ENVIRONMENTAL IMPACT ASSESSMENT FOR DEVELOPMENT OF A CITY HOTEL HANIMAADHOO, H.DH. ATOLL

FINAL REPORT

PREPARED FOR
Island Expert Pvt. Ltd

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Declaration of the Consultant:

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

Mahmood Riyaz (EIA03/07)
7 May 2014

Acronyms used in the text

BOD	Biological Oxygen Demand
BOH	Back of the House (all the utility function and its services on the hotel)
COD	Chemical Oxygen Demand
DNP	Department of National Planning
EPA	Environmental Protection Agency
EPAA	Environmental Protection and Preservation Act
MHTE	Ministry of Housing, Transport and Environment
MoFA	Ministry of Fisheries and Agriculture
MoFT	Ministry of Finance and Treasury
MoHE	Ministry of Housing and Environment
MoT	Ministry of Tourism,
MPL	Maldives Ports Limited (a state-owned enterprise)
MRC	Marine Research Centre
MSL	Mean Sea Level
NPC	National Planning Council

ދިވެ ހިލާލުވަމުންދާ ގަބޫލުކުރެވޭ ގޮތަށް ހަމަ ހަމަ ހަމަ ހަމަ 3 ވަނަ ކަމަށް ހަދާ ހިލާލުވާ ވަކި ގޮތަށް ހަދާ ހިލާލުވާ ގޮތަށް ހަދާ ހިލާލުވާ ގޮތަށް ހަދާ ހިލާލުވާ

ހަނިމާދޫއަކީ ބޮޑުމިނުގައި ގާތްގަނޑަކަށް 155 ހެކްޓަރ ހުންނަ ބޮޑު ރުކާއި ބިޔަގަސްތަކުން ހުރިފައިވާ ރަށެކެވެ. ރަށުގެ ދެކުނުފަރާތުގެ އިރުމަތީ ފަރާތުގެ ބަނދަރާއި ބެހޭގޮތުން ކުރިއަށްގެންދެވިފައެވެ. ފަރާތުގެ ބަނދަރު ސަރަހައްދުން ރަށުގެ ގާތްގަނޑަކަށް 50% ބިން ހާއްސަ ކުރެވިފައިވެއެވެ. މިހެންކަމުން ރަށުގެ ގެސްޓްހައުސްތަކާއި ބޮޑެތި އިމާރާތްތަކުގެ ސަރުކާރީ ސާފުކުރުންތަކެވެ. ރަށުގެ މިހެން އެކި ސަރަހައްދުތައް އޮންނަނީ ގުދުރަތީގޮތުގައި ހިފެހެއްޓިފައިވާ އެކިބާވަތްތަކެވެ. ސިޓީހޮޓާ އެޅުމަށް ހުށަހަޅާފައިވާ ބިމުގައި މައިގަނޑު ގޮތެއްގައި ހުރިފައިވަނީ ދިވެހިރާއްޖޭގެ ގަސް، ދިރުއްގަ، ހިކަނދި، ނިކަ އަދި ދަނޑުވެރިކަމެވެ. މިސަރަހައްދުގެ ގާތްގަނޑަކަށް 20% އަކީ ކުދި މަގު އުނި ފަސް ހިކަނދި އަދި ދިރުއްގަ ގަހެވެ. މިގެ އިތުރުން މިސަރަހައްދުގައި މަދު އަދަދަކަށް ކާށި، ބޯށި، މިދިލި، ކާނި ކާށި އަދި ދަނބުކާށި ހުރިފައިވެއެވެ. ސިޓީހޮޓާ އެޅުމަށް ދޫކުރެވިފައިވާ ސަރަހައްދުގެ ކުރީގައި ދެކުނުގެ ގޮތުގައި އޮތް ދަނޑުގެ ގޮތުގައި ބޭނުން ކުރުމަށް ގެންގުޅޭ ސަރަހައްދެއް ކަމަށްވާތީ ހުސްބިމެއް ކަމުގައި ވެސް ބަލައިފައެވެ.

ސިޓީހޮޓާ އެޅުމަށް ހުށަހަޅާފައިވާ ސަރަހައްދާ ދިމާލުން ގޮނޑު ވަރަށް ބޮޑެވެ. ގޮނޑުގެ ފުޅާމިނުގައި ގާތްގަނޑަކަށް 70-50 ހުރެއެވެ. އަދި އެދިމާ ފަޅުތެރޭ 310-290 މީޓަރު ފުޅެވެ. ފަރުމަތީގެ އެވްރެޖް ފެންމިންނަކީ 1.5 މީޓަރ އަދި ފަރުތޮށީގެ އެވްރެޖް ފެން މިންނަކީ 1.5މީޓަރ އަދި ފަޅުގެ ބޭރުކައިރީގެ އެވްރެޖް ފެންމިންނަކީ 2.5-2 މީޓަރެވެ. މުރަކަ އެންމެ ރަނގަޅަށް ހުރިފައިވަނީ ފަރުގެ ކަޅި ބައި (ރީފް ސްލޯޕް) ގެ މަތީބައިގައެވެ. ފަރުގެ ދޮންފަރުގެ ބައިބަލާގައި ދިރޭ މުރަކަ ހުރި މިންވަރަކީ ގާތްގަނޑަކަށް 12% އެވެ. ފަރުގެ އެތެރެ ކައިރީއާއި ބޭރުކައިރީގައި ދިރޭމުރަކަ އޮތްތޯ މިންވަރަކީ 4% އާއި 6% އަދަދުތަކެވެ. ހަނިމާދޫ ސިޓީ ހޮޓާ އެޅުމަށް ހަމަޖެހިފައިވާ ބިމުގެ ފަރުން ތަފާތު ބާވަތްތަކުގެ މަހާއި ގެރިގެރި ބޮޑެތި މަސްޖިސްތަކަށް ބަދަލުތަކެއް ބޮޑު ބިމުގަ ރަށް ދިރިއުޅުމަށް ގެ މަނާކުރުން ކަމުގައި ނުވެއެވެ. ސިޓީހޮޓާ ސަރަހައްދުގައި ގެއްލުންތަކެއް ވާކަށް ނުފެނެއެވެ.

ހުރަ ހަލާކުވާ ޕްރޮޖެކްޓްގެ މަސައްކަތްތަކުގެ ސަބަބުން ބިމަށް އަސަރުފޯރާ ދިރުމަށް ބެލުމުން ބަޔާއި އިމާރާތްކޮށް ފެށިކަމަށް އެއްބައިވަންތަ ކުރެވޭނެ. މިގޮތަށް އިމާރާތްކޮށް ފެށިކަމަށް އާއި އެއްބަޔަކަށް ބިމާ ވަށައިގެން އަސަރުކުރާ ދިރާސާކުރުމަށް ބަދަލުގެނައުން ގެއްލުންތައް ކުޑަކޮށް ބަލާނެ. މިހެންކަމުން ބޭނުންކުރާ ބަލަހައްޓާ ހިނގާފައިވާ (ސަރަހައްދު) އަދި ނަރުދަމާ ހަލާކުވާ މާހައުލަށް ގެއްލުންތަކެއް ލިބިދާނެ ކަމުގެ ސިޓީހޮޓާ ހިންގުމުގެ މަސައްކަތްތަކުގައި ގެންދަން ހަމަޖެހިފައިވާ ގޮތުގެ އެކަމުގެ ފަރާތްތަކާއި ހަވާލުވެވޭނެ. ހަލާކުވާ ސަރަހައްދު (އެއްސިބަބު) އަދި ވިއްސާރައިގެ ފެނުގެ ތަފާތު ބަދަލުތަކުގެ ސަބަބުން އިތުރު ގިނަ ސަރަހައްދަކަށް ގެއްލުން ފޯރާނެ ކަމުގެ އަސަރުތައް ދިމާވެދާނެ.

ހަލާކުވާ ސަރަހައްދުގެ މާހައުލަށް ސިޓީހޮޓާ ހިންގުމުގެ ބަދަލުތަކުގެ ބޭނުންކުރާ ތަކެތި އެންމެ ފަރާތުން ކަމަށްވެސް ކަނޑައަޅާ މަސައްކަތްތަކަށް ދެވޭނެ ގޮތްތަކާއި ހުށަހަޅާ މާހައުލަށް ގެއްލުން ކުޑަކުރުމުގެ ފިޔަވަޅުތައް ތަފްސީލުކޮށް ބަޔާންކޮށްފައިވެއެވެ. އަދި އެކަން ކުރުމަށް މަސައްކަތް ކުރާ ފަރާތްތަކުން އަމަލުކުރަންޖެހޭ ގޮތްތައް ހަމަޖެހިފައިވާ ފިޔަވަޅުތަކާއި އެކަމުގެ ބަލަހައްޓަން ގެންގުޅޭނެ ގޮތްތަކެވެ. ހަމަޖެހިފައިވާ ހަލާކުވާ ސަރަހައްދުގެ މާހައުލަށް ގެއްލުންވާ މިންވަރު ބަލައި، ގެއްލުން ކުޑަކުރުމުގެ ފިޔަވަޅުތައް ކުރިއަށް ގެންދަން ހުށަހެޅުނު ނިޒާމު ހަމަޖެއްސުމަށް ސަރަހައްދުގެ ތަފާސް އަދި ސާމްޕަލް ނަގައިގެން ބަލަހައްޓާނެ ގޮތް (މޮނިޓަރިންގ އަދި ސާމްޕްލިންގ) ހޮޓާގެ ހިންގުން ގެންދާ މުއްދަތުގައި ކުރިއަށް ގެންދާނެ ގޮތް ވެސް ކަނޑައެޅިފައިވެއެވެ.

ސިޓީހޮޓަލް ހެދުމަށް ކުރަންހުށަހަޅާފައިވާ ބަދަލުތަކާއިބެހޭކަން ބަދަލުގެނައުމަށް ބޭނުންވާކަމި، އެކަންކަން ބިމާއެބިން ގެއްލުންކަކާ ބޭނުން ކުރެވިދާނެ ބޭނުން މިޒިދޭބޭގައި ވަނަކުރެވިފައިވާނެއެވ. މިބޭނުން މިހާރު ހުރަހަގޮފައިވާ ފުރަމާހާއި ބިންބޭނުން ކުރާ ބޭބޭއި، މިހާރު އެދުމަން ހަމަދުރުގޮފައިވާ ދޭބި އިބުރަން ދޭއްސައިދިނަމަ ހެދިދާނެ ބޭބޭއް ހުރަހަގޮފައިވާނެއެވ. މިފަދަ ފުރާދޭކުޅުބޭއް ރާއްދޭގެ ބަންބޭނުގައި ހިންގޭފައިވާ ބޭބޭއްބަހާއިރު ބިމާބެހޭބިންގެ ބޭއްގެންބޭކާއި ކުރާނުނަދާ އަސަރުބޭކަން ބިމާބިރު ބުރަންއަވަހަން ރަނގަޅުވާ އިހާދާރުކަދު ބަދަލުނެގެ އެދުމަންނަކޭއިދު ކުރާވާކަން ބިނިފަހަގޮއެ ކުރެވިފައިވާ. އަހަރަހަރަމަ ބިމާބެހަން ބަދަލުބޭއްބަބާ މަނިބެރުކުރަން ފުރާނަހުއް މިނިފަހަގޮއެ ހިމަނާފައިވާނެއެވ. މިފަދަ މަނިބެރިން ފުރާނަހުގެ ބަނޑިކަ ބިމާބެހަން ކުރާއަސަރުބޭއް ދަނަޅަން ޕިހައިފަސ އަވަހަކަން އެކަންކަން ރަނގަޅުކުރުމުގެ ފިޔަވަޅު އެޅުމެވ.

