN Convention on Biodiversity, 1992

ID: CON 11

PURPOSE: Conserve biodiversity, promote sustainable use of its components, and ensure fair and equitable sharing of the benefits arising out of the utilisation of genetic resources

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

1. Integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into project development
2. Take account of those components of biological diversity important for its conservation and sustainable use having regard to:
 - a. Ecosystems and habitats: containing high diversity, large numbers of endemic or threatened species, or wilderness; required by migratory species; of social, economic, cultural or scientific importance; or, which are representative, unique or associated with key evolutionary or other biological processes
 - b. Species and communities which are: threatened; wild relatives of domesticated or cultivated species; of medicinal, agricultural or other economic value; or social, scientific or cultural importance; or importance for research into the conservation and sustainable use of biological diversity, such as indicator species; and
3. Identify processes and categories of activities which are likely to have significant adverse impacts on the conservation and sustainable use of biological diversity, and monitor their effects through sampling and other techniques
4. Rehabilitate and restore areas affected by construction activities through reinstatement programmes
5. Adopt measures to prevent the introduction of invasive alien species through project activities
6. Support local populations to develop and implement remedial action in degraded areas where biological diversity has been reduced
7. Encourage cooperation between governmental authorities and the project in developing methods for sustainable use of biological resources.
8. Promote and encourage research which contributes to the conservation and sustainable use of biological diversity
9. Prepare environmental impact assessments of proposed projects that are likely to have significant adverse effects on biological diversity with a view to avoiding or minimizing such effects and, where appropriate, allow for public participation in such procedures
10. Promote national arrangements for emergency responses to activities or events that present a grave and imminent danger to biological diversity and, where appropriate and agreed by the States, establish joint contingency plans
11. Facilitate the exchange of information relevant to the conservation and sustainable use of biological diversity, including exchange of results of technical, scientific and socio-economic research and monitoring

NAME: Protection of the Marine Environment and Coastal Area of the South-East Pacific, Lima 1981

ID: CON 12

PURPOSE:

- To prevent, reduce and control pollution of the marine environment and coastal area of the South-East Pacific and to ensure appropriate environmental management of natural resources.

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

1. Prevent, reduce and control pollution of the marine environment and coastal area from any source and promote the appropriate environmental management of such environment and area in accordance with existing international standards.

2. Adopt measures to prevent and control pollution of the marine environment shall including, *inter alia*, measures designed to minimize to the fullest possible extent:

- Release of toxic, harmful or noxious substances, especially those which are persistent:
 - (i) From land-based sources
 - (ii) From or through the atmosphere
 - (iii) By dumping;
- Pollution from vessels, in particular measures for preventing accidents and dealing with emergencies, ensuring the safety of operations at sea, preventing intentional discharges and regulating the design, construction, equipment, operation and manning of vessels pursuant to the generally accepted international standards and rules
- Pollution from any other installations and devices operating in the marine environment, in particular measures for preventing accidents and dealing with emergencies, ensuring the safety of operations at sea, and regulating the design, construction, equipment, operations and manning of such installations or devices.

3. Adopt all appropriate measures to prevent, reduce and control erosion of coastal areas

NAME: Convention for the Protection of the World Cultural and Natural Heritage, Paris 1972

ID: CON 13

PURPOSE:

- To recognize the duty of ensuring the identification, protection, conservation, presentation and transmission to future generations of cultural and natural heritage.
- To ensure that effective and active measures are taken for the protection, conservation and presentation of the cultural and natural heritage

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

1. Endeavour to, in so far as possible, and as appropriate for the project:

- Adopt a general policy which aims to integrate the protection of natural and cultural heritage into planning programmes
- Take the appropriate measures necessary for the identification, protection, conservation, presentation and rehabilitation of this heritage as it may be affected by project activities
- Consider supporting the establishment or development of regional centres for training in the protection, conservation and presentation of the cultural and natural heritage and to encourage scientific research in this field.

NAME: International Plant Protection Convention, Rome 1951, including revised text 1991

ID: CON 14

PURPOSE:

- To secure common and effective action to prevent the introduction and spread of pests and diseases of plants and plant products¹ and to promote measures for their control, through the adoption of legislative, technical and administrative measures.

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

1. To the extent possible and where appropriate ensure the disinfestation or disinfection of consignments of plants and plant products moving in international traffic, and their containers, storage places, or transportation facilities of all kinds employed²⁴
2. To the extent possible and where required and appropriate, obtain certificates relating to phytosanitary condition and origin of consignments of plants and plant products from the relevant competent authority, in accordance with Articles IV (1), (a) (iv) and V of the Convention²⁵

¹ Term "plant" shall comprise living plants and parts thereof, including seeds in so far as the supervision of their importation under Article VI of the Convention or the issue of phytosanitary certificates in respect of them under Articles IV(1), (a) (iv) and V of this Convention may be deemed necessary by contracting Governments

²⁴ Potentially necessary if importing plant seed for the reinstatement programme

²⁵ A requirement of the Convention is that the Member States establish the administrative capacity to issue such certificates. As a signatory to the Convention it is assumed that Peru has this capacity.

