



# A SUPPLEMENTARY GUIDE FOR INCORPORATING CLIMATE CHANGE INTO ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

Prepared for the Republic of Mauritius, 2012

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## 1. Objective

This guideline outlines entry points to integrate climate change considerations into EIA for specific undertakings - as listed under the EPA 2002. EIA guidelines have been developed for a number of specific undertakings (Table 1); however, there is an absence of targeted EIA guidance for some activities listed in the EPA 2002. A proponent undertaking an EIA for a specific undertaking that does not currently have specific EIA guidelines, adopts the EIA General guidelines (in which climate change considerations have been mainstreamed). This supplementary guide provides additional information tailored to certain activities that assist the proponent in developing a proposal that minimises environmental impact, whilst also taking into account changing environmental conditions (e.g. climate change).

This guideline will supplement the EIA guideline for specific undertakings (as outlined in Table 1), specifically taking into account climate change considerations. Furthermore, this support tool can be utilised by ROM authorities as a framework for incorporating climate change into future EIA guidelines.

**Table 1: Existing EIA Guidelines for Specific Undertakings, ROM**

No.	Guideline
1	EIA Guideline for Proposed Coastal Hotel Projects (2004) (Under review)
2	EIA Guidelines for Proposed Desalination Plants (2005)
3	EIA Guidelines for Fish Farming in the Sea (2009)
4	EIA Guideline For Proposed Residential Morcellement Projects (2004) (Under review)
5	EIA Guidelines For Proposed Stone Crushing Plants (2005)

## 2. Background Information

### What is an Environment Impact Assessment (EIA)?

EIA is a study that predicts the environmental consequences of a proposed development. It evaluates the expected effects on the natural environment, human health and on property. The study requires a multi-disciplinary approach.

The EIA compares various alternatives by which the project could be realized and seeks to identify the one that represents the best combination of economic and environmental costs and benefits. Alternatives include location as well as methods, process technology and construction methods.

### Why do we need an EIA?

EIA is one of the most important tools for sound decision-making and for achieving sustainable development. Mauritius first adopted formal procedures for EIA in June 1993 following the amendment of the Environment Protection Act (EPA) 1991. In order to further consolidate and reinforce the institutional and legal framework for the protection of the environmental assets of Mauritius and sustainable development, a new Environment Protection Act was introduced from 5 September 2002. The EPA 2002 provides for environmental stewardship, greater transparency and public participation in the EIA mechanism as well as streamlining of the EIA procedures.

## Which activities are subject to EIA?

Undertakings requiring an EIA licence are listed in Part B of the First Schedule of the EPA 2002 (Appendix 1). The EPA 2002 also empowers the Minister to request an EIA for any non-listed activity, which, by reason of its nature, scope, scale and sensitive location could have an impact on the environment.

The processing of an EIA application involves consultation with several Ministries/ Authorities and the report is also sent for public comments to the Local Authorities. Thus, a proponent applying for an EIA Licence shall submit in **electronic form and 10 printed copies** of the EIA report to the Department of Environment and also indicate the tentative date of commencement of work.

## Structure of Guideline:

The guideline is structured in two parts:

Part 1: Recommended entry points for climate change integration – aligned with prescribed EIA guideline contents.

Part 2: Recommendations for incorporating climate change into specific undertakings, listed in the EPA 2002.

## 3. Climate Change Considerations in EIA

The following section details where climate change considerations are to be addressed within the ROM's EIA framework. The contents of available EIA guidelines for specific undertakings (Table 1) were reviewed to provide a structure for incorporating climate change within EIA applications. Note that the contents have been amalgamated from a number of EIA guidelines and as a result, not all subsections may be relevant for all activities. Proponents must therefore take into account relevant legislation, policies and industry standards when embarking on their respective EIA proposal – this guideline is a supplement to the EIA guidelines for each specific undertaking and is not considered a definitive EIA guideline.

### Part 1: General EIA

#### 3.1 Alignment of Climate Change Considerations with EIA Process

Please note this section outlines climate change considerations only. Proponents must refer to the general EIA process outlined in *Proponent's Guide to Environmental Impact Assessment (2004)* or the EIA guidelines for their specific undertaking (if available) for a full description of the required content under each section.

##### 1. Early Considerations of the strategic context:

No additional content required in this section.

##### 2. Early assessment of options (Screening):

The proponent is to complete a first pass assessment of potentially adverse impacts that (i) the project may have on the environment (ii) the environment may have on the project (e.g. climate change). All feasible alternatives that could satisfy the objectives of the proposal should be considered. When weighing up options, the biophysical, economic and social costs and benefits throughout the whole life cycle of the proposal should be considered. The “do nothing” options should also be included in these considerations.

### **3. Identifying Issues (Scoping)**

The aim of this phase is to ensure that the EIA study addresses all the issues important for decision-making.

Guidelines to assist proponents in the Scoping Phase are provided in Appendix 2. Scoping is a critical component of the EIA submission as it demonstrates adequate consideration of climate risks and provides guidance to the proponent on the level of detail required in the full EIA assessment. The outputs of the scoping activities should be submitted in partnership with the full EIA application. Applications preparing an Outline of the Undertaking should submit the Scoping Phase outputs in partnership with the Outline of the Undertaking.

### **3.2 Alignment of climate change considerations with prescribed contents of EIA**

#### **1. Intro, Exec Summary**

No additional content required in this section.

#### **2. Site and Project Description:**

This should describe the project and indicate the justification and rationale underlying the project, including:

- ◆ Site characteristics in terms of site location, landform; present and past land use (*if known*), accessibility to site, flora and fauna; areas vulnerable to flooding, inundation, landslides, erosion and other impacts from natural hazards or climate change.
- ◆ Surrounding environment indicating adjacent residential areas/built-up environment, environmentally sensitive areas and their categorization (refer to the ESA Management Plan), watercourses, designated sites of interest.
- ◆ Other attributes of the area, e.g. amenities, recreational and agricultural values, including socio-economic activities vulnerable to natural hazard or climate change impacts.
- ◆ Project description should detail operational boundaries (e.g. physical and process boundaries).

#### **3. Establishment of baseline data:**

A vulnerability and adaptation assessment, including potential impacts on the vulnerability of the project to natural hazards should be conducted; and climate change impacts including the frequency, magnitude and distribution of any natural hazard or climate change element affecting the spatial or temporal boundaries of the proposed project should be considered. Assemble, evaluate and present baseline data on the relevant natural hazard/climate change characteristics of the study area that are relevant to project siting or design, or to the

formulation of mitigation or adaptation measures. Include information on any changes anticipated before the project commences.

The ROM Second National Communication (SNC) to the United Nations Framework Convention on Climate Change (UNFCCC) outlines proposed scenarios for change in climate conditions over time; as well as baseline values for GHG emissions. This information can be referred to when establishing the baseline and completing the vulnerability and adaptation assessment.

