FIRST ADDENDUM TO THE ENVIRONMENT IMPACT ASSESSMENT

PREPARED FOR THE PROPOSED

DEVELOPMENT OF 7,000 SOCIAL HOUSING UNITS AT HULHUMALE' PHASE II

December 2016

Prepared for

China State Construction Engineering Corporation Limited (CSCEC)

Maldives

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List of Abbreviations

BOD	Biological Oxygen Demand
DO	Dissolved Oxygen
EIA	Envrionmental Impact Assessment
GPS	Global Positioning System
MEE	Ministry of Environment and Energy
MHI	Ministry of Housing and Infrastructure
MSL	Mean Sea Level
MWSC	Maldives Water and Sewerage Company
NW	North West
SE	South East
SW	South West
TDS	Total Suspended Solids
ToR	Term of Reference

Acknowledgements

The lead author of this report is Dr. Ahmed Shaig

Additional assessments were undertaken by the following team members.

Ms. Hana Saeed (Report writing and stakeholder consultations)

Field assistance was provided by

Mr. Mohamed Ali (Marine assessments)

Mr. Ahmed Haiman Rasheed (Surveying assistance)

The curriculum vitae's of the EIA consultants are attached in Appendix I of this report.

Lead Consultant's Declaration

I certify that statements made in this Environment Impact Assessment are true, complete and correct to the best of my knowledge and available information.

Dr. Ahmed Shaig

Proponent's Declaration

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See Appendix J

Executive Summary

The purpose of this document is to fulfil the requirements to get necessary environmental clearance from the Environmental Protection Agency to construct a temporary jetty at Hulhumale' phase II. This jetty is required for the transportation of construction goods, equipment and machineries for the development of 7,000 social housing units at Hulhumale' Phase II. EPA has approved the original EIA for the proposed development of social housing units on 22 September 2016. This addendum is required for the construction of the jetty. The proponent of this project is China State Construction Engineering Limited (CSCEC).

The rationale for the proposed construction of the jetty is to facilitate the transportation of the construction goods and machineries to the project site. The project to develop 7,000 social housing units requires large-scale machineries, equipment and high quantities of construction materials, which will need to transported in bulk to the project site. Hence, the proponent has decided to construct a temporary jetty, which will have the capacity to moor a 5,000DWT vessel. The contractor for this project is CSCEC Limited and it is financed through bank loans.

For the purpose of this project, HDC has allocated an area of 3,204.20 sqm for temporary loading and unloading of materials towards the western side of Hulhumale' Phase II. HDC has also given permission to the proponent for the construction of the jetty. The project proposes to construct a jetty that will be divided into two parts. The first part will be allocated for wharf operation area (40 m wide) and the other part for temporary transfer stacking yard. The project will involve excavation to a depth of 3 m. During this process, 1,385 m^3 of sand will be dredged that will be used for backfilling at the end of the jetty. The surface of the jetty will be backfilled with sand and the sides will be protected using sand bags. In addition, 30 cm thick packaged concrete will be laid as toe protection for the foundation bed. Project duration is estimated to be 2 months.

The key laws and regulations applicable to this project are: Environmental Protection and Preservation Act, Environmental Impact Assessment Regulation 2012, sand and coral mining regulation and Dredging and Reclamation Regulation. In addition, this project requires approval from HDC.

The existing environment of the project was assessed for the purpose of this addendum. Assessments conducted include marine water quality and marine assessment. Marine assessment showed that no significant fish life or coral colonies occur at the site. The area is mostly made up of a sandy bottom covered in thick patches of algae. Marine water quality assessment showed that water is turbid.

Significant impacts of this project during construction phase of the project are the potential impact of greenhouse gas emissions, marine water turbidity during dredging and impact on groundwater and soil condition due to oil spillages and accidental leakages. There are cumulative impacts on the site due to recent extensive land reclamation in the area. The reef, water quality and shoreline has already been extensive modified. The main mitigation measures include carrying out construction activities during low tide hours and calm weather, carrying out the work in the shortest time frame possible. Mitigation measures also include, storing oil and chemicals in sealed containers, and training workers in spill prevention and cleanup, and designate responsible individuals.

The "No Project" option was explored for this project. However given the importance of this project for the overall project, the plan is to go ahead with the project.

The monitoring plan is designed to assess impacts to the marine environment and impacts to groundwater quality. The cost of monitoring is estimated to be between USD 1,000 and USD 2,000 per annum. The management plan for this project has been updated to include the key management requirements during construction of jetty.

Stakeholders consulted for this project include, Environmental Protection Agency and Housing Development Corporation. EPA advised to undertake appropriate mitigation measures to prevent sedimentation. HDC emphasised to not use the temporary area given for the project for storing materials. They also advised to keep the vessels moving in the area to avoid traffic since the area has other jetties in operation. Both stakeholders highlighted that the jetty must be demobilized once the overall project is complete.

The main conclusion of this report is to proceed with the project but after incorporating the mitigation measures proposed in this addendum. Safety during construction must be a priority.

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މަޝްރޫޢު އެއްކޮށް ނިމުމުން، ތަޖުރިބާ ނަގާފައިވާ އިޖުރާއަތު ދިނުމެވެ.

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ބަދަލުތަކުގެ ސަބަބުން ކުރާ ނޭދެވޭ އަސަރުތައް ވަރަށް މަދު ދަރަޖައަކަށް ކުޑަކުރެވިދާނެއެވެ.

1 INTRODUCTION

1.1 Purpose of the EIA First Addendum

This Environment Impact Assessment (EIA) addendum report is required for the construction of a temporary jetty at Hulhumale' Phase II to unload and load the construction materials and machineries for the construction of the 7,000 social housing units. The project is proposed by China State Construction Engineering Corporation Limited (CSCEC).

This document is submitted to EPA by the proponent to fulfil the requirements of Environmental Protection and Preservation Act (EPPA) of the Maldives (4/93), more specifically the clause 5 of the Act which states that a report should be submitted before implementation of any project that may have a potential impact on the environment.

This report provides the background to the proposed changes to the project as well as an assessment of their likely environmental and social impacts, both beneficial and adverse. The proposed enhancement and mitigation measures are outlined where necessary together with an environment management plan and a monitoring programme.

The original EIA for the project was approved on 22nd September 2016

1.2 Project Scope

The overall project is the development of 7,000 social housing units in Hulhumale' phase II. This addendum is required for the construction of a temporary jetty, which is required to transport all the materials and equipment required for the construction to Hulhumale'. The proponent has planned to construct a multifunctional berth with the capacity to moor a 5,000DWT vessel which will be suitable for loading and unloading goods such as steel, packaged cement, construction machines and engineering vehicles.

See next chapter for more details.

1.3 Background and rationale for the proposed jetty

For the construction of 7,000 social housing, large quantities of construction materials and machineries are required. It is estimated that 115,000 tonnes of cement, 15,000 tonnes of sand and 290,000 tonnes of aggregate will be used for the construction. In addition, as the project site is in Hulhumale' phase II where utility facilities are not yet established, the contractor has planned to use their own generator sets and desalination plants.

Hence, given the scale of the project and amount of machineries, equipment and construction materials that are required, the proponent realised the need for a temporary jetty in Hulhumale' phase II, which will serve the overall housing project. The jetty will be used to transport constructions materials and equipment to Hulhumale' and as an area used to load and unload construction goods and machineries.

1.4 Aim and objectives

The aim of the overall project is to develop 7,000 social housing units in Hulhumale' phase II.

The objective of the proposed development is to facilitate the transportation of construction materials, equipment and machineries to Hulhumale'.

1.5 Consultants, Contractors and Government Institutions

All the EIA related work is undertaken by consultants from CDE Consulting.

Design criteria and technical specifications have been developed China State Construction and Engineering Corporation Limited (CSCEC).

The project contractor is CSCEC Limited.

The project will be financed by banks loans via Housing Development Corporation (HDC).

1.6 Scope and Terms of Reference of EIA addendum

The scope of this EIA is broadly based on the Environmental Impact Assessment Regulations 2012. The assessment more specifically adheres to the Terms of Reference (ToR) issued by the Environmental Protection Agency on 29th November 2016. A copy of the ToR is attached in Appendix A.

The EIA report contains the following main aspects.

- A description of the proposed developments including the need for the project, how the project will be undertaken, full description of the relevant parts of the project, methodology used in the assessment, implementation schedules, site plans and summary of project inputs and outputs *(Chapter 1 and 2).*
- Any additional legislation relevant to the project *(Chapter 3).*
- Additional information about the existing baseline environmental conditions of the site, primarily on marine water quality, and marine environment *(Chapter 4).*

- An assessment of the potential impacts during both construction and operational stages of the project as well as identification and cost of the potential mitigation measures to prevent or reduce significant negative impacts during both construction and operation stages of the project *(Chapter 5 & 6).*
- Assessment of alternatives for the proposed changes *(Chapter 7)*
- Updated Environment Management Plan (Chapter 8)
- Updated environmental monitoring plan *(Chapter 9).*
- Stakeholder Consultations (*Chapter 10)*
- Potential gaps in information *(Chapter 11)*
- Main conclusions *(Chapter 12)*

1.7 Summary of Assessment Methodology

1.7.1 General Approach

This EIA is broadly guided by the EIA Regulations published in 2012.

This report has been prepared to ensure that the significant environmental and social impacts of the proposed changes to the project have been considered and assessed at the project planning phase.

The process followed in the preparation of this EIA report consists of six parts. These are: scoping consultations; literature review; field surveys; stakeholder consultations; analysis of results; and compilation of the assessment in the form of a report.

In order to conduct a broad based and inclusive study, the proponent and the consultant have from the onset ensured the exercise is participatory. As such, discussions were held with relevant stakeholders with the assistance and coordination of the proponent.

1.7.2 The Study Area

The study area for the project is the marine environment of the proposed site for jetty construction.

1.7.3 Field Observations

Field assessments were undertaken in at the project site on 21st November 2016. Field visits mainly covered water quality, marine environment and lagoon condition of the proposed project site. No additional field assessments were undertaken for this addendum.

Marine Assessments

Visual Snorkelling Survey

Visual snorkelling surveys were carried out at select locations of the lagoon. General status of these sites were recorded, special attention was given to types of corals and fishes present at these sites and the environmental conditions that could affect growth such as suspended solids, depth, and other threats to coral life.

Water Quality

Marine water quality was assessed from MWSC laboratory. Samples were taken at two different locations selected based on proposed development and the parameters tested include nitrates, pH, sulphate, phosphate, temperature, Biological Oxygen Demand (BOD), Total petroleum Hydrocarbon (TPH), Total Suspended Solids (TSS) and turbidity. Samples were collected in clean 1.5L PET bottles after washing them with the water to be sampled and they were collected at mid depth.

1.7.4 Desk Study Review

A literature review was conducted to acquire background information on the site and its environment as well as to identify possible environmental impacts of similar developments in island settings. In this context, the EIA Regulations 2012, best practices from similar development activities, scientific studies undertaken in similar settings around Maldives and previous documents/historical publications was considered.

The literature review comprised of, but is not limited to, the following:

- EIA for the development of the 7,000 social housing units in Hulhumale' Phase II.
- Relevant regulations, including Dewatering Regulation

1.7.5 Key Stakeholder Consultation

Stakeholder consultations were undertaken with the following stakeholders:

- Environmental Protection Agency (EPA)
- Housing Development Corporation (HDC)

1.7.6 Data Analysis

The EIA experts used their experience and knowledge in their respective fields to analyse the data from the previous studies and field visits in order to determine the potential impacts of the

proposed projects, the severity of effects arising from these impacts and how any adverse impacts can be best mitigated and positive impacts enhanced. This analysis provides the framework for the recommendations on corrective actions and remedial measures and provides the basis for the formulation of the environmental management plan which forms part of this report EIA.

1.7.7 Report Format

The report format and structure presented here follows the report formatting guidelines issued by EPA.

1.8 Study Team Members

The team members of this EIA are:
Dr. Ahmed Shaig (EIA and coastal environment Specialist)
Mr. Mohamed Ali (Marine Environment Specialist)
Mr. Ahmed Haiman Rasheed (Marine Surveys)
Ms. Hana Saeed (Report writing and stakeholder consultations)

The curriculum vitae's of the EIA consultants are attached in Appendix I of this report

2 PROJECT DESCRIPTION

2.1 Project Location

The overall housing project is located on the newly reclaimed area in Hulhumale' Phase II, at approximately 73°32'50.49"E and 4°13'56.89"N towards the north eastern side.

The proposed jetty will be developed at approximately 73°32'25.21"E and 4°13'27.39"N towards the north western side in Hulhumale' phase II. This is approximately 700 m from the site allocated for the development of social housing units.

2.2 Outline of proposed development and site plan

The overall proposed site plan is presented in Appendix B. A Reduced version of the project location and original site plan is provided in Figure 2.1 below. The areas potentially affected by the project are presented in Figure 5.1.

This proposed development mainly involves the construction of a jetty for the transportation of construction materials, equipment and machineries to Hulhumale' phase II.

The next section provides the details of the project components.