APPENDIX D – Summaries of International Best Practice Requirements

NAME: Texas human health protective concentration levels (PCLs) for chemicals of concern (COCs)

ID: INT'L 1

PURPOSE:

- To provide guidance for site remediation following the release of a chemical of concern

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

1. Tier 1 PCL tables are intended for use after a COC release has occurred and for use as a reference tool to:

- Help establish assessment levels
- Determine levels of required performance of analytical methods (i.e., method quantification limits)
- Identify those exposure pathways for a given COC where further action is warranted
- Identify the COC concentrations below which the TNRCC might not require action
- Help determine the remedial strategies.

2. To interpret the tables the following information is required:

- Land use (residential or commercial/industrial)
 - The environmental media affected by the COC and the associated exposure pathways,
 - The size of the source area for each COC.

3. The applicable table for the project in the event of a spill is Table 2 (commercial/industrial)

NAME: Control of Substances Hazardous to (COSHH) Health Regulations, 2002

ID: INT'L 2

PURPOSE: Hazardous substances used in the workplace can harm employees' health if exposures aren't properly controlled and can add to the unnecessary and preventable burden of ill health. COSHH requires employers to control exposures to hazardous substances to protect both employees and others who may be exposed from work activities. COSHH provides a legal framework to protect people against these health risks and sets out the essential precautionary measures that employers and employees must take.

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

4. Work out what hazardous substances are used in the work place and find out the risks from using these substances to people's health.
5. Decide what precautions are needed before starting work with hazardous substances.
6. Prevent people being exposed to hazardous substances; where this is not reasonably practicable, control the exposure.
7. Make sure control measures are used and maintained properly and that safety procedures are followed.
8. If required, monitor exposure of employees to hazardous substances.
9. Carry out health surveillance where appropriate
10. Prepare plans and procedures to deal with accidents, incidents and emergencies
11. Make sure employees are properly informed, trained and supervised.

NAME: Occupational Safety and Health Standards, Hazardous waste operations and emergency response, 1910.120

ID: INT'L 3

PURPOSE: Emergency response operations for releases of, or substantial threats of releases of, hazardous substances without regard to the location of the hazard.

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

1. The employer shall develop an emergency response plan for emergencies which shall address, as a minimum, the following:

- Pre-emergency planning.
- Personnel roles, lines of authority, training, and communication.
- Emergency recognition and prevention.
- Safe distances and places of refuge.
- Site security and control.
- Evacuation routes and procedures.
- Decontamination procedures which are not covered by the site safety and health plan.
- Emergency alerting and response procedures.
- Critique of response and follow-up.
- PPE and emergency equipment.
- Site topography, layout, and prevailing weather conditions.
- Procedures for reporting incidents to local, state, and federal governmental agencies.

2. The emergency response plan shall be a separate section of the Site Safety and Health Plan.

3. The emergency response plan shall be compatible and integrated with the disaster, fire and/or emergency response plans of local, state, and federal agencies.

4. The emergency response plan shall be rehearsed regularly as part of the overall training program for site operations.

5. The site emergency response plan shall be reviewed periodically and, as necessary, be amended to keep it current with new or changing site conditions or information.

6. An employee alarm system shall be installed to notify employees of an emergency situation, to stop work activities if necessary, to lower background noise in order to speed communication, and to begin emergency procedures.

7. Based upon the information available at time of the emergency, the employer shall evaluate the incident and the site response capabilities and proceed with the appropriate steps to implement the site emergency response plan.

8. Training for emergency response employees shall be completed before they are called upon to perform in real emergencies. Such training shall include the elements of the emergency response plan, standard operating procedures the employer has established for the job, the personal protective equipment to be worn, and procedures for handling emergency incidents.

NAME: WHO: Air Quality Guidelines for Europe 2000

ID: INT 4

PURPOSE:

- The WHO air quality guidelines aim to provide a basis for protecting public health from adverse effects of air pollution and for eliminating, or reducing to a minimum, those contaminants of air that are known or likely to be hazardous to human health and well being.

KEY DUTIES / COMPLIANCE GUIDE/ REQUIREMENTS

1. The guidelines set the following ambient standards:
 - a. NO_2 – $40 \mu\text{g m}^{-3}$ (annual mean)
 - b. NO_2 – $200 \mu\text{g m}^{-3}$ (maximum one hour mean)
 - c. SO_2 – $50 \mu\text{g m}^{-3}$ (annual mean)
 - d. SO_2 – $125 \mu\text{g m}^{-3}$ (24 hour mean)
 - e. SO_2 – $500 \mu\text{g m}^{-3}$ (10 minute mean)
 - f. PM_{10} – $50 \mu\text{g m}^{-3}$ (annual average)
 - g. PM_{10} – $125 \mu\text{g m}^{-3}$ (24 hr average)
 - h. Total Suspended Particulates $70 \mu\text{g m}^{-3}$ (annual average)
 - i. Total Suspended Particulates $150\text{-}230 \mu\text{g m}^{-3}$ (24 hr average)