Note: The following standards may assist proponents in evaluating risk – refer to the Mauritius Standards Bureau for more detail:

- MS ISO 31000:2009: *Risk Management – Principles and guidelines*
- MS ISO 31010:2009: *Risk Management – Risk assessment techniques*

#### **4. Climatic conditions and associated impact:**

This should provide a description of the expected environmental conditions at the time of probable project implementation. For example temperature, rainfall, wind direction, wind speed and associated constraints e.g. summer season, rainy season, cyclonic period etc. In addition, describe expected changes in climatic conditions (i.e. climate change) over the life cycle of the project (construction to decommissioning) and the likely impact these may have on the project site and its area of influence. Some of this detail may have been captured in the vulnerability and adaptation assessment.

Specific climate scenarios and projections for change in climate drivers (such as temperature, mean-sea level, wind and rainfall) are not presented in this Guidance document. Climate information is regularly updated and therefore it is recommended that proponents seek the most up-to-date climate information when preparing their assessment. As a baseline, the ROM Second National Communication to the UNFCCC provides a solid foundation for projections for change.

#### **5. Predicted Environmental Impacts & Potential Mitigation Measures (includes: construction/operation phases and assessment of the associated human and environmental impacts/risks – i.e. socio-economic and socio-cultural).**

*Note: Also referred to as 'Assessment of the direct and indirect environmental impacts' in certain ROM EIA Guidelines'.*

##### **5.1 Predicted Environmental Impacts:**

This section should indicate (i) what effects the proposed development is likely to have upon the environment and (ii) impacts of natural hazards and climate change on the proposed project.

In this analysis, distinguish between significant positive and negative impacts, direct and indirect impacts, cumulative impacts, and immediate and long-term impacts. Identify impacts that are unavoidable or irreversible. Wherever possible, describe impacts quantitatively, in terms of social/environmental costs and benefits.

The analysis of potential impacts of the proposed project is to include an assessment of potential exacerbations or reduction of natural hazard impacts, both on- and off-site. Characterize the extent and quality of available data, explaining significant information deficiencies and any uncertainties associated with predictions of impact.

Further analysis is also required to determine the rate and amount of Greenhouse Gas (GHG) emissions associated with the proposed undertaking. The following actions describe the recommended approach.

1. Identify and describe operations within the project boundary that will emit GHG.
2. Develop a GHG Inventory: Include estimates of GHG emissions in CO<sup>2</sup>e/year from the project based on projected construction, operations and if feasible, decommissioning activities using available data and references. Evaluate these estimates with industry standards and relevant climate change policies. If emissions are expected to exceed standards more detailed analysis is required.

Please note:

- (i) Significant climate change risks, including the project activities that contribute GHG emissions are identified in the scoping phase.
- (ii) The Energy Efficiency Management Office can provide the proponent with guidance on determining GHG emissions and outlining relevant standards, as stated in the Energy Efficiency Act 2011
- (iii) The Mauritius Standards Bureau have developed standards that can assist proponents in monitoring GHG emissions, they include:
  - MS ISO 14064-2:2006: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements
  - MS ISO 14066:2011: Greenhouse gases – Competence requirements for greenhouse gas validation teams and verification teams

3. Describe and/or quantify direct impacts on large-scale carbon sinks as a result of the project, if any. Carbon sinks are broadly defined as natural or artificial reservoirs that store carbon (e.g. soil, forests, mangroves, landfills). This data may also be included in the GHG Inventory. Note: The GHG Inventory may form a component of the Monitoring Plan.

The EIA should emphasize the key issues identified during the Scoping phase and indicate why these are felt to be crucial. Lesser impacts should be mentioned but the amount of space devoted to them should be proportional to their perceived importance. Although direct impacts will be more obvious, indirect and cumulative effects should not be overlooked. For clarity, impacts may be identified for construction, operational and decommissioning phases, and where possible quantified and an indication given of their magnitude and significance. In addition, risk transfer post decommissioning should be considered – what climate risks could result from the activity or be amplified by the activity, both now and in the future. Any uncertainty in prediction should also be made explicit. A matrix may serve to indicate whether the impacts are:

- Long/short term
- Strategic/local/regional/national
- Direct/indirect
- Irreversible/reversible

## **5.2 Mitigating Measures (including adaptation measures):**

Impacts that are to be addressed when developing mitigation and adaptation measures include



- The potential climate impacts now or in the future that could result from the proposed undertaking or be amplified by the proposed undertaking. Impacts of remedial measures to address identified impacts, such as seawalls, may have on- and off-site.
- GHG emissions associated with the undertaking over the project lifecycle.

Adaptation measures to reduce the undertaking's exposure and sensitivity to climate change risks, as identified in the scoping phase and the climate change vulnerability/risk assessment(s) established in the Baseline Data analysis. Adaptation measures should address significant climate change impacts that will affect the project (including project activities and the projects area of influence) according to the following areas (where relevant):

- Biodiversity and wildlife
- Ecosystem and their Goods and Service (Agriculture, Forestry, Fisheries, Aquaculture, Coastal Zone and Marine Ecosystems).
- Hydrology and Water Resources
- Soils and Land Resources
- Human Settlements, Energy and Industry
- Human Health
- Socio/economic Development

\*Feasible GHG reduction strategies or technologies that will be applied to the construction, operation and decommissioning stages of the undertaking. Development of these measures should be articulated through a GHG Mitigation Plan (containing reduction objectives, targets and strategies). Development of GHG mitigation measures is of particular importance for activities expected to exceed Government emissions standards.

\*Note: Mitigation targets and standards should be consistent with national strategies, policies and standards (e.g. Energy Efficiency Act 2011, Mauritius Standards Bureau). Proponents should consult with the Energy Efficiency Management Office (EEMO) to ensure existing guidelines, standards and initiatives are utilized.

The following standards should be referred to when conducting GHG Monitoring and developing GHG mitigation measures for the built environment - refer to the Mauritius Standards Bureau for more detail.

- *MS ISO 14064-2:2006: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements*
- *MS ISO 14066:2011: Greenhouse gases – Competence requirements for greenhouse gas validation teams and verification teams*
- *MS ISO 16813:2006: Building Environment Design – Indoor Environment – General Principles*
- *MS ISO 23045:2008: Building Environment Design – Guidelines to assess energy efficiency of new buildings*

## **6. Environmental Monitoring Plan:**

Prepare a detailed plan to monitor the implementation of management, mitigation or adaptation measures and the impacts of (a) the project during construction and operation,

and (b) climate change during all phases of the project (design, construction, operation, abandonment and decommissioning).

This should indicate:

- ◆ Provision made for ongoing monitoring during the life of the undertaking to assess change in social and environmental conditions (monitoring change against baseline conditions at time of EIA screening assessment).
- ◆ Provision for remedial action to address social or environmental changes, as specified within a monitoring plan.
- ◆ Estimate of capital and operating costs and a description of other inputs (such as training and institutional strategy).
- ◆ Incorporated into the monitoring plan/programme – Ongoing record and assessment of the performance of mitigating measures, adaptation and GHG reduction strategies. The monitoring plan should describe; objectives, processes, schedules, maintenance logs, and people responsible for each respective task. The monitoring plan should also be designed to monitor:
  - (i) Climate patterns affecting the project area
  - (ii) Climate change impacts on key social, economic and environmental indicators

The monitoring practitioner(s) should determine, where possible, the effectiveness of any adaptation, GHG emission reduction, offset or compensatory measures that has been implemented. Maintaining a database of “lessons learnt” should feed into an iterative process whereby mitigation measures are modified and enhanced when necessary – thereby managing change adaptively.