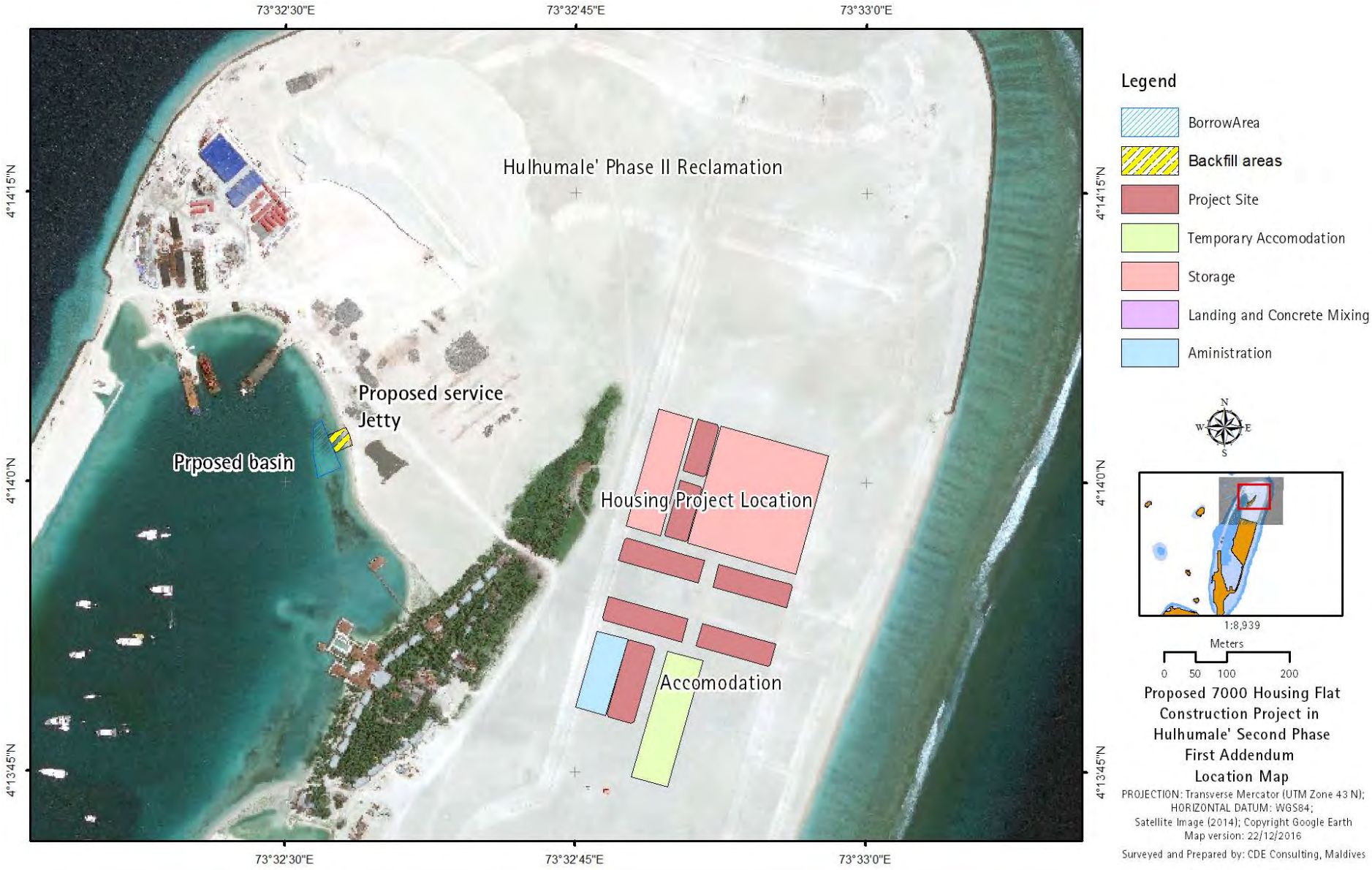

Figure 2.1: Location map

Figure 2.2: Aerial image of Hulhumale' Phase II

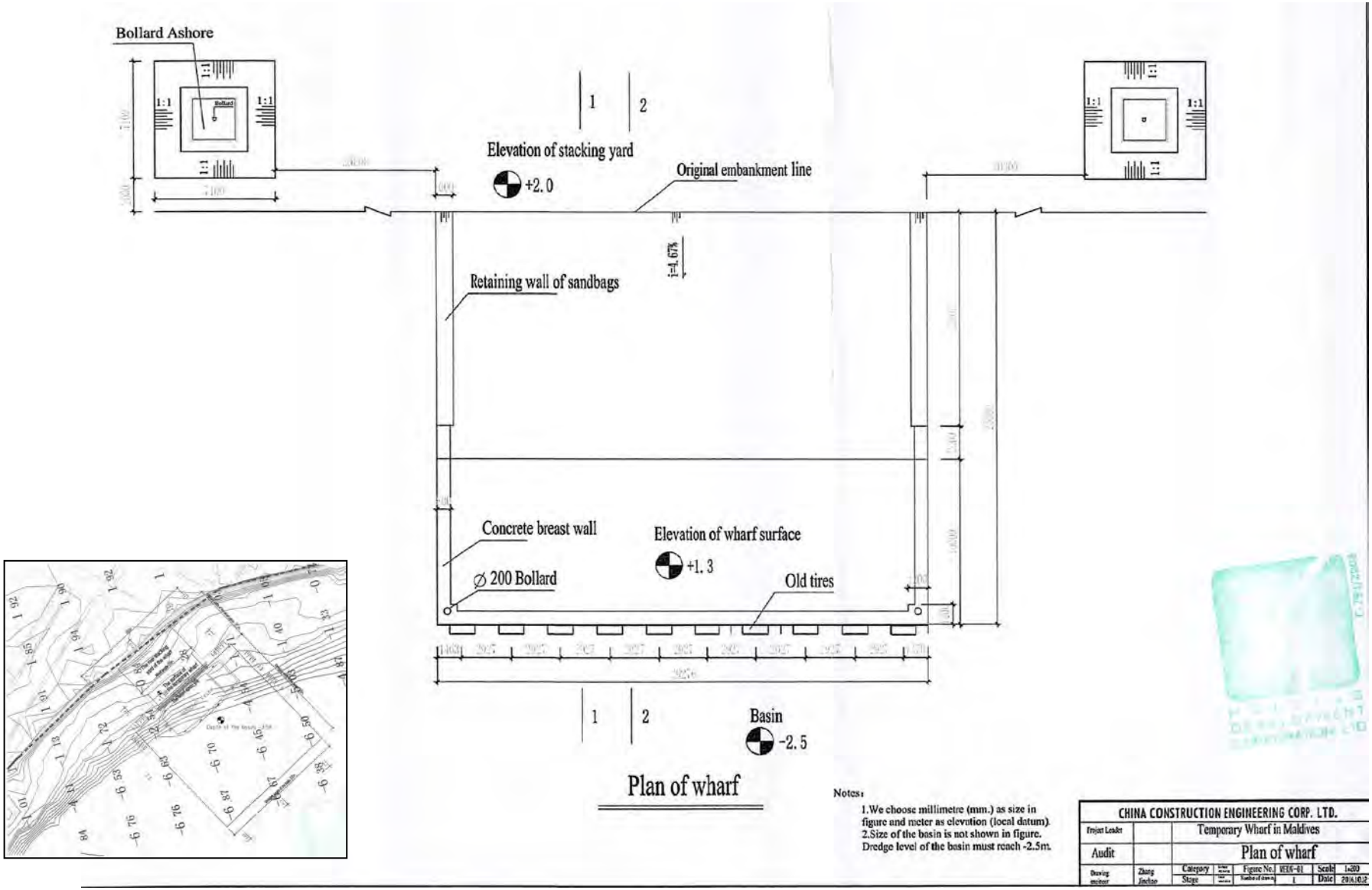

Figure 2.3: Proposed Jetty Site Plan

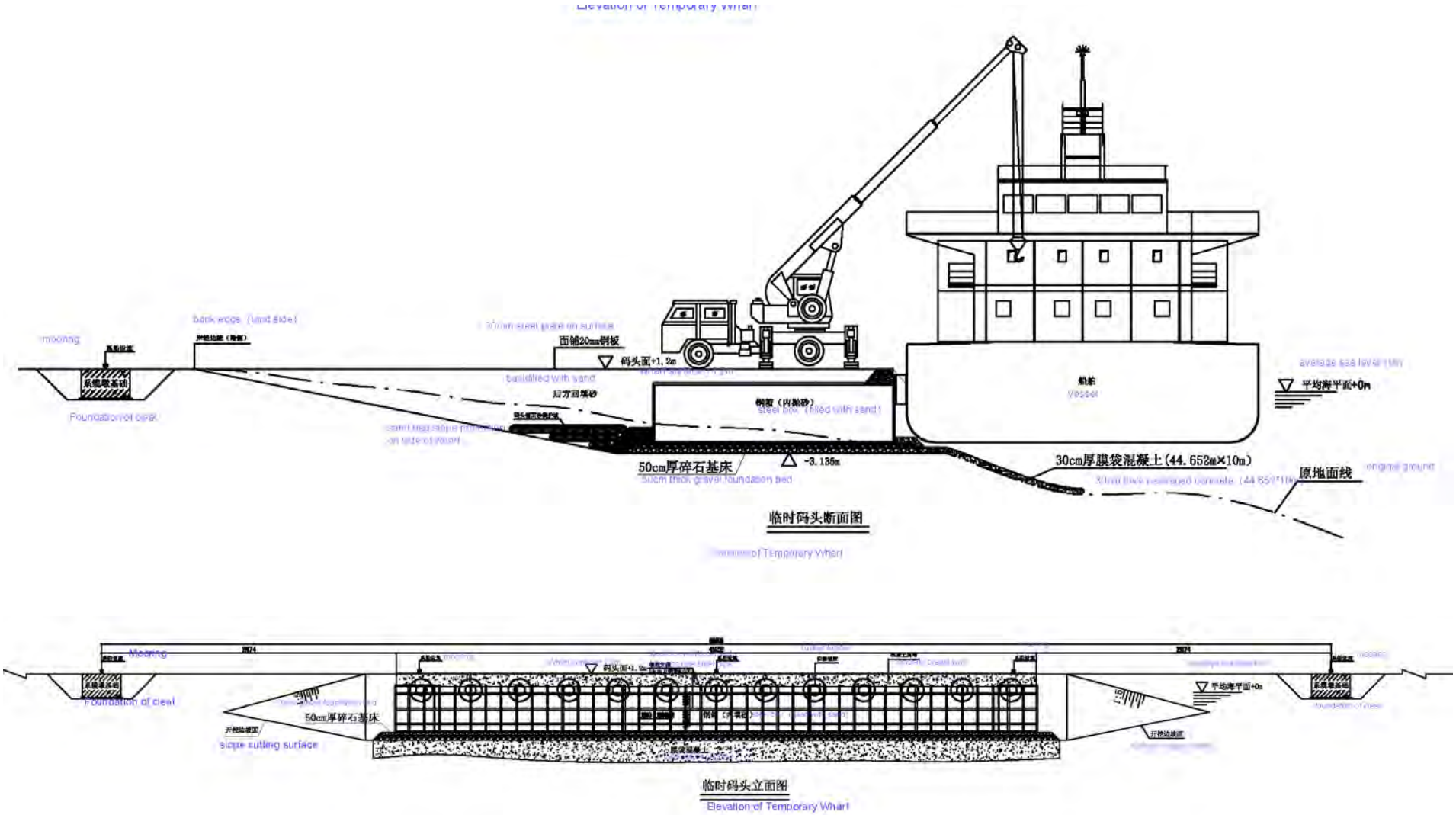

Figure 2.4: Proposed Jetty Site Plan – Elevation view

2.3 Detailed Project Outline and Work Methodology

2.3.1 Scope of Works

The project involves construction of a multifunctional berth at Hulhumale' phase II which will facilitate the transportation of goods and machineries for the construction of 7,000 social housing units. The multifunctional berth will be suitable for mooring of 5,000DWT vessel. The conveyor belt will be 30 m and it will be operated 30 m away from the wharf.

2.3.1.1 Design of the jetty

The jetty is proposed to be located along the lagoon facing shoreline of the Hulhumale' Phase II reclaimed land. The jetty structure will be a protruding square constructed parallel to the existing shoreline. The jetty will be 40 m long and 20 m wide.

The main approach quaywall of the jetty will be 40 m long. The sides will not be used for approach. There will be two concrete bollards placed on land on either sides of the jetty to anchor the vessels. The 3200 sq m area will be used to unload and temporarily store the incoming cargo before moving to the construction site.

A basin will have to be dredged. The length of the basin is 80 m and the width is 50 m. Of these, part of the lagoon slope will have to be dredged. The required minimum depth at the basin site is -3.5 m MSL.

The jetty structure consists of steel boxes filled with sand to act as a platform. The boxes will be placed on a 50 cm thick gravel foundation bed, constructed from granite aggregate (See Figure 2.4). The surface of the jetty will be filled with sand. The sides will be protected using stacked jumbo bags filled with sand. The toe of the jetty will be protected using 30 cm thick concrete bags.

2.3.2 List of Equipment and Machineries

- 2 Generator units
- 2 Traffic boat
- 1 Sand pump
- 2 Auto crane
- 3 Welder
- 1 Excavator
- 3 Dump truck

2.3.3 Work Methodology

For foundation bed excavation, the survey team will set the measurement control point and the GPS base station on land. After determining the area to be excavated, air reverse circulation equipment with the high-pressure water pump will be used to clear the top layer of sand from the area.

Foundation area will be excavated to a depth of -3 m and the dredge waste sand will be transported the sides of the wharf using trucks and excavators. Approximately 1,385 m^3 of sand will be dredged during bed excavation and this sand will then be used for steel box backfilling and backfilling at the end of the jetty. The depth of dredging and the extent of dredging will be controlled using a measuring bar during the dredging process.

After excavating the foundation bed, the bed will be levelled using rocks and this work will be conducted in sections. Prior to foundation construction, the surface of the foundation bed will be processed to ensure the surface is not higher than 30 cm.

Steel boxes fabricated in China will be installed on the levelled foundation bed by a crane barge. The second steel box will be placed using four assembly pulleys. Two anchors will then be set on the outer side of the subsequent steel boxes and 20 mm steel plates will be laid on the surface of the jetty. In addition, 30 cm thick packaged concrete will be laid as a toe protection measure against the foundation bed.

The surface of the jetty will be backfilled with sand and protected on both sides of the jetty using sand bags.

2.3.4 Utilities during construction

During construction stage, power will be sourced from 2 generator sets of 100KW each. For the operation of the generator sets, 400 litres of oil will be stored on project site. The oil will be stored in sealed containers in the project site. Water will be sourced from the ocean for use during the construction stage of the project. For the construction workers, bottled water will be used.

2.4 Schedule and Life Span

It is anticipated that the completion of the whole project will take approximately 2 months. Detailed work plan matrix of the project is attached in Appendix E.

2.5 Waste Management, Logistics and Safety Measures

2.5.1 Construction Waste Management and Disposal

Construction wastes that will be created are mainly construction debris.

Small amounts of waste oil may be generated from the operation and maintenance of vehicles. All waste oil will be disposed as per the approved standards of the Environment Ministry.

All general packaging, food and green waste can be disposed at the waste disposal site at Thilafushi by the contractor.

2.5.2 Pollution and Emission Control Measures

The following measures will be taken to ensure minimal pollution during construction stage.

- Machinery will be properly tuned and maintained to reduce emissions and minimize risk of spills/leaks.
- All paints, lubricants, and other chemicals used on site will be stored in secure and bunded location to minimize risk of spill.

2.5.3 Sediment Containment and Turbidity Control Measures

The proponent is committed to preventing any sedimentation of the marine environment including the reef system from this proposed project. However, given the depths in the area, the short time frame and the small scale of the project, stringent measures have not been deployed. The following specific measures will be undertaken during the project.

- Undertake dredging work during calm weather conditions.

2.5.4 Health and Safety Measures

- The contractor would ensure that Health and Safety procedures are complied with at all times.
- Construction activities would be carried out under the supervision of a suitably experienced person.
- All reasonable precautions will be taken for the safety of employees, and equipment will be operated by competent persons.

- Warning signs, barricades or warning devices will be provided and used. Necessary safety gear will be worn at all times.
- Fire extinguishing equipment would be readily available and employees will be trained in its use. In general, water-based fire extinguishers would be used.
- Oxygen, acetylene or LPG bottles will not be left free-standing. All welding and cutting will be done in accordance to high safety regulations by experienced personnel.

2.6 Labour Requirements and Availability

Approximately 13 staff members of the contractor will be involved in the project.

2.7 Dismantlement of Jetty

The jetty will be dismantled after 2 years, when the construction of the 7,000 social housing units is complete. The jetty will be continuously maintained, particularly the jumbo bags on the sided. All removed sand will be placed back in the lagoon. All concrete bags placed in the lagoon will be removed. All the aggregate placed at the site as a foundation will also be removed. No decision has been taken on how to manage the steel boxes. However, it is anticipated that they will be transported to China and sold as recyclable metal. The aggregate removed is likely to be sold locally. Jumbo bags and concrete bags will be transported to Thilafushi.

2.8 Summary of Additional Project Inputs and Outputs

The types of materials that will go into the development and from where and how this will be obtained are given in Table 2.1 and the type of outputs (products and waste streams) and what is expected to happen to the outputs are given in Table 2.2

Table 2.1: Major Project Inputs

Input resource(s)	Source/Type	How to obtain resources
Construction workers	Local and foreign	Contractor's employees or by announcement
Engineers and Site supervisors	Foreign	Contractor's employees
Water supply (during construction)	Bottled water; portable desalination plant	Purchased from local businesses; contractor equipment

Input resource(s)	Source/Type	How to obtain resources
Machinery	Excavators, loaders, trucks, barges, welder, truck, sand pump, generator sets	Contractor's machinery or hire locally where available
Maintenance material	Maintenance parts and fluids required for the machinery and equipment	Import or purchase locally where available
Accommodation	Purpose built accommodation on site	Constructed by the contractor
Firefighting equipment	Fire Extinguishers...etc.	Contractor's equipment
Fuel	Light Diesel, Petrol, Lubricants	Local suppliers
Food and beverage bottles	PET bottles, glass bottles, packaging waste, plastic bags and various frozen, packaged and fresh food.	Contractor's equipment

Table 2.2: Major Project Outputs

Products and waste materials	Anticipated quantities	Method of disposal
Construction waste	Moderate quantity	Disposed to Thilafushi
Waste oil	Small quantities	Barrelled and sent to Thilafushi site during demobilisation.
Hazardous waste (diesel)	Moderate quantities	Barrelled and sent to Thilafushi site.
Noise	Only localised	Excavator and truck operation will be noisy. No option available.
Food waste	Small quantities	Sent to waste disposal site at Hulhumale phase I
Plastic and packaging wastes	Small quantities	Sent to waste disposal site at Hulhumale phase I

3 POLICY AND LEGAL FRAMEWORK

These legal and policy provisions have to be fully respected in carrying out the proposed development. All contractors and sub-contractors will be informed of these requirements. This project conforms to all relevant laws and regulations of the Maldives.

3.1 Relevant Environment Legislation

3.1.1 Environment Protection and Preservation Act (Act no. 4/93)

The Environmental Protection and Preservation Act (*4/93*) enacted on 19 March 1993 is the framework law related to environment protection in the Maldives. The authority responsible for the Environment Act is the Ministry of Environment and Energy.

Articles 2, 4, 5, 6, 7, and 8 of the law are relevant to this Project.

Article 2 states that the concerned government authorities shall provide the necessary guidelines and advise on environmental protection in accordance with the prevailing conditions and needs of the country. All concerned parties shall take due considerations of the guidelines provided by the government authorities.

The project developers and contractors shall abide by any guidelines or advice given by the concerned Government authorities for the project.

Article 4 states that the Ministry of Environment shall be responsible for identifying protected areas and natural reserves and for drawing up the necessary rules and regulations for their protections and preservation.

The project developers and contractors shall ensure that there is no negative impact from the proposed project on sensitive environments in the vicinity or protected species.

According to Article 5 (a) of the Act, an Environmental Impact Assessment study shall be submitted to the Ministry of Environment before implementing any development project that may have a potential impact on the environment.