NAME: Californian Ballast Water Discharge Standards

ID: INT'L 5

PURPOSE:

- To reduce the introduction of harmful exotic species into California's coastal waters
- Present a set of standards that are more stringent than the equivalent IMO standards, but which are technologically achievable and more appropriate the perceived risk to Californian waters

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

Table 1. Recommended ballast water discharge standards

	Organism type or size class	Discharge standard
Interim Standards	<u>Environmentally-protective limits</u>	
	Organisms greater than 50 microns in minimum dimension:	No detectable living organisms
	Organisms 10-50 microns in minimum dimension:	No more than 10 ⁻² living organisms per milliliter
	Organisms less than 10 microns in minimum dimension:	No more than 10 ³ colony-forming-units of bacteria per 100 milliliters
		No more than 10 ⁴ viruses per 100 milliliters
	<u>Public health-protective limits</u>	
	<i>Escherichia coli</i> :	No more than 126 colony-forming-units per 100 milliliters
	Intestinal enterococci:	No more than 33 colony-forming-units per 100 milliliters
	Toxicogenic <i>Vibrio cholerae</i> (serotypes O1 and O139):	No more than 1 colony-forming-unit per 100 milliliters No more than 1 colony-forming-unit per gram of wet zoological samples
Long-term Standard	All size classes	No detectable living or culturable organisms

Table 2. Recommended Implementation Schedule for Interim Standards

Ballast capacity of vessel	Applied to vessels in this size class that are constructed in or after	Applied to other vessels in this size class starting in
<1500 metric tons:	2009	2016
1500-5000 metric tons:	2009	2014
>5000 metric tons:	2012	2016

NAME: WHO Guidelines for Drinking Water Quality, 2004

ID: INT'L 6 (A)

PURPOSE:

- The guidelines contain a large number of standards to eliminate or minimise the risk to human health from substances. The guidelines are intended to provide a basis for the setting of national standards.

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

4. Refer to Annex 4 of Guidelines for Drinking Water Quality, Third Edition, Recommendations, Vol. 1 (see Attachment A, pdf file) for a summary of key parameters, along with the Guidelines a basis for assessing drinking-water quality and in particular, for identifying potentially hazardous water constituents.
2. Recognise that different water quality parameters may require different priorities for management to ensure public health and accordingly, adopt the following general the progression of priority in the course of managing water quality supply to employees and for use in the preparation of food:
 - a. Ensure an adequate supply of microbiologically safe water
 - b. Manage key inorganic contaminants known to cause adverse health effects in humans
 - c. Maintain acceptability of drinking-water quality to prevent consumers seeking other potentially less microbiologically safe supplies
 - d. Address other chemical contaminants

NAME: WHO standards for drinking water, 2001

ID: INT'L 6 (B)

PURPOSE:

- The guidelines contain a large number of standards to eliminate or minimise the risk to human health from substances. The guidelines are intended to provide a basis for the setting of national standards.

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

5. Refer to the following table for a summary of key parameters, along with the Guidelines a basis for assessing drinking-water quality and in particular, for identifying potentially hazardous water constituents.

Parameter	Design standard	Parameter	Design standard
Turbidity	5 NTU	Iron (Fe)	0.3 mg/L
Colour	15 time colour units	Lead (Pb)	0.01 mg/L
pH	6.5-8.5	Manganese* (Mn)	0.5 mg/L, 0.1 mg/L
Chlorines	5mg/L, 0.6 – 1 mg/L	Mercury (Hg)	0.01 mg/L
Total Dissolved Solids	1000mg/L	Molybdenum (Mo)	0.07 mg/L
Total Coliform	0 per 100 mg/L	Nickel (Ni)	0.2 mg/L
Hydrogen sulphide	0.05 mg/L	Selenium (Se)	0.01 mg/L
Inorganics		Sodium (Na)	200 mg/L
Aluminium (Al total)	0.2mg/L	Sulphates (SO ₄)	250 mg/L
Ammonium (NH ₄)	1.5 mg/L	Zinc (Zn)	5 mg/L, 3 mg/L
Arsenic (As)	0.01 mg/L	Aromatic compounds	
Barium (Ba)	0.7 mg/L	Benzene	0.01 mg/L
Boron (B)	0.3 mg/L	Ethylbenzene*	0.3 mg/L, 2-200 ug/L
Cadmium (Cd)	0.003 mg/L	Toluene	0.7 mg/L, 24-170 ug/L
Chlorides (Cl)	250 mg/L	Xylene	0.5 mg/L, 20-1800 mg/L
Chromium (total)	0.05 mg/l	Styrene	20 ug/L, 4-2600 mg/L
Copper* (Cu)	2 mg/L, 1 mg/L	Benzo[a]pyrene	0.7 mg/L
Cyanides (Cn)	0.07 mg/L		
Fluoride (F)	1.5 mg/L		