### **7. Implementation Schedule:**

No additional content required in this section.

### **8. Enhancement Opportunities:**

A brief outline should be given of any enhancement works that are planned. This should be distinguished from mitigation measures, which are integral to the project and form part of the proposal. For example participating in environmental upgrading campaigns; providing community services and compensation to affected stakeholders (e.g. climate change impacts that are amplified by the project affecting surrounding residents).

### **9. Consultation:**

Proponents to include

- ◆ Outline relevant statutory bodies, environmental and amenity groups and local residents, planters in the region and vicinity who are likely to be affected by the proposed development that have been contacted.
- ◆ Information critical to public consultation also includes; cumulative impacts that may result due to the interaction between climate and non-climatic stressors; proposed adaptation and mitigation measures that may affect the public.

### **10. Alternatives:**

The concept of alternatives extends to siting, design, technology selection, construction techniques and phasing, and operating and maintenance procedures. Compare alternatives

in terms of potential environmental impacts; capital and operating costs; suitability under local conditions; and institutional, training and monitoring requirements.

When describing the impacts, indicate which are irreversible or unavoidable and which can be mitigated, managed or addressed under an appropriate adaptation plan. To the extent possible, quantify the costs and benefits of each alternative, incorporating the estimated costs of any associated mitigation/adaptation measures. Include the alternative of not constructing the project, in order to demonstrate environmental conditions without it.

## **11. Conclusions/summary of environmental outcomes**

No additional content required in this section.

## **12. Proponent Checklist**

In addition to the existing checklist elements (see for example stone crushing EIA guideline), proponents are to ensure the following tasks are completed:

- Scoping phase completed with assessment of significant impacts
- Completed vulnerability and adaptation assessment
- Development of appropriate mitigation/adaptation measures to ameliorate impact associated with the undertaking and changing climatic conditions
- Development of monitoring plan

## Part 2: EIA For Specific Undertakings

**Table 2: Climate Change Entry Points for Specific Undertakings**

Note: This table of recommendations is not exhaustive. The recommendations are examples of potential integration points. Proponents and ROM Authorities should conduct further analysis to determine integration points for specific undertakings. The recommendations were developed drawing on a desktop review and limited in country consultation. Therefore, it is emphasised that additional review of each undertaking should be undertaken to determine adaptation options relevant to ROMs social, political and environmental context.

No.	Undertaking	Early Considerations (process, site and legislative boundaries)	Additional Climate Change Integration: Processes, potential adaptation/mitigation options
1	Stone Crushing - EIA Guideline (2005)	<ul style="list-style-type: none"> <li>• 1 km from permitted development/settlement boundaries, or from nearest residential building</li> <li>• 30m from water body (Rivers and Canal Act 1863)</li> <li>• No incompatible development within 1 km radius</li> <li>• Shall not constitute a visual intrusion in landscape</li> <li>• Preferably located in a depression, with high walls</li> <li>• Shall not be located within a wetland, coastal zone or any other sensitive area, including areas of high landscape value, landscape corridors, and mountain slopes.</li> <li>• Post closure measures shall be considered (rehabilitation)</li> <li>• Consideration shall be given to transport and associated traffic problems relating to operations.</li> </ul>	<p>Climate change vulnerability assessment to include</p> <ul style="list-style-type: none"> <li>• Assess how climate change may affect operation of plant - stockpiles, maintenance and monitoring (e.g. as a result of heavier rainfall episodes).</li> </ul> <p>Adaptation/Mitigation Options:</p> <ul style="list-style-type: none"> <li>• Flood-proof or re-site infrastructure and plan transport routes and roads to avoid disruption by flooding activities*.</li> </ul>
2	Coastal Hotel Projects – EIA Guideline (2004)	<ul style="list-style-type: none"> <li>• Shall be in line with the guidelines set by the ICZM and Beach Authority to promote sustainable development of the coastal zone.</li> <li>• Setback 15m from high water mark.</li> <li>• No hotel development shall be allowed on sensitive coastal area.</li> <li>• Hotel developments with 50 or more rooms shall require wastewater treatment plant.</li> <li>• Any cutting or removal of trees shall have prior approval from the Forestry Division of Ministry of agriculture.</li> <li>• Natural drains shall not be filled/diverted and shall be kept in a safe and good state and regularly maintained.</li> <li>• Clearance from Government of Fire Services shall be obtained for the intended fire fighting system.</li> </ul>	<p>Climate change vulnerability assessment to include</p> <ul style="list-style-type: none"> <li>• Assessment of the 15-30m setback - determine if this limit should be increased as a result of projected sea level rise/ increased coastal erosion.</li> <li>• Utilise documents/data that outline local impacts associated with climate change (e.g. Second National Communication)</li> <li>• Risk assessment to ensure new infrastructure is not placed in fire-prone areas*.</li> </ul> <p>Adaptation/Mitigation Options:</p> <ul style="list-style-type: none"> <li>• Design buildings to allow for ease of future adaptation, e.g. have the ability for significant amounts of shade to be added or removed from a facade.</li> <li>• Reduce lighting and equipment loads to reduce overheating*.</li> <li>• Optimise design of cooling systems to provide the best energy efficiency under higher temperature operating loads, i.e. use of passive cooling systems, improved use of thermal properties of building materials, reduce solar heating using recessed windows, roof overhangs and shades*.</li> <li>• Include development controls, such as those that promote soft surfaces external to the building footprint - thereby minimising adverse impacts associated with higher rainfall intensity*.</li> </ul>