According to Article 5 (b), The Ministry of Environment shall formulate the guidelines for EIA and shall determine the projects that need such assessment as mentioned in paragraph (a) of this clause.

This report is prepared to fulfil this clause.

According to Article 6, the Ministry of Environment has the authority to terminate any project that has any undesirable impact on the environment. A project so terminated shall not receive any compensation.

All project developer and contractors shall be aware of this provision and contractors shall take all practical measures to ensure there is no irreversible and significant negative impact of the projects on the environment

Article 7 of the EPPA (4/93) states that any type of waste, oil, poisonous gases or any substances that may have harmful effects on the environment shall not be disposed within the territory of the Maldives. In cases where the disposal of the substances becomes absolutely necessary, they shall be disposed only within the areas designated for the purpose by the government. If such waste is to be incinerated, appropriate precaution should be taken to avoid any harm to the health of the population.

All project contractors shall comply with the Environmental Management Plan presented in this report, which specifies how the wastes, oil and gases generated by the project will be disposed.

Article 8 of the EPPA (4/93) states that Hazardous/ Toxic or Nuclear Wastes that is harmful to human health and the environment shall not be disposed anywhere within the territory of the country.

Any hazardous wastes that may be generated from this project shall be transferred to the designated waste site in Thilafushi for disposal according to Government regulations and standards.

3.2 Relevant Regulations and Guidelines

3.2.1 Environmental Impact Assessment Regulations 2012

Environmental Impact Assessment regulations were issued by Environment Environmental Impact Assessment regulations were issued by Environment Ministry on 8 May 2012. The first step in environmental assessment process involves screening of the project to be classified as one that requires an EIA or not. Based on this decision, the Ministry then decides the scope of the EIA, which is discussed with the proponent and the EIA consultants in a "scoping meeting". The consultants then undertake the EIA starting with baseline studies, impact prediction and finally reporting the findings with impact mitigation and monitoring programme. This report follows the principles and procedures for EIA outlined in the EIA regulations.

The EIA report is reviewed by MEE following which an EIA Decision Note is given to the proponent who will have to implement the Decision Note accordingly. As a condition of

approval, appropriate environmental monitoring may be required and the proponent shall have to report monitoring data at required intervals to the Ministry. The project proponent is committed to implement all impact mitigation measures that are specified in this EIA report. Furthermore, the proponent is committed to environmental monitoring and shall fulfil environmental monitoring requirements that may be specified in the EIA decision note as a condition for project approval.

This report complies with the EIA regulations

3.3 Relevant Regulations and Guidelines

3.3.1 Regulation on Sand and Coral Mining

Regulation on sand mining covers sand mining from uninhabited islands that have been leased; sand mining from the coastal zone of other uninhabited islands; and aggregate mining from uninhabited islands that have been leased and from the coastal zone of other uninhabited islands.

Coral mining from house reef and atoll rim has been banned through a directive from President's Office dated 26 September 1990.

Sand should not be mined from any part of an existing island. Sand should also not be mined from within 100 ft. of the shoreline of project site. Please see regulation on dredging and reclamation for further controls.

3.4 Regulation on Dredging and Land Reclamation

The regulation of Dredging and Land Reclamation was published on 2 April 2013 with the aim of minimising environmental impacts associated with dredging activities in islands and reefs across Maldives.

- The regulation defines the rationales acceptable for dredging as those related to approved development activities on inhabited islands and economic islands. It defines that those activities should be if utmost necessity for dredging to be considered.
- All dredging and reclamation activities must be approved by EPA in writing. The process includes the submission of project information to EPA along with a scaled before and after map.
- The regulation defines rationales for reclamation as those absolutely necessary for social, economic or safety purposes.

- Beach replenishment is restricted from 10 m of the registered shoreline in resort islands
- Dredging is restricted in the following areas:
  - 500 m from the ocean side reef edge
  - 50 m from any island vegetation line
  - An environmentally sensitive site
- Land reclamation is restricted within 200 m of a sensitive area.
- Land reclamation cannot exceed 30% of the house reef area

During foundation bed excavation, the project involves excavation of sand, which will also be used for backfilling. Hence, approval for dredging will be required from EPA before undertaking any dredging works.

3.5 Approvals

Housing Development Corporation (HDC) has given the permit for the construction. See Appendix C for approval letter.

4 EXISTING ENVIRONMENT

Baseline environment of the project site has been covered in detail in the initial EIA report of the proposed development of 7,000 social housing units and is used as the baseline for this assessment. Baseline surveys conducted for this component of the project include marine assessments and marine water quality testing.

4.1 Work Completed

There has been no progress in the overall project; development of 7,000 social housing units Construction of the temporary jetty is the first component of this overall project. The jetty is the key to the transportation of all construction goods and machineries required for the implementation of the overall project.

4.2 Marine Environment

A visual snorkelling rapid assessment was undertaken near the proposed jetty site, on 27th November 2016. The sky was cloudy during the survey. This land adjacent to the survey location has been extensively reclaimed by pumping sand. This area was highly turbid due to movement of suspended solids.

Figure 4.1: View of proposed jetty site from the sea

The marine environment near the proposed site for jetty construction area is made up of sand, covered in patches of thick algae. No significant fish communities or live coral colonies occur in the area.

Figure 4.2: Thick algal patches observed on the lagoon bottom

4.3 Marine Water Quality

The primary objective of the lagoon water quality sampling was to determine the baseline conditions of the marine water around the project site. Water samples were collected from two locations. The following table shows the test results of the marine water samples collected. Laboratory results are attached in Appendix F.

Table 4.1: Marine water quality assessment results from MWSC laboratory

Parameter	Optimal Range (EPA)	Results	
		SW1	SW2
Physical appearance		Clear with particles	Clear with particles
pH	8.0 – 8.3	**7.93**	8.03
Nitrate (mg/L)	<5	4.1	4.0
Phosphate (mg/L)	0.005 – 0.020	**0.05**	**0.07**
Sulphate (mg/L)	<2700	2450	2550
Turbidity (NTU)	<5 NTU	**24.1**	0.592
Biological Oxygen Demand (BOD) (mg/L)	<2	**5**	2
Total Petroleum Hydrocarbon (mg/L)		0.39	0.73
Total Suspended Solids (mg/L)		<5(LoQ 5mg/L)	<5(LoQ 5mg/L)

The investigations of marine water revealed that the quality of majority of the parameters tested is at acceptable levels for non-potable waters. Although pH level at SW1 is slightly less than optimal, it is not significant. Nitrates, sulphates, TPH and TSS are within acceptable limits. However turbidity at SW1 is above the optimum limit of 5 mg/L and so is the BOD count for the same sample with 5 mg/L which is above the optimum level of 2 mg/L. Hence it can be deduced that the sample SW1 is slightly contaminated by organic matter. The levels of phosphates at both samples are also above the optimum level. This could be organically bound phosphate due to the presence of some human and animal waste in the water, as it is a source of phosphorous.

4.1 Bathymetry

Bathymetric chart of the proposed project site is provided in Appendix G.

5 IMPACTS IDENTIFICATION

5.1 Introduction

Potential adverse and beneficial impacts of the proposed changes to the project are identified and evaluated in this section. Refer to the original EIA for a complete impact identification and evaluation of the Social housing project at Hulhumale Phase II. This section only highlights additional impacts likely to result from proposed changes to the project.

Significant impacts are identified and evaluated in two stages. The first stage identifies the environmental and socio-economic components that may be impacted from key project activities. The second stage determines the significance of impacts of each component. The following sections provide details of the evaluation of impacts.

5.2 Impact Identification and Evaluation

Environmental and socio-economic aspects that may be impacted by the project are identified in the impact matrices in Table 5.1 to 5.3. Assessments of the impacts are conducted based on the following criteria.

1. **Magnitude**: Refers to the quantum of change that will be experienced as a consequence of the impact. It is defined by the severity of each potential impact based on impact reversibility, irreversibility and potential rate of recovery. Impacts of high magnitude are those that cannot be mitigated substantially or involve substantial residual impacts.

2. **Nature**: Where the activity or component has direct, indirect or cumulative impacts from multiple projects or activities.

3. **Duration:** Refers to the temporal scale (i.e. duration, frequency) of the impact. It does not take into account the duration of the impact's effects.

4. **Distribution:** Refers to the spatial scale of the area impacted. An impact can be site specific or limited to the project area; locally occurring within the immediate vicinity of the project locality; atoll level; or at a national level.

5. **Significance:** Refers to the importance of the impact's consequence or implications (ecological social, economic). An impact of small magnitude could have a very high significance and vice-versa (e.g. siltation of a small reef area with rare coral species has low magnitude but very high significance). Once an impact has been identified it needs to be evaluated using set of criteria. The key criterion considered in this study are:

    a. The degree of reversibility of an impact (i.e. duration of its effects) is considered part of its significance.

b. Threats to sensitive eco-systems. For example, those leading to loss of key habitats and extinction of species, or those affecting Protected Areas.

c. Threats to key resources leading to depletion of resources or loss of livelihood associated with those resources.

d. Geographic extent of impact. For example, national or trans-boundary impacts

e. Duration and timing of the impact

f. Likelihood or probability of the impact occurrence

g. Reversibility

h. Resource use conflicts

i. Public views and complaints

j. Cumulative impacts on an area due to multiple projects

k. Uncertainty in impact predictions

l. Cost of mitigation.

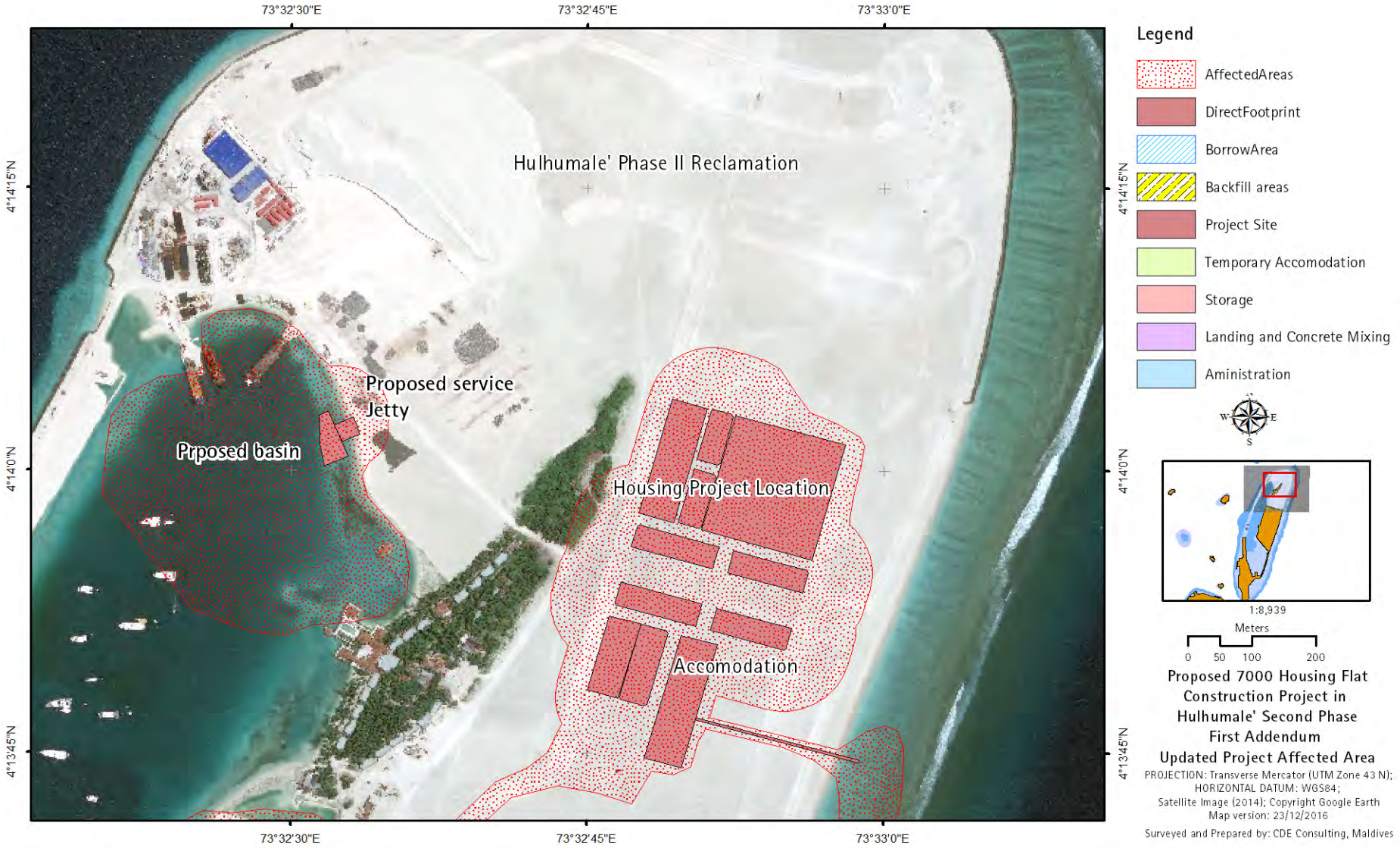

Figure 5.1: Affected Area

Table 5.1: Impact Identification Matrix during construction stage

Activity / Potential Impact	Direction		Nature			Duration		Distribution			Magnitude			Significance		
	Pos	Neg	Dir	In Dir	Cumu	Long	Short	Site	Local	Nat	High	Mod	Low	High	Mod	Low
1. Site preparation and construction																
Physical Impacts																
Air quality		X	X				X	X				X			X	
Groundwater quality		X	X			X		X				X			X	
Marine water turbidity (excavation of foundation bed, sand bed construction and backfilling)		X	X		X		X	X				X			X	
Sedimentation (excavation of foundation bed, sand bed construction and backfilling)		X	X				X	X				X			X	
Marine water contamination (usage of construction equipment and machineries)		X	X				X	X				X			X	
Biological Impacts																
Impacts on coral communities																
Direct loss of coral communities (footprint of borrow area and sand bed)		X	X			X		X					X			X
Indirect (smothering from sedimentation, turbidity)		X		X			X	X					X			X
Invertebrate displacement		X	X				X	X					X			X
2. Socio-economic impacts																
Health and safety of workers		X	X				X	X					X	X		
Opportunities for local businesses	X		X				X		X				X		X	
Demand for Utilities																
Waste management		X	X				X		X			X			X	
Water and energy production (Air emission and fuel consumption)		X					X	X	X			X			X	
Waste water management		X	X	X			X	X				X			X	

X (no impact), - (negative impact), + (positive impact)

Table 5.2: Impact Identification Matrix during operation stage

Activity / Potential Impact	Direction		Nature			Duration		Distribution			Magnitude			Significance		
	Pos	Neg	Dir	In Dir	Cumu	Long	Short	Site	Local	Nat	High	Mod	Low	High	Mod	Low
1. Jetty operation																
Physical Impacts																
Marine water turbidity (mooring of vehicles)		X	X				X	X				X			X	
Sedimentation (mooring of vehicles)		X	X				X	X				X			X	
Marine water contamination (during loading and unloading of goods, oil spillages)		X	X				X	X				X			X	
Biological Impacts																
Impacts on coral communities																
Indirect (smothering from sedimentation, turbidity)		X		X			X	X				X				X
Invertebrate displacement		X	X				X	X					X			X
2. Socio-economic impacts																
Health and safety of workers		X	X				X	X					X	X		

X (no impact), - (negative impact), + (positive impact)

Table 5.3: Impact Identification Dismantlement of Jetty

Activity / Potential Impact	Direction		Nature			Duration		Distribution			Magnitude			Significance		
	Pos	Neg	Dir	In Dir	Cumu	Long	Short	Site	Local	Nat	High	Mod	Low	High	Mod	Low
1. Jetty Dismantlement																
Physical Impacts																
Marine water turbidity		X	X				X	X				X			X	
Sedimentation		X	X				X	X				X			X	
Marine water contamination (during loading and unloading of waste, oil spillages)		X	X				X	X				X			X	
Biological Impacts																
Impacts on coral communities																
Indirect (smothering from sedimentation, turbidity)		X		X			X	X				X				X
Invertebrate displacement		X	X				X	X					X			X
2. Demand of resources																
Space at Thilafushi to dispose dismantlement waste		X	X			X				X			X			X

X (no impact), - (negative impact), + (positive impact)

6 SIGNIFICANT IMPACTS AND MITIGATION MEASURES

6.1 Impacts on the Natural Environment

6.1.1 Air Quality and Greenhouse Gas Emissions

During the mobilisation of equipment and operation of heavy machinery, it is anticipated that significant noise will be generated. Dust and emissions, including greenhouse gases, from vehicle and machinery exhausts will degrade the air quality. However, these adverse impacts will be short term and can be mitigated. With proper mitigation measures, it is unlikely that air pollution impacts will cause long term effects such as human health risks leading to increased public and private health costs. While emitted greenhouse gases can persist in the atmosphere in the long term, the level of emission from this project is expected to be negligible.