2. Recognise that different water quality parameters may require different priorities for management to ensure public health and accordingly, adopt the following general the progression of priority in the course of managing water quality supply to employees and for use in the preparation of food:

- a. Ensure an adequate supply of microbiologically safe water
- b. Manage key inorganic contaminants known to cause adverse health effects in humans
- c. Maintain acceptability of drinking-water quality to prevent consumers seeking other potentially less microbiologically safe supplies
- d. Address other chemical contaminants

NAME: EU Directives 94/55/EC and associated Directives (for roads), and 96/49/EC associated Directives (for rail) covering transport of dangerous goods

ID: INT'L 7

PURPOSE: Provide a harmonised system for preventing accidents or mitigating them during transport of dangerous goods by ensuring proper enforcement of international standards

KEY DUTIES / COMPLIANCE GUIDE/ REQUIREMENTS

1. Observe appropriate international standards when transporting chemicals and dangerous goods requiring transportation, for example by classifying the goods in terms of the level of risk posed, i.e.,
 - a. Explosives
 - b. Gases
 - c. Flammable liquids
 - d. Flammable solids
 - e. Oxidising substances and organic peroxides
 - f. Toxic and infectious substances
 - g. Radioactive materials
 - h. Corrosives
 - i. Miscellaneous materials and articles

and observing corresponding procedures and requirements appropriate to their transportation.¹

¹ Very specific details are provided in the Directives. For example COUNCIL DIRECTIVE 94/55/EC plus Annexes is 479 pages

NAME: Dutch Target values and intervention values for soil remediation

ID: INT'L 8

PURPOSE:

- To provide an overview of all the currently available soil remediation intervention values and indicative levels for serious soil contamination including the accompanying target values, measurement regulations and parameters for determining the remediation urgency and the remediation deadline
- Establishing intervention values for soil remediation and indicative levels for serious contamination for the fourth series of substances
- Provide a guideline for handling substances for which there is no standard

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

1. Target values and intervention values for soil remediation are specified in four annexes:
 - **Annex A** deals with the target values, the soil remediation intervention values and the indicative levels for serious contamination.
 - **Annex B** contains the measurement and analysis regulations for soil/sediment and groundwater for the substances listed in Annex A
 - **Annex C** gives the data required for determining the remediation urgency and the remediation deadline for the substances in part A
 - **Annex D** provides a guideline for dealing with substances for which there are no standards.
2. The soil remediation **intervention values** indicate when the functional properties of the soil for humans, plant and animal life, is seriously impaired or threatened. They are representative of the level of contamination above which there is a serious case of soil contamination.
3. The intervention values for groundwater are not based on any separate risk evaluation with regard to the presence of contaminants in groundwater, but are derived from the values for soil/sediment.
4. The **target values** indicate the level at which there is a sustainable soil quality. In terms of curative policy this means that the target values indicate the level that has to be achieved to fully recover the functional properties of the soil for humans and plant and animal life. Besides this the target values give an indication of the benchmark for environmental quality in the long term on the assumption of negligible risks to the ecosystem.

Intervention Values for the Protection of Surface and Groundwater

Contaminant	Soil Sediment (mg/kg dry weight)		Groundwater (µg/l)	
	Optimum	Action	Optimum	Action
Metals	Optimum	Action	Optimum	Action
Arsenic	29	55	10	60
Barium	200	625	50	625
Cadmium	0.8	12	0.4	6
Chromium	100	380	1	30
Cobalt	20	240	20	100
Copper	36	190	15	75
Lead	85	530	15	75
Molybdenum	10	200	5	300
Nickel	35	210	15	75
Mercury	0.3	10	0.05	0.3
Zinc	140	720	65	800
Cyanides	Optimum	Action	Optimum	Action
Free	1	20	5	1500
Complex (pH<5) (1)	5	650	10	1500
Complex (pH>5) (1)	5	50	10	1500
Thiocyanate	-	-	20	1500
Aromatics	Optimum	Action	Optimum	Action
Benzene	0.05[d]	2	0.2	30
Ethylbenzene	0.05[d]	50	0.2	150
Phenol	0.05[d]	40	0.2	2000
Toluene	0.05[d]	130	0.2	2000
Xylene	0.05[d]	25	0.2	70
Cresol	-	5[d]	-	200
Catechin	-	20	-	1250
Resorein	-	10	-	600
Hydroquinone	-	10	-	800
Polycyclic Aromatic Hydrocarbons (PAH)	Optimum	Action	Optimum	Action
Anthracene	-	-	0.02	5
Benzo(a)pyrene	-	-	0.001	0.5
Fluoroanthrene	-	-	0.005	1
Naphtalene	-	-	0.1	70
Phenanthrene	-	-	0.03	5
Benzo(a)anthracene	-	-	0.003	0.05
Benzo(a)fluoranthrene	-	-	0.003	0.5