ހިނ. ހަނިމާދޫ ސިޓީހޮޓަ ބަރުއްޤީކުރުމުގެ ސަބަބުން ބިޔަގައި ބަހާކަންފައިވާ ފައިދާބޭއް ވަނަކަމަން ފާހަގަކުރެވުނެވ:

- ސިޔާހީބުންނާއި ނިސިބާ ބޭބުން ވެރިޔާގެ ފުރުސަތުބޭއް އިތުރުވުން
- ގެއުމުގެ އިގްތިޞާދަށް ކަރުގެ، ހަނިމާދޫއި ކައިރިގައިވާ ރަށްރަށުގެ ކާރިއަރި މަދަރުޒާނީގެ ވިޔަފާރިބޭއްގެ އިތުރުވުމުގެ ފުރުސަތުތައް މަގުބަންވަސްވެގެން ދިއުން
- ސަރުކާރުގެ އާމްދަނީ އިތުރުވެ ގެއުމުގެ އުފެއްދުންތެރިކަމުގެ މިންވަރު މައްޗަށްދިއުން

ހަނިމާދޫގައި ސިޓީހޮޓަ ބަރުއްޤީކުރުމުގެ ސަބަބުން ބިޔަގައި ބާނާފަދަ ގެއްލުމެއް ބިމާބެހޭބޭއި އަދި އިޤްތިޞާދީ- އިޖްތިމާޢީ ބޭނުން ފިހަނަކަމުގެ އެއްވެސް ހައްކައެއްނެތި ފާހަގަކުރެވިފައި ނުވެއެވ:

- ބިމާވެރިގެ ބޭނުން އަދާހަ ހިމާޔަ މަހައުމުއް ނުވަތަ ދިރުމުއް ނެތިގެން ދިއުން
- ބޭއްފީބޭނުން މުޅިނމު ބެރިކައްހެ ހަމަކޮށ ނެތިފާހަގެން ދިއުން
- ސަރުކާރުގެ ނުވަތަ ކައުންސިލްއްގެ ނުވަތަ ދަމާހަބެއްގެ ފްލިސިދަކާ، ގެވާދަކާ، އަދަކާދަބެކާކާ، ޤާނޫނީ ބިމާވެރިގެ ބޭނުންނާއި އިޖްތިމާޢީ- އިޖްތިމާޢީ ބޭނުންނާއި ބައްއްގެ ދިރުއްމުގެ ފައްބަފަރި، ވެރިއަށް ގެދިފައިވާ އްއްމިދަބެކާކާ ބެހޭރާސްވާ ފުރުޤުރުން

ނިންމުން:

ބިމާވެރިގެ އަސަރު ފިޒިމިންވަރު ވެރިންހާން ބަހާ މިދިޔަބޭގައި ފަހަގޮ ހާރުފައިވާ ކަންބެއްބޭކާގެ މަބްޖިން ބިނާހާން ބިމާބެހަން އަސަރުފިޒާ މިންވަރުކު ކުގެކުރެވިން އެހެން ޖެހިހަނޑިއްކާތަކާ ފިއަވަޅުބެއް އެޅުއި ދިޔަބޭގައި ފަހަގޮ ހާރުފައިވާ ކަންބެއްބޭކާން ފެދިހަމަހަން ދިއާހިބާހާން ބެރިޔިޖެކުރުމުން ހިނ. ހަނިމާދޫ ސިޓީހޮޓަ ބަރުއްޤީކަން ހިންގުމުގެ މަޝްރޫޢުގެ ސަބަބުން ބިމާބެހަން ދިރާގެއްމިހާ ދިރާސާފައިދާ މާހިރަޔާނުއެވ.

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2 NON TECHNICAL SUMMARY

This is the Environmental Impact Assessment (EIA) report carried out for Island Expert Pvt. Ltd to develop and operate a three star City Hotel on the north western part of Hanimaadhoo Island located in North East of H.Dh Atoll. The proposed project includes development of 41 guest rooms and necessary infrastructure to establish and operate the city hotel. The EIA was prepared as fulfilment of the requirement by the Ministry Tourism (MoT) for granting permission for the project. Environmental Impact Assessment (EIA) of development projects is a requirement by the Environmental Protection and Preservation Act (EPPA) (law 4/93) of the Government of the Republic of Maldives.

The total cost of the proposed project is approximately 6 million USD. The project will be developed within 18 months. The project will create a relatively large number of direct and indirect employment opportunities throughout for the people of Hanimaadhoo Island and particularly to the islands on the northern part of the Maldives. Therefore the project will significantly contribute to the economic growth, particularly tourism sector, and other relevant socio-economic activities

This report has been prepared in accordance with the Environmental Impact Assessment Regulations published by the Ministry of Environment and Energy 2012 and covers both negative and positive environmental and socio-economic impact arising from the proposed project in Hanimaadhoo Island. This report also presents an assessment of the ongoing work at the land plot allocated for Hanimaadhoo city hotel development following a report by Hanimaadhoo council during the EIA scoping meeting that the developer has already started construction and site clearance work prior to EIA approval. Major findings of this report are based on information gathered during the field inspection of both the existing environment and possible effects of the project activities, through extensive literature review and experiences gained from similar projects elsewhere in the Maldives.

The proposed project activity will take place on the north western part of Hanimaadhoo Island. The island of Hanimaadhoo is a North-south oriented island located at the Eastern rim of H.Dh Atoll. The reef system hosting Hanimaadhoo Island is an elongated shape reef, which has a length of 6.9 km and width of 1.6km. The reef flat is wider at the western side and the island occupies the eastern half of the reef. The island of Hanimaadhoo is an inhabited island with a population of 1200 people is approximately 6.5km long and 40-700m wide and the with increases towards north. Hanimaadhoo is located at latitude 6.7536^{o} and longitude 73.1737^{o} in North H.Dh Atoll (*Figure 1*). It is approximately 288 km from the capital Male'.

H.Dh Hanimaadhoo is a fairly big island having approximately 155ha with thick vegetation mostly consisting of coconut palms and woody trees. The southern part of the island has been developed as a domestic airport, which was recently converted to an International Airport. Almost 50% of the land area on the southern parts occupies airport territories, hence, vegetation clearance and alteration was greatly seen. The settlement of the island is found on the mid-northern parts and is mainly concentrated on the western areas and extending towards north. Main vegetation within the area allocated for city hotel development is fairly intact with coconut palms, *funa, dhigaa, hirundhu* and small amounts of *nika* and *dhonkeyo* as the main cover within the area, which makes up over 50% of the vegetation cover. Most of

the vegetation found on the site is fairly young with *magoo, uni* as well as *funa, hirundhu* and *dhigga*. The cover of young vegetation found on the site exceeds 20%. Other types of vegetation that are sparsely distributed on the site include *kaani, boashi, kashikeyo, dhonkeyo,* and *midhili* are found in a very small content. It was observed that the vegetation of the site has been greatly altered or to a great extent used by the local communities probably for collection of fire wood, wood and timber as well as for undertaking agriculture in small areas.

The reef on the NW side of Hanimaadhoo is characterized by a large reef flat having approximately 50-70m in the width and a very large lagoon having approximately 290-310m in the width. The average depth of the reef flat is about 1m and the lagoon is about 1.5m. The reef crest is found at a depth of about 2-2.5m. The reef slope is observed to be slanted with the upper portion having the most live coral, while the lower portion (below 10-15m) are mostly covered with dead corals, sand and aged rocks. The live coral cover was generally low except for the upper reef slope where the live coral percentage estimated was 12%. The reef flat and the reef crest had 4% and 6% live coral cover respectively. Based on the ground water analysis ground water of Hanimaadhoo city hotel development site is safe to use for all purposes. At present drinking water is transported from Kulhudhuffushi and supplemented by the rainwater catchments.

During the preparation of the EIA report an impact matrix, which is a standard tool for identifying the possible impacts of project activities, has been created for proposed development project in Hanimaadhoo Island. The activities carried out during the construction and post-construction or operational phases are arrayed against a selection of environmental factors that may be affected directly or indirectly as a result of project activities.

The report has identified and described in detail possible change that would occur to the existing condition of the environment caused during the construction phase and have suggested appropriate mitigation measures for each and every impact identified in the report. Vegetation clearance has been identified as the most significant negative environmental impact that could be associated with the vegetation clearance. Liquid, solid and other forms of wastes and particularly hazardous waste generated during the construction and operational phase has also been identified as significant impact associated with the project and appropriate mitigation measures are suggested for each and every waste related impact identified in the study.

The study has evaluated alternative options for some components of the project and has suggested some modifications for city hotel layout and landscaping. Also the report found, based on the similar project activities elsewhere in the Maldives, the island and the reef will recover from the expected impacts rapidly and will re-establish a new ecological balance soon. However the report has come-up with an extensive monitoring programme that will keep on monitoring the environmental changes associated with the development and make necessary adjustment to the activities of the project based on the findings of various measured environmental parameters suggested in the monitoring plan.

The report has identified the following beneficial effects form city hotel development in Hanimaadhoo:

- Increased direct employment and training opportunities;
- Improvements in environmental quality of the island;
- Stimulation of local economy, cultivation and small business opportunities within the nearby island communities; and
- Increased government revenue and increased GDP.

The report found no evidence that the city hotel development in Hanimaadhoo requires or involves any of the following environmental or socio-economic impacts.

- loss of unique habitat or wilderness areas;
- resettling of local communities;
- removing or destroying cultural properties;
- contravening national government of the Republic of Maldives, or island community policies, regulations, criteria, customs or aspirations concerning environment, economy, employment, cultural traditions or life styles.

On the basis this environmental impact assessment study and the impact mitigation measures proposed in the report will be duly implemented and recommendations are given due consideration, it is concluded that the benefits of the planned city hotel development in Hanimaadhoo Island will substantially outweigh its imposition on the environment.

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3 INTRODUCTION

3.1 BACKGROUND

The Republic of Maldives is an archipelagic nation in the central Indian Ocean. The country comprises of about 1,190 island dispersed over wide geographic area. While the east-west spread of the atoll chain is only 100 km, the north-west extension spans to over 800 km from 7°N to 1°S.

The two major drivers of Maldivian economy are tourism and fishing. Development and expansion of the tourism industry has always been a priority of the Government since its inception in the early 1970s. Over 110 resorts are now in operation[1]and over100 islands have been allocated for resort development and many are in various states of development.

Most of the resorts developed since 2003 are in atolls in northern and southern end of the Maldives. Development of domestic airports enabled access to these islands and subsequent tourism development and economic growth.

The opening of the domestic airport on Hanimaadhoo Island triggered and made tourism development possible on the northern end of Maldives and brought much needed economic and infrastructural development to the northern region. At Present Hanimaadhoo airport represents the main transportation hub connecting between the Capital and northern part of Maldives. Statistical records show movement of over 1500 flights and 35,000 passengers in-and-out of Hanimaadhoo airport. The airport also accounts for over 30% of the total passenger movement in domestic airports in the Maldives. The economic sector that benefitted most from the operation of Hanimaadhoo airport is the tourism sector. All the tourist travelling to resort in northern part of Maldives travels through Hanimaadhoo airport.

