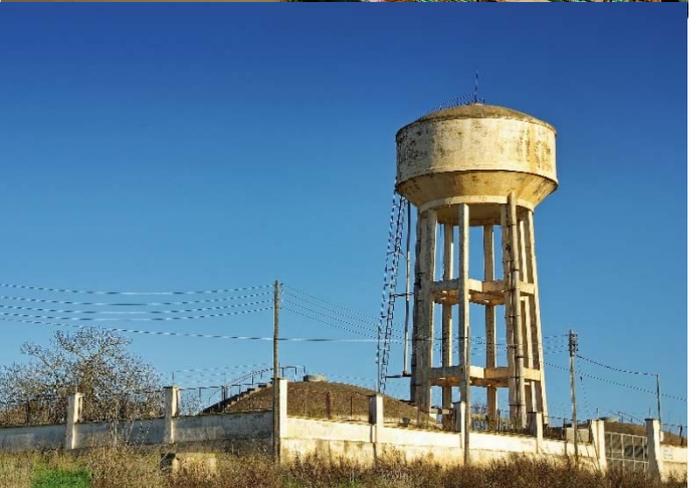




Netherlands Commission for  
Environmental Assessment

MALDIVES (ORIO13/MV/01)

# Review of the ToR for the ESIA Fuvahmulah Coastal Protection



7 July 2016  
Ref: 7202



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## Advice of the Secretariat

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**To** Netherlands Enterprise Agency (RVO.nl)

**Attn** Ms Kim Tran

**CC** Mr Thomas Vintges

**From** The Netherlands Commission for Environmental Assessment (NCEA)

**Date** 7 July 2016

**Subject** **Review of the ToR for the ESIA Fuvahmulah Coastal Protection, Maldives**

By: the Secretariat of the Netherlands Commission for Environmental Assessment –Ms Ineke Steinhauer and Mr Arend Kolhoff

**Reference** 7202

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# 1. Introduction

A Terms of Reference (ToR) has been prepared for an Environmental and Social Impact Assessment (ESIA) for Coastal protection works in Gn. Fuvahmulah in the Maldives. The island is exposed to strong wave action and southwest monsoon winds. An extreme storm event coupled with high tide can compromise the integrity of the ridge surrounding the island, breaching it and causing flooding of the majority of the island to occur. This flooding can have several negative impacts, as the saline water will cause damage to crops, households, vehicles and contaminate the freshwater aquifer for years.

Various options have been considered for the coastal protection of the island and include offshore breakwater, onshore revetment, applying sand nourishment, land reclamation, and a floating revetment in addition to ecological engineering. Of these, technical and environmental and social reviews in the feasibility study show that that the offshore breakwater or onshore revetment option are considered the most feasible solutions for the coastal protection of the island.

Following a feasibility study carried out by the Royal HaskoningDHV in 2015 under the development phase of the project funded by ORIO, the project now proceeds with detailed designing, preparation of a full ESIA complying with the EIA Regulations of the Maldives and the Sustainability Framework of the IFC. Since the project development and the preparation of the ESIA will be taking place concurrently, the project details such as schedules, machineries used, and all other details are not available at this stage and therefore be provided in the ESIA report.

## 1.1 Approach to this Quick Scan

The project is benefitting from ORIO funding from the Government of the Netherlands. The RVO, who manages the ORIO fund, has requested that the Netherlands Commission for Environmental Assessment (NCEA) review the draft ToR for this ESIA report, with the aim to provide observations and comments on the quality of the ToR, preferably before 8 July 2016. This input will subsequently be used to finalize the ToR, merging it with comments already received (but still being processed) from the Maldivian Environmental Protection Agency (EPA).