Contaminant	Soil Sediment (mg/kg dry weight)		Groundwater (µg/l)	
Benzo(k)fluoranthrene	-	-	0.001	0.05
Benzo(g,h,i)perylene	-	-	0.0002	0.05
Indenol(1,2,3-c,d)pyrene	-	-	0.0004	0.05
Total PAH (2) (10)	1	40	-	-
Chlorinated Hydrocarbons	Optimum	Action	Optimum	Action
1,2 Dichloroethane	-	4	0.01 [d]	400
Dichloromethane	[d]	20	0.01 [de]	1000
Tetrachloromethane	0.001	1	0.01 [d]	10
Tetrachloroethane	0.01	4	0.01 [d]	40
Trichloromethane	0.001	10	0.01[d]	400
Trichloroethene	0.001	60	0.01[d]	500
Vinylchloride	-	0.1	-	0.7
Monochlorobenzene	[d]	-	0.01[d]	180
Dichlorobenzol (total)	0.01	-	0.01[d]	50
Trichlorobenzol (total)	0.01	-	0.01[d]	10
Tetrachlorobenzol (total)	0.01	-	0.01[d]	2.5
Pentachlorobenzene	0.0035	-	0.01[d]	1
Hexachlorobenzene	0.0025	-	0.01[d]	0.5
Chlorobenzenes (3) (10)	-	30	-	-
Monochlorophenol	0.0025	-	0.25	100
Dichlorophenol	0.003	-	0.08	30
Trichlorophenol	0.001	-	0.025	10
Tetrachlorophenol	0.001	-	0.01	10
Pentachlorophenol	0.002	5	0.02	3
Chlorophenols (total) (4) (10)	-	10	-	-
Chloronaphtylene	-	10	-	6
PolyChloroBiphenyls (total)(5) (10)	0.02	1	0.01	0.01[d]
Pesticides	Optimum	Action	Optimum	Action
DDT/DDD/DDE (total) (6)	0.0025	4	[d]	0.01
Aldrin	0.0025	-	[d]	-
Dieldrin	0.0005	-	0.02ng/l	-
Endrin	0.01	[d]	-	-
Drins (total)	-	4	-	0.1
alpha HCH	0.0025	-	[d]	-

Contaminant	Soil Sediment (mg/kg dry weight)		Groundwater (µg/l)	
Beta HCH	0.01	-	[d]	-
Gamma HCH	0.05 µg/l	-	0.2 ng/l	-
HCH combined (7)	-	2	-	1
Carbaryl	-	5	0.01 [d]	0.1
Carbofuran	-	2	0.01[d]	0.1
Maneb	-	35	[d]	0.1
Atrazin	0.05 µg/l	6	0.0075	150
Miscellaneous	Optimum	Action	Optimum	Action
Tetrahydrofuran	0.1	0.4	0.5	1
Pyridine	0.1	1	0.5	3
Tetrahydrothiophene	0.1	90	0.5	30
Cyclohexanone	0.1	270	0.5	15000
Styrene	0.1	100	0.5	300
Mineral Oil (9)	50	5000	50	600
Phthalates (total)	0.1	60	0.5	5

1. Values are for a Standard Dutch Soil (10% organic matter and 25% dry content)
2. [d] = Detection Limit.
3. Acidity: pH (0.01M CaCl₂) The 90 percentile of the measured value is used to determine the pH value.
4. PAH (total of 10) is the total of Anthracene, Benzo(a)anthracene, Benzo(a)fluoranthrene, Benzo(g,h,i)perylene, Benzo(k)fluoranthrene, Chrysene, Fluoroanthrene, Indenol(1,2,3-c,d)pyrene, Naphtalene, Phenanthrene.
6. Chlorobenzenes are the total of all chlorobenzenes (mono-, di-, tri-, tetra-, penta- and hexachlorobenzene).
7. Chlorophenols are the total of all chlorophenols (mono-, di-, tri-, tetra-, pentachlorophenols).
8. The action value for PCB's (Polychlorinatedbiphenyls) is the total of PCB's 28,52,101, 118, 153, 180. The target value refers to the total excluding PCB 118.
9. DDT/DDD/DDE is the total of DDT, DDD, DDE.
10. Drins is the total of Aldrin + Dieldrin + Endrin.
11. HCH combined is the total of alpha, beta, gamma and delta HCH.
12. Mineral Oil is the sum of all alkanes (both straight and branch-chain). When contamination is due to mixtures (e.g., petrol or heating oil), then the content of aromatic and/or polycyclic aromatic hydrocarbons must also be determined.
13. The total values for PAH's, chlorophenols and chlorobenzenes in the soil/sediment apply to the total concentration of the compound belonging to the relevant category. If contamination is due to only one compound of a category, the value used is the intervention value of that compound. Where there are two or more compounds the value for the total of these compounds applies. For soil/sediment the effects are directly additive. In the case of groundwater effects are indirect and are expressed as a fraction of the individual values before being summed.