No.	Undertaking	Early Considerations (process, site and legislative boundaries)	Additional Climate Change Integration: Processes, potential adaptation/mitigation options
			<ul style="list-style-type: none"> <li>Coastal protection and rehabilitation works to minimise coastal erosion, and exposure to climate risks.</li> <li>Refer to USAID (2009) resource for list approaches to 'climate proofing' coastal development.</li> </ul> <p>Monitoring:</p> <ul style="list-style-type: none"> <li>Monitor energy efficiency/integrity of building envelope in withstanding changes in the environment.</li> <li>GHG Inventory: Include assessment of carbon sink loss as a result of removal of trees.</li> <li>Increase monitoring and maintenance activities at embankments and bridge piers, and gully emptying activities*.</li> </ul>
3	Desalination Plants – EIA Guideline (2005)	<ul style="list-style-type: none"> <li>No development shall be allowed on sensitive coastal areas including mangroves and wetlands; and conservation areas and their buffer zones, e.g. marine parks, islet nature reserves and islet natural park.</li> <li>Natural drains shall not be blocked</li> <li>Beach and sea shall remain a public domain.</li> <li>50m from HWM, at least 30m from wetlands, 30m from water body</li> <li>Resulting wastewater must be treated and discharged to satisfaction of Wastewater Management Authority – maintain quality of lagoons.</li> <li>Proposer sanitary seal for any borehole</li> <li>Measures proposed for the protection of water resources shall be to the satisfaction of Ministry of Public Utilities</li> <li>Measures proposed for the protection of marine resources shall be to the satisfaction of Ministry of Fisheries and MOI</li> <li>The microclimatic conditions of the site plant shall be taken into consideration in the design and location of the plant</li> <li>Heavy fuel oil (HFO) or diesel shall not be used in the desalination plant. Electricity, gas, kerosene or solar energy shall be the preferred option for energy use.</li> </ul>	<p>Climate change vulnerability assessment to include:</p> <ul style="list-style-type: none"> <li>Assess how climate change may affect operation of plant (e.g. intakes, waste discharge, pipelines) as a result of increased coastal erosion.</li> </ul> <p>Design</p> <ul style="list-style-type: none"> <li>Determine lifetime of plant, and the associated climate change projections for different time periods. Make appropriate adjustments to plant design in order to increase its capacity to absorb environmental change (e.g. increased average temperatures, sea level rise).</li> </ul> <p>Monitoring</p> <ul style="list-style-type: none"> <li>Assess how changes in specific climate parameters (e.g. temperature) are affecting (i) Physical structures (ii) Processes (e.g. reverse osmosis)</li> </ul>
4	Fish Farming in the sea – EIA Guideline (2009)	<ul style="list-style-type: none"> <li>No development shall be allowed on sensitive coastal areas including mangroves and wetlands; and conservation areas and their buffer zones, e.g. marine parks, islet nature reserves and islet natural park.</li> <li>Natural drains shall not be blocked.</li> <li>Any discharge of effluent shall be in compliance with regulations in force.</li> <li>Measures proposed for the protection of water resources shall be to the satisfaction of Ministry of Public Utilities.</li> <li>Measures proposed for the protection of marine resources</li> </ul>	<p>Scoping (Assessment of alternatives)</p> <ul style="list-style-type: none"> <li>Assess the degree to which the fish stock being used is sensitive to climate change (e.g. water temperature).</li> <li>Consider alternative species more tolerant to changing environmental conditions.</li> </ul> <p>Monitoring</p> <ul style="list-style-type: none"> <li>Increasing monitoring and maintenance of nets as a result of changing environmental conditions (e.g. increased wave intensity damaging nets).</li> <li>Ongoing assessment of fishnets should be built into the associated</li> </ul>

No.	Undertaking	Early Considerations (process, site and legislative boundaries)	Additional Climate Change Integration: Processes, potential adaptation/mitigation options
5	Residential Morcellement Projects – EIA Guideline (2004)	<p>shall be to the satisfaction of the Fisheries Division.</p> <ul style="list-style-type: none"> <li>• 200 m from the site boundaries of any poultry and livestock farm</li> <li>• 500 m from the site boundary of any pigsty</li> <li>• 1 km from the site boundary of any stone crushing plant/ asphalt mix plant</li> <li>• 300 m from the site boundary of a transfer station</li> <li>• 500 m from the site boundary of a sewage treatment plant</li> <li>• 50 m from the site boundary any individual wetland</li> <li>• 16 m from a river, 8m from rivulet, 3m from feeder, and 1m from open canal.</li> <li>• 30 m from High Water Mark (for residential morcellement in the coastal zone) depending on the specificity of the region</li> <li>• An appropriate buffer shall also be respected to hazardous installations whose hazards (fire, explosion, toxic release, etc.) poses the threat of escalating off site and thereby affecting residents and the environment in the vulnerable zone</li> </ul>	<p>Monitoring Plans.</p> <p>Adaptation/Mitigation Options:</p> <ul style="list-style-type: none"> <li>• Design buildings to allow for ease of future adaptation, e.g. have the ability for significant amounts of shade to be added or removed from a facade.</li> <li>• Reduce lighting and equipment loads to reduce overheating*.</li> <li>• Optimize design of cooling systems to provide the best energy efficiency under higher temperature operating loads, i.e. use of passive cooling systems, improved use of thermal properties of building materials, reduce solar heating using recessed windows, roof overhangs and shades*.</li> </ul> <p>Monitoring:</p> <ul style="list-style-type: none"> <li>• Monitor energy efficiency/integrity of building envelope in withstanding changes in the environment.</li> </ul>
6	Asphalt plant	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	n/a
7	Assembly of motor vehicles	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	n/a
8	Block making plant manufacturing above 10,000 blocks per day	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	n/a
9	Bulk processing, storage and handling of petroleum products, liquefied gas, coal and petro-chemical products	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	Climate change integration points, as outlined in the supplementary guidelines above, should be followed.
10	Clinic and hospital, including animal hospital	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	Climate change integration points, as outlined in the supplementary guidelines above, should be followed.
11	Construction of airports and runways	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	Climate change integration points, as outlined in the supplementary guidelines above, should be followed.
12	Construction of breakwaters, groins, jetties, revêtements and seawalls	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	<p>Process</p> <ul style="list-style-type: none"> <li>• Detailed examination of change in environmental parameters associated with change in climate, i.e. sediment transport processes, wave heights, mean sea level etc. Assessment of how changed climate parameters will impact both the element constructed; and downstream impacts that the construction will have on the surrounding coastal areas.</li> </ul> <p>Adaptation/Mitigation Options:</p> <ul style="list-style-type: none"> <li>• Coastal protection and rehabilitation works to minimise coastal erosion</li> <li>• Refer to USAID (2009) resource for list approaches to ‘climate proofing’ coastal development.</li> </ul>

No.	Undertaking	Early Considerations (process, site and legislative boundaries)	Additional Climate Change Integration: Processes, potential adaptation/mitigation options
13	Construction of dam and dyke	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	<p>Process</p> <ul style="list-style-type: none"> <li>Detailed examination of change in environmental parameters associated with change in climate. Assessment of how changed climate parameters will impact both the element constructed; and downstream impacts that the construction will have on the surrounding coastal areas.</li> </ul> <p>Adaptation/Mitigation Options:</p> <ul style="list-style-type: none"> <li>Coastal protection and rehabilitation works to minimise coastal erosion.</li> <li>Refer to USAID (2009) resource for list approaches to 'climate proofing' coastal development.</li> </ul>
14	Construction of marinas	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	<p>Process</p> <ul style="list-style-type: none"> <li>Detailed examination of change in environmental parameters associated with change in climate, i.e. sediment transport processes, wave heights, mean sea level etc. Assessment of how changed climate parameters will impact both the element constructed; and downstream impacts that the construction will have on the surrounding coastal areas.</li> </ul> <p>Adaptation/Mitigation Options:</p> <ul style="list-style-type: none"> <li>Coastal protection and rehabilitation works to minimise coastal erosion</li> <li>Refer to USAID (2009) resource for list approaches to 'climate proofing' coastal development.</li> </ul>
15	Conversion of forest land to any other land use	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	<p>Monitoring:</p> <ul style="list-style-type: none"> <li>GHG Inventory: Include assessment of carbon sink loss as a result of removal of trees.</li> </ul>
16	Creation of, and/or development on, barachois (coastal lagoon separated from the sea by a sand bar)	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	<p>Process</p> <ul style="list-style-type: none"> <li>Detailed examination of change in environmental parameters associated with change in climate. Assessment of how changed climate parameters will impact both the element constructed; and downstream impacts that the construction will have on the surrounding coastal areas.</li> </ul> <p>Adaptation/Mitigation Options:</p> <ul style="list-style-type: none"> <li>Coastal protection and rehabilitation works to minimise coastal erosion.</li> <li>Refer to USAID (2009) resource for list approaches to 'climate proofing' coastal development.</li> </ul>
17	Distillery	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	n/a
18	Dyehouse	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	n/a
19	Fishing port	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	<p>Process</p> <ul style="list-style-type: none"> <li>Detailed examination of change in environmental parameters associated with change in climate, i.e. sediment transport processes, wave heights, mean sea level etc. Assessment of how changed climate parameters will impact both the element constructed; and downstream impacts that the construction will have on the surrounding coastal areas</li> </ul>