This advice is a so-called NCEA 'Advice of the secretariat', based on a desk review only. It is therefore not based on a verification 'on the ground' in the Maldives. However, use is made of NCEA's secretariat knowledge from 2 similar projects in the Maldives in the past (ORET funding at the time). In this quick scan review, the NCEA has not checked against Maldivian EIA requirements as this had been taken care of already by the EPA in the Maldives. The NCEA also faced the handicap that the project activities/details are not yet entirely clear, and will be developed in parallel with the ESIA report. This makes it difficult to develop a very project specific ToR for the ESIA report at the moment.

The NCEA observations on the ToR have been made with track changes and are attached. Once the final ESIA report is available, the NCEA is willing and available for quality review.

## ANNEX

### Terms of Reference for Environmental and Social Impact Assessment for Coastal Protection Works in Gn. Fuvahmulah

The following is the Terms of Reference (ToR) following the scoping meeting held on XXX for undertaking the EIA for coastal protection works in Gn. Fuvahmulah.

While every attempt has been made to ensure that this TOR addresses all of the major issues associated with the proposed development proposal, they are not necessarily exhaustive. They should not be interpreted as excluding from consideration matters deemed to be significant but not incorporated in them, or matters currently unforeseen, that emerge as important or significant from environmental studies, or otherwise, during the course of preparation of the EIA report.

**Met opmerkingen [IS1]:** Details to be provided

**Met opmerkingen [IS2]:** Refer to project description in other document, or include here, otherwise difficult to understand what project is all about? It is not (yet) clear whether the project will include off shore breakwaters (how many and where) and/or also onshore revetment. This makes it difficult to make these ToR very specific.

**Met opmerkingen [IS3]:** The title speaks of ESIA, here EIA is used? Throughout the rest of the ToR the focus seems to be on environmental issues, whereas social issues are similarly important.

1. **Introduction and rationale the project** – Describe the purpose of the project and, if applicable, the background information of the project/activity and the tasks already completed. Clearly identify the rationale and objectives of the development. In the EIA report, the problems which are assumed to be solved by realisation of the project should be stated in clear terms and the underlying causes should be analysed, e.g the problems of anticipated accelerated sea level rise and increased extreme weather conditions. Objectives of the development activities should be specific and if possible quantified (e.g. number of beneficiaries). Define the arrangements required for the environmental assessment and if relevant, including how work carried out under this contract is linked to other activities that are carried out ~~or that is being carried out~~ within the project boundary. List the donors and the institutional arrangements relevant to this project.

2. **Study area** – Submit a minimum A3 sized scaled plan with indications of all the proposed on land and marine infrastructures. Specify the boundaries of the study area for the environmental impact assessment highlighting the proposed development location and size. The study area should include adjacent and nearby environmentally important areas (e.g. coral reef, sea grass beds, marine protected areas, special bird sites etc). Relevant developments in the areas must also be addressed including residential areas, all economic ventures and cultural sites.

3. **Scope of work** – Identify and number tasks of the project including preparation, construction and decommissioning phases.

**Met opmerkingen [IS4]:** Unclear whether site clearance is needed for onshore revetment? If so, will people be affected (resettlement needed and thus compensation required?)

The report should be categorised into the following components

**Task 1. Description of the proposed project** – Provide a full description and justification of the relevant parts of the coastal protection works, using maps at appropriate scales where necessary. The following should be provided including all inputs and outputs related to the proposed activities and shall be justified.

- Coastal defense construction, and justification of the selected project solution/activities and how environmental and social criteria were incorporated in the selection of the project solutions;
- Design parameters and project inputs and outputs;
- Justification for the selection of the location;
- Method and equipment to be used and impact control measures while construction;
- Duration of the construction activity and decommissioning of temporary and auxiliary works (?);
- Location and length of the coastal defense structure, including justification for the selection of this location including whether and how environmental and social considerations played a role in the selection;