NAME: International Union for Conservation of Nature and Natural Resources; 2004 IUCN Red List of Threatened Species.

ID: INT'L 9

PURPOSE:

- To provide an explicit, objective framework for the classification of the broadest range of species according to their extinction risk
- To provide a system that can be applied consistently by different people
- To improve objectivity by providing users with clear guidance on how to evaluate different factors which affect the risk of extinction
- To provide a system that will facilitate comparisons across widely different taxa
- To give people using threatened species lists a better understanding of how individual species were classified.

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

1. IUCN Red List Categories are as follows:

- Extinct, EX
- Extinct in the Wild, EW
- Critically Endangered, CR
- Near Threatened, NT
- Endangered, EN
- Vulnerable, VU
- Least Concern, LC
- Data Deficient, DD
- Not Evaluated, NE

2. A set of 5 criteria has been developed for each category to facilitate the uniform assignation of species to one of the above categories. These criteria differ from one category to the next.

3. The list of threatened taxa is maintained in a searchable database by the [SSC Red List Programme](#) as part of the [SSC's Species Information Service \(SIS\)](#). The records for all taxa listed in the Red List Categories described above are provided here and they can be viewed by using the Search and Expert Search functions on the home page

NAME: E&P Forum Waste Management Guidelines, September 1993

ID: INT'L 10

PURPOSE: To provide E&P Operators guidance in the development of a waste management program appropriate to their activities and ecological sensitivity of the operating location.

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

1. Design and operate E&P facilities in accordance with a waste management hierarchy, i.e., source reduction, reuse, recycling/recovery, treatment, responsible disposal.
2. Develop an area-specific waste management plan, incorporating
 - d. Management approval
 - e. Area definition
 - f. Waste identification
 - g. Regulatory analysis
 - h. Waste categorisation
 - i. Evaluation of waste management and disposal options
 - j. Waste minimisation opportunities
 - k. Selection of preferred waste management options
 - l. Implement an Area Waste Management Plan
 - m. Review and update plan

NAME: OECD Guidelines for Multinational Enterprises

ID: INT'L 11

PURPOSE:

- To help Multinational Enterprises (MNEs) operate in harmony with government policies and with societal expectations.

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

1. Non-binding recommendations to enterprises, made by the thirty-seven governments that adhere to them
2. Enterprises should within the framework of law, regulations and prevailing labour relations and employment practices, in each of the countries in which they operate:
 - respect employee rights to be represented by trade unions
 - observe standards of employment and industrial relations not less favourable than those observed by comparable employers in the host country
 - take the livelihoods of their employees into account when considering major changes to their operations
 - Support and uphold the principles of good corporate governance, and should develop and apply good corporate governance practices
 - Develop and apply effective self-regulatory practices and management systems that foster a relationship of confidence and mutual trust between entities and the societies in which they operate
 - Promote awareness of, and compliance with, company policies through appropriate dissemination of policies, including through training programmes
 - Refrain from disciplinary or discriminatory action against employees who make bona fide reports to management or the competent authorities on practices that contravene the law, the guidelines or the enterprise's policy
 - Encourage, where practicable, business partners (including suppliers and sub-contractors) to apply principles of corporate conduct compatible with the guidelines
 - Ensure that timely, regular, reliable and relevant information is disclosed, including, as appropriate, its disclosure along business lines and geographic areas
 - Enterprises should not, directly or indirectly, offer, promise, give or demand a bribe to obtain or retain business or other improper advantage. Nor should enterprises be solicited, or expected to render a bribe or other undue advantage.

NAME: ILO Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy

ID: INT'L 12

PURPOSE:

- To evolve principles for the guidance of governments, workers' and employers' organizations, and multinational enterprises themselves

KEY DUTIES/ COMPLIANCE / GUIDE/ REQUIREMENTS

Multinational enterprises should:

1. Respect the sovereign rights of States, obey the national laws and regulations, give due consideration to local practices and respect relevant international standards.
2. Take fully into account established general policy objectives of the countries in which they operate. Their activities should be in harmony with the development priorities and social aims and structure of the country in which they operate.
3. Endeavour to increase employment opportunities and standards, taking into account the employment policies and objectives of the governments, as well as security of employment and the long-term development of the enterprise.
4. Give priority to the employment, occupational development, promotion and advancement of nationals of the host country at all levels in cooperation, as appropriate, with representatives of the workers employed by them or of the organizations of these workers and governmental authorities
5. Promote employment in developing countries, in the context of an expanding world economy, multinational enterprises, wherever practicable, should give consideration to the conclusion of contracts with national enterprises for the manufacture of parts and equipment, to the use of local raw materials and to the progressive promotion of the local processing of raw materials.
6. Ensure that relevant training is provided for all levels of their employees in the host country, as appropriate, to meet the needs of the enterprise as well as the development policies of the country.
7. Multinational enterprises operating in developing countries should participate, along with national enterprises, in programmes with the aim of encouraging skill formation and development, including special funds, encouraged by host governments and supported by employers' and workers' organizations.