The proposal is for development of a small 40 room city hotel on the north western section of Hanimaadhoo Island. This hotel provides for airport transit accommodation and facilities for Hanimaadhoo' International Airport, additional three star quality tourist bed capacity and opens up the northern part of the Maldives for small-medium conference tourism. It is envisaged that the development will bring much needed economic growth to the country and socioeconomic benefits for the people of Hanimaadhoo and will open up small and medium business opportunities. Overall the project will contribute for wellbeing of the local communities in the north particularly Hanimaadhoo Island trough creation of jobs development of business opportunities in travel, trade and tourism industries.

3.2 PROJECT SETTING

The proposed development project is located in the island of Hanimaadhoo in South Thiladumathee (Haa Dhaalu) Atoll at 06°45'37"N and 73°10'16"E. Project site is located on the north western end of Hanimaadhoo island in a land plot allocated for City Hotel development in the designated area for tourism development in the land use plan (Figure 1). Closest inhabited islands to Hanimaadhoo are H.A. Baarah and H.A. Muraidhoo approximately 7.97km and 8.98km north of Hanimaadhoo Finey and Hirimaradhoo lies approximately 13.46km and 16.80km west of Hanimaadhoo Nolhivaramfaru and

[1]Ministry of Tourism website, accessed December 2013. www.tourism.gov.mv

Nolhivaramu lies approximately 8.56km and 14.70km and the the Atoll Capital Kulhudhuffushi 18.91km south of Hanimaadhoo. Resort islands close to Hanimaadhoo are HA. Alidhoo and HA. Dhonakulhi. Industrial agricultural islands closer to Hanimaadhoo Airport are HA. Maafahi and HDh. Theefaridhoo.

There is no designated protected area or ecologically or environmentally sensitive area identified in the close proximity of the project location.

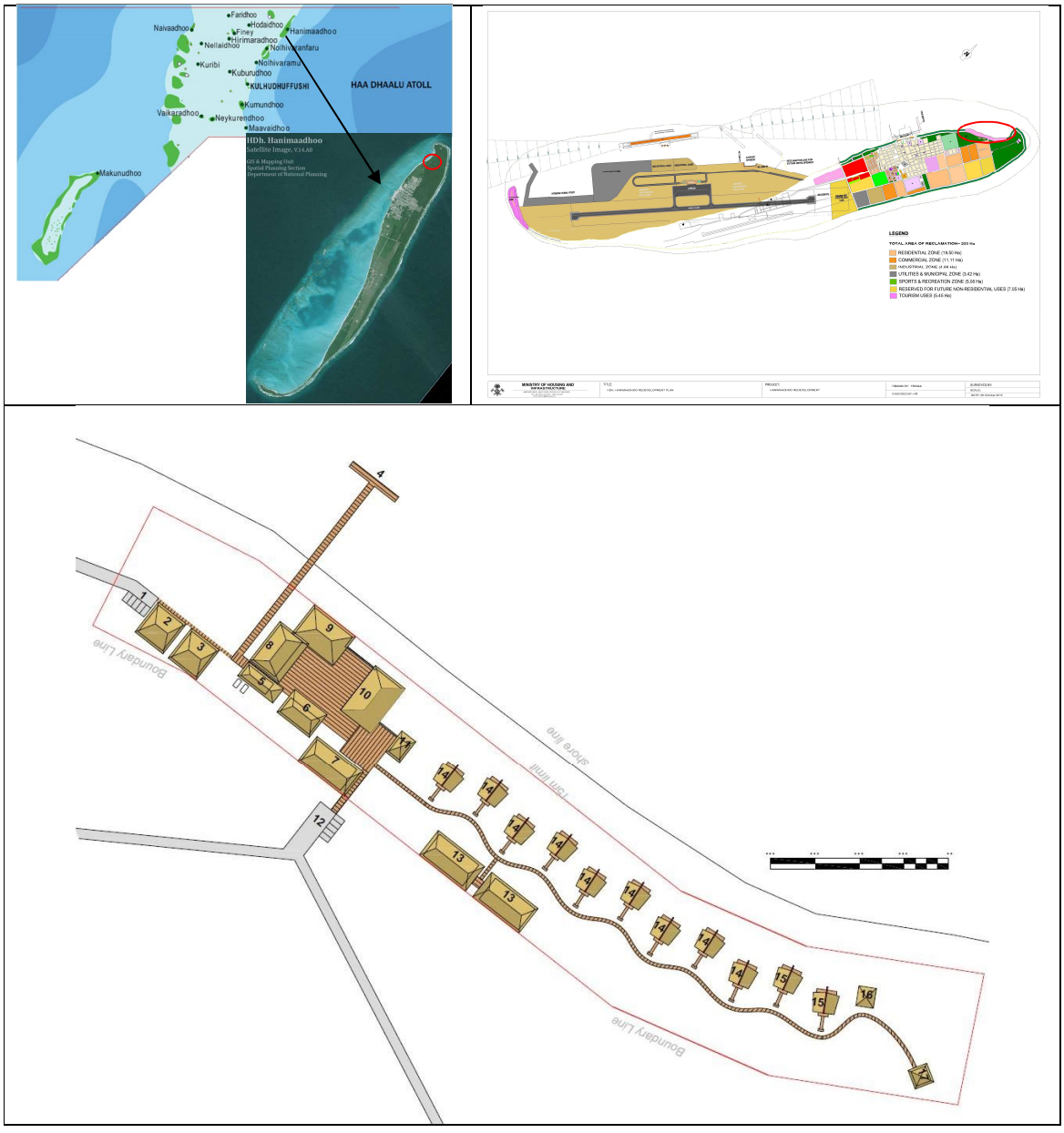

Figure 1: Location map; showing location of Hanimaadhoo Island in Hdh. Atoll and magnified aerial view of the island (left), Hanimaadhoo land use plan and location of City Hotel, red circle (right), and boundary of the hotel (bottom).

3.3 EIA REPORT AND EIA IMPLEMETATION PROCESS

In general the objective of an EIA report is to address the environmental concerns of the development project. The EIA will help to achieve efficient planning, aid in identifying impacts and their potential mitigation measures. The EIA report will also help to promote informed environmental and sound decision making during the development of the project.

The aim of the EIA is to identify, describe and assess in an appropriate manner, proposed development, in accordance with the provisions of guidelines and regulations of the GoM, the direct, indirect and residual effects of the project on the following factors:

- Physical and chemical characteristics of the earth (soil, landform,), water (marine and ground), atmosphere (air quality and climate), and processes (floods, erosion, deposition/accretion, and compaction);
- biological conditions including flora (trees/shrubs and endangered species), fauna (birds, land animals, coral and endangered animals) habitats (environmentally sensitive areas protected area etc);
- cultural factors including aesthetic and human interest (scenic views and vistas, wilderness qualities, landscape design, historical and archaeological sites and objects), and cultural status (employment); and
- ecological relationships including eutrophication, disease and insect vectors, and introduction of alien species etc..

This EIA report has been prepared by registered freelance EIA consultants selected by the proponent. EIA preparation process is as follow:

1- The consultant prepares EIA application form for the proponent for submission to EPA, and the proponent submits the application along with the approved site plan and concept design.
2- EPA calls for a scoping meeting with proponent, consultant and relevant stakeholders from government agencies to determine the scope of the EIA study
3- Based on the discussion of the scoping meeting the consultant submits a draft TOR of the EIA.
4- EPA reviews the draft ToR finalize and send to the proponent and consultant
5- The consultant undertakes literature review and gathers relevant data and information on the project.
6- Consultant undertakes the field assessment work
7- The consultant analysis data and information gathered and identify environmental impacts, determine mitigation measures, rationally evaluate and suggest alternatives and limitations and propose a monitoring plan.
8- The consultant will discuss major findings with the proponent and suggest possible changes to the project/project component.
9- Based on the discussion with the proponent the consultant reviews the EIA and makes necessary changes to the document.
10- The proponent should provide written commitment to undertake Post-development monitoring of EIA as per the proposed monitoring plan in the EIA report.
11- The consultant submits the final EIA to the proponent who subsequently will submit the EIA report to EPA for review and issue decision note.

Once the decision note is issued from EPA the proponent is obligated to implement the EIA and matters highlighted in the decision note. Also the proponent shall implement the periodic monitoring programme during construction and operational phase of the project and submit monitoring report as indicated in the EIA report.

3.4 METHODOLOGY

The EIA methodology followed in the Maldives has evolved to an internationally recognized standard even to the standard to being advocated by IAIA[2]. Started in Maldives around 1995/1996 the EIA Regulations underwent a major revision in 2007. The EIA Regulation[3]stipulates the complete process including EIA screening, scoping, review and issuing of decision notes, including the registration of the EIA consultants.

The EIA process in the Maldives is in many respects similar to international best practice. The process is shown in Figure 2.What has been lacking in the Maldives is strategic environment assessment which gives directions for environmental management including spatial planning and development strategy.

The EIA process starts with the screening where following an initial environmental examination[4], a decision is made whether the project requires an EIA or not. If an EIA if required a full scoping of the project takes with stakeholder consultations. Following the issuance of a Terms of Reference (ToR) of a project, the EIA consultants will undertake field work to examine the baseline conditions or existing environmental conditions to determine the impact analysis. The report is peer-reviewed anonymously by the two reviewers and comments and issues will be addressed before the decision statement is issued.

Post-development monitoring of EIA is most neglected in the Maldives, partly because due to lack of enforcement measures from the authorities. The ToR for the complete EIA is given in

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[2]International Association for Impact Assessment (IAIA) which is the leading global network on best practice in the use of impact assessment, http://www.iaia.org/default.aspx, accessed December 2013.
[3]Environment Impact Regulations, 2007.Ministry of Environment, Energy and Water, Malé, Maldives, 74 pages.
[4]Initial Environmental Examination technically involves the Screening Form, Schedule #1, Development Proposal Screening Form, page 30, EIA Regulations, 2007.