**Met opmerkingen [IS5]:** Also asked in next bullets, so overlap

- Construction method, equipments and technologies, including description of safety measures during construction;
- Temporary labour arrangements, including e.g. the recruitment/availability of local staff for construction, housing of temporary labour (housing boat, work camps, supply of food and fuel);
- Emergency plan during construction activities, e.g. in case of spills (diesel, grease, oil);
- Project risks;
- Environmental monitoring during construction activities;
- Measures to protect environmental values during construction and decommissioning phase;
- Project management description (including schedule, labour, housing and machinery management and operation, health and safety measures);
- Measures to be taken for the maintenance of the breakwaters and/or revetments, e.g. depending on the materials used;

**Task 2. Description of the environment** – Assemble, evaluate and present the environmental and social baseline study/data regarding the study area and timing of the project (e.g. monsoon season, but also migratory birds, fish spawning). Identify baseline data gaps and identify studies and the level of detail to be carried out by the consultant. Consideration of likely monitoring requirements should be borne in mind during survey planning, so that data collected is suitable for use as a baseline. As such all baseline data must be presented in such a way that they can ~~will~~ be usefully applied into further monitoring. The report should outline detailed methodology of data collection utilized.

The baseline data will be collected before construction and from at least two benchmarks. All survey locations shall be referenced with GPS including water sampling points, reef transects, vegetation transects and manta tow sites for posterior data comparison. Information should be divided into categories shown below;

#### Climate

- Temperature, rainfall, wind, ~~waves, (including extreme conditions)~~; and
- Risk of hurricanes and storm surges;
- Climate change effects e.g. sea level rise for the next 50 years based on a positive and worst case scenario.

#### Hydrography

- ~~Tides~~
- ~~Waves~~
- ~~Currents~~

#### Geology and Geomorphology

- Offshore/coastal geology and geomorphology (use maps);
- Bathymetry and beach morphology including beach profiles of the project location;
- Seasonal patterns of coastal erosion and accretion;
- Identify areas of erosion;
- Characteristics of seabed; sediments to assess direct habitat destruction and turbidity impacts during construction.

#### Hydrography/hydrodynamics (use maps as appropriate)

- Tidal ranges and tidal currents;
- Wave climate and wave induced currents (including extreme conditions), velocities and directions;
- Wind induced seasonal currents;
- Sediment transport regimes.

#### Physical parameters (use maps where appropriate)

- Sea water quality measuring these parameters: Temperature, pH, salinity, turbidity, sulphate, BOD and TDS. (seawater quality should be tested from at least one control site)

#### Ecology:

**Met opmerkingen [IS6]:** Depending on what the project activities will finally entail. Not clear at the moment for instance whether dredging will take place

**Met opmerkingen [IS7]:** Not clear why this is relevant? If the project only implies construction of revetments or breakwaters, this is probably information which will not be used.

- Identify marine protected areas (MPAs) and sensitive sites such as breeding or nursery grounds for protected or endangered species (e.g. coral reefs, spawning fish sites, nurseries for crustaceans or specific sites for marine mammals, sharks and turtles, [see grass fields \(?\)](#)).
- Coastal and coral reef environment at the project location;
- Benthic and fish community in the areas directly affected as a result of the proposed development.

#### Existing Terrestrial (shoreline) Environment

- Shoreline vegetation in the immediate vicinity of the location proposed for coastal protection; and
- Details of the vegetation to be removed for any project related activities.

#### Natural Hazard and Vulnerability

- Vulnerability of the area to flooding and storm surges.

#### Socio-economic environment

- Demography: total population, sex ratio, density, growth and pressure on land and marine resources;
- Economic activities of the population, [of both men and women \(e.g. fisheries, home gardening, fish processing\)](#);
- Economic situation and income situation;
- Land use planning, natural resources use and zoning of activities at sea;
- Accessibility and transport to other islands;
- [Services quality and accessibility such as water supply, wastewater disposal, solid waste disposal, energy supply and social services such as health, education etc.](#)
- [Sites with historical or cultural interest or sacred places \(if any\)](#);
- Community needs and wants.