NAME: UN Norms of Responsibilities of Transnational Corporations and Other Business Enterprises with Regard to Human Rights (draft, March 2003)

ID: INT'L 13

PURPOSE:

The Draft Norms are intended to assist companies to implement human rights standards throughout their operation and integrate human rights principles into their decision-making processes. They were drafted in consultation with governments, NGOS, businesses and other experts. It is based on existing international standards such as UN treaties, the UN Global Compact, the Geneva Conventions, ILO conventions and the OECD Guidelines for Multination Enterprises.

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

1. Businesses are obliged to respect, ensure respect for, prevent abuses of, and promote human rights recognised in international as well as national law.
2. Eliminate discrimination.
3. Not engage in nor benefit from violations of humanitarian law.
4. Security arrangements to observe human right norms.
5. No forced or compulsory labour.
6. Protect children from economic exploitation
7. Provide a safe and healthy working environment.
8. Compensation workers with remuneration that ensures an adequate standard of living.
9. Ensure freedom of association and recognise the right to collective bargaining.
10. Recognise and respect applicable rules of law; social, economic, and cultural policies including transparency, accountability and prohibition of corruption.
11. Do not offer, promise, give, accept, condone, or knowingly benefit from a bribe or other improper advantage.
12. Respect rights to [*inter alia*] development; adequate food; drinking water; health; housing; education; freedom of thought; conscience and religion; freedom of opinion and expression.
13. Act in accordance with fair business practices.
14. Conduct activities in a manner contributing to sustainable development.
15. Adopt, disseminate and implement internal rules of operation in compliance with Human Rights responsibilities, including in contracts and other arrangements with contractors, sub-contractors, and suppliers.
16. Subject to periodic monitoring by national, international, government and/or non-governmental mechanisms regarding Human Rights Responsibilities.

NOTES

These Draft Norms are considered unlikely to ever become finalised, due to the politics of the UN, but they are emerging as a benchmark for international businesses.

NAME: World Bank/IMF core principles for poverty reduction

ID: INT'L 14

PURPOSE:

KEY DUTIES / COMPLIANCE GUIDE/ REQUIREMENTS

Poverty reduction strategies should be:

1. Country-driven, involving broad-based participation by civil society and the private sector
2. Results-oriented, and focused on outcomes that would benefit the poor
3. Comprehensive in recognizing the multidimensional nature of poverty
4. Prioritised so that implementation is feasible in fiscal and institutional terms
5. Partnership-oriented
6. Based on a long-term perspective for poverty reduction

NAME: World Health Organisation Guidelines for Community Noise

ID: INT'L 15

PURPOSE:

- To provide guidance to protect people from the harmful effects of noise in non-industrial environments

KEY DUTIES / COMPLIANCE GUIDE / REQUIREMENTS

1. The following table summarises the key data for different environmental settings:

Specific environment	Critical health effect(s)	LA _{eq} [dB]	Time base (hours)	LA max [dB]
Outdoor living area	Serious annoyance: daytime/evening	55	16	-
	Moderate annoyance: daytime/evening	50	16	-
Dwelling, indoors	Speech intelligibility and moderate annoyance, daytime and evening	35	16	
Inside bedrooms	Sleep disturbance: night-time	30	8	45
School class rooms and pre-schools, indoors	Speech intelligibility, disturbance of information extraction, message communication	35	During class	-
School, playground outdoor	Annoyance (external source)	55	During play	
Industrial, commercial, shopping and traffic areas, indoors and outdoors	Hearing impairment	70	24	110
Outdoors in parkland and conservation areas	Disruption of tranquillity	Existing quiet area should be preserved and the ration of intruding noise to natural background sound should be kept low		

NAME: PWBLF/World Bank/UNDP Building Competitiveness and Communities

ID: INT 16

PURPOSE:

- To provide guidance on building competitiveness and communities

KEY DUTIES/ COMPLIANCE/ GUIDE/ REQUIREMENTS

Main areas where companies can take practical action for beneficial effect:

1. Generating investment and income by contributing to the foreign exchange and export earnings of host countries, plus other capital (both public and private) that is attracted by this investment.
2. Creating new jobs (directly and indirectly)
3. Developing human resources through skills development and building human capital along the value chain and in local communities
4. Providing appropriate products and services
5. Building local business systems through local joint venture partners, and maximizing local producers and service suppliers
6. Sharing international standards and world-class business practices, including health safety and environmental standards, ethical business practices, quality standards and management practices, and employment practices
7. Supporting technology development and transfer
8. Establishing physical and institutional infrastructure, including physical infrastructure and legal and financial institutions and business associations.

NAME: Charter for the Protection and Management of Archaeological Heritage (1990)

ID: INT'L 17

PURPOSE:

- The Charter was adopted by the General Assembly of ICOMOS (an international NGO). It is almost an update of the earlier Venice Charter of 1964 (see INT 17) and establishes a number of similar rather general and high level principles, relating to national measures rather than specific projects.