Since the project is implemented in phase II of Hulhumale' where there no residential settlements, the significance of impacts from noise level and air quality will be negligible.

Mitigation measures to minimize air pollution

- Properly tune and maintain all vehicles and machinery
- Keep ground/ soil damp to minimize dust/ topsoil erosion by wind
- Conduct construction activities during daytime

6.1.2 Impact on the marine environment

One of the most significant impacts of the proposed project activities will be on the marine flora and fauna, including direct removal of organisms and indirect impacts due to sedimentation and loss of habitat. The surface biota in the project footprint will be completely destroyed by the excavation process for foundation bed construction process. Sediment plumes will also be generated in the process, particularly during foundation bed construction. However, since no live coral colonies occur within the proposed footprint, direct loss of marine life will be mainly limited to bottom dwelling organisms and algal patches.

Significant changes to the physical and biological processes of coral reef ecosystems are not expected, given there is no live coral reef ecosystems within the project impact boundary. As per the marine assessment report, the area is made of sand and thick patches of algae. There are no significant coral of fish communities.

Foraging behaviour of fishes may be impeded by turbid conditions; gills maybe clogged by sediment particles and sediment deposition may cover and suffocate eggs and larvae of benthic

spawning fishes. Prolonged exposure to high sediment levels can lead to a decrease in fish immunity against parasites and diseases. As fishes can readily disperse they are likely to relocate in nearby reefs if high sediment conditions persist.

In addition, sedimentation is likely to cause shifts in invertebrate populations as sediment is deposited at the crevices/crannies blocking their habitat. This favours domination of invertebrate populations that are more tolerant of the condition. The overall population diversity, size and quality of reef ecosystem are likely to decline due to increased and prolonged sedimentation arising from the proposed activities. These impacts are expected to be cumulative from the past dredging and on-going works at the site.

Mitigation measures to minimize loss of marine organisms and habitats and to reduce impact on marine environment

- Carry out the activities in as short a time period as possible to allow normal conditions to re-establish in the area as soon as possible.
- Ensure all project activities are restricted to necessary areas only.
- Carry out work in low tide hours and in calm condition
- Minimize affected area and preserve areas not in direct footprint
- Specify the routes for excavator movement and prevent excavator operators from straying into other zones.

6.1.3 Groundwater and Soil Condition

The construction and development of the jetty is expected to have some impact on the quality and quantity of the groundwater and soil condition. Impacts are severe in the event of accidental spills.

During the construction stage, mishandling of paint, chemicals and fuels has a tendency to cause serious pollution of soil and groundwater aquifer. There have also been reports of spilled oil near temporary generator sets and around fuel transport lines in other similar construction projects. This sort of pollution may sometimes have long-term irreversible effects, extending through the operations stage, since such contamination does not degrade itself and is expensive to clean up. The clean-up itself may require extensive ground water extraction, which will impacts such as salt-water intrusion. However, under direct supervision of a trained personnel, accidental oil spillages can be prevented and groundwater contamination can be avoided.

Mitigation measures to prevent soil and groundwater contamination

- Oil, solid waste & hazardous waste handled carefully & transported in sealed containers.
- All paints, lubricants, and other chemicals used on site stored in a secure and bunded location
- General refuse stockpiled in one central area
- Keep spill cleanup materials readily available
- Train workers in spill prevention and cleanup, and designate responsible individuals
- Properly tune and maintain all machinery
- Carry out construction activities user the supervision of a suitably experienced person

6.2 Impacts on the Socio-economic Environment during construction

6.2.1 Business and Employment Opportunities

Demand for resources such as food and accommodation for construction workers, equipment, machinery, vehicles and vessels hire will also likely benefit the local suppliers and businesses.

6.2.2 Health and Safety

Health and safety risks arising from construction work is high, especially due to the use of specialised equipment and machinery. Accidents related to equipment use can lead to injury, and fatalities. Materials used in construction, in addition to the equipment and machinery, also involve risks to health and safety. Accidental spills/ leakage of hazardous substances can contaminate the site and pose risks to human health, including workers on the site and the local population. The project activities include measures to minimize risks to health and safety of workers.

Mitigation measures to ensure occupational health and safety

- Health checks will be administered before work commences
- Warning signs, barricades or warning devices will be provided and used.
- Necessary safety gear will be worn at all times. These include safety gloves, construction boots, facemasks, earmuffs, etc.
- Fire extinguishing equipment would be readily available and employees will be trained in its use.

- Oxygen, acetylene or LPG bottles will not be left freestanding.
- First aid kits will be made available on site
- The construction site will be properly closed to unauthorised personnel

The construction site will be properly closed to unauthorised personnel

6.2.3 Demand for services

During construction stage, it is expected that the project will not require water and power service from the national grid, as it is not yet established at Phase II. The contractor will be using his own power generator sets and water production system.

Demand for waste management will increase during the period of construction as construction workers for this project are accommodated on site and plan to use local waste management and disposal centre. There will be additional demand on waste management infrastructure and services as well since domestic waste from accommodation blocks and all construction waste from this project are planned to be taken to Thilafushi waste management site.

Local businesses in Hulhumale' Phase 1 may profit from the additional demand on food and supplies from the workforce accommodation at project site.

7 ALTERNATIVES

7.1 "No-project" Alternative

The option of a no project alternative has been considered for construction of the jetty. The advantages and disadvantages of the No Project option are presented in Table 7.1.

Table 7.1: Summary of "No Project" Alternative

Options	Advantages	Disadvantages
No jetty developed	– Marine environment will not be disturbed – No disruption to the workers in the vicinity due to construction activities – No impact on air quality of the island – No development costs to the Proponent	– Challenges in transporting goods and equipment directly to the project site – Delays in transporting via the Hulhumale' phase I jetty – Delays in the overall project

As discussed before, the construction of the jetty will allow easy and quick transportation of construction goods, machineries and equipment to the project site in Hulhumale' phase II. Hence given the high opportunity cost of the No Project option to the proponent and the overall project, the preferred option is to go ahead with the jetty construction.

The developer will have to bear the cost of mitigation measures related to the significant impacts associated with this project if he chooses to move forward with the project. The following subsections provide alternative options to minimize the overall impacts of various elements of the project.

7.2 Alternative jetty construction method

Considering the reclamation works and lagoon bed modification required, two alternatives were considered for jetty construction method. They are construction on stilts and sheet piles. Construction on stilts require assembling a suing steel, wood or concrete. Wood and concrete were deemed too weak for the proposed load anticipated and a robust structure will involve a lot

of concrete. The only option for stilts is to drive steel piles, which would make the activity unviable.

Similarly, the use of sheet piles, while highly stable and easy to construct, is prohibitive in terms of costs.

In terms of environmental impacts, all options except construction on stilts require backfilling. There is no major advantage of stilts or not having to use dredge material as the habour basin has to be dredged anyway. Extending the sheet piles up to deep water was found to be too expensive.

The preferred option is the currently proposed option with sand filled steel boxes.

8 ENVIRONMENTAL MANAGEMENT PLAN

There will be no changes to the originally proposed management plan. The updated table of management measures are presented in Table 8.1.

Table 8.1: Update table of management measures

Activity	**Management measures**	**Responsible party**	**Timing**
Training of staff and contractors	All construction workers and project management staff will be provided information on general environmental issues, compliance with environmental permits and EMP. All staff involved with environmental monitoring will be provided training in environmental monitoring procedures.	Project proponent & Environmental Consultant	Before commencement of construction activities
Documenting non-conformances and corrective actions	All non-conformances to the environmental permit conditions, observed during monitoring will be documented. Necessary corrective actions and preventative actions will be identified Corrective actions will be implemented, with systematic follow ups to ensure effectiveness of these measures	Project proponent & Environmental consultant	Continuous during construction phase
Control of water and ground contamination	Oil, solid waste and hazardous waste handled carefully and transported in sealed containers. All paints, lubricants, and other chemicals used on site stored in a secure and bunded location. Littering and accidental disposal of construction wastes avoided by preplanning. All raw materials stored away from the vicinity of the coastal areas. General refuse stockpiled in one central area. Construction activities carried out under the supervision of an	Project proponent	Continuous during construction phase

Activity	**Management measures**	**Responsible party**	**Timing**
	experienced person. Regular visual inspection of surrounding marine environment for waste		
Waste management (Waste generated from construction activities, the construction workforce will generate domestic and sewage waste)	All waste segregated, stored temporarily and transferred to the existing waste management site and domestic sewage generated will be dealt through septic tanks as Phase II does not have the sewerage network established yet.	Project proponent	Continuous, during construction phase
Supervision of project activities	Assign suitably experienced and qualified personnel to supervise the entire project and ensure that all activities are carried out with minimal adverse impact on the environment	Project proponent	Before commencement of the project

9 ENVIRONMENTAL MONITORING PLAN

This original EIA contains a comprehensive monitoring plan. Some updates are required for the construction and monitoring stage. The changes are summarised in Table 9.1 for construction stage and Table 9.2 for operations stage.

All monitoring location base lines are presented in the original EIA. All coordinates are presented in Appendix F of original EIA.

9.1 Monitoring report

A detailed environmental monitoring report is required to be compiled and submitted to the EPA annually based on the data collected for monitoring the parameters included in the monitoring plan given in the EIA. The requirements of this addendum can be treated within a single monitoring report along with the original EIA requirements.

9.2 Cost of monitoring

The cost of monitoring may increase to US$ 2,000 annually. Professional consultants will be hired to undertake the monitoring and the necessary equipment for monitoring will be procured.

Monitoring cost is calculated excluding logistics and contingency costs.

9.3 Commitment to monitoring

The proponent is fully committed to undertake the monitoring programme given in this chapter (see Appendix J).

Table 9.1: Monitoring Schedule for Construction Stage

Monitoring Attribute	**Indicator**	**Methodology**	**Locations & samples**	**Frequency**	**Applicable standard**	**Est. Total Costs / USD**
Marine Water Quality (Marine)	The following parameters will be tested: Temperature, pH, BOD, Total Suspended Solids, Nitrate, Phosphate, Turbidity, Sulphate and Total Petroleum Hydrocarbon	Laboratory analysis	Three Locations (SW1, SW2) One sample for each site	Once every month during construction	WHO marine water quality standards	313
Marine Water Contamination	Oil spills (Surface layer of groundwater)	Visual observation	All area where oil is handled	Daily for the duration of the project	NA	Included in contractor fees
	Oil leakage from machinery or vessels	Maintenance and tuning of all machinery & vessels	All area where oil is handled Excavated area	Weekly during the construction phase	NA	Included in contractor fees
Solid Waste monitoring	Waste generation levels	Daily assessment of waste quantities and records of ultimate disposal Waste census	Project site	Monthly	NA	Costs incl. in contractor and environmental consultant fees
Marine Environment assessment	Visual snorkeling	Visual assessment	Project site	Once on Completion of project	NA	200

Table 9.2: Monitoring Schedule for Operations Stage

Monitoring Attribute	**Indicator**	**Methodology**	**Locations & samples**	**Frequency**	**Applicable standard**	**Est. Total Costs/ USD**
Marine Water Quality (Marine)	The following parameters will be tested: Temperature, pH, BOD, Total Suspended Solids, Nitrate, Phosphate, Turbidity, Sulphate and Total Petroleum Hydrocarbon	Laboratory analysis	Three Locations (SW1, SW2) One sample for each site	Once every six months during operations stage of two years	WHO marine water quality standards	624
Marine Water Contamination	Oil spills	Visual observation	All area where oil is handled	Monthly for the duration of the project	NA	Included in contractor fees
	Oil leakage from machinery or vessels	Maintenance and tuning of all machinery & vessels	All area where oil is handled Excavated area			
Solid Waste monitoring	Waste generation levels	Daily log of waste quantities and records of ultimate disposal Waste census	Project site	Daily	NA	Costs incl. in contractor
Marine Environment assessment	Visual snorkeling	Visual assessment	Project site	Once on completion of the project	NA	800

10 STAKEHOLDER CONSULTATIONS

Stakeholder consultations were conducted for this addendum to provide information about the proposed component and to seek their views on the project. During each consultations meeting, site plans of the proposed jetty were shared with the stakeholders and the stakeholders were asked about their opinions or concerns regarding the construction of the jetty and their recommendations to address the key issues. The following stakeholders were consulted for this addendum;

1. Environmental Protection Agency
2. Housing Development Corporation

Following section will provide details of the discussions held in the each stakeholder consultation meetings. List of attendees participated in each meeting is attached in Appendix H.

10.1.1 Environmental Protection Agency (EPA)

Date: 13 December 2016

Time: 0900hrs

Venue: EPA

Participants: Ali Mishal (Engineer), Rifath Naeem (SEA), Hawwa Namsa (Assistant project officer), Aminath Mohamed (Environment Analyst)

Summary of discussion

- EPA highlighted that the location for sourcing sand should be identified for backfilling. If any area in the lagoon has to be dredged to borrow sand, permit should be acquired from EPA for dredging .
- Since construction will be undertaken inside the lagoon, EPA recommends to undertake appropriate mitigation measures for avoid excessive sedimentation and turbidity in the marine environment.
- As there are multiple projects happening in the area where the jetty is going to be constructed, EPA advised to consult with HDC and plan work schedule in a way that is does not impede the work of others.
- EIA should indicate when the temporary jetty will be demobilized.
- EPA also questioned whether the channel will be adequate for the vessels that will come in for this project.

10.1.2 Housing Development Corporation (HDC)

Date: 15 December 2016

Time: 1000hrs

Venue: HDC

Participants: Mohamed Razzan (Planning Officer), Abdulla Mubah (Assistant planning officer)

Summary of discussion

- At present, there are 3 additional jetties in the same area allocated to CSCEC. These jetties include the ones operated by road project workers, bridge construction and HDC's main jetty. Out of these 3, jetties used by road and bridge construction workers are already in operation.
- HDC has approved a land area of 3,204 sqm for loading and unloading.
- Since, the area includes jetties for other projects, HDC highly emphasises to clear the loading and unloading as frequently as possible. This area should not be used for material storage under any circumstance
- HDC has already demarcated the areas for the jetties used by HDC, road project and bridge project.
- So far, none of the vessels have had any issues in entering through the existing channel to the jetty.
- HDC also advises not to keep the vessels anchored around the jetty as it will cause traffic and impede operations of other jetties in the area.
- The area allocated for the jetty by CSCEC may not be sufficient, hence there is the possibility that the location may be changed.
- When the project is complete, the temporary must be demobilized immediately.

11 POTENTIAL DATA GAPS AND ASSESSMENT LIMITATIONS

11.1 Gaps in Information

The environment of Maldives is generally poorly understood. This may be due to the lack of detailed studies in the Maldives. Much of the literatures on coral islands are derived from studies done in the Pacific which unfortunately has very different climatic and geologic settings.

Detailed environmental analysis for an EIA is often required to be undertaken in a relatively short period of time. Give the seasonal climatic variations in Maldives and the differences in local geomorphologic and climate settings in individual islands such a short time frame is often too little to assess selected aspects of the environment. This problem is compounded by the absence of long-term studies in other parts of Maldives. Hence, most EIA's end up being based on an environmental snapshot of specific point in time. However, experienced EIA specialists can deliver a close match to reality based on a number of similar assessments. In this regard, the following gaps could be identified in information.

- Absence of historical and long-term records on reef and lagoon environment.
- Lack of detailed data on geology and soil due to time limitation in EIA submission.

These gaps are seriously considered in the assessment and care has been taken to address the issue in designing mitigation measures and the monitoring programme.

11.2 Uncertainties in Impact Prediction

Environmental impact prediction involves a certain degree of uncertainty as the natural and anthropogenic impacts can vary from place to place due to even slight differences in ecological, geomorphological or social conditions in a particular place. As note earlier, there is also no long term data and information regarding the particular site under consideration, which makes it difficult to predict impacts. It is important to consider that there will be uncertainties and voluntary monitoring of natural processes as described in the monitoring programme is absolutely essential.

Project information and planning and background data were not fully prepared or decided during the conduct of this study. However, available documents in connection with data provided particularly the concept plan were used as the basis for preparation of this document. Therefore, it will be possible to analyse, implement mitigation and suggest monitoring measures to the most relevant negative impacts.

12 CONCLUSIONS

This addendum has been proposed to develop a temporary jetty in Hulhumale' Phase II. This jetty is required for the transportation of construction goods, equipments and machineries for the development of 7,000 social housing units at Hulhumale' Phase II. EPA has approved the original EIA for the proposed development of social housing units on 22 September 2016

The rationale for the proposed construction of the jetty is to facilitate the transportation of the construction goods and machineries to the project site. The project to develop 7,000 social housing units requires large-scale machineries, equipments and high quantities of construction materials, which will need to transported in bulk to the project site.