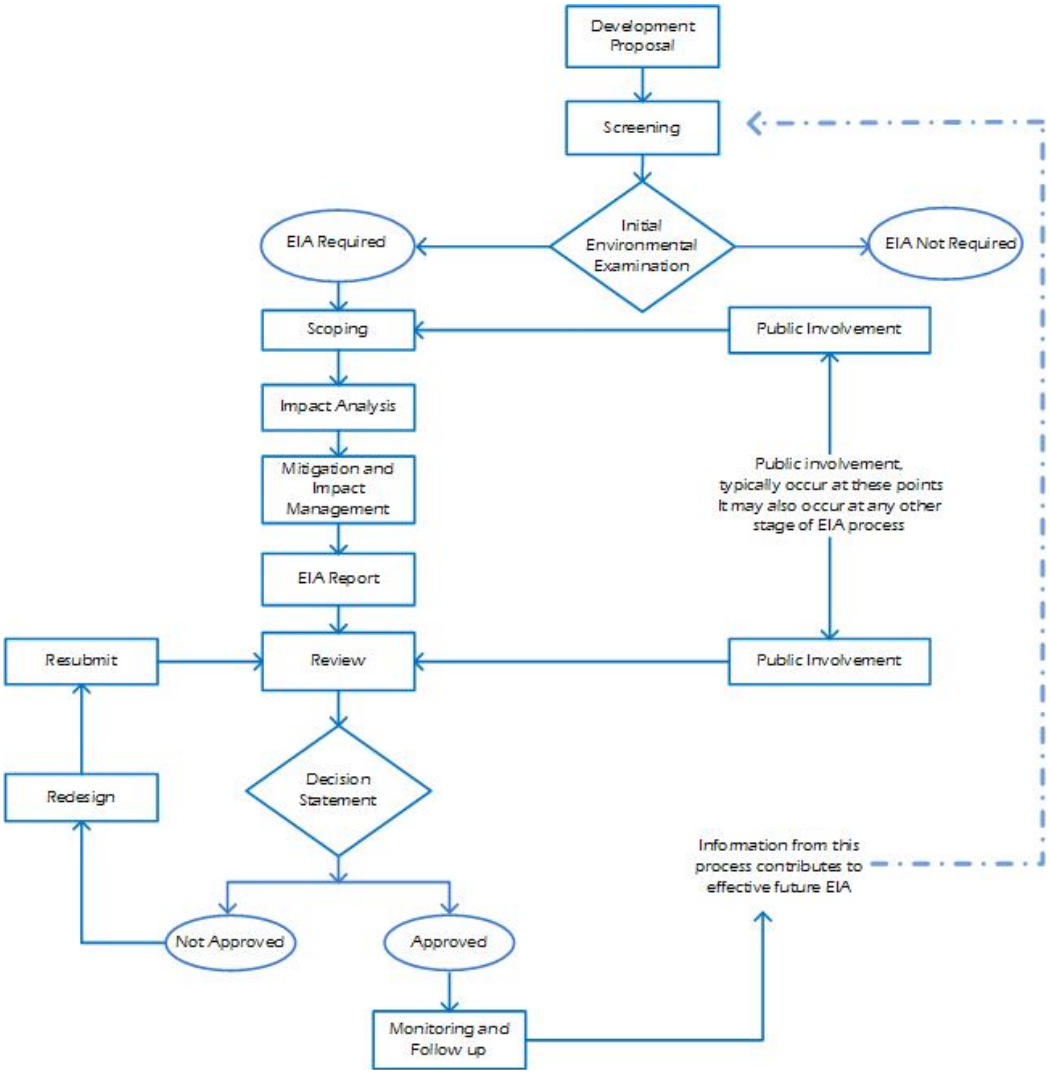


Figure 2: A general flow-chart of the EIA process that is followed in the Maldives

4 DESCRIPTION OF THE PROJECT

4.1 THE PROPONENT

The proponent of the project is City Hotel Hanimaadhoo Pvt Ltd. A company registered in the Maldives (Registration no: C0706/2013) for the purpose of developing and operating the Hanimaadhoo City Hotel. Island Expert Pvt. Ltd., a foreign investment company established in November 2010 has been contracted to develop the City Hotel in Hanimadhoo. The company business comprises of design/build construction of new homes, construction/remodelling of residential structures, Project management/ renovation and maintenance of high class resorts. The company is extensively engaged in residential housing developments across Maldives. **Error! Reference source not found.** shows a brief of ongoing projects of the Island Expert Pvt Ltd Company in various parts of the Maldives.

Table 1: List of projects Island Expert Pvt. Ltd is undertaking in the Maldives

Project Name	Details
Hdh. Hanimaadhoo housing development project	100 Housing units for MHI and sewerage project
Hdh. Kulhudhuffushi housing development project	140 Housing units
Ha. Dhidhoo housing development project	200 housing units
Hdh. Nolhivaramfaru housing development project	160 Housing units
L. Gan housing development project	200 Housing units
Hulhumale	300 flats for MPS and 300 flats for SIFCO (MNDF)
Bodufolhudhoo	Charity preschool development
Gangehi	40 room resort development

City Hotel Hanimaadhoo Pvt. Ltd was awarded the land plot for City Hotel development upon winning the bid invitation by the Government on 8 July 2013 to develop and operate a city hotel in Hanimaadhoo. The lease agreement between the City Hotel Hanimaadhoo Pvt. Ltd and the Government of Maldives was signed on 19th December 2013. Under the agreement the land plot is leased to City Hotel Hanimaadhoo Pvt. Ltd for fifty years (**Error! Reference source not found.**).

4.2 NEED AND JUSTIFICATION OF THE PROJECT

A land plot on the north western end of H.Dh. Hanimaadhoo has been allocated for development of a three star 42 rooms City Hotel in Hanimaadhoo Island in the Northern part of Maldives. The main objective of City Hotel development in Hanimaadhoo is to meet current and projected bed capacity needs in the Maldives to reach the strategic targets outlined in the 4th Tourism master Plan 2013-2017 as well as the National Development plan of the Maldives. The basis for tourism development in the Maldives in the next master plan period, 2013 to 2017, is projected as follow:

- Increase tourist arrivals from 1million to over 1.6 million, maintaining a 10% growth
- Increase average stay of tourists from 6.8 days to 7.2 days
- Increase operational tourist bed capacity from 25,000 beds to 35,500 beds
- Increase occupancy rate from 73% to 85%

• Increase bed nights from 6.5 million to 12 million, with an average growth of 10% p.a.

This hotel provides for airport transit accommodation and facilities for Hanimaadhoo International Airport, additional three star quality tourist bed capacity and opens up the northern part of the Maldives for conference tourism. Overall the project will contribute to strategic targets outlined in the tourism master plan and overall tourism development in the Maldives and to create employment opportunities particularly for locals. The project will also generate much needed foreign currency and contribute to the island economy directly through land rent and to the economy of Maldives through tax revenue and annual rent.

4.3 PROJECT COST

The total investment cost of the for the City Hotel development project (construction phase) is estimated to be 6 Million USD and this will be completed within the eighteen months of the project construction phase. *Table 2* gives a breakdown of costs for City Hotel development in Hanimaadhoo Island

Table 2: Investment cost (construction Phase) of Hanimaadhoo City Hotel development project

Building name	Cost in US$ millions
Front of the House (FOH) (buildings, guest accommodation, jetty restaurant Spa etc)	4
Back of the house facilities (BOH) and Utilities	1
Contingencies	1
Total	6

4.4 MAIN DEVELOPMENT FEATURES OF THE PROJECT

4.4.1 Site plan and design

All buildings have been located so as to maximize the use of sunlight and natural ventisea breeze. It is proposed to develop 41 rooms City Hotel with all the support and ancillary facilities. There will be three categories of accommodation on the city hotel with combination 4 room villas/ two floors, two room villas and a suit. All the rooms are set along the beaches on the Western stretch of the island. Each villa will have a front covered veranda backed by a spacious bedroom and set at the back of the bedroom, a bathroom with a private courtyard. The most basic category will be the four room two storey villas. The next category will be 2 room villas with their own plunge pools. The highest categories consist of a suit with plunge pools. All the units will have vanities, bath tubs and indoor and outdoor showers in the bath.

The interiors are all open sided to take advantage of the beautiful surroundings and also to merge the exterior with the interior. The public areas consist of two restaurants, two bars, spa with four treatment rooms, seminar room dive and water sports centre. The arrival area will support the reception fronted by a library with boutiques.

The build-up area is designed to ensure that the existing vegetation particularly the large trees remain intact and untouched. Artificial landscaping will be used in both sides of pathways which will only consists of salt and spray tolerant coastal vegetation and coconut trees that usually grow on island environment. The City Hotel will be accessible by road from the land and by jetty from the sea. The jetty is set on the southern end of the land plot in the natural deep area within the lagoon. Space allocation for buildings and facilities in the city hotel is given in *Table 3*. Site plan of Hanimaadhoo City Hotel is shown in *Figure 3* details drawings are presented in **Error! Reference source not found.**.

Table 3: Space allocation for buildings and facilities in Hanimaadhoo City Hotel

Building name	No	Built-up area (m^2)
4 room villas/ 2 floor	9	1120.5
2 room villas	3	373.5
Suite	1	72
Reception Office	1	371
Restaurant	1	387.75
Kitchen	1	363
Boutique	1	240.5
Bar	1	425
Library	1	96
Dive center	1	104
Power house desalination plant	1	272
Workshop depots and staff house	1	272
Seminar room	2	742
Spa	1	81
Total		4920.25

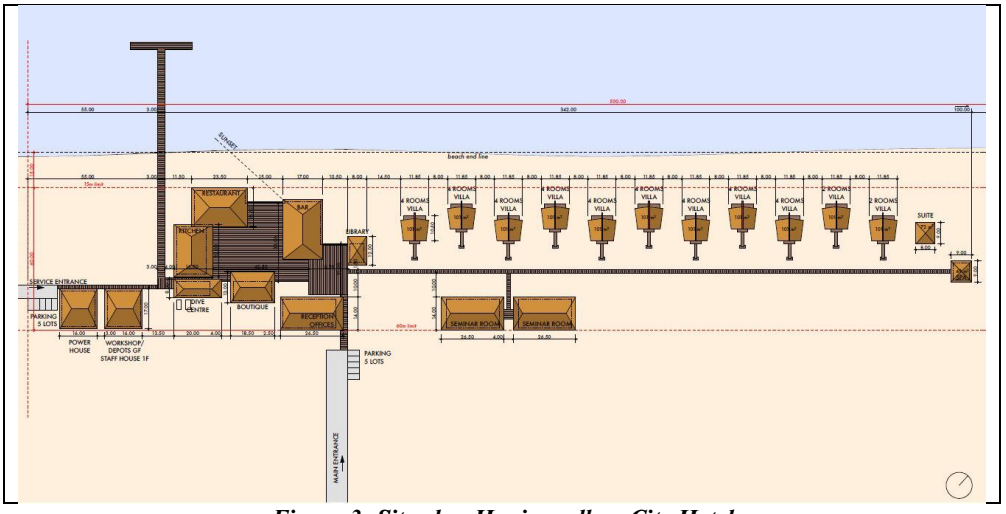


Figure 3: Site plan Hanimaadhoo City Hotel

4.4.2 Guest Accommodations

Hanimaadhoo City Hotel is developed as a three star city hotel. There will be three categories of accommodation on the city hotel with combination 4 room villas/ two floors, two room villas and a suit. The rooms are placed and designed to maximize the view of the sea and beach to optimize build space of the Island. All the guest rooms will be on land, over water rooms will not be constructed, to minimize the intrusion of natural beauty of the sea view and maintain the beautiful white sandy beach of the island. Beach Villas will be constructed in two storey blocks containing 2 rooms in each floor along with service and support facilities in the island. The placement and design of the rooms are well fenestrated to allow excellent ventilation where air-conditioning is hardly needed in rooms particularly in the second floor.

4.4.3 Hotel Entrance

The City Hotel will be accessible by road from the land and by jetty from the sea. Main access to the Hotel will be from land. There are two entrances to the hotel by land, the main entrance to the FOH facilities and a separate entrance to the BOH facilities. The jetty is set on the southern end of the land plot where the natural deep lagoon is located. This location is selected to get good access to the existing lagoon in Hanimaadhoo Island and the back of the house facilities on the south western part of the land plot to allow clear access to the back of the house with minimal intrusion to the guest and FOH facilities. The Jetty will be constructed on concrete columns to allow water and sediment flow underneath it.