**Task 3. Legislative and regulatory considerations** – Identify the pertinent legislation, regulations, standards, and environmental [and social](#) policies that are relevant and applicable to the proposed project, and identify the appropriate authority jurisdictions that will specifically apply to the project. The report should clearly identify the different articles and clauses that apply to the proposed project and should state how the project meets these requirements. [These include those of policies, legislation, regulations and standards on environmental quality \(water, soil, air, noise and solid waste\), health and safety and protection of sensitive areas.](#) International standards of the IFC shall be incorporated to comply with the requirements of the [potential donors](#). [International conventions which are ratified by the Maldives, such as the United Nations Convention on the Law of the Sea, International Convention for the Prevention of Pollution from Ships \(MARPOL\) and others shall also be considered.](#)

Met opmerkingen [IS8]: ?

[The EIA report must give a clear description of the administrative framework in the Maldives, including competent \(licensing\) authorities directly involved in the execution of the project and in the control of the executed works. The EIA report must also indicate which authority is committed to the follow-up activities once project activities are finished and how maintenance of the works will be secured.](#)

**Task 4. Potential impacts (environmental and socio-cultural) of proposed project, incl. all stages** – The EIA report should identify all the impacts, direct and indirect, during and after construction, and evaluate the magnitude and significance of each. Particular attention shall be given to impacts associated with the following:

#### Impacts on the natural environment

- Changes in flow velocities/directions, resulting in changes in erosion/sedimentation patterns, which may impact shore zone configuration/coastal morphology;
- Loss of marine bottom habitat, [both in borrow area as well as due to enlargement of the island, resulting in](#) (temporary) loss of bottom life, which may impact fish stocks and species diversity;

Met opmerkingen [IS9]: Is this part of the proposed project? According to separate project description the works include offshore breakwaters and onshore revetments? So no enlargement of the island? Will dredging be part of the project? If so, then this should be clearly described in task 1. This will involve a number of additional activities and thus impacts

- Sediment dispersal in water column (turbidity during the construction activities, movement of marine based equipments), possibly resulting in changing in visibility, smothering of coral reefs and benthic communities and affecting fish and reef organisms;
- Impacts on unique or threatened habitats or species (coral reefs, sea grasses, sea turtles etc.);
- Pollution of the natural environment (eg. oil spills, discharge of untreated waste water and solid waste, including construction waste);
- Impact of noise, vibration and disturbance;
- Impacts on ground and marine water quality resulting from project activities;
- Impacts on landscape/seascape integrity/scenery; and
- Any cumulative impacts.

#### Impacts on the socio-economic environment

- Impacts of the project and construction and decommissioning works on the public, businesses and way of life, giving particular attention to sensitive population;
- Impacts on demographic developments (migration);
- Impact on coastal fishing and tourism related activities and navigation;
- Impacts on agricultural development;
- Impacts on island employment, income and economy diversification, including potential for local people to have (temporary) job opportunities (and what kind) in the execution of the works;
- Level of protection against hazards like sea-level rise, storm surges etc;
- Impacts of workers on the local population;
- Impacts on cultural sites and heritage;
- Impacts of increased demands on natural resources and services especially water supply, land availability, waste management, energy supply, harbour capacity;
- Monitoring of socio-economic impacts.

The methods used to identify the significant impacts shall be outlined. One or more of the following methods must be utilised in determining impacts: checklists, matrices, overlays, networks, expert and professional judgement. Justification must be provided to the selected methodologies. The report should outline the uncertainties in impact prediction and also outline all positive and negative short and long term impacts. Identify impacts that are cumulative and unavoidable.

#### **Task 5. Alternatives to proposed project** – Alternatives including the “no action option” should be presented.

Determine the best practical environmental option. Alternatives examined for the proposed project that would achieve the same objective including the “no action alternative” should be presented. This should include but not be limited to alternative coastal protection measures, locations, alternative designs, materials and methods. The EIA report must include an alternative which contributes maximally to sustainable development, which may be a combination of the environmentally most favorable implementation with least hindrance for stakeholders. The report should highlight how the best options were determined. All alternatives must be compared according to accepted standards as much as possible. The comparison should yield the preferred alternative for implementation. Mitigation options should be specified for each component of the proposed project.