The proposed developments are generally in conformance to the laws and regulations of the Maldives. Additional approvals are required for the following before commencement of project activities. They are detailed drawings approval from the HDC; approval from civil aviation authority, dewatering application and approval before commencement of any dewatering activities; connections to sewer systems; water connections; power connections and approvals to use the building for housing.

For the purpose of this project, HDC has allocated an area of 3,204.20 sqm for temporary loading and unloading of materials towards the western side of Hulhumale' Phase II. HDC has also given permission to the proponent for the construction of the jetty.

The key laws and regulations applicable to this project are: Environmental Protection and Preservation Act, Environmental Impact Assessment Regulation 2012, sand and coral mining regulation and Dredging and Reclamation Regulation. In addition, this project requires approval from HDC.

Significant impacts of this project during construction phase of the project are the potential impact marine water turbidity during dredging and impact on groundwater and soil condition due to oil spillages and accidental leakages. The main mitigation measures include carrying out construction activities during low tide hours and calm weather, carrying out the work in the shortest time frame possible.

The "No Project" option was explored for this project. However given the importance of this project for the overall project, the plan is to go ahead with the project.

The monitoring plan is designed to assess impacts to the marine environment and impacts to groundwater quality. The cost of monitoring is estimated to be between USD 1,000 and USD 2,000 per annum.

A management framework has been proposed and it is essential that this framework be used in the construction stage of the project.

Based on this assessment, it is recommended to proceed with the project but after incorporating recommendations stated in this report.

REFERENCES

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HAY, J. E. (2006). Climate Risk Profile for the Maldives. Male', Maldives: Ministry of Environment Energy and Water.

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APPENDIX A – Approved Terms of Reference

TOR Number: 203-ADMIN/PRIV/2016/679

Terms of Reference for the First Addendum to the Environmental Impact Assessment prepared for the Development of 7,000 Social Housing Units at Hulhumale' Phase II

The following is the Terms of Reference (ToR) TOR for the **Addendum to the EIA report on the development of 7,000 social housing units at Hulhumale' Phase II** approved on 22 September 2016. This TOR addresses the proposed additional component to the ongoing project (Construction of temporary jetty at harbour of Hulhumale' Phase II). **The proponent of the project is China State Construction Engineering Corporation Limited (CSCEC).**

While every attempt has been made to ensure that this TOR addresses all of the major issues associated with 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

1. **Introduction** - Identify the additional components to the 7,000 social housing units project to be assessed and explain the executing arrangement for the environmental assessment. Describe the rationale for the proposed components.

2. **Study Area** - Specify the boundaries of the study area for the assessment

3. **Scope of Work** - The following tasks will be performed

Task 1. Description of the Proposed Additional Components to the project –The description of the proposed additional components to the project shall consider the following.

a) Details of the proposed components, justification for the proposed components, a full description of how the additional project activities will be undertaken including work methods and the project schedule.
b) Construction methdology
c) Description of construction methods construction methods, scheduling and operation of temporary facilities including power generation, oil storage, water supply, waste water treatment, accommodation facilities, waste management and decommissioning
d) Description of the utility providers during construction (water, electricity and sewage)
e) Clearly labeled site plan of the project boundary, with regard to the proposed component.
f) Project inputs and outputs of the proposed components.

Task 2. Description of the environment – Assemble, evaluate and present the environmental baseline study/data regarding the study area. 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 will be usefully applied to future monitoring. The report should outline detailed methodology of data collection utilized.

Environmental Protection Agency
Green Building, 3rd Floor, Handhuvareehingun
Male', Rep. of Maldives, 20392
Tel: [+960] 333 5949 [+960] 333 5951
Fax: [+960] 333 5953
Email: secretariat@epa.gov.mv
Website: www.epa.gov.mv

All data must be collected as per the requirements of the EPA Data Collection Guideline (published on www.epa.gov.mv). The report should outline detailed methodology of data collection utilized.

All survey locations shall be referenced with Geographic Positioning System (GPS) including water sampling points, reef transects, vegetation transects and manta tows sites for posterior data comparison. Information should be divided into the categories shown below:

Baseline environment in the Environment Impact Assessment Report for the development of 7,000 social housing units shall be referred to. **If any such reference is made, the refered information must be presented in this Addendum report.** The following assessments will be conducted specifically for this addendum

a) Marine Assessment
b) Marine water quality assessment (parameters including pH, temperature, Turbidity, Total Suspended Solids (TSS), Nitrates, Phosphates, sulphates, Biological Oxygen Demand and Total petroleum hydrocarbon

Task 3. Legislative and regulatory considerations – Identify the pertinent legislation, regulations and standards, and environmental policies that are relevant and applicable to the proposed project, and identify the appropriate authority jurisdictions that will specifically apply to the project. Include permits and approvals in the EIA document.

a) Approval from Housing Development Corporation

Task 4. Potential impacts (environmental and socio-cultural) of proposed project – 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:

The methods used to identify the significance of the impacts shall be outlined. One or more of the following methods must be utilized in determining impacts; checklists, matrices, overlays, networks, expert systems and professional judgment. 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 – Describe alternatives including "no action option" should be presented. Determine the best practical environmental option. Alternatives examined for the proposed project that would achieve the same objectives including the "no action alternative". This should include alternative location, construction technologies, taking into account environmental, social and economic factors. The report should highlight how the location was determined. All alternatives must be compared according to international standards and commonly 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

Task 6. Mitigation and Management of negative impacts - Identify possible measures to prevent or reduce significant negative impacts of the activities of the project. Measures for both construction and operation 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 effect shall be given.

Task 7. Monitoring Plan – Identify the critical issues requiring monitoring, in addition to the issues addressed in the existing monitoring plan, to ensure compliance to mitigation measures. Details of additions to the existing monitoring programme including the additional physical and biological parameters to be monitored, frequency, duration and cost commitment from responsible person, detailed reporting timetable and ways and means of undertaking the monitoring programme must be provided.

Task 8. Stakeholder Consultation -Identify appropriate mechanisms for providing information on the development proposal and its progress to all stakeholders, government authorities, NGOs, engineers/designers, development managers, staff and members of the general public. The EIA report should include a list of people/groups consulted and summary of the major outcomes. The following parties should be consulted

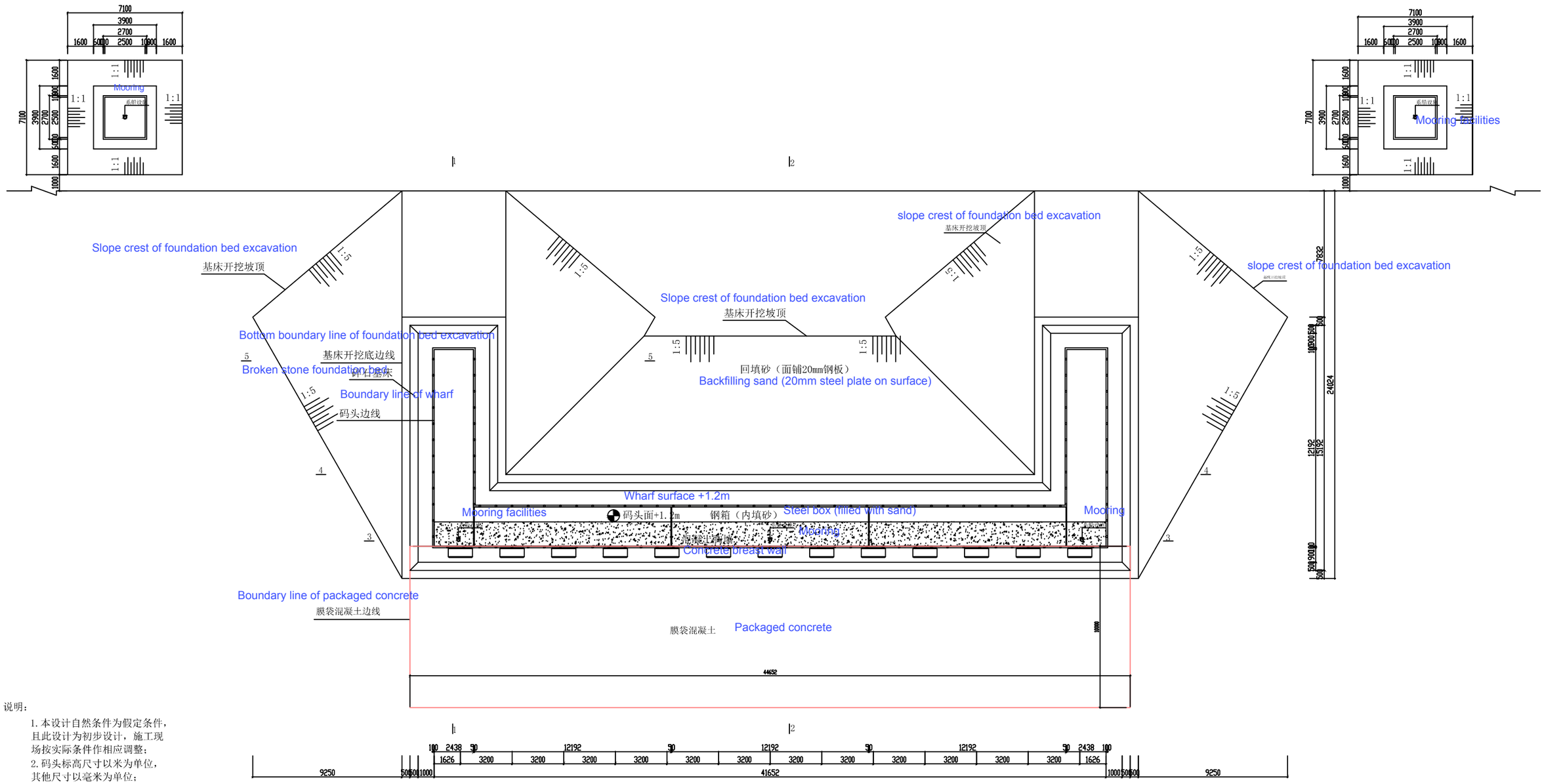
a) EPA
b) HDC

Presentation- The environmental impact assessment report, to be presented in digital format, will be concise and focus on significant environmental issues. It will contain the findings, conclusions and recommended actions supported by summaries of the data collected and citations f or any references used in interpreting those data. 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 developer must submit the completed EIA report within 6 months from the date of this Term of Reference.

29th November 2016

APPENDIX B – Site Plan



临时码头平面图1 Plan 1 of temporary wharf

说明：

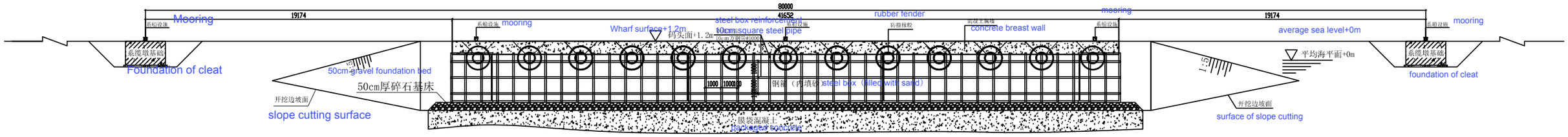
1. 本设计自然条件为假定条件，且此设计为初步设计，施工现场按实际条件作相应调整；
2. 码头标高尺寸以米为单位，其他尺寸以毫米为单位；
3. 码头后方为回填砂，回填砂进行振冲密实，砂面铺设2cm厚钢板。

Notes:

1.The natural conditions considered for this design is assumed conditions, and this is the preliminary design. The layout in actual construction shall be adjusted accordingly to the actual site conditions.

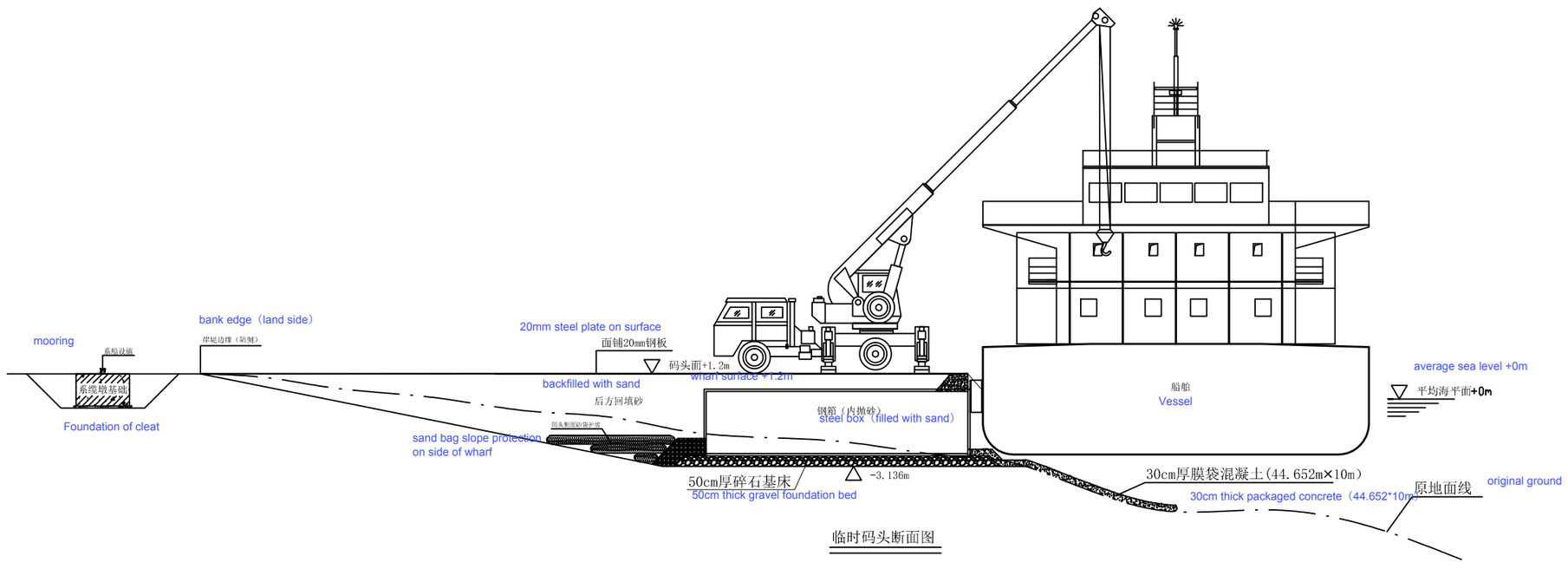
2. The unit of all sizes is millimeter,except that for wharf elevation is meter.

3. Area behind the wharf shall be back filled with sand which shall be compacted with vibroflotation method. On the completed sand surface 2cm thick steel plates shall be layed.



临时码头立面图

Elevation of Temporary Wharf



临时码头断面图

Section of Temporary Wharf

说明：

1. 本设计自然条件为假定条件，且此设计为初步设计，施工现场按实际条件作相应调整；
2. 码头标高尺寸以米为单位，其他尺寸以毫米为单位；
3. 码头后方为回填砂，回填砂进行振冲密实，砂面铺设2cm厚钢板。

Notes:

1.The natural conditions considered for this design is assumed conditions, and this is the preliminary design. The layout in actual construction shall be adjusted accordingly to the actual site conditions.

2. The unit of all sizes is millimeter,except that for wharf elevation is meter.

3. Area behind the wharf shall be back filled with sand which shall be compacted with vibroflotation method. On the completed sand surface 2cm thick steel plates shall be layed.

APPENDIX C – Approvals

بسم الله الرحمن الرحيم

HOUSING DEVELOPMENT CORPORATION

VISIT MALDIVES YEAR 2016

C-793/2008

Letter No.: HDC (161)-PM/MIS/2016/1158

20 November 2016

Zhang Xiaofu
General Manager
China State Construction Engineering Corporation Limited
Platinum Residence A2-2/4,
Hulhumale',
Republic of Maldives

Dear Sir,

PROJECT: HULHUMALÉ PHASE 2, 7000 SOCIAL HOUSING UNITS PROJECT - 2016
SUBJECT: Service Harbor Application for the 7000 Social Housing Unit Project

With reference to your letter CSCEC LANKA (OUT) – MDV- 029-2016 (18 August 2016) and our reply letter HDC (161)-PM/MIS/2016/834, we would like to inform you that our management has given the approval for your temporary jetty under the following condition.

- CSCEC shall be willing to provide the jetty facilities free of charge to HDC, such that it does not affect your operations.

So please take the necessary actions to proceed with the construction of jetty.

Thank You.