No.	Undertaking	Early Considerations (process, site and legislative boundaries)	Additional Climate Change Integration: Processes, potential adaptation/mitigation options
			Adaptation/Mitigation Options: <ul style="list-style-type: none"> <li>• Coastal protection and rehabilitation works to minimise coastal erosion</li> <li>• Refer to USAID (2009) resource for list approaches to 'climate proofing' coastal development.</li> </ul>
20	Golf course	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	Climate change integration points, as outlined in the supplementary guidelines above, should be followed.
21	Harbour dredging operation, construction and development	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	Process <ul style="list-style-type: none"> <li>• Detailed examination of change in environmental parameters associated with change in climate, i.e. sediment transport processes, wave heights, mean sea level etc. Assessment of how changed climate parameters will impact both the element constructed; and downstream impacts that the construction will have on the surrounding coastal areas</li> </ul> Adaptation/Mitigation Options: <ul style="list-style-type: none"> <li>• Coastal protection and rehabilitation works to minimise coastal erosion</li> <li>• Refer to USAID (2009) resource for list approaches to 'climate proofing' coastal development.</li> </ul>
22	Highway and mass transit system	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	Climate change integration points, as outlined in the supplementary guidelines above, should be followed.
23	Hotel and Integrated Resort Scheme, including extension, with first boundary within 1 kilometre from high water mark	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	Adaptation/Mitigation Options: <ul style="list-style-type: none"> <li>• Solar passive design principles for enhanced resilience to heatwaves, and to minimise GHG emissions.</li> </ul>
24	Housing project and apartments above 50 units within 1 kilometre from high water mark	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	Adaptation/Mitigation Options: <ul style="list-style-type: none"> <li>• Solar passive design principles for enhanced resilience to heatwaves, and to minimise GHG emissions.</li> </ul>
25	Incineration of municipal solid waste, quarantine waste, medical and clinical wastes	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	Climate change integration points, as outlined in the supplementary guidelines above, should be followed.
26	Industrial manufacture of beer, wine and spirit	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	Climate change integration points, as outlined in the supplementary guidelines above, should be followed.
27	Lagoon dredging and re-profiling of sea beds	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	Climate change vulnerability assessment to include <ul style="list-style-type: none"> <li>• Assess the impacts of dredging in combination with an assessment of projected climate changes (e.g. will dredging amplify coastal erosion).</li> </ul> Adaptation/Mitigation Planning: <ul style="list-style-type: none"> <li>• Assess how dredging plans can be modified to minimise impacts in the coastal zone (i.e. coastal erosion).</li> </ul>
28	Land clearing and development, including installation of high-tension lines in environmentally sensitive areas such as water catchment areas, waterlogged areas, wetlands, mountain slopes and islets.	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	Climate change integration points, as outlined in the supplementary guidelines above, should be followed.
29	Landfill	Not yet specified by ROM Authorities. Considerations must	Climate change integration points, as outlined in the supplementary guidelines



No.	Undertaking	Early Considerations (process, site and legislative boundaries)	Additional Climate Change Integration: Processes, potential adaptation/mitigation options
		align to existing regulations and legislation.	above, should be followed.
30	Manufacture of batteries	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	n/a
31	Manufacture of dangerous chemicals, chemical fertilizers and pesticides	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	n/a
32	Manufacture of lime	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	n/a
33	Manufacture and packing of cement	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	n/a
34	Manufacture of pharmaceutical products	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	n/a
35	Modification of existing coastline such as beach re-profiling, coastal protection works and removal of basaltic and beach rock	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	<p>Process</p> <ul style="list-style-type: none"> <li>Detailed examination of change in environmental parameters associated with change in climate, i.e. sediment transport processes, wave heights, mean sea level etc. Assessment of how changed climate parameters will impact both the element constructed; and downstream impacts that the construction will have on the surrounding coastal areas.</li> </ul> <p>Adaptation/Mitigation Options:</p> <ul style="list-style-type: none"> <li>Coastal protection and rehabilitation works to minimise coastal erosion, and exposure to.</li> <li>Refer to USAID (2009) resource for list approaches to 'climate proofing' coastal development.</li> </ul>
36	Municipal wastewater treatment plant	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	Climate change integration points, as outlined in the supplementary guidelines above, should be followed.
37	Offshore sand mining	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	Climate change integration points, as outlined in the supplementary guidelines above, should be followed.
38	Parcelling out of land above 5 hectares	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	n/a?
43	Petroleum refinery	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	Climate change integration points, as outlined in the supplementary guidelines above, should be followed.
44	Power generating plants	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	Climate change integration points, as outlined in the supplementary guidelines above, should be followed.
45	Pulp and paper manufacture	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	Climate change integration points, as outlined in the supplementary guidelines above, should be followed.
46	Rearing of monkeys	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	n/a
47	Rock quarrying	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	Climate change integration points, as outlined in the supplementary guidelines above, should be followed.
48	Sea outfall	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	Climate change integration points, as outlined in the supplementary guidelines above, should be followed.
49	Shipyard and dry dock	Not yet specified by ROM Authorities. Considerations must	Climate change integration points, as outlined in the supplementary guidelines

No.	Undertaking	Early Considerations (process, site and legislative boundaries)	Additional Climate Change Integration: Processes, potential adaptation/mitigation options
		align to existing regulations and legislation.	above, should be followed.
50	Sugar factory or refinery	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	Climate change integration points, as outlined in the supplementary guidelines above, should be followed.
51	Tannery and leather finishing	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	n/a
52	Transfer station for solid waste	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	Climate change integration points, as outlined in the supplementary guidelines above, should be followed.
53	Used or waste oil treatment and disposal	Not yet specified by ROM Authorities. Considerations must align to existing regulations and legislation.	Climate change integration points, as outlined in the supplementary guidelines above, should be followed.

\* Sourced from SMEC 2010

## References

USAID (2009). *Adapting to Coastal Climate Change: A Guidebook For Development Planners*. United States Agency for International Development. Available from: [http://pdf.usaid.gov/pdf\\_docs/PNADO614.pdf](http://pdf.usaid.gov/pdf_docs/PNADO614.pdf)

SMEC (2010). *Climate Change Adaptation Actions for Local Government*. Prepared for the Department of Climate Change and Energy Efficiency, Government of Australia. Australian Greenhouse Office, Canberra, Australia.