**Met opmerkingen [IS10]:** Alternative options? If mitigation options are meant, then this sentence can be deleted and should feature as part of task 6

**Task 6. Mitigation and management of negative impacts** – Identify possible measures to prevent or reduce significant negative impacts to acceptable levels. These will include both environmental and socio-economic mitigation measures with particular attention paid to pollution control and future changes in coastal processes and prevention of flooding. Mitigation measures to avoid or compensate habitat destruction caused by the project activities will have to be considered. Measures for both construction and decommissioning phase shall be identified. Cost the mitigation measures, equipment and resources required to implement those measures. The confirmation of commitment of the developer to implement the proposed mitigation measures shall also be included. An Environmental management plan for the proposed project, identifying responsible persons, their

duties and commitments shall also be given. In cases where impacts are unavoidable arrangements to compensate for the environmental or social effect shall be given.

**Task 7. Development of monitoring plan**– Identify the critical issues requiring monitoring to ensure compliance to mitigation measures and present an impact management and monitoring plan for ground water and sea water quality as well as for marine ecosystems in surrounding waters. Ecological monitoring will be submitted to the EPA to evaluate the damages during construction and after project completion. A realistic schedule of implementation of the monitoring program shall be provided. The baseline study described in Task 2 of Section 2 of this document is required for data comparison. Details of the monitoring program including the physical and biological parameters for monitoring, cost commitment from responsible persons to conduct monitoring in the form of a commitment letter, detailed reporting scheduling, costs and methods of undertaking the monitoring program must be provided. This could include involvement of the local population in the monitoring in a simple way, e.g. by asking them to report any changes they notice (see, hear, smell, feel), in fauna, flora, currents, flow patterns, turbidity, etc. Some important aspects to monitor include the following:

- Changes to ground and surface? water quality in near coastal areas and marine environment;
- Impacts of sedimentation as a result of the disturbance during the construction activities;
- Assessment of nearby sensitive ecosystems and marine resources;
- Health of the corals relocated (if undertaken);
- Erosion and accretion along the coastal areas;
- Effectiveness of the coastal defence structure;
- Social and cultural issues (e.g. employment of available local labour force);
- Effectiveness of the mitigation measures.

The EIA report should also provide information on monitoring once project activities are finished and how maintenance of the works will be secured.

**Task 8. Stakeholder consultation, Inter-Agency coordination and public/NGO participation** – Identify appropriate mechanisms for providing information on the project to all stakeholders. Consultation shall be undertaken with Fuvahmulah council and the general public of Fuvahmulah. The EIA report should include evidence of consultation including a list of people/groups consulted, their contact details and summary of the major outcomes, including how the outcomes were considered in the EIA report. The report shall also include the methodology of the consultation with justification, date, time and place of consultation. The report should also include evidence that EIA has been submitted to Fuvahmulah council prior to submission to EPA. The EIA report must indicate in which way the Fuvahmulah inhabitants are involved in the project design and the development of alternatives as well as project execution.

**Presentation**- The environmental impact assessment report, to be presented in digital format, will be concise and focus on significant environmental and social issues. It will contain the findings, conclusions and recommended actions supported by summaries of the data collected and citations ~~for~~ any references used in interpreting those data. A non-technical summary must be included. This must address the major subjects of the EIA report and be written in such diction that it provides non-technicians with a clear insight in the issues treated. The environmental assessment report will be organized according to, but not necessarily limited by, the outline given in the Environmental Impact Assessment Regulations, 2012.

**Timeframe for submitting the EIA report** – The Proponent must submit the completed EIA report within 6 months from the date of this Terms of Reference.

(Date XX)

Met opmerkingen [IS11]: Also surface water of the two fresh water ponds?