4.4.4 Public Areas (Front-of-the-House FOH)

Front-of-the-house facilities such as, reception with arrival hall, boutique, dive school, administration office, main restaurant, bar and library etc will be developed on the south eastern part of the land plot around the main entrance at the landward side. All the FOH facilities will be connected via elevated wooden pathways, well fenestrated with natural ventilation and supplemented with ceiling fans to provide the necessary cooling for the guests. FOH facilities are designed so that natural light can enter during day time. High ceiling spaces in FOH facilities will allow natural light and breeze through the buildings and negate the need to use air conditioning. Spa is located on the northern end of the island and the two seminar rooms on the eastern side north of the main entrance.

4.4.5 Utilities and back-of-the-house (BOH) facilities

Utilities and Back-of-the-house facilities such as, staff accommodation units, staff facilities, workshops, power and desalination complex, store building, and waste collection building etc. will be developed on the southern end of the land plot with access from land through back entrance and jetty from the sea. All the utilities will be located in two separated buildings fenced and well blocked from guest accommodations. BOH facilities are designed and ideally placed to provide efficient support for the smooth operation of the hotel.

4.5 MAJOR CIVIL WORKS

Major civil works required for Hanimaadhoo City Hotel construction includes; excavation mobilization of the heavy equipment and transportation of construction materials. The estimated workforce for the City Hotel development is 50-100 expatriate and locals. Most of the construction workforce would be located in the temporary facilities established in the site; however senior staffs and workers from Hanimaadhoo Island will be accommodated in the island and transported back-and-forth from their accommodation to the site on daily basis during the construction period.

4.6 MAJOR WORKS OF CITY HOTEL

4.6.1 Mobilization of Equipment and Site Clearance

The construction contractor of the City Hotel, Island Expert Pvt. Ltd already has an ongoing housing construction project and a sewerage system development project in Hanimaadhoo Island. Also the contractor has completed housing units' construction work in nearby Kulhudhufushi. Therefore the contractor's equipment and material are already in the island or can easily be transported from Kulhudhuffushi Island. Once the construction work of City Hotel commences the contractor will move his equipment to the site and bring additional equipment and material needed for the construction of City Hotel from Kulhudhuffushi Island.

Despite the fact that equipment and material needed for City Hotel construction is already in hand the site mobilization of equipment, materials and work force to the site will be undertaken in a planned manner in order to avoid excess cost and environmental implications.

All the civil works would be carried out manually by the human labour force facilitated by the heavy equipment such as lorries, excavators, dumpers, concrete machine and a crane. No work is expected to cause a significant impact to the terrestrial environment, no large trees will be removed only the necessary bush vegetation in the site will be removed during the site clearance process. If a designed building falls into a large and old important tree, the location of the building will be adjusted to keep the tree and all the buildings will be adjusted accordingly.

4.6.2 Assessment of ongoing work in Hanimaadhoo City Hotel land plot.

During the EIA scoping meeting the Island council of Hanimaadhoo raised the issue that the developer has already started construction and site clearance work prior to EIA approval. The representative of the Island Expert Pvt. Ltd admitted that some site mobilization work are going on, and they have started mobilization work upon written permission from the Island Council for site mobilization and construction of mock-up room. The consultants were asked to investigate the issue and provide an assessment in the EIA report on the extent of the work and the developer was asked to immediately stop the ongoing work until EIA is approved. The following bullet points gives account of major findings of consultants assessment of the extent of work carried out by the developer in Hanimaadhoo City Hotel land plot.

- The letter referred by the developer which gives permission for site mobilization and construction of mockup room from Hanimaadho council (**Error! Reference source not found.**) was dated xxx. The letter gives permission for site mobilization, which we believe as per the rules of procedure should be issued by the Ministry of Tourism not Hanimaadhoo Council. At Hanimaadhoo land plot allocated for City Hotel construction we found that;
- The developer has cleared from part of the land plot the necessary vegetation, small trees and shrubs, that must be cleared for construction of the City Hotel,
- Vegetation has already been cleared from one third of the total land plot (*Figure 4*);
- No large tree has been removed or taken away
- One mockup room (a two storey guest accommodation room no 2) has already been constructed and fully functional (*Figure 5*)
- Foundation work for two more rooms already started (*Figure 6*);
- Temporary facilities for workers, accommodation, toilets, kitchen, dining etc. already established and constructed at the proposed reception and dive center area (*Figure 7*)
- Large number of workers approximately 50 are already on site
- Construction material and equipment has been brought to the site (*Figure 8*);
- Precast concrete pillar pads, sheets and beams construction work is going on (*Figure 9*) ;
- Cleared vegetation are burned on the site
- Hanimaadhoo City hotel land plot is used for material storage and supply for the housing construction projects contracted by Island Expert Pvt. Ltd in Hanimaadhoo

The consultant believes that vegetation clearance work is done responsibly, no mature large tree is removed, all the coconuts trees and mature trees are kept intact

Figure 4: vegetation clearance in Hanimaadhoo City Hotel land plot

Figure 5: The mockup house constructed at the site

Figure 6; Foundation work for two more rooms started

Figure 7: Temporary facilities for workers established in the land plot.

Figure 8; Construction material and equipment mobilized in the site

Figure 9: Precast concrete beams, pads and sheet production at the site.

4.6.3 Clearance and relocation of trees

Following accurate geo-location of the large trees in the area, vegetation and large trees will be left intact where possible. Large trees and palms that necessarily requires relocation would be replanted elsewhere in the land plot. Current estimate is that no large tree is needed to be removed or relocated outside of the City Hotel land plot.

4.6.4 Excavation and Foundations and Construction system

Since all the guest villas and buildings in Hanimaadhoo City Hotel will be constructed on land, conventional building methods that do not require deep foundation structures will be used. All buildings will be standing on columns on 1x1m concrete pads. Such shallow foundation based structures does not require any dewatering and excavation and removal of soil which will have negligible impact on the environment. Therefore all buildings will be constructed using reinforced precast concrete sheets, beams and structural steel and masonry work, using manual labours and a crane.

Power cables, sewer, drainage and water pipe grids will be connected through underground trenches. Mini excavators will be used for trenching work.
Fuel storage tanks will be built using steel plates. A bund wall will be constructed around the fuel storage tanks as fuel storage handling and safety regulation stipulates. The tanks will be built on reinforced concrete foundations.

The Jetty, Hotel access from the sea, will be constructed on precast concrete columns. The footings of the piles will be precast on land and transported to the site. Footing area will be cleared using excavators. Footing clearance work will be conducted at low tide to minimize sediment plume dispersal.

Feed water for the RO plant will be sourced through a borehole located near the RO plant at BOH area. Borehole construction and installation process will strictly follow the regulation on borehole construction by EPA. The brine outlet will be connected to the island sewerage system.

4.6.5 Landscaping and Terrestrial Habitat

The land plot allocated for City Hotel construction on the north western end of island was used for agricultural purposes in the past. Mainly banana was grown in the area. The area also had coconut trees and other types of trees that belong to local islanders. As part of the land acquisition and allocation process the government has settled financial compensation for the trees that belong to the people. Large trees and palms that necessarily requires removal will only be removed and relocated elsewhere in the land plot. At present the vegetation in the area consists of mainly coconut palm, pendanus and banana trees.

Artificial landscaping will only be used to fill the gaps after removal of bush vegetation and for decoration of pathways, which will only, consists of salt and spray tolerant coastal vegetation, coconut trees and ornamental trees that usually grow on island environment. The detailed design for natural landscaping has not yet been prepared but it should be noted that there is no intention to import exotic plants that has potential to introduce alien species to the environment. Also the proponent has no plans to relocate tress from other islands. Every attempt will be made to utilize native and local plant species in a manner to create a habitat that will support even more diverse fauna on the island. Most of the mature trees at the vegetated area of the island will be left intact as mentioned earlier.

4.7 POWER GENERATION

Main source of electric power needed during construction and operation of City Hotel will be provided by FENAKA who operates powerhouse in Hanimaadhoo and provides electricity for the island. FENAKA will increase the electricity generation power to cater for the requirements of the City Hotel and other developments that are coming in the island.

The City hotel will have a backup generator system consisting of 2x100 kVA to provide electricity in case of emergency and as a backup for the Hotel. Additionally solar panels will be installed in all the roofs of hotel building. Solar panels will generate electricity needed for the hotel during day time. Solar panels in each guest room will generate approximately 2000 volts per day. Total capacity of electricity generation from solar panels installed in the City Hotel will be 250 Kilowatts.

4.8 WATER PRODUCTION

Ground water analysis result shows that the salinity of water is in the land plot allocated City Hotel development is the range of 19-32% therefore, ground water can be used as portable water for all the uses other than for drinking and cooking purposes. At present rain water is harvested from the roofs of temporary buildings and consumed as portable water for cleaning and toilet flushing. Occasionally water is transported from Kulhudhuffushi to use by the workforce for drinking and cooking purposes. During the construction period a temporary desalination plant with a production capacity of 100m3/day will be installed for production of fresh water supply. This capacity supplemented with rainwater harvested from roofs of the existing buildings will be sufficient during initial period of development. To avoid installation of temporary RO Plants additional capacity will be installed at early stages of the construction works. It is expected that a 2 x 100 m^3/day will be required during for the hotel during operation period. The RO plants will be housed in BOH the utility building.

The source water for the RO plants will be from boreholes. The borehole will be located at BOH near the utility building. Standard guidelines produced by EPA will be followed in drilling boreholes.

It is proposed to discharge the rejected brine into the lagoon. The discharge will have no effect on the surrounding environment as it will be instantly mixed with water column reducing the concentrations to negligible amounts.

Government regulation requires that water production plants with capacity of > 10 cubic meters / day be registered at EPA. The requirements, in addition to addressing environmental issues, need to undertake comprehensive water quality tests.

4.8.1 Hot Water Installation

All the hot water needed for the hotel including guestrooms, kitchen, restaurant, Spa and bar will be provided by using energy efficient heat recovery water heaters. This heat recovery water heater system generates hot water by using waste heat from split type air-conditioning systems. As per the manufacturer of the system PAC Frenergy$^{(R)}$ the systems will lower the

energy cost to 10-30% and help to extend the useful life of the AC compressor. A schematic of the system is given in *Figure 10* and more information can be obtained from www.pac.co.th

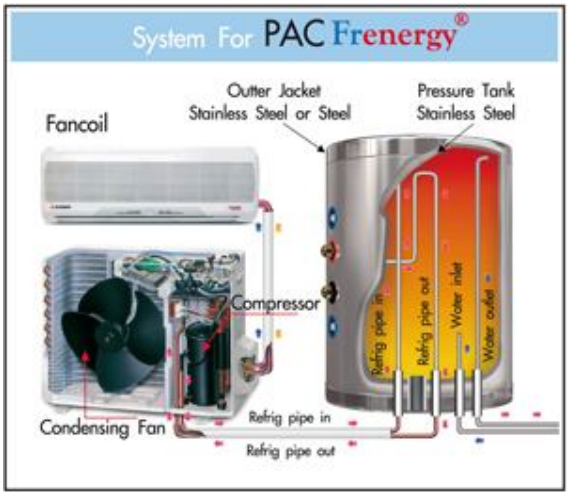


Figure 10: Schematic of hot water installation system in Hanimaadhoo City Hotel

4.9 SEWAGE AND SOLID WASTE DISPOSAL

Island expert Pvt. Ltd is contracted to develop the sewerage system for Hanimaadhoo Island. Once the system is in place City Hotel sewerage will be connected to Hanimaadhoo sewerage system. Once the island sewerage system is complete the system will be maintained and operated by FENAKA Cooperation.