KEY DUTIES/ COMPLIANCE GUIDE/ REQUIREMENTS

1. Policies for the protection of the archaeological heritage should constitute an integral component of policies relating to land use, development, and planning as well as of cultural, environmental and educational policies.
2. Active participation by the general public must form part of policies for the protection of the archaeological heritage.
3. Development projects constitute one of the greatest physical threats to the archaeological heritage. A duty for developers to ensure that archaeological heritage impact studies are carried out before development schemes are implemented, should therefore be embodied in appropriate legislation.
4. Excavation should be carried out on sites and monuments threatened by development, land-use change, looting, or natural deterioration.
5. The overall objective of archaeological heritage management should be the preservation of monuments and sites in situ, including proper long-term conservation and curation of all related records and collections etc.
6. The presentation of the archaeological heritage to the general public is an essential method of promoting an understanding of the origins and development of modern societies.
7. The training of an adequate number of qualified professionals in the relevant fields of expertise should therefore be an important objective for the educational policies in every country.
8. The archaeological heritage is the common heritage of all humanity. International co-operation is therefore essential in developing and maintaining standards in its management.

NOTES:

1. ICOMOS has national committees in many countries, including Peru (Jiron de la Union 1040 3er. Piso LIMA 1). ICOMOS claims to be the principal advisor to UNESCO on archaeological matters. It has a role under the World Heritage Convention in designating World Heritage Sites.
2. ICOMOS has 21 International Scientific Committees that "seek to establish international standards for the preservation, restoration and management of the cultural environment". Many of these have been promulgated as "Charters" as a result of adoption by the ICOMOS General Assembly.

NAME: International Charter for the Conservation and Restoration of Monuments and Sites (The Venice Charter, 1964)

ID: INT'L 18

PURPOSE: This Charter was promulgated by The International Council on Monuments and Sites (ICOMOS), which is a leading international NGO in the field of archaeology. The Charter expresses a number of high-level principles relating to archaeological protection at a national level.

KEY DUTIES/ COMPLIANCE GUIDE/ REQUIREMENTS

1. The conservation and restoration of monuments must have recourse to all the sciences and techniques which can contribute to the study and safeguarding of the architectural heritage.
2. It is essential to the conservation of monuments that they be maintained on a permanent basis.
3. No new construction, demolition or modification which would alter the relations of mass and colour (of a monument) must be allowed.
4. The moving of all or part of a monument cannot be allowed except where the safeguarding of that monument demands it, or where it is justified by national or international interest of paramount importance.
5. Items of sculpture, painting or decoration which form an integral part of a monument may only be removed from it, if this is the sole means of ensuring their preservation.
6. The sites of monuments must be the object of special care in order to safeguard their integrity and ensure that they are cleared and presented in a seemly manner.
7. Excavations should be carried out in accordance with scientific standards and the recommendation defining international principles to be applied in the case of archaeological excavation adopted by UNESCO in 1956.
8. In all works of preservation, restoration or excavation, there should always be precise documentation in the form of analytical and critical reports, illustrated with drawings and photographs.

NOTES:

1. ICOMOS has national committees in many countries, including Azerbaijan, Georgia and Turkey. ICOMOS claims to be the principal advisor to UNESCO on archaeological matters. It has a role under the World Heritage Convention in designating World Heritage Sites.
2. ICOMOS has 21 International Scientific Committees that "seek to establish international standards for the preservation, restoration and management of the cultural environment". Many of these have been promulgated as "Charters" as a result of adoption by the ICOMOS General Assembly.
3. Both this Charter (The Venice Charter, 1964) and the Charter for the Protection and Management of the Archaeological Heritage (1990) (see CH/7) are rather high level documents, aimed at governments rather than individual projects.

NAME: IUCN Guidelines for the Prevention of Biodiversity Loss Caused by Alien Invasive Species (2000)

ID: INT'L 19

PURPOSE: To prevent further losses of biological diversity due to the deleterious effects of alien invasive species, thereby assisting in compliance with the Convention on Biological Diversity, which states that:

"Each Contracting Party shall, as far as possible and as appropriate:
...Prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species."

KEY DUTIES / COMPLIANCE GUIDE/ REQUIREMENTS¹

1. Raise awareness amongst the construction operation of the damaging effects of alien invasive species on native biodiversity
2. Identify and manage potential pathways that could lead to the unintentional introduction of invasive alien species to the project area including:
 - a. The importation of construction material from international sources
 - b. Discharge of ballast water from ships delivering construction materials
 - c. The movement of construction material along the right of way
3. Incorporate provisions in the post re-instatement surveys for the recognition and, as appropriate, eradication of invasive alien species

¹ Alien invasive species means alien species that become established in natural or semi-natural ecosystems or habitats, are agents of change, and threaten native biological diversity.