Yours faithfully,

Nawaz Shaugee.
Director

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Hulhumalé, Rep. of Maldives
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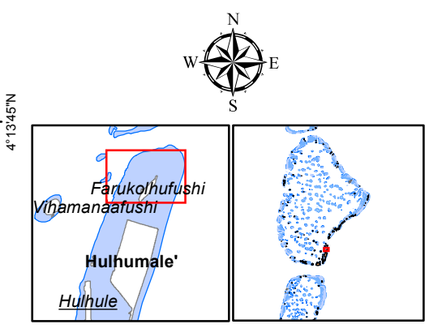
Website: www.hdc.com.mv
Email: mail@hdc.com.mv

ހއ.ހުޅުމާލެ، ދިވެހިރާއްޖެ
3 ވަނަ ފަންގިފިލާ، ތާރާގެ ފަހަރު
ފޯނު: 3353535 (960)+ ، ފެކްސް: 3358892 (960)+

APPENDIX D – Survey Locations

Legend

- Marine Water Samples
- Timed Swims
- BorrowArea
- Backfill areas
- Project Site
- Temporary Accomodation
- Storage
- Landing and Concrete Mixing
- Aministration



Marine water quality

code	X	Y
W1	73.5414	4.23373
W2	73.5412	4.23147

Proposed 7000 Housing Flat Construction Project in Hulhumale' Second Phase Updated Survey Locations

PROJECTION: Transverse Mercator
(UTM Zone 43 N); HORIZONTAL DATUM: WGS84;
VERTICAL DATUM: Hulhule Tide Gauge
Map version: 22/12/2016

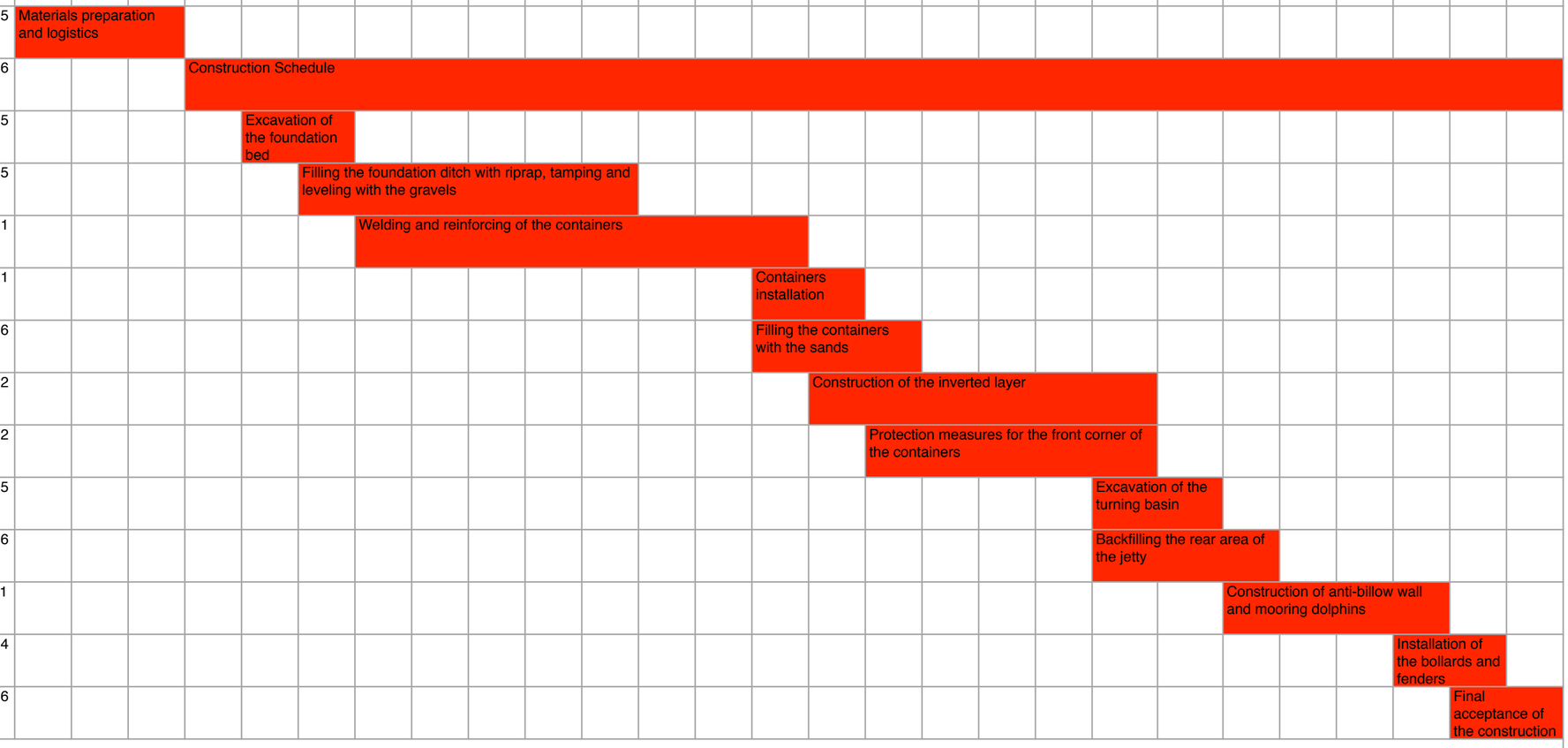
Surveyed and Prepared by: CDE Consulting, Maldives

APPENDIX E – Work plan

表格 1

WORK SCHEDULE OF THE CONSTRUCTION

No.	Construction	Duration	Start date	End date
I	Materials preparation and logistics	30	2016-12-07	2017-01-05
II	Construction Schedule	45	2017-01-03	2017-02-16
i	Excavation of the foundation bed	3	2017-01-03	2017-01-05
ii	Filling the foundation ditch with riprap, tamping and leveling with the gravels	10	2017-01-06	2017-01-15
iii	Welding and reinforcing of the containers	15	2017-01-07	2017-01-21
iv	Containers installation	2	2017-01-20	2017-01-21
v	Filling the containers with the sands	6	2017-01-21	2017-01-26
vi	Construction of the inverted layer	10	2017-01-24	2017-02-02
vii	Protection measures for the front corner of the containers	8	2017-01-26	2017-02-02
viii	Excavation of the turning basin	3	2017-02-03	2017-02-05
viiii	Backfilling the rear area of the jetty	4	2017-02-03	2017-02-06
x	Construction of anti-billow wall and mooring dolphins	5	2017-02-07	2017-02-11
xi	Installation of the bollards and fenders	3	2017-02-12	2017-02-14
xii	Final acceptance of the construction	2	2017-02-15	2017-02-16



Instructions:
1. Construction site preparation work, such as the confirmation of the coordinates and heights, has been completed as requested.
2. As the project materials are procured in China, the transportation and customs clearance needs for the materials is going to take about 30 days; as the result, they are expected to be delivered to the construction site on January 20th, 2017.
3. The construction has to wait until all the materials to start, although there is one container arrived already.

APPENDIX F – Water Quality Results

Male' Water & Sewerage Company Pvt Ltd
Water Quality Assurance Laboratory
FEN Building 5th Floor, Machangoalhi, Ameeneemagu, Male', Maldives
Tel: +9603323209, Fax: +9603324306, Email: wqa@mwsc.com.mv

بسم الله الرحمن الرحيم

MWSC

WATER QUALITY TEST REPORT

Test Report No: 301512/2016/19

Customer Informations : ***Aurinko Pvt Ltd***
H.Orchidmaage 4th Floor
Ameeru Ahmed Magu
Male'
Rep.of Maldives

Date: 01/12/2016

Sample Description / Location~	Hulhumale'		TEST METHOD	UNIT
	SW1	SW2		
Sample Type~	Sea water			
Sampled Date~	21/11/2016			
Sample Received Date	22/11/2016			
Test Requisition Form No.	900169739			
Sample No.	830623	830624		
Date of Analysis	22/11/2016 - 27/11/2016			
PARAMETER	ANALYSIS RESULT			
Physical Appearance	Cloudy with particles	Clear with particles	Visual	-
Nitrate	4.1	4.0	Method 8171 (Adapted from HACH DR5000 Spectrophotometer procedure Manual)	mg/L
pH	7.93	8.03	Method 4500-H+ B. (adapted from Standard methods for the examintation of water and waste water, 21st edition)	-
Sulphate	2450	2550	Method 8051 (Adapted from HACH DR5000 Spectrophotometer procedure Manual)	mg/L
Phosphate	0.05	0.07	Method 8048 (Adapted from HACH DR5000 Spectrophotometer procedure Manual)	mg/L
Temperature	24.0	24.0	Electrometry	°C
Biological Oxygen Demand (BOD)	5	2	HACH Method 8043	mg/L
Total Petroleum Hydrocarbon (TPH)	0.39	0.73	UV Fluorescence	mg/L
Total Suspended Solids (TSS)	<5 (LoQ 5mg/L)	<5 (LoQ 5mg/L)	Method 8006 (Adapted from HACH DR5000 Spectrophotometer procedure Manual)	mg/L
Turbidity	24.1	0.592	HACH Nephelometric Method (adapted from HACH 2100N Turbidimeter User Manual)	NTU

Keys:

µS/cm: Micro Siemens per centimeter, **mg/L:** Milligram per Liter, **‰:** Parts per Thousand, **°C:** Degree Celcius, **NTU:** Nephelometric Turbidity Unit

LoQ: Limit of Quantification

Checked by:	Approved by:
Nihaz Ali Zahir Laboratory Executive	Abdulla Rasheed Senior Quality Officer

Notes:

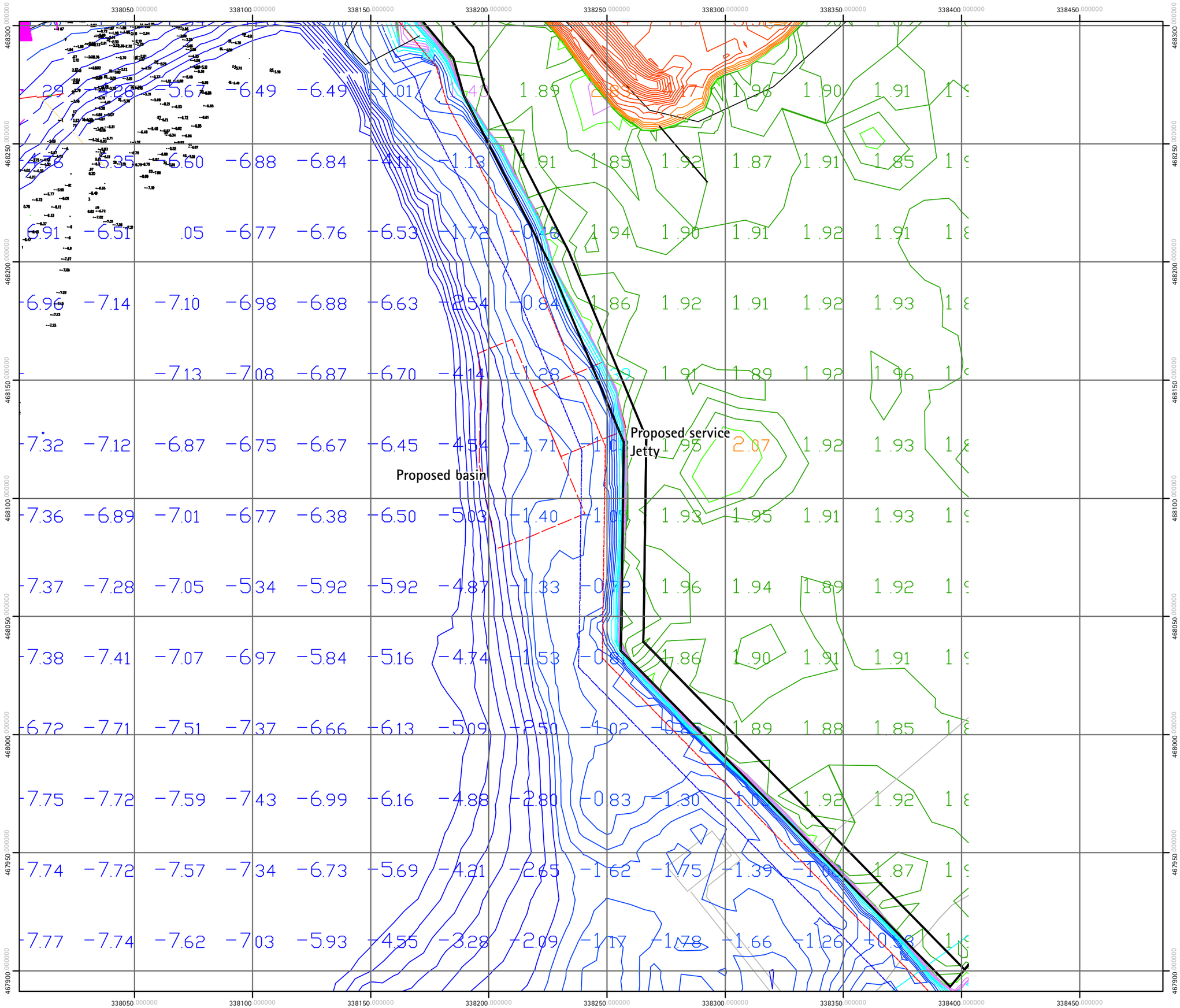
Sampling Authority: Sampling was not done by MWSC Laboratory

This test report is ONLY FOR THE SAMPLES TESTED.

~ Information Supplied by the customer

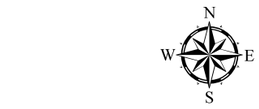
**********END OF THE REPORT**********

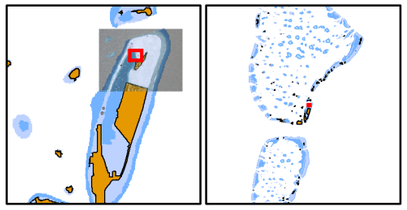
APPENDIX G – Bathymetry



Legend

Project Boundary





Meters

0 10 20 40

Proposed 7000 Housing Flat Construction Project in Hulhumale' Second Phase First Addendum Bathymetry Overall

PROJECTION: Transverse Mercator
(UTM Zone 43 N); HORIZONTAL DATUM: WGS84;
VERTICAL DATUM: Hulhule Tide Gauge
Map version: 22/12/2016

Surveyed and Prepared by: CDE Consulting, Maldives

338150.000000
338200.000000
338250.000000
338300.000000
468200.000000
468150.000000
468100.000000

76 −6.53 −1.72 −0.48 1.94 1.90 1.91

88 −6.63 −2.54 −0.84 1.86 1.92 1.91

87 −6.70 −4.14 −1.28 1.39 1.91 1.89

67 −6.45 −4.54 −1.71 −1.02 1.95 2.07

38 −6.50 −5.03 −1.40 −1.02 1.93 1.95

92 −5.92 −4.87 −1.33 −0.72 1.96 1.94

3.5 m
4.5 m
3.0 m
4.0 m
5.0 m
2.5 m
2.0 m
1.5 m
1 m

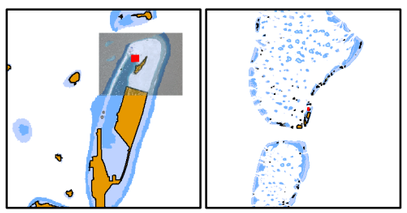
Proposed basin

Proposed service Jetty

Legend

Project Boundary

N
W
E
S



Meters

0 10 20 40

Proposed 7000 Housing Flat Construction Project in Hulhumale' Second Phase First Addendum Bathymetry

PROJECTION: Transverse Mercator
(UTM Zone 43 N); HORIZONTAL DATUM: WGS84;
VERTICAL DATUM: Hulhule Tide Gauge
Map version: 22/12/2016

Surveyed and Prepared by: CDE Consulting, Maldives

APPENDIX H – List of attendees in stakeholder consultations

Details: First Addendum for the EIA on the proposed development of 7,000 social housing units at Hulhumale' Phase II

Time: 10:00 AM

Date: 15/12/2016.