Development of a waste management system in Hanimaadhoo Island has been agreed as part of the lease agreement between Hanimaadhoo City Hotel Pvt. Ltd and the Government of Maldives. Under the agreement (clause 3 Infrastructure development project) Hanimaadhoo City Hotel Pvt. Ltd will develop a waste management system and a school in Hanimaadhoo Island. Once the waste management system is in place all the waste generated in the City Hotel will be disposed off at the waste management area of Hanimaadhoo Island.

Development of a sewerage system and a waste management system in Hanimaadhoo is taking place in parallel with the City Hotel development project.

Despite the fact that a proper waste management system will be established in Hanimaadhoo island solid waste would be disposed according to the tourism industry standards using incinerators, compactors and bottle crushers etc.

The new Waste Management Regulation that became effective on 6 February 2014 calls for extended producer responsibility where by producer has to ensure the waste is dealt according to guideline in the regulation. It is likely to take some time before the EPA can effectively ensure the waste management entities comply with the provisions in the regulation.

4.10 PROJECT ACTIVITIES – OPERATIONAL PHASE

4.10.1 Guest Accommodation

The City Hotel will have 42 rooms. A 1:2 staff-guest ratio will be maintained at the hotel. This is because not all the staff will be accommodated at the hotel, due to the hotel being on an inhabited island most of the staff will be accommodated Hanimaadhoo Island residential area. However, a 1:1 staff-guest ratio will be maintained at the hotel during its operation. Greater emphasis will be given to maintain and effectively manage the environment of the island during the hotel operation. The following operational activities of the hotel will be taken into serious consideration during the overall operation of the City Hotel in Hanimaadhoo Island.

4.10.2 Transport

Main mode of transportation for arriving/departing guest to the hotel would be from land by using car, bus and van etc. Almost all the guest arriving/departing the Hotel will be via Hanimaadhoo International airport. Sea transport, speed boats and launches, will be used for guest arriving from other islands. Hanimaadhoo harbour will be used to bring in transport cargo and supplies for the Hotel using boats and cargo Dhonis. The supplies will be unloaded to the harbour and transported via land to the City hotel through the back entrance.

4.10.3 Water demand, supply and conservation

Using a factor of 300litres /person/day and a guest staff ratio of 1:2, at full occupancy, the estimated daily water consumption of the hotel is about 36m3, inclusive of the requirements for irrigation of the grounds. All water will be generated using desalination plants. Hotel water supply will be metered and the water will be stored in reservoirs with a capacity of 10 days consumption. The main reservoir for drinking water will be divided into two sections to facilitate cleaning and maintenance and it will be fitted with a chlorinator. A separate tank will store water for fire protection.

Measures that will be considered to reduce water consumption include:

- Water pressure booster system used to maintain a constant water pressure which could allow considerable savings of water each day,
- Efficient hot water delivery system to reduce volume of water wasted while waiting for hot water in the tap,
- WC cistern with double flushing mechanism (3/6 litres) or flush stop mechanism. Its effectiveness depends on the guest's choice,
- Taps with flow and temperature restrictors could potentially save up to 20 m3 per day,
- Use of treated sewage effluent for irrigation,

4.10.4 Waste Management

The different types of waste during the hotel operation can be divided into two broad categories; inorganic and organic waste. The main types of inorganic waste include paper and cardboard items such as stationary and packaging, glass and plastic bottles, plastic bags, cans and tins, building material, and furniture and will be sorted accordingly. Organic waste will mainly consist of food and kitchen waste and green waste from garden trimmings. The other type of waste that will be generated during the hotel operation is hazardous waste, which will mostly consist of batteries, solvents, paints and anti-fouling agents that will have high chemical content.

Both organic and inorganic as well as hazardous waste will be collected daily and will be taken to the waste collection area, which will be established in close proximity to the staff and back of the house area for easy management. Different types of waste will be initially sorted and contained at the waste collection area, which will have bottle crusher, incinerator and can compactor. The organic waste will be sorted into kitchen and garden waste, while inorganic waste will be sorted into plastics, paper, glass and tins. Hazardous waste will also be kept separate at the waste collection area.

The waste generated on the hotel will be carefully managed by use of waste management equipment. For instance, all flammable waste will be incinerated, glass bottle will be crushed, aluminum cans and tins will be compacted and food and garden waste will be composted. The residual waste such as crushed glass and compacted cans as well as hazardous waste will be transported and properly disposed at Hanimaadhoo waste management area.

4.10.5 Power Generation, Fuel Management, and Waste Oil Disposal

Electricity demand, supply and conservation: All the electricity needed for the hotel during day time will be provided through the solar panels installed on roof tops of buildings. The solar panel installed in the island will provide 250Kw of electricity daily, which will be sufficient for the daily requirements of the hotel. The powerhouse and the generator sets installed in the hotel will only be used in emergencies and as a backup system for main power failures.

In order to minimise the use of electrical energy, the hotel intends to implement the following:

1. Install fluorescent lighting throughout, but preferably LED lights which is more efficient
2. A/C controlled with switches on room windows
3. Central lighting control system for common areas
4. Rooms outfitted with body detectors or card switches

4.10.6 Marine and Water Sports

Snorkeling diving and recreational fishing will be the main tourist activities. The reef and lagoon of Hanimaadhoo Island is excellent for water sports activities and snorkelling. The hotel therefore will offer the usual suite of water sports including small boat sailing, snorkeling, wind surfing and scuba diving etc. Fishing excursion will also be an important activity the hotel will offer. Water sports will be operated by licensed service providers. It is anticipated that the hotel will ensure that guests are well informed about the marine protected species and that it will encourage adherence to the relevant diving and snorkeling regulations. It is also expected that the hotel will use mooring sites for dive boats so as to avoid anchor damage on the reef.

4.10.7 Use of pesticides and Fertilizers

The proponent has no intention of importing exotic plants. Only plants that grow on the island will be used for landscaping. If for any reason, if it becomes necessary to import plants, they will be acquired from respected breeders who can provide Government acceptable health certificates. Use of fertilizers and pesticides will be strictly controlled and will not be considered unless it becomes absolutely necessary.

4.11 FENCING CITY HOTEL BOUNDARY

For safety and unauthorised access to the hotel premises the boundary of the city hotel will be fenced using GI iron pipes and wire mesh. The hotel boundary will be demarcated and fenced and the entry to the city hotel will only be through either the main entrance or the back entrance. Once the boundary is fence is established, entrance gates will have to be erected. The fence will be constructed.

4.12 INPUTS AND OUTPUTS

The input / output analysis of a project helps us to define and understand the potential environmental impacts of the project in more informed manner. Linking inputs to processes and activities leads us to outputs and consequently impacts. The inputs and outputs relating to the construction and operation of City hotel maybe primarily derived from the project concept and the project description and site plan of the Island.

Table 4: Matrix of major inputs to the project construction and operational phase

Input resource(s)	Source/type	How to obtain resources
Construction phase		
50-100 construction Workers	Foreign/ local	Contractor's employees, 5 engineer and a 6 site supervisor Recruited through bidding and announcement in local papers, and recruiting

		agencies etc.
Construction material	Reinforcement steel bars, river sand, cement, aggregates, Timber; Solar panels for roof, electrical cables and wires, DBs, MMCBs and MCBs, PVC pipes, light weight concrete blocks, light weight, telephone cable CAT, PVC conduits, core armored cables, PP-R pipe, Multi pump, UPVC (T1000, T600) for sewerage grid, floor and wall tiles, gypsum boards, calcium silicate boards, zinc coated corrugated metal roof, paint, varnish, lacquer, thinner, dry walls etc.	Imported and locally purchased where available
Heavy machinery (excavator lorries, dumpers, concrete machine and a crane and operational tools)	Contractor's machinery	contractors machinery
Maintenance tool and equipment	Maintenance parts and fluids required for the machinery	Import or purchase locally where available
Fuel and lubricant for machinery	Diesel, Petrol, Lubricants	local suppliers/ contractor
Fresh water	Desalinated water/ rainwater	Kulhudhufushi and rainwater harvested in the existing rain water tanks.
Electricity/ energy during construction	Diesel generator	FENAKA existing power in the island
Electrical appliances/machinery	Energy efficient machinery and appliances	Local suppliers if available if not import
Firefighting equipment	Fire pumps, Fire protection system, and Foam fire extinguishers.	Local suppliers if available if not import
Operational Phase		
82 operational staff	50 locals and 32 expatriate	Recruited through bidding and announcement in local papers, and recruiting agencies etc.
Water supply	Desalinated water, hot water and water storage	2x100m^3/day RO plant, AC heat recovery water heater systems, and water storage tanks
Drinking water	Bottled water	Locally purchased empty bottles will be sent back to the company for recycling
Electricity/ energy	FENAKA island electricity and solar panels	250KW from solar panels supplemented by FENAKA power
Maintenance material	Timber, wooden shingles for roof, electrical cables, electrical appliances, paint, thinner etc.	Locally purchased
Telecommunications	PABX system, fax machines, email and internet facilities to all guest	Local telecom companies

	facilities, BoH area and Administrative buildings	
Transport	Airlines international/domestic, by land and sea	Cars, buses, vans and launches
Food and beverages	Mainly imported sources. Preference will be given to locally grown agricultural items and produced food items.	Import and purchase locally (fruits, fish and vegetables).
Laundry chemical	Detergent, all-purpose cleaners, glass cleaners, bathroom cleaners, destainer, softener, alkali neutralizer, detergent, detergent plus, stain spots remover, etc. preference will be given to bio-degradable compounds	Imported and locally purchased
Paper products	issue roll, tissue boxes, hand tissues, guest room paper amenities/ brochures office use paper products	local supply if available if not import. Recycle products and fabric material tissues will be preferred
Fertilizers	Compost and fertilizers	Locally produced from organic waste will be used as soil fertilizer
Firefighting equipment	Fire Pumps, Fire Protection System, Smoke Detectors, Carbon Dioxide and Foam Fire Extinguishers, etc.	Local suppliers
Fuel, Kerosene and LPG	Light Diesel, LPG Gas, Petrol, Lubricants	Local suppliers

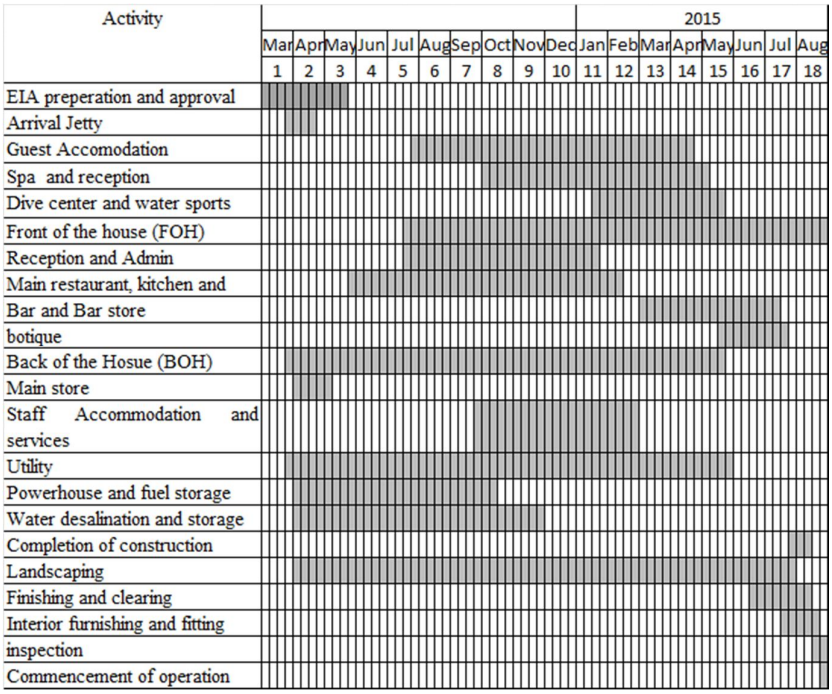
Table 5: Matrix of major outputs construction and operational phase