## Appendix 1: List of Undertakings requiring an EIA/PER

### List of undertakings requiring an Environmental Impact Assessment (EIA), as stated in the Part B of the Environment Protection (Amendment of Schedule) Regulations 2006:

- Asphalt plant
- Assembly of motor vehicles
- Block making plant manufacturing above 10,000 blocks per day
- Bulk processing, storage and handling of petroleum products, liquefied gas, coal and petro-chemical products
- Clinic and hospital, including animal hospital
- Construction of airports and runways
- Construction of breakwaters, groins, jetties, revêtements and seawalls
- Construction of dam and dyke
- Construction of marinas
- Conversion of forest land to any other land use
- Creation of, and/or development on, barachois
- Desalination plant
- Distillery
- Dyehouse
- Fishing port
- Golf course
- Harbour dredging operation, construction and development
- Highway and mass transit system
- Hotel and Integrated Resort Scheme, including extension, with first boundary within 1 kilometre from high water mark
- Housing project and apartments above 50 units within 1 kilometre from high water mark
- Incineration of municipal solid waste, quarantine waste, medical and clinical wastes
- Industrial manufacture of beer, wine and spirit
- Lagoon dredging and reprofiling of sea beds
- Land clearing and development, including installation of high tension lines in environmentally sensitive areas such as water catchment areas, waterlogged areas, wetlands, mountain slopes and islets.
- Landfill
- Manufacture of batteries
- Manufacture of dangerous chemicals, chemical fertilizers and pesticides
- Manufacture of lime
- Manufacture and packing of cement
- Manufacture of pharmaceutical products
- Modification of existing coastline such as beach reprofiling, coastal protection works and removal of basaltic and beach rock
- Municipal wastewater treatment plant
- Offshore sand mining
- Parcelling out of land above 5 hectares -
  - otherwise than by way of division in kind among heirs;
  - to be allocated to persons other than such persons as may be approved by the Minister responsible for the subject of agriculture and who are-
- *bona fide* occupiers of housing units forming part of sugar estate camps owned by sugar milliers or sugarcane planters;
- *bona fide* occupiers of housing units forming part of tea estate camps;
- workers affected by the closure of a sugar factory; or
- workers opting for the Voluntary Retirement Scheme
- Petroleum refinery
- Power generating plants

- Pulp and paper manufacture
- Rearing of monkeys
- Rock quarrying
- Sea outfall
- Shipyard and dry dock
- Stone crushing plant
- Sugar factory or refinery
- Tannery and leather finishing
- Transfer station for solid waste
- Used or waste oil treatment and disposal

**List of undertakings requiring a Preliminary Environmental Report (PER), as stated in the Part A of the First Schedule to the Environmental Protection Act 2002:**

- Construction of helipads
- Coral crushing and processing
- Creation of bathing areas by mechanical means
- Depot for 50 buses or more
- \*Discotheque and night-club
- Food processing industry, excluding small and medium enterprises
- Foundry, smelting plant or metallurgical work
- Galvanising industry
- Industrial-scale laundry and dry-cleaning within 1 kilometre of high water mark
- Land reclamation and backfilling
- Manufacture of animal feed
- Manufacture of ceramics
- Manufacture of paint, pigment and varnish
- Manufacture of photographic films
- Manufacture of plastics and plastic products
- Manufacture of rubber products
- Mechanical removal of marine flora such as sea grasses and marine algae
- Parcelling out of land above 5 hectares for agricultural purposes, where the parcelling involves infrastructure work
- Quarantine station for livestock
- Ready-mix concrete plant
- \*\* Rearing of livestock including cattle, goat, pig and sheep
- Rearing of poultry above 5000 heads
- Recycling plant
- Rendering plant
- Sawmill
- Slaughter house
- Textile industry associated with washing, bleaching and printing
- Timber treatment plant

**NOTE:**

\*As per a Cabinet Decision of 07/04/2006 no new licenses for night clubs, except for hotels should be issued.

\*\*Applies for the rearing of more than 20 cattle heads, more than 50 goat heads and more than 50 sheep heads.

## Appendix 2: Scoping Process

The recommended approach to scoping and the activities associated with each step have been summarised in the following table. The results of this process (completion of 'Scoping Checklist 1') will provide a list of significant issues that should be considered in detail in the environmental study.

**Table 3: Overview of Tools and Activities used in Scoping**

Stage	Tool	Step
1	<b>Scoping Checklist 1: Undertaking Characteristics (See Table 4)</b>	<p>Provides a detailed list of characteristics of undertakings that could give rise to significant effects on the environment.</p> <ol style="list-style-type: none"> <li>1. Determine if one of the listed activities* is likely to occur (yes, no)</li> <li>2. If yes, consider which aspects of the surrounding environment could be affected by that activity, or how changes in the environment might affect the activity - using 'Scoping Checklist 2' as a guide.</li> <li>3. Determine the significance of the associated impact using 'Scoping Checklist 3' as a guide.</li> </ol> <p>*Activities listed are suggestions only. The Ministry of Environment may develop/incorporate additional activities relevant to select undertakings (e.g. stone crushing) to enhance the scoping tool.</p>
	<b>Scoping Checklist 2: Characteristics of the Environment (See Table 5)</b>	Provides a list of characteristics of the environment in which the undertaking or activity is implemented that could be susceptible to significant adverse effects.
3	<b>Scoping Checklist 3: Criteria for Evaluating the Significance of Environmental Effects (See Table 6)</b>	Provides a list of factors to be considered in deciding whether or not an impact is likely to be significant.

**Note:**

1. Information required to complete the checklist may require preliminary data collection and fieldwork. It is important for the proponent to provide as much information as possible to inform the requirements of the EIA study.
2. Where an activity is marked as 'not significant' the proponent should provide an explanation as to why the impact is 'not significant'.
3. The Scoping phase should be revisited if major aspects of the undertaking are changed later in the EIA process (e.g. change of site, change in project design etc.).

Table 4: Scoping Checklist 1: Characteristics of the Undertaking. Adapted from EC (2001).

No.	Questions to be considered in Scoping	Yes /No	Which characteristics of the environment and/or undertaking could be affected and how?	Is the effect likely to be significant? Why?
<b>Will construction, operation or decommissioning of the Undertaking involve actions that will cause physical changes in the site (topography, land use, changes in water bodies, etc.)?</b>				
	Permanent or temporary change in land use, land cover or topography including increases in intensity of and use?			
	Clearance of existing land, vegetation and buildings?			
	Creation of new land uses?			
	Pre-construction investigations (e.g. boreholes, soil testing)?			
	Construction works?			
	Demolition works?			
	Temporary sites used for construction works or housing of construction workers?			
	Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations?			
	Reclamation works?			
	Dredging?			
	Coastal structures (e.g. seawalls)?			
	Offshore structures?			
	Production and manufacturing processes?			
	Facilities for storage of goods or materials?			
	Facilities for treatment or disposal of solid wastes?			
	Facilities for long term housing			
	New road, rail or sea traffic during construction or operation?			
	New road, rail, air, waterborne or other transport infrastructure including new or altered routes and stations, ports, airports etc.?			
	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?			
	New or diverted transmission lines or pipelines?			
	Impoundment, damming, culverting, realignment or other changes to the hydrology of watercourse or aquifers?			
	Stream crossings?			
	Abstraction or transfers of water from ground surface water?			
	Changes in water bodies or the land surface affecting drainage or run-off?			
	Transport of personnel or materials for construction, operation or decommissioning?			
	Long-term dismantling or decommissioning or restoration works?			
	Ongoing activity during decommissioning which could have an impact on the environment?			

No.	Questions to be considered in Scoping	Yes /No	Which characteristics of the environment and/or undertaking could be affected and how?	Is the effect likely to be significant? Why?
	Influx of people to an area, either temporarily or permanently?			
	Introduction of alien species?			
	Loss of native species or genetic diversity?			
	Any other actions?			
<b>Will the physical changes in the site, as a result of the undertaking, amplify climate change impacts (e.g. coastal erosion)?</b>				
	For example, construction or activities that will result in:			
	Change in topography			
	Change in land use			
	Change in water bodies or hydrology			
	Change in natural coastal buffers (i.e. mangroves, sand dunes)			
<b>Will the Undertaking be exposed to climate change impacts (during construction to decommissioning)? Consider a range of climate change scenarios.</b>				
	Site of operation proximity to climate change impacts:			
	Areas vulnerable to flooding during storm events?			
	Areas vulnerable to coastal inundation?			
	Areas vulnerable to landslides?			
	Areas vulnerable to erosion?			
	Areas vulnerable to other natural hazards?			
<b>Will construction or operation of the Undertaking use natural resources such as land, water, materials or energy, especially any resources which are non-renewable or in short supply?</b>				
	Land especially undeveloped or agricultural land?			
	Water?			
	Minerals?			
	Aggregates?			
	Forests and timber?			
	Energy including electricity and fuels?			
	Any other resources?			
<b>Will the Undertaking involve use, storage, transport, handling or production of substances or materials that could be harmful to human health or the environment or raise concerns about risks to human health (actual or perceived)?</b>				
	Will the undertaking involve use of substances or materials that are hazardous or toxic to human health or the environment (flora, fauna, water supplies)?			
	Will the undertaking result in changes in occurrence of disease or affect disease vectors (e.g. insect or water borne diseases)?			
	Will the undertaking affect the welfare of people (e.g. by changing living conditions)?			
	Are there especially vulnerable groups of people who could be affected by the undertaking (e.g. hospital patients, the elderly)?			
	Any other causes?			



No.	Questions to be considered in Scoping	Yes /No	Which characteristics of the environment and/or undertaking could be affected and how?	Is the effect likely to be significant? Why?
<b>Will the Undertaking produce solid wastes during construction, operation or decommissioning?</b>				
	Spoil, overburden or mine wastes?			
	Municipal waste (household and or commercial wastes)?			
	Hazardous or toxic wastes (including radioactive wastes)?			
	Other industrial process wastes?			
	Surplus product?			
	Sewage sludge or other solid wastes from effluent treatment?			
	Construction or demolition wastes?			
	Redundant machinery or equipment?			
	Contaminated soils or other material?			
	Agricultural wastes?			
	Any other solid wastes?			
<b>Will the Undertaking release Greenhouse Gas (GHG) emissions, pollutants or any hazardous, toxic or noxious substances to air? If yes, estimate the emissions (CO2e/year) associated with the following activities.</b>				
	Emissions from combustion of fossil fuels from stationary or mobile sources?			
	Emissions from production processes?			
	Emissions from materials handling including storage or transport?			
	Emissions from construction activities including plant and equipment?			
	Dust or odours from handling of materials including construction materials, sewage and waste?			
	Emissions from incineration of waste?			
	Emissions from burning of waste in open air (e.g. slash material, construction debris)?			
	Emissions from any other sources?			
<b>Will the Undertaking cause noise and vibration or release of light, heat energy or electromagnetic radiation?</b>				
	From operation of equipment (e.g. engines, ventilation plant, crushers)?			
	From industrial or similar processes?			
	From construction or demolition?			
	From blasting or piling?			
	From construction or operational traffic?			
	From lighting or cooling systems?			
	From sources of electromagnetic radiation (consider effects on nearby sensitive equipment as well as people)?			
	From any other sources?			
<b>Will the Undertaking lead to risks of contamination of land or water from releases of pollutants onto the ground or into sewers, surface waters, groundwater, coastal waters or the sea?</b>				
	From handling, storage, use or spillage of hazardous or toxic materials?			
	From discharge of sewage or other effluents (whether treated or untreated) to water or the land?			
	By deposition of pollutants emitted to air, onto the land or into water?			

No.	Questions to be considered in Scoping	Yes /No	Which characteristics of the environment and/or undertaking could be affected and how?	Is the effect likely to be significant? Why?
	From any other sources?			
	Is there a risk of long term build up of pollutants in the environment from these sources?			
<b>Will there be any risk of accidents during construction or operation of the Undertaking that could affect human health or the environment?</b>				
	From explosions, spillages, fires etc. from storage, handling, use or production of hazardous or toxic substances?			
	From events beyond the limits of normal environmental protection (e.g. failure of pollution control systems)?			
	From any other causes?			
	Could the undertaking be affected by natural disasters causing environmental damage (e.g. floods, earthquakes, landslip, etc.)?			
<b>Will the Undertaking result in social changes, for example, in demography, lifestyles, or employment?</b>				
	Changes in population size, age, structure, social groups etc.?			
	By resettlement of people or demolition of homes or communities or community facilities (e.g. schools, hospitals, social facilities)?			
	Through in-migration of new residents or creation of new communities?			
	By placing increased demands on local facilities or services (e.g. housing, education, health)?			
	By creating jobs during construction or operation or causing the loss of jobs with effects on unemployment and the economy?			
	Any other causes?			
<b>Are there any other factors that should be considered such as consequential development that could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality?</b>				
	Will the undertaking lead to pressure for consequential development that could have significant impact on the environment (e.g. more housing, new roads, new supporting industries or utilities, etc.)?			
	Will the undertaking affect residents surrounding the project sites in terms of their ability to adapt to climate change (e.g. access to sheltered areas, increased erosion further along the coast)?			
	Will the undertaking lead to development of supporting facilities, ancillary development or development stimulated by the undertaking which could have impact on the environment, e.g.: <ul style="list-style-type: none"> <li>• Supporting infrastructure (roads, power etc.)</li> <li>• Housing development</li> <li>• Extractive industries</li> <li>• Supply industries</li> </ul>			

No.	Questions to be considered in Scoping	Yes /No	Which characteristics of the environment and/or undertaking could be affected and how?	Is the effect likely to be significant? Why?
	• Other?			
	Will the undertaking lead to after-use of the site that could have an impact on the environment?			
	Will the undertaking set a precedent for later developments?			
<b>Could the impacts from combinations of climate change events (e.g. sea level rise, more intense storms) interact among themselves, or with other future stressors (e.g. increased population)? How will these synergistic or additive impacts effect the undertaking over its life cycle?</b>				
	Building design/materials/orientation			
	Location			
	Socio-economic activities			
<b>Have alternatives in the design, construction and operation of the undertaking been considered, which may mitigate: social and environmental impacts; exposure/sensitivity to climate change; cumulative impacts associated with climatic and non-climatic stressors?</b>				
	Modification of design and/or building materials?			
	Alternative site?			
<b>Will the design, construction and operation of the undertaking reduce the proponents' ability to adapt to predicted climate change impacts?</b>				
	Building design (materials, orientation)			
	Associated infrastructure (e.g. wastewater management system)			

**Table 5: Scoping Checklist 2: Characteristics of the environment associated with the undertaking.**  
Adapted from European Commission (2001)

No.	Question	Examples
1	Are there features of the local environment that could be affected by the undertaking?	<ul style="list-style-type: none"> <li>• Areas that are protected under international or national or local legislation for their ecological, landscape, cultural or other value.</li> <li>• Sensitive ecological areas e.g. Wetlands, sand dunes</li> <li>• Areas used by protected, important or sensitive species of fauna or flora e.g. for breeding, nesting, foraging, resting, overwintering, migration.</li> <li>• Areas or features of high landscape or scenic value?</li> <li>• Routes or facilities used by the public for access to recreation or other facilities.</li> <li>• Transport routes which are susceptible to congestion or which cause environmental problems.</li> <li>• Areas or features of historic or cultural importance.</li> </ul>
2	Is the Undertaking in a location where it is likely to be highly visible to many people?	<ul style="list-style-type: none"> <li>• Exposure to residential areas, public open spaces</li> </ul>
3	Is the Undertaking located in a previously undeveloped area where there will be loss of greenfield land?	
4	Are there <b>existing</b> land uses on or around the undertaking location which could be affected by the undertaking?	<ul style="list-style-type: none"> <li>• Homes, gardens, other private property</li> <li>• Industry</li> <li>• Commerce</li> <li>• Recreation</li> <li>• Public open space</li> </ul>
5	Are there any plans for <b>future</b> land uses on or around the undertaking location that could be affected by the Undertaking?  Will these future developments (e.g. expansions) be sensitive or exposed to climate change impacts?	<ul style="list-style-type: none"> <li>• Areas that are sensitive to sea level rise</li> <li>• Areas prone to flooding</li> </ul>
6	Are there any areas on or around the location that are densely populated or built-up, which could be affected by the undertaking?	<ul style="list-style-type: none"> <li>• Residential areas</li> </ul>
7	Are there any areas on or around the location that are occupied by sensitive land uses that could be affected by the undertaking?	<ul style="list-style-type: none"> <li>• Hospitals,</li> <li>• Schools,</li> <li>• Places of worship</li> <li>• Community facilities</li> </ul>
8	Are there any areas on or around the location that contain important, high quality or scarce resources that could be affected by the undertaking?	<ul style="list-style-type: none"> <li>• Groundwater resources</li> <li>• Surface waters</li> <li>• Forestry</li> <li>• Agriculture</li> <li>• Fisheries</li> </ul>
9	Are there any areas on or around the location of the undertaking that are already subject to pollution or environmental damage (e.g. where existing legal environmental standards are exceeded, which could be affected by the undertaking)?	<ul style="list-style-type: none"> <li>• Landfill</li> </ul>
10	Is the Undertaking location susceptible to earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions (e.g. temperature	

No.	Question	Examples
	inversions, fogs, severe winds, which could cause the Undertaking to present environmental problems)? Consider both current and future climate hazards.	
11	Is the Undertaking likely to affect the physical condition of any environmental media?	<ul style="list-style-type: none"> <li>• Groundwater resources</li> <li>• Surface waters</li> <li>• Forestry</li> <li>• Agriculture</li> <li>• Fisheries</li> </ul>
12	Are releases from the Undertaking likely to have effects on the quality of any environmental media?	<ul style="list-style-type: none"> <li>• Local air quality</li> <li>• Global air quality including climate change and ozone depletion</li> <li>• Water quality – rivers lakes, groundwater</li> <li>• Soils</li> </ul>
13	Is the Undertaking likely to affect the availability or scarcity of any resources either locally or globally?	<ul style="list-style-type: none"> <li>• Fossil fuels?</li> <li>• Water?</li> <li>• Minerals and aggregates?</li> <li>• Timber?</li> <li>• Natural hazard buffers (mangroves, sand dunes)</li> <li>• Other non-renewable resources?</li> </ul>
14	Is the Undertaking likely to affect human or community health or welfare?	<ul style="list-style-type: none"> <li>• The quality or toxicity of air, water, foodstuffs and other products consumed by humans?</li> <li>• Morbidity or mortality of individuals, communities or populations by exposure to pollution?</li> <li>• Occurrence or distribution of disease vectors including insects?</li> <li>• Vulnerability of individuals, communities or populations to disease?</li> <li>• Individuals' sense of personal security?</li> <li>• Community cohesion and identity?</li> <li>• Cultural identity and associations?</li> <li>• Minority rights?</li> <li>• Housing conditions?</li> <li>• Employment and quality of employment?</li> <li>• Economic conditions?</li> <li>• Social institutions?</li> </ul>

### Criteria for Evaluating the Significance of Impacts

The following table contains a list of questions that proponents can utilize when evaluating the significance of impacts, and are intended to be used in conjunction with 'Scoping Checklist 1'. Please note, this tool is intended as a starting point for assessing significance and should not be interpreted as definitive list. Proponents may require tailored evaluation criterion for their own social, political and environmental context.

**Table 6: Scoping Checklist 3: Criteria for Evaluating the Significance of Impacts. Adapted from European Commission (2001)**

No.	Question	Output (insert in 'Scoping Checklist 1')
1	Will there be a large change in environmental conditions?	
2	Will new features be out-of-scale with the existing environment?	
3	Will the effect extend over a large area?	
4	Will many people be affected?	
5	Will other social and environmental items (i.e. fauna and flora, businesses, facilities) be affected?	
6	Will valuable or scarce features or resources be affected?	
7	Is there a risk that environmental standards will be breached?	
8	Is there a risk that protected sites, areas, and features will be affected?	
9	Is there a high probability of the effect occurring?	
10	Will the effect continue for a long time?	
11	Will the effect be permanent rather than temporary?	
12	Will the impact be continuous rather than intermittent?	
13	If it is intermittent will it be frequent rather than rare?	
14	Will it be difficult to avoid, or reduce or repair or compensate for the effect?	
15	Will the impact enhance, or degrade, the proponents' (or the community's) ability to adapt to climate change?	
16	Will the impact lead to reactive maladaptive measures (actions which fail to ameliorate the impacts of climate change, whilst also imposing additional social, environmental or financial costs)?	
17	Does the impact (e.g. GHG emissions) exceed the limit outlined in relevant Government policies and/or laws?	

Based on the output of the Scoping assessment, proponents will have an understanding of the priority impacts and considerations to be addressed via detailed assessment in the full EIA.