#	Name	Designation	Office	Email	Contact	Signature
1	Abdulla Mubaah	Assistant planning officer	HDC	mubaah@hdc.com.mv	9852523	
2	MOHAMED RAZZAN	PLANNING OFFICER	HDC	razzan@hdc.com.mv	7482242	
3	Chen chen	Project officer	CSEC	chen.chen1958@yahoo.com	7625027	Chen chen
4						
5						
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7						
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11						

Meeting Attendance Form
ބައްދަލުވުމުގެ ފޯމް

Details: First Addendum to the EIA for the proposed development of 7,000 Social Housing units at Hulhumale' Phase II

Time: 9:00 AM

Location: EPA

Date: 13/12/16

#	Name ނަން	Designation ޑިޒިގ	Office ޮފިސް	Email ޢީމެއިލް	Contact ނަންބަރ	Signature ސޮއި
1	ALI MISHAL	ENGINEER	EPA	ali.mishal@epa.gov.mv	7766699	
2	Rifath Naeem	~~SAE~~ SEA	EPA	rifath.naeem@epa.gov	9889987	
3	Hawwa Namsa	Ass. Project officer	EPA	hawwa.namsa@epa.gov.mv	9162638	
4	Aminath Mohamed	Env. Analyst	EPA	aminath.m@epa.gov.mv	7504494	
5	Chenchen					Chen Chen
6						
7						
8						
9						
10						
11						

APPENDIX I – CVs of Consultants

Ahmed Shaig

Phone: (+960) 77 88 758 shaig@cde.com.mv

Personal Details

Date of Birth: 19/02/1976 **Nationality:** Maldivian **Gender:** Male **Marital Status:** Married

Permanent Address: Maldives **Present Address:** M. Muleege, Orchid Magu, Male', Maldives.

Education

PhD, Environmental Science, 2009
James Cook University, Townsville, Australia

Research degree on 'Settlement Planning for Natural Hazard Resilience in Small Island States: The Population and Development Consolidation Approach'

BSc Land and Spatial Information Studies/Information Science. (double major), 1999-2001
University of Otago, Dunedin, New Zealand

Diploma in project planning, implementation, monitoring and evaluation, 1995
ILO training Centre, Turin, Italy

Employment History

Director, Environmental Services 2008 to present
CDE Consulting Supervisor: Dr. Simad Saeed
Republic of Maldives Phone: +(960) 7777445
Head of environmental wing

Assistant Under-secretary, Spatial Planning 2002-2004
Ministry of Planning and National Development Supervisor: Hon. Hamdun Hameed
Republic of Maldives Phone: +(960) 332-3919
Head of Spatial Planning Unit. Relevant Tasks include:

- Oversee environment related projects and application of environmental guidelines for planned projects.
- Plan, implement and oversee the development of a National GIS;
- Aid/facilitate/oversee urban planning, housing, land use planning, natural resource planning and environment related projects; Provide assistance in project planning (includes urban and regional planning, natural resources planning)

Project Manager, National Digital Mapping Project 2005 (8 months)
Ministry of Planning and National Development Supervisor: Hon. Hamdun Hameed
Republic of Maldives Phone: +(960) 332-3919

- Project involved aerial photography and satellite imagery of entire Maldives, ground surveying of key settlements, digital conversion of data and setting up a Mapping Unit.

Assistant Planning Officer/Planning Officer 1994-1999
Ministry of Planning and National Development Supervisor: Mr. Mohamed Hunaif
Republic of Maldives Phone +(960) 331-3040
Relevant tasks involved:

- Assisting in the National GIS Development Programme (Junior GIS developer)
- Facilitate urban planning, housing, land use planning, natural resource planning and environment related projects.

Experience in Consultancy

- *September 2002:* Member of the team appointed for environmental surveying and carrying capacity assessment of islands for tourism development in the southern atolls of Maldives for Ministry of Tourism Maldives.
- *October 2002:* Developed the Census GIS for United National Population Fund
- *December 2002:* Developed the Maldives Protected Areas Systems GIS for Maldives Home Affairs Housing and Environment.
- *February 2003*: Participated in the preparation of Royal Island and Spa Resort Annual Environmental Monitoring Report for Royal Island and Spa.
- *April 2003:* Member of the team selected for developing town plans for urban centres in Northern and Southern Regional Development Zones, looking specifically into environmental control measures, for Ministry of Planning and National Development.
- *April 2003:* Participated in the preparation of Environmental Impact Statement for Coastal Modifications on Rihiveli, South Malé Atoll, Maldives.
- *April 2003:* Participated in the surveying and preparation of Environmental Impact Statement for the proposed coastal improvements to address coastal erosion concerns on Royal Island Spa Resort, Baa Atoll, Maldives.
- *May 2003:* Participated in the bathymetry survey and preparation of Initial Environmental Examination for Deepening of Existing Entrance Channel to Service Jetty, Soneva Gili Resort and Spa, North Malé Atoll, Maldives
- *May 2003:* Participated in the preparation of Initial Environmental Examination for development of an access channel into the natural inner lagoon (*Vilu*) of Mayafushi resort, North Ari Atoll.
- *May 2003:* Participated in the preparation of Environmental Impact Assessment for Landaa Giraavaru Pvt. Ltd. for the development of a Four Season's Tourist Resort on the island of Landaa Giraavaru in Baa Atoll, Maldives.
- *June 2003:* Participated in survey and preparation of Initial Environmental Examination for the Development of a Mooring Area and Associated Beach Replenishment in, Boduhithi Club, North Malé Atoll, Maldives.
- *July 2003:* Participated in the surveying and preparation of Initial Environmental Examination for Short-term and Long-term Shore Protection Measures at Alimatha Tourist Resort, Vaavu Atoll, Maldives.
- *July 2003:* Conducted shoreline and vegetation line of Alimatha Tourist Resort, Vaavu Atoll, Maldives.
- *July 2003:* Participated in the surveying for Initial Environmental Examination for Short-term and Long-term Shore Protection Measures at Dhiggiri Tourist Resort, Vaavu Atoll, Maldives.
- *July 2003:* Participated in conducting and preparation of Fun Island Resort Annual Environmental Monitoring Report.
- *July 2003:* Participated in conducting and preparation of Sun Island Resort Annual Environmental Monitoring Report.
- *July 2003:* Participated in conducting and preparation of Holiday Island Resort Annual Environmental Monitoring Report.
- *August 2003:* Developed the Initial Environmental Examination for the construction of Sun Decks along the southern beach of Kudarah Island Resort.
- *September 2003:* Participated in surveying and preparation of Fonaddoo Environmental Impact Assessment Report for the development of fisheries complex, Fonaddoo, Maldives.
- *October 2003*: Participated in surveying and preparation of Kuda Rah Erosion Study and recommendations for shore protection and erosion prevention
- *November 2003:* Conducted vegetation and shoreline survey of Dhonveli Beach and Spa and Four Seasons Report for the Boundary Delineation between the two islands.
- *December 2003:* Contributed to the Landuse Planning Guidelines of Maldives (environmental aspects) for Ministry of Housing and Urban Development.
- *December 2003*: Contributed to the Development of a Building Code of Maldives for Ministry of Housing and Urban Development.
- *January 2004:* Co-author to the Environmental Guidelines for the Development of Resort Islands in Maldives, Ministry of Tourism.
- *February 2004:* Developed the Baa Atoll Spatial Development Plan for Ministry of Planning and National Development.

- *April-July 2004:* Participated in the preparation of the Environmental aspects of the 8 bid proposals for resort Development for various proponents.
- *November 2005:* Participated in the preparation of EIA for L.Gan Resettlement Project for Ministry of Housing.
- *December 2005:* Participated in the surveying and preparation of EIA for Gn Fuvahmulaku Tourist Hotel Development
- *November 2005:* Developed a GIS for strategic planning to select islands for tourism development for Ministry of Tourism.
- *January 2006:* Local consultant for the Strategic Environmental Assessment (SEA) of Maldives Regional Development Plan, for AGRIFOR Consult Consortium, Belgium.
- *June 2006:* Developed the Baa Atoll Resource Management GIS for Ministry of Environment and Energy.
- *August 2006:* Consultant to the Integrated Climate Change System (ICCS) project – Assessment of vulnerability of Maldives Islands and Beaches to climate change
- *September 2006:* Consultant to the ICCS project – Assessment of vulnerability of Maldives Infrastructure to climate change
- *November 2006:* Consultant to the preparation of National Adaptation Programme of Action in Maldives for Ministry of Environment.
- *December 2006*: Environmental Consultant to the United Nations Development Programme (UNDP) Project: Disaster Risk Assessment of Selected nine Safe Islands in Maldives.
- *April 2007:* Prepared the Coastal Erosion Assessment and Management Report for Ga.Meradhoo Island.
- *May 2007:* Participated in the preparation of EIA for N. Randheli Resort Development Project, I&T Management group.
- *June 2007:* Participated in the preparation of Millennium Development Goals, Maldives Country Report.
- *October 2007*: Natural Hazard Assessment consultant to the UNDP Project: Disaster Risk Assessment of Selected Safe Islands in Maldives.
- *November 2007*: Prepared the EIA for proposed coastal protection, beach replenishment and access improvement of Elaa, Thaa Atoll, for Mr Abbas Mohamed, H. Merry Rose.
- *May 2009*: Participated in the preparation of EIA for sand sourcing and beach replenishment project of Viligilli Island, Addu Atoll, for Shangri-La at Viligilli..
- *April 2009:* Participated in the preparation of EIA for N. Maafaru Airport Development Project for Noonu Hotels Pvt Ltd.
- *May 2009:* Participated in the preparation of EIA for resort development in Huvandhumaavattaru, Noonu Atoll
- *June 2009:* Prepared a status of the environment report Randheli Island, Noonu Atoll.
- *July 2009:* Prepared the Environmental EIA for harbour development in Fiyoari, Gaafu Dhaalu Atoll.
- *July 2009:* Participated in the preparation of EIA for Jetty and arrival lounge development project in Gan, Addu Atoll, for Island Aviation Services Private Limited.
- *July 2009:* Team Leader for the socio-economic risk assessment of Selected Safe Islands in Maldives.
- *August 2009:* Coastal erosion data synthesis for selected islands of Maldives, for World Bank Maldives Environmental Management Project.
- *September 2009:* Prepared the beach management plan and development control measures for Reethibeach Island Resort, Baa Atoll.
- *September 2009:* Participated in the preparation of EIA for agricultural island development in Felivaru, Noonu Atoll, for Fantasy Private Limited.
- *September 2009:* Consultant to review the safer islands programme and cost benefit study of mitigation measures in three islands in the Maldives for UNDP.
- *October 2009:* Consultant to the Maldives Environmental Management Project for waste management technical assistance for World Bank.
- *December 2009:* Environmental consultant for advising on resort development and development control measures in Randheli Island, Noonu Atoll.
- *January 2010:* Prepared the beach management plan and development control measures for Shangri-La Island Resort, Addu Atoll.
- *January 2010:* Consultant to the Atoll Ecosystem Conservation project conservation component defining conservation areas and development controls.
- *February 2010:* Prepared the environmental audit of Thunbafushi Island, Kaafu Atoll, for Champa Brothers Private Limited.

- *March 2010:* Prepared the beach management plan and development control for Herathera Island Resort, Addu Atoll.
- *March 2010:* Lead author in the preparation of EIA for power plant upgrading project in Palm Beach Island in Lhaviyani Atoll.
- *April 2010:* Lead author in the preparation of EIA for Seagrass removal and beach replenishment project in Olhuveli Island Resort and Spa, Kaafu Atoll.
- *April 2010:* Prepared an EIA addendum for resort development in Gaakoshibee Island, Shaviyani Atoll.
- *May 2010:* Consultant to undertake island environmental scoping studies in 30 islands in North Maldives to determine islands with resort development potential for GMR Group of India.
- *May 2010:* Lead author in the preparation of EIA for harbour development project in Madidhoo Island, Shaviyani Atoll.
- *June 2010:* Lead author in the preparation of EIA for deep piling project in Olhuveli Island Resort and Spa, Kaafu Atoll.
- *July 2010:* Lead author in the preparation of EIA for the development of an aquaculture site in Kanduoigiri, Kaafu Atoll.
- *July 2010:* Environmental planning consultant for Shangri-La at Viligilli Maldives, Addu Atoll.
- *July 2010:* Environmental planning consultant to the Addu Land Use Planning project (including defining development controls) in Addu Atoll Maldives for South Province Office.
- *August 2010:* Environmental Consultant for the Atoll Ecosystem Conservation Project to declare Baa Atoll as a UNESCO Biosphere reserve.
- *September 2010:* Lead author in the EIA for Seagrass removal and beach replenishment project in Herathera Island, Addu Atoll.
- *September 2010:* Lead author in the EIA for resort redevelopment in Vilamendhoo Island Resort, Ari Atoll.
- *September 2010:* Lead author in the preparation of EIA for Gulhifalhu land reclamation project in Gulhifalhu, Male' Atoll, for Capital Investment and Finance Limited, UK.
- *September 2010:* Participated in the preparation of EIA for sewerage system development project in Miladhoo, Noonu Atoll.
- *October 2010:* Consultant to undertake the coastal adaptation survey of 40 islands in Maldives for Ministry of Housing and Environment.
- *November 2010:* Environmental consultant for advising on resort development and development control measures in Maamigili Island, Raa Atoll
- *January 2011:* Lead author in the preparation of EIA for sewerage and water system development project in Hithadhoo Island, Addu City for Bi-water International Private Limited.
- *February 2011:* Lead author in the preparation of EIA for sewerage and water system development project in Maradhoo Island, Addu City for Bi-water International Private Limited.
- *March 2011:* Lead author in the preparation of EIA for sewerage and water system development project in Feydhoo Island, Addu City for Bi-water International Private Limited.
- *April 2011:* Lead author in the preparation of EIA for sewerage and water system development project in Maradhoo-Feydhoo Island, Addu City for Bi-water International Private Limited.
- *May 2012:* Coastal erosion mitigation assessment and planning for Six Senses Laamu, Laamu Atoll
- *January 2012:* Lead author in the preparation of EIA for sewerage and water system development project in Fuvahmulah Island, Addu City for Bi-water International Private Limited.
- *February 2012:* Coastal erosion mitigation assessment and planning for Fushivelavaru Island
- *March 2012:* EIA for the proposed resort redevelopment project in Conrad Rangali Island for Champa and Crown Resorts
- *March 2012:* EIA for the proposed resort redevelopment project in Gasfinolhu Island Resort, Champa and Crown Resorts
- *May 2012:* Environmental consultant for advising on resort development and development control measures in Gasfinolhu Island, Male' Atoll
- *June 2012:* Environmental consultant for advising on resort development and development control measures in Nakachchaa Huraa Island, Male' Atoll
- *April 2012:* Member of the consultant team that prepared the Tourism Opinion and Profile Survey 2011, Ministry of Tourism.
- *October 2012:* Environmental consultant to the preparation of 4th Tourism Master plan for Ministry of Tourism, Maldives.
- *November 2013:* Environmental consultant for advising on land reclamation, resort development and development control measures in Dhiffushi Island Reef, Male' Atoll.

- *January 2013:* Environmental consultant for advising on resort development and development control measures in Hankede Island, Addu Atoll
- *January 2013:* Environmental consultant for advising on resort development and development control measures in Hankede Island, Addu Atoll
  June 2013: Local Environment consultant to the WCCM project, HIDRIA and Aquatica, Spain.
- *June 2015:* Environmental consultant for Nasandhura Palace Hotel Redevelopment EIA, 15-storey building, Male'City
- *June 2015:* Environmental consultant for Male-Hulhule Bridge, Borehole Drilling EIA, Male' City
- *July 2015:* Environmental consultant for Male-Hulhule Bridge EIA, Male' City
- *September 2015:* Environmental consultant for Development of Tertiary Hospital in Hulhumale
- *July 2015:* Environmental consultant for Development of 9-Storey Building for ADK, Male'City

Membership of Professional Bodies

- Member of Building Code Committee, Maldives
- Member of Commission on Sustainable development
- Member of the Technical Committee for Developing Spatial Plans for conducting tourism related activities in Ari Atoll.
- Member of Climate Advisory Council to the President of Maldives 2009- to present.
- Registered EIA Consultant in Maldives Environment Protection Agency roster.

Major Publications

SHAIG, A. (2001) "An Overview of Web Based Geographic Information Systems". In Proceedings: Thirteenth Annual Colloquium of the Spatial Information Research Centre. P.A. Whigham (ed). 2 - 5 Dec, Dunedin, New Zealand. University of Otago, pp.255-264.

SHAIG, A. (2006). Climate Change Vulnerability and Adaptation Assessment of the Coastal Infrastructure of Maldives. Technical Paper submitted to Maldives National Adaptation Plan of Action for Climate Change. Ministry of Environment, Energy and Water, Male', Maldives.

SHAIG, A. (2006). Climate Change Vulnerability and Adaptation Assessment of the Land and Beaches of Maldives. Technical Paper submitted to Maldives National Adaptation Plan of Action for Climate Change. Ministry of Environment, Energy and Water, Male', Maldives.

SHAIG, A. (2007) Land Study of Maldives, 2006. Ministry of Planning and National Development, Male' Maldives.

SHAIG, A. and Aslam, M (2007) Detailed Island Risk Assessment Maldives Volume I to Volume IV – Natural Hazard Assessment (Final Draft). UNDP, Male' Maldives

SHAIG, A. (2007) Detailed Island Risk Assessment Maldives Volume I to Volume IV – Environmental Vulnerability Assessment (Final Draft). UNDP, Male' Maldives.