Outputs (s)	Anticipated quantities	Disposal method
Construction phase		
Green waste	Small quantities	Burnt or mulched on site and used for nursery and landscaping needs
Construction Waste	Small quantities	combustibles burnt/ incinerated others sent to Hanimaadhoo waste management site
Fuel and lubricant for machinery	Minor quantities	Gathered in a barrel and sent to Hanimaadhoo waste management site
Waste water from workers	Minor quantities	Managed through temporary sewerage system
Operational Phase		
Non portable water	50-100 liters/day	Reused for gardening and landscaping toilet flushing, aquifer recharge

Portable water	1000-2000 plastic bottles/ month and 500-1000 glass bottles/month	Plastic Bottles – crushed and sent to the bottling company Glass Reused or Returned to manufacturer
Sewage and wastewater	300 liters/person/day gray water laundry waste water	Hanimaadhoo sewerage system
General Domestic waste	Over 300 kg/day	Sent to Hanimaadhoo waste management site
Kitchen and organic waste	Over 400kg/day	Sent to Hanimaadhoo waste management site
Waste oil and grease	Over 500 liters/ month	Incinerated or reused
Scrap metal/cans/plastics	20-100kg/ month	Sent to Hanimaadhoo waste management site
Paper and Plastics, packaging waste	10-50 kg /month	Sent to Hanimaadhoo waste management site
Glass and glass bottles	10-50 bottles/ day	Sent to Hanimaadhoo waste management site
Hazardous waste	Minor quantities	Properly sealed in containers and sent to Hanimaadhoo waste management site

4.13 DEVELOPMENT SCHEDULES

Under the agreement between the Government and the developer, the city hotel is to be completed within 12 months. Additional three months were given to complete the EIA and administrative clearances. An indicative schedule of activities is given below.



5 REGULATORY CONSIDERATIONS

5.1 INTRODUCTION

The proposed City Hotel development project in H.Dh. Hanimaadhoo will be subject to the laws in particular Environmental Protection and Preservation Act (No. 4/93) of Maldives. Thus, it must satisfy the EIA process and get approval before the project starts implementation. This section outlines and summarizes key policies, applicable laws and regulations and regulatory bodies regarding environmental protection in the Maldives.

5.2 POLICY GUIDANCE

The environmental management and policy direction is taken from a number of policy documents prepared by the Government of Maldives. Key documents outlined in this EIA are currently being implemented towards sustainable development of the country. They key policy direction is taken from most recent policy documents that were available at the time of the EIA preparation.

5.2.1 National Framework for Development (2009 -2013)

One of the most important environmental policy guidance is given in the Strategic Action Plan (SAP) of the National Development Framework for 2009-2013. Due to the fragile nature of the country's environment, all the development activities must ensure that appropriate care is taken to protect the environment. Environmental sustainability is the basis for socio-economic development, hence, the SAP outlines the key environmental policies that will be implemented in the country for environmental protection and sustainability, while one of the key environmental goals of the country is to protect and preserve the natural environment to ensure prosperous economic development. The environmental policies outlined in the SAP include;

Policy 1: Strengthen EIA process with an emphasis on EIA monitoring

Policy 2: Conserve and sustainably use biological diversity and ensure maximum ecosystem benefits

Policy 3: Develop resilient communities addressing impacts of climate change, disaster mitigation and coastal protection

Policy 4: Strengthen adaptation and mitigation responses for beach erosion and develop a system to assist communities where livelihood and property are affected by beach erosion

Policy 5: Ensure management of solid waste to prevent impact on human health and environment through approaches that are economically viable and locally appropriate

Policy 6: Ensure protection of people and the environment from hazardous waste and chemicals
Policy 7: Improve air quality to safeguard human health
Policy 8: Enable a fully functional decentralized environmental governance system
Policy 9: Develop a low carbon economy to achieve Carbon Neutrality by 2019
Policy 10: Inculcate environmental values in the society and enable environmentally friendly lifestyle

The Ministry of Environment and Energy and Environmental Protection Agency takes the lead role in implementing the above national policies through various strategies and regulatory measures.

5.2.2 Third National Environment Action Plan (2009 – 2013)

NEAP 3 sets out the agenda for environmental protection and management in the Maldives for the five year period 2009 – 2013. This plan is targeted to achieve measurable environmental results that matter to the people of the Maldives.

The aim of developing NEAP 3 is to protect and preserve country's environment and properly manage natural resources for sustainable development of the country and encompasses ten principles, six strategic results with targeted goals to be achieved under each result.

The key principles of the NEAP 3 are;

Principle 1: Environmental protection is the responsibility of every individual
Principle 2: Achieve results
Principle 3: Promote and practice sustainable development
Principle 4: Ensure local democracy
Principle 5: Inter-sectoral co-ordination and co-operation
Principle 6: Informed decision making
Principle 7: Precaution first
Principle 8: Continuous learning and improvement
Principle 9: Right to information and participation
Principle 10: Environmental protection complements development

The six strategic results of NEAP3 are: resilient islands; rich ecosystems; healthy communities; safe water; environmental stewardship; and a carbon neutral nation with 30 result oriented environmental goals that will be achieved in the span of the NEAP 3.

5.2.3 Maldives National Strategy for Sustainable Development (2009)

The Maldives National Strategy for Sustainable Development (NSSD) outlines the key objectives, principles and goals that the country will embark toward achieving sustainable development. Hence, the overall direction of the NSSD is to build a nation which appreciates the true value of the natural environment, utilizes its natural resources in a sustainable manner for national development, conserves its limited natural resources, has built the capacity to learn about its natural environment and leaves a healthy natural environment for future generations.

The guiding principles outlined in the NSSD are;

Principle 1: Promotion and protection of fundamental human rights
Principle 2: Equity within and between generations
Principle 3: Democratic and open society
Principle 4: Full participation of businesses and civil society
Principle 5: Policy coherence and coordination
Principle 6: Use best available knowledge
Principle 7: Precaution first
Principle 8: Make polluters pay

While the country will be steered in accordance with the underlying principles of NSSD, the country aims to achieve very important environmental goals, including; adapting to climate change, protecting coral reefs, achieving carbon-neutrality in energy, ensuring food security, establishing a carbon neutral transport system, protecting public health and achieving full employment and ensuring social security.

5.2.4 Fourth Tourism Master Plan (2013 – 2017)

Tourism master plans are for four years, the most recent one being the Fourth Tourism Master Plan (4TMP). The plan is currently in the draft stage. The emphasis of the 4TMP is on six themes.

1. *Maintaining Maldives position in the world*
2. *Managing environment and conservation issues*
3. *Engaging more Maldivians in tourism careers*
4. *Promoting sensible ways for communities to participate in tourism*
5. *Promoting investment towards sustainable growth and high product quality*
6. *Efficient in marketing and destination management.*

Unfortunately it talks little about the guest house or city hotel tourism, but which seems to be booming in the Maldives. The islands around Malé, like Maafushi, are extremely popular among the tourists looking for a cheap holiday packages.

Despite the apparent lack of strategic direction for lower to middle end market, many small case investors are capitalizing on the change in policy, which is gaining ground. In some ways allowing small-scale tourist hotel operations facilitates more Maldives taking tourism as their careers.

5.3 REGULATORY BODIES

5.3.1 Ministry of Environment and Energy (MEE)

The primary environmental institution in the Maldives is MEE. It is mandated with formulating policies, strategies, laws and regulations concerning environmental management, protection, conservation and sustainable development, regulation of the water, sewerage, waste and energy sectors as well as implementation of the international, regional environmental conventions and treaties. The Minister of Environment or a designate gives the environmental approval or clearance to EIA by an Environmental Decision Statement.

5.3.2 Environmental Protection Agency (EPA)

EPA is the key regulatory body on environment, which is an autonomous body formed under the umbrella of MEE. It is mandated with implementing the EIA process in the Maldives, implementing the Environment Act and subsequent regulations on behalf of MHE, regulating water and sanitation, biodiversity conservation, waste management and coastal zone management. Also, it is responsible for developing environmental standards and guidelines in the country.

5.3.3 Ministry of Tourism, Arts and Culture (MOTAC)

The Ministry of Tourism, Arts and Culture is responsible for the sustainable development of the tourism sector in the Maldives. Under the Tourism Law various regulations, standards, controls and measures relating to protection of the environment have been developed and are currently being implemented. Important measures include implementation of carrying capacity limits when developing islands as tourist resorts. In this regard, only 30% of the island shall be used to develop tourist resort infrastructure and facilities. Also, the Ministry of Tourism ensures that appropriate waste management facilities such as incinerators, bottle crushers and compactors and that water production and energy generation methods are environmentally friendly.

5.3.4 Atoll Councils and Island Councils

Under the Maldives Decentralization Law, elected City Councils, Atoll Councils and Island Councils have been formed as regulatory bodies dealing directly with City, Atoll and Island issues. In this regard, the some of the development projects are subject to approval of these councils through a stakeholder consultation process.

5.4 LAWS AND REGULATIONS

There are a number of laws and regulations relating to environment in the country. Only relevant laws and regulations have been outlined in this section.

5.4.1 Environmental Protection and Preservation Act (Law No. 4/93) and Regulations

The Environmental Protection and Preservation Act of the Maldives, EPPA (Law No. 4/93) provides the basic framework for environmental management including Environmental Impact Assessment (EIA) process in the Maldives, which is currently being implemented by EPA on behalf of MEE.

Clause 2 of the EPPA mandates the Ministry of Environment and Energy to formulate policies, rules and regulations regarding the environment.

Clause 5 of this Act specifically provides for environmental impact assessment (EIA), a tool implemented to attempt to integrate environmental issues into development decisions. According to the Clause, environmental impact assessments are a mandatory requirement for all economic development projects.

Clause 6 of the EPPA gives the Ministry of Environment and Energy the authority to terminate any project that has an undesirable impact on the environment.

Clause 7 of the EPPA refers to the disposal of oil, wastes and poisonous substances in to the Maldivian territory. According to this clause, any type of waste, oil, toxic gas or any substance that may have harmful effects on the environment should not be disposed within the Maldivian territory. If, however, the disposals of such substances become absolutely necessary, the clause states that they should be disposed only within the areas designated for that purpose and if incinerated, appropriate precautions should be taken to avoid harm to the health of the population.

Furthermore, clause 9 sets a fine between five and five hundred Rufiyaa for minor offenses in breach of this law and a fine of not more than one hundred million Rufiyaa for major

offenses. The fine shall be levied by the Ministry of Housing and Environment or by other government authorities designated by that Ministry in case of minor offenses.

Finally, Clause 10 of EPPA gives the government of the Maldives the right to claim compensation for all damages caused by activities that are detrimental to the environment.

The Environmental Act or Law 4/93 is the single most important legal instrument with regards to environmental management and it gives very high prominence towards safeguarding the environment with regard to all the development activities. Under this Act, the Ministry of Housing and Environment have developed regulations and guidelines concerning the environmental protection through implementation of EIA procedures.

5.4.1.1 EIA Regulation of the Maldives, 2012

The most important regulation concerning the proposed development is Environment Impact Regulations, 2007, which was amended in 2012 is enforced under Environment Protection and Preservation Act (Law No. 4/93) by the Environmental Protection Agency (EPA). The Clauses of Environment Protection and Preservation Act address the following that relate to the proposed project development and implementation.

- An impact assessment study shall be submitted to the relevant Government authority before implementing any development project that may have a potential impact on the environment
- The relevant Authority of Government shall formulate the guidelines for environmental impact assessment and shall determine the projects that need such assessment as mentioned in above.
- The Termination of projects. The relevant Government Agency has authority to terminate any project that has any undesirable impact on the environment. A project so terminated shall not receive any compensation
- Waste Disposal, Oil and Poisonous Substances. Any type of waste, oil, poisonous gases or any substance that may have a harmful effect on the environment shall not be disposed within the territory of the Maldives
- Government of Maldives reserves right to claim compensation for all the damages that area caused by the activities that are detrimental to the environment.

In addition to EIA regulations, other relevant regulation will be followed in development and implementation of the proposed project. These regulations include ban on coral mining. Coral mining from house reef and atoll rim reef has been banned since 1990.

Sand mining from any island has also been banned since March 2000. Coral or sand will not be used for any purpose for the proposed project.

5.4.1.2 Regulation on Uprooting, Cutting and Transportation of Palms and Trees, 2006

Cutting down and relocating of mature trees is regulated in Maldives under the By-law on Cutting down, Uprooting, Digging out and Export of Trees and Palms from One Island to Another. In the preamble of the law, made in pursuant to Law No. 4/93[5], it states the purpose of the law is to educate citizens and developers about the importance of trees including sound management to maintain trees and provide standards for the preservation of trees in the Maldives.

Under the law certain tree are prohibited to remove from island. They include:

- The coastal vegetation growing around the islands extending to about 15m into the island
- All trees and palms growing in mangroves and wetlands spreading to 15m of land area
- All trees in Government protected areas
- Trees that are being protected by the Government in order to protect species of animal / organisms that inhabit on such trees
- Trees / palms those are unusual in nature.

The regulation states that prior permission must be obtained for removal and/or relocation of 10 or more trees or palms. For indiscriminate removal and land clearances and EIA and Decision Note is required. The size of the trees and palms that are allowed to be relocated should have more 15feet from lowest point to the crown spread for palms and 8 feet from the lowest point to the trunk to tip of the highest branch for trees other than palms.

The law also states that cutting down and uprooting of the trees shall be made under supervision of the island / atoll offices (in the current context Atoll / Island Councils).

5.4.1.3 Regulation on Management, Use and Control of HCFC Substances, 2010

The HCFC Regulation is developed under the Environmental Protection and Preservation Act (4/93) towards regulating phasing out of import, use, selling of HCFC substances by 2011 and completely eliminating use of HCFC substances in the Maldives by 2020 through controlling importers, registering importers, establishment of a quota system, control

mechanisms for selling, maintenance of import, selling, purchase and service providers statistics.

5.4.1.4 Regulation on Environmental Damage Liabilities, 2011

Under the Environmental Protection and Preservation Act (No. 4/93), the Ministry of Housing and Environment formulated the Environmental Damage Liabilities Regulation in February 2011, which encompasses the basis to avoid environmental deterioration, extinction of biological resources, environmental degradation and avoid wastage of natural resources. The main purpose of this regulation is to stop unlawful activities on environment and adequately implement a fining procedure for violations as well as implement a compensation mechanism on environmental damages. Its Schedules form the basis for levying fines on various environmental components and activities. Hence, the proposed project will be subject to this Regulation for any activity outside of the EIA scope and Environmental Decision Statement.

5.4.1.5 Dredging and Reclamation Regulation, 2013

Regulation on Reclamation and Dredging of islands lagoons (Regulation 2013/R-15) came into effect in April 2013. The regulation requires having permission of EPA on projects requiring alternation of the island, either by reclamation of dredging. Specifically the regulation requires producing scaled-maps of the island before and after the proposed intervention. Special provisions have been made on protected and sensitive area restricting changes to the environment of the islands.

5.4.1.6 Waste Management Regulation, 2013

Waste management Regulation (No. 2013/R-58) is more recent coming into effect on 6 February 2014. The Regulation was gazetted on 05 August 2013. The regulation is provides set of comprehensive guidelines and on collecting, storing, transporting and managing waste as well as management of hazardous waste. The waste management regulation identifies the following areas prohibited from dumping of waste; protected areas under the Environmental Protection and Preservation Act, mangroves, lagoons of islands, coral reefs, sand banks, beaches of islands, coastal vegetated areas of islands, harbours, parks and roads. Additionally, waste management regulation states that those involved in waste management must be permitted by the Environmental Protection Agency.

5.4.2 Other Environment-related Laws and Regulations

Other laws and regulations that have direct bearing to environmental protection include, the Law relating to Uninhabited Islands (Law No. 20/89) and the Law relating to Coconut Palms and Trees of Inhabited Islands (Law No. 21/89), both define the policy with respect to

conservation and use of terrestrial flora and living resources in the Maldives. The Law on Uninhabited Islands provides that trees and plants on uninhabited islands must be planted, cared for and protected by the party entrusted with the management of the island. Both these Acts regulate protection of vegetation, removal of trees and sustainable use of timber. The Law on Uninhabited Islands is implemented by Ministry of Fisheries and Agriculture, and the Law relating to Coconut Palms and Trees of Inhabited Islands is now implemented by Ministry of Home Affairs and Island Councils.

Coral and sand mining in the Maldives is regulated through Regulation of Sand and Coral Mining issued and implemented by Ministry of Fisheries and Agriculture. The Regulation restricts and prohibits mining of sand and coral from certain areas in the Maldives. It also identifies areas where mining of coral and sand is permitted through approval.

5.5 TOURISM LAW (NO. 2/99) AND REGULATIONS

As part of the city hotel development of the proposed project, the Tourism Law and Regulations have to be followed. The Tourism Law recognizes a number of regulations, standards and controls with regard to the development of tourist resorts in an environment friendly manner in the Maldives and is implemented by the Ministry of Tourism, Arts and Culture. Under the Tourism Law the Ministry has developed regulations comprising of important regulatory measures and controls as well as standards including building standards, food and sanitation standards, waste disposal, electricity code, carrying capacity, diving regulation, windsurfing and tourist behavior.

5.5.1 Carrying Capacity

As an important basis for deciding the number of rooms and extent of resort facility development allowed on each resort island, the government has established carrying capacity standards. These are based on several factors including; cutting of trees is controlled so that the natural appearance and façade of the island are maintained and no buildings are allowed to appear above the tree tops, the maximum land area occupied shall not exceed 20% of the total land area. The total development area has been recently changed to 30%.

To preserve the tourist's perception and image of beach orientation, all guestrooms should be facing the beach, with a minimum of 5m of linear beach available in front of each room. Only 68% of the beach length shall be allocated to guestrooms, 20% has to be allocated to public use and 12% left as open space.

5.5.2 Architectural and Design Controls

The design of tourist resorts are controlled so that they are well integrated into the island environment, use local building materials, such as thatch roofs to the extent possible. The use of coral is restricted and the use of imported building materials is encouraged. Coral and sand mining from the resorts and their house reefs are strictly prohibited.

Hard engineering solutions for dynamic coastlines are discouraged and construction of solid jetties and groynes are controlled and shall only be undertaken after conducting an impact assessment study. Design of boat piers, jetties shall be in such a way that these shall not obstruct the current patterns of the island.

5.5.3 Biodiversity Conservation

In order to protect and preserve marine environment a number of measures have been prescribed. Spear, poison and dynamite fishing are strictly prohibited. Net and trap fishing are controlled and confined to certain areas. Removal of shells, juvenile lobsters and lobsters ready to lay eggs are strictly prohibited.

The catching of turtles is strictly prohibited and trade in all turtle products is banned. The commercial exploitation and export of many other marine species are banned. Reef fishing from the resort house reef is also discouraged. Also, as a measure for protecting and conserving marine biodiversity, 25 marine protected areas have been designated and fishing, removal of coral, anchoring and other destructive activities are prohibited.

The Ministry of Tourism recognizes the importance of vegetation in maintaining the natural beauty of the island and there a number of regulations in terms of conserving the vegetation of the islands. These include a limit of 30% of the island for development and a setback limit of 5 linear metres from the vegetation line of the island and that no buildings shall appear above the treetops.

5.5.4 Food, Water and Sanitation

The tourism regulation also requires the restaurants and kitchens of tourist resorts to be structurally sound, clean and properly maintained. Rat proof ceiling and rodent control mechanisms shall be in place in the kitchens and other food handling areas. Hygienic food handling and cleanliness of staff is also encouraged.

According to these regulations, safe and adequate water must be made available and water supplies must be clean and well maintained. Drinking water must be sufficiently disinfected to prevent water-borne diseases.

All catch pits and manholes shall be made water-tight and shall not leak. Stagnant waters shall not be left uncovered for mosquito breeding. Tins, bottles and cans that will hold water shall not be left anywhere. The tourism regulation also specifies that the sewage system shall be installed such that pollution of water supplies, beaches, lagoons, and other areas are prevented. It also emphasizes the need of dispose of sewage and wastewater in such a way that it will have minimal or no implications on the environment of the island and surrounding seas.

5.5.5 Waste Disposal

According to the regulations issued by the Ministry, garbage from tourist resorts shall be disposed of in a manner that would not cause any damage to the environment. All garbage disposed into the sea shall be done as far away into the sea as necessary in order to ensure that it does not get washed onto the beaches of the islands.

All tourist resorts are required to have incinerators and compactors adequate in size to burn and compact all waste materials generated from the resort. It is also important to have bottle crushers to crush glass bottles. Those that lack these facilities are not allowed to operate. Plastic or hygienic bags shall not be thrown into the sea and such materials shall be burnt.
These regulations also require sweep cleaning of the entire resort at least once every day. Refuse is required to be disposed in closed containers and disposed of daily.

5.5.6 Dredging, Reclamation and Other Coastal Activities

The Ministry of Tourism does not encourage hard engineering solutions such as heavy breakwater structures, groynes, solid jetties, seawalls and revetments on tourist resorts of the Maldives in order to ensure the natural environmental qualities of the island are maintained. Clause 15 of the Tourism Regulation requires that such activities shall only be undertaken after approval from the concerned government agencies and through its Circulars CIR/64/96 and CIR-ES/98/07, the Ministry of Tourism has reminded tourist resorts of the need to obtain necessary approvals after submission of EIA reports to the Ministry of Housing and Environment before commencing any coastal development activities.

5.5.7 Construction Practices

All infrastructure development areas in the islands designated for tourist resort developments have to be clearly demarcated and these areas will be inspected by the planning officials of

the Ministry of Tourism. The number of mature trees that need to be felled and the vegetation that needs clearing will have to be noted and prior permission is required for any vegetation clearance.

5.5.8 Regulation on the Protection and