Academic Achievements

2001 Critchlow Associates Prize in Surveying, New Zealand.
Prize awarded annually by University council for the highest standard of Achievement in Spatial Information Studies in University of Otago.
1994 Certificate for best results in General Certificate of Examinations, Advanced Level.
Science Education Centre, Male', Maldives

References

Hamdun Hameed
Member of Parliament
Male', Maldives
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minister@planning.gov.mv

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Tel: +960 777 7445
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David King, Dr.
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James Cook University
Townsville, QLD,Australia, 4811
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Email: david.king@jcu.edu.au

Peter Valentine
Head of School, TESAG Department
James Cook University
Townsville, QLD,Australia, 4811
Tel: (+61) 747 81 4441 ,Fax: (+61) 747 81 5581
Email: peter.valentine@jcu.edu.au

Clarification

I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes myself, my qualifications and my experience. I understand that any willful misstatement described herein may lead to my disqualification or dismissal, if engaged.

Signature Date: 15 July 2013

MARIYAM HANA SAEED

ADDRESS

G. Quest, Alikilegefaanu Magu
Galolhu, 20118, Malé
Republic of Maldives

CONTACTS

960 797 0022

mariyamhanas@gmail.com
hana@cde.com.mv

NATIONALITY

Maldivian

ACADEMIC QUALIFICATIONS

2014
December

Bachelor of Environments
University of Melbourne, Parkville Victoria

Recipient of Australia Awards Scholarship
Majored in Environmental Geographies, Politics and Culture

2010
June

Higher Secondary Education, Edexcel A' Level
Centre for Higher Secondary Education, Male' Maldives

Achieved Fourth Place among the National Top 10 Achievers in 2010

Maths (Mechanics)	A	Biology	B
Chemistry	A	Physics	B
Islam	A	Dhivehi	B

2007
November

Secondary Education, GCE O' Level
Aminiya School, Male' Maldives

Achieved First Place among the National Top 10 Achievers in 2007

Maths	A	Physics	A	English (IGCSE)	B
Biology	A	Computer Studies	A	English (GCE)	A
Chemistry	A	Dhivehi	A	Islam	A

LANGUAGES

English
●●●●● Fluent

Dhivehi
●●●●● Fluent

SKILLS

+ Excellent customer service skills
+ Expert knowledge in environment and development field
+ Familiar with the concept of environmental psychology
+ Knowledge on coastal landforms and processes
+ Familiar with risk assessment projects
+ Experience in communicating effectively with key decision makers and clients
+ Ability to learn quickly and understand complex work
+ Excellent organisation skills
+ Excellent computer skills

EXPERIENCE

Environment Impact Assessment (EIA)

- EIA for the proposed development of a tertiary hospital at Hulhumale'
- EIA for the proposed Test Drilling For Hulhule'-Male' Bridge Construction project
- EIA for the proposed redevelopment of Nasandhura palace Hotel, Male'
- EIA for the proposed Hulhule'-Male' Bridge Project
- EIA for the proposed construction of a 9-storey building at the compound of ADK Hospital, Sosun Magu, Male', Maldives
- EIA for the proposed tourist development project at Madivaru Island, Kaafu Atoll
- EIA for the proposed land reclamation and resort development project in Ithaafushi Reef, South Male' Atoll
- EIA for the proposed resort development in Bodukaashihuraa, Alifu Dhaalu Atoll, Maldives

Water

Completed Desalination Plant Registration in the following resorts

- Mirihi Island Resort
- Conrad Maldives Rangali Island

Energy

- Gasfinolhu Energy Audit 2015
- Tourism Adaptation Platform - conducted energy audit of the following resorts to understand the risks to and vulnerability of energy sector to climate change in tourist resorts
    - Bandos Island resort
    - Kurumba Maldives
    - Vilamendhoo Island Resort and Spa
    - Embudhu Village
    - Irufushi Beach & Spa
    - Shangri-La's Vilingili Resort & Spa

Monitoring Projects

- Environmental and Social Performance Annual Monitoring 2014 for Shangri-La's Vilingili Resort & Spa, Addu Atoll, Maldives

Survey

- IFES Maldives Democracy Survey 2015

EMPLOYMENT HISTORY

March 2015 to Present

Sustainable Development Consultant | **CDE Consulting, Malé, Maldives**

Specialised Work Areas | **Renewable energy, Water, Sewerage and Housing**

Duties

+ Involved in cross-business, community and regulatory agencies
+ Contribute to development plans, policy analysis, institutional and sectoral reviews, project appraisals and designs
+ Planning and designing of strategies and programs of intervention on key social issues, major economic sectors and environmental issues
+ Conduct consultation, education and outreach programs
+ Prepare baseline, suitability analysis, due diligence, consultation, impact assessment, monitoring and evaluation and audit reports
+ Research and maintain up to date knowledge about current policies, best practices and potential future policies.

February 2011 to January 2012

Administrative Assistant | **The President's Office, Malé, Maldives**

Duties

+ Monitored the policies under governance section in the Policy Office
+ Organised meetings of Narcotics Control Council board and updated the progress of the policies and actions under the council
+ Managed all admin-oriented work in the section, updating minutes of each council meeting, updating databases, and filing
+ Led administrative work to organise the 17th SAARC Summit in November 2011 and worked in coordination with other government bodies, private agencies and key decision makers to organise meetings and circulate information

AHMED HAIMAN RASHEEDH

PERSONAL DETAILS

Full Name:	**Haiman Rasheedh, Ahmed**	NIRC:	**A297924**
Gender:	**Male**	Date of birth:	**September 24, 1993**
Place of birth:	**S.Feydhoo, Republic of Maldives**	Nationality:	**Maldivian**
Marital Status:	**Single**		

Permanent Address:	**Goal Corner** **S.Feydhoo 19040** **Republic of Maldives**	Current Address:	**G. Velagala** **Faashanakileygefaanu Magu** **Male, Republic of Maldives**

Contact Details**:** **(Mobile): +960 7684393**

Email for correspondence: **haiman@cde.com.mv**

EDUCATION

Year	Name of Education Institute	Title of Qualification	Status
2007 – 2009	**DHARUMAVANTHA SCHOOL**	**GCE / IGCSE O' Level under the curriculum of University of Cambridge**	**Graduated**

EMPLOYMENT HISTORY

Time Period	Position Held, Employee	Task assigned
February 2014 – present	Associate Consultant, CDE Consulting	▪ Marine surveying (Conducting inspections, reef transects, manta tows, designing coral reef restoration projects, & examinations of reefs) ▪ Coral Point Count with Excel extensions (Software to determine of coral cover using transect photographs) ▪ Beach surveying ▪ Compiling Marine reports (Prepare reports on types of surveys conducted
August 2013 – February 2014	Assistant technician, Ministry of Fisheries and Agriculture	▪ Designing the structure of FAD (Fish Aggregating Device) ▪ Research on the status of pelagic fishes found near FADs
January 2011 – January 2012	Research officer, CDE Consulting	▪ Marine surveying (Conducting inspections, surveys & examinations of reefs) ▪ Beach surveying ▪ Compiling Marine reports (Prepare reports on types of surveys conducted
December 2009 – June 2010	Research officer, CDE Consulting	▪ Marine surveying (Conducting inspections, surveys & examinations of reefs) ▪ Beach surveying ▪ Compiling Marine reports (Prepare reports on types of surveys conducted)

Field Experience

- Traveled to all 20 atolls of the Maldives
- Over 100+ islands in the Maldives; including 20+ Resorts, 50+ Inhabited islands and 30+ Uninhabited islands and their associated reef systems

Some of the EIA's that I have worked on as a member of the team, or contributed to field work;

- Tourism Development Projects:
  - Adh. Bodukaashihuraa Resort Development EIA
  - B. Dhigufaruvinagandu Resort Development EIA
  - K. Madivaru Resort Development EIA
  - Lh. Fushifaru Resort Development EIA
  - N. Thanburudhuffushi Picnic Island Development EIA
  - K. Gasfinolhu Addendum EIA (Palm transplanting)
  - K. Taj Vivanta Resort Shore Protection EIA
  - Lh. Maabinhuraa Resort Development EIA
  - Aa. Maagaa Resort Development EIA
  - Aa. Madivaru Finolhu Resort Development EIA
  - Olhuveli Lagoon Reclamation EIA
  - Dh. Aluvifushi Resort Development EIA
  - Lh. Huruvalhi Resort Development EIA
- Agricultural Development Projects:
  - Sh. Madidhoo Agricultural Development EIA
  - Lh. Maduvarri Agricultural Development EIA
  - N. Minaavaru Agricultural Development EIA
- Airport Development Projects:
  - R. Ifuru Airport Development EIA
  - N. Maafaru Airport Development EIA
- Major public/ private sector Projects:
  - Tree Top Hospital Development EIA
  - Nasandhura Palace Hotel Redevelopment EIA
  - Thilafushi Harbor Development EIA
  - Male-Hulhule Bridge, Borehole Drilling EIA
  - Male-Hulhule Bridge EIA
  - Addu and Fuvahmulah ESIA for Wetland Project

Dive Qualifications

Date	Qualification	School	Status
May 2014	**Open Water Diver, PADI**	**Maldivers Diving Center, Maldives**	**Certified**
Mar 2016	**Advanced Diver, PADI**	**Dive Desk, Maldives**	**Completed, Card pending**
Mar 2016	**Emergency First Response, PADI**	**Dive Desk, Maldives**	**Completed, Card pending**

REFERENCES

Name	**Address, Telephone & Fax**	**Email, Occupation & Business Title**
Ahmed Shaig, PhD	CDE Pvt Ltd 4th Floor, Orchidmaage Ameer Ahmed Magu, Henveiru Male', Maldives (Telephone): +960 3312514 (Fax): +960 3315926	Director CDE Pvt Ltd info@cde.com.mv
Mohamed Ali	CDE Pvt Ltd 4th Floor, Orchidmaage Ameer Ahmed Magu, Henveiru Male', Maldives (Telephone): +960 3312514 (Fax): +960 3315926	Marine Specialist/ DiveMaster CDE Pvt Ltd mohamed.ali@cde.com.mv

Mohamed Ali

ID #:	A 094918
Nationality:	Maldivian
Languages:	English, Sinhalese, Dhivehi
Date of Birth:	13/09/1983
Telephone:	960-790-6007
Email:	mohamed.ali@cde.com.mv

Experience

Marine Environmental Specialist — June 2011- Present
CDE Consulting

Marine Environment Officer — July 2008 – May 2011
Banyan Tree Vabbinfaru

Freelance Lobster Hunter, Shark Fisherman — Jan 2007 - July 2008
Laamu Atoll

Dock Assistant — Sep 2006 - Jan 2007
Tourist Submarine Maldives

Education and Certifications

PADI Rescue Diver	June 2011
PADI Enriched Air Diver	June 2011
Emergency First Responder	May 2011

Basic Computer Science — 2001 - 2006
Singapore Informatics, Colombo Sri Lanka

Profile

I am very passionate about protecting the marine environment. After having worked as both a fisherman and a marine environment officer I am aware of the impact that human activity has on our fragile marine environment. My favorite activities are reef monitoring and planting coral gardens. With my undying passion for the underwater world and also with my vast experience diving all over the Maldives, educating people on the marine environment is my greatest mission, to ensure the preservation and protection of our most valuable treasure. Furthermore, I have got the opportunity to work besides the greatest marine experts in the world namely Prof. J.E.N. Veron,Dr. Norman Queen and Dr. Daphne G. Fautin.

References

N.D. Abdul Azeez Abdul Hakeem
Former Director of Conservation
Mobile: + 960 7784263
Banyan Tree Maldives

Dr. Steve Newman
Former Marine Lab Manager at Banyan Tree
steve.newman@ncl.ac.uk

Robert James
Former Marine Lab Manager at Banyan Tree

APPENDIX J – Commitment Letter

中国建筑股份有限公司马尔代夫分公司
CHINA STATE CONSTRUCTION ENGRG. CORP. LTD (MALDIVES)

Date: 21st Dec 2016
Reference No.: CSCEC LANKA(OUT)-MDV-080-2015

Mr. Ibrahim Naeem
Director General,
Environmental Protection Agency,
Male', Republic of Maldives

Sub: First Addendum for the EIA prepared for the proposed development of 7,000 social housing units at Hulhumale' Phase II.

Dear Sir,

As the proponent of the above mentioned project, we guarantee that we have read the report and to the best of our knowledge all non-technical information provided here are accurate and complete.

We also hereby confirm our commitment to carry out and bear costs of environmental mitigation measures and monitoring outlined in the EIA report.

Yours Faithfully,

Mr. Wang Zhouya

General Manager

China State Construction Engineering Corporation Ltd. (Maldives)

CHINA STATE CONSTRUCTION ENGINEERING CORPORATION LIMITED

APPENDIX K – Acknowledgement Letter from HDC

بسم الله الرحمن الرحيم

CDE-L/1216/183 :ނަންބަރު

www.cde.com.mv

ހަދާނެދެއް ގެންނަންވީ ގޮތާ ގުޅޭގޮތުން ދަންނަވާ ލިޔުމަކާ ގުޅޭގޮތުން،
ވަޒީރު ސަލާހުވެރި ފަންނީ ކަންކަމުގެ.

ހުޅުވާލާ ފުރަތަ ތިރީގައި ދެ ހަ ހާސް 7000 ރަދީފުގެ ތުރިއްޔާ ދައްކާ ދަށުން ދިވެހި ރައްޔިތުންގެ ހަނދާންކުރުމަށް ހިނގާ ދިޔަ ހަ ދިހަ ތިން 69 ވަނަ ފާރުގެ ކުދިންގެ ހަ ދިހަ ތިން ދަރިވަރުން ތަކުގެ ގެންދާ ދަތުރު ހިނގާ ގޮތާ ގުޅޭ ކަންކަމުގެ ތަފާސީ ހިންގުމަށް ތިރީގައި ލިޔެ ހުށަހަޅާ ފަރާތުގެ ގުޅުއްވުމަށް ދަތުރުގައި ދިވެހި ރައްޔިތުންގެ ރައްކާތެރިކަމާ ގުޅޭ ކަންކަމުގެ ތަފާސީ ހިންގުމަށް ދައްކާ ދަށުން ހަ ދިހަ ތިން 3315926 ނަންބަރަށް ގުޅުއްވުމަށް nishaman@cde.com.mv ތަކުގެ ކުރިން ލިޔުއްވާ ފޮނުއްވުމަށް ދަންނަވަމެވެ.

ލިޔުއްވާ ދުވަސް ހުށަހަޅާ ފަރާތުގެ ދަށުން ކަށަވަރު ކުރަންވާނެ.

27 ޖެނުއަރީ 2016

ދ.ގެ.ދ

ސަލާހުވެރި ފަންނީ ކަންކަމުގެ

ރަދީފުގެ ތުރިއްޔާ ދައްކާ ދަށުން ދިވެހި ރައްޔިތުންގެ
ހުޅުވާލާ، ތިރީގައި ލިޔެ

ލ.ތަ.ބ. ލިޔުއްވި ފަރާތުގެ ނަން:

ލިޔުއްވި ތަން: ހުޅުވާލާ ފުރަތަ ތިރީގައި ދެ ހަ ހާސް 7000 ރަދީފުގެ ތުރިއްޔާ ދައްކާ ދަށުން ދިވެހި ރައްޔިތުންގެ ހަނދާންކުރުމަށް ހިނގާ ދިޔަ ހަ ދިހަ ތިން ދަރިވަރުން ތަކުގެ ގެންދާ ދަތުރު ހިނގާ ގޮތާ ގުޅޭ ކަންކަމުގެ ތަފާސީ ހިންގުމަށް ތިރީގައި ލިޔެ ހުށަހަޅާ ފަރާތުގެ ގުޅުއްވުމަށް ލިޔުއްވި ފަރާތުގެ ދާއިރާ:

ލިޔުއްވި ގޮތް:

ލިޔުއްވި ތާރީޚް:

ލިޔުއްވި ތަން: ރަދީފުގެ ތުރިއްޔާ ދައްކާ ދަށުން ދިވެހި ރައްޔިތުންގެ ހުޅުވާލާ ފުރަތަ ތިރީގައި ލިޔެ

ލިޔުއްވި ތާރީޚް: 26 ޖެނުއަރީ 2016 ވާ ދުވަހު

HOUSING DEVELOPMENT CORPORATION LTD
RECEIVED DATE: 27/12/16 L.NO: —
RECEIVED BY: Xyna TIME: 12:00
ACTION TO
RECEIVED FROM
COMMENTS:

ސ.ތަ.ބ:

CDE Pvt Ltd
4th Floor, Orchidmaage,
Ameeru Ahmed Magu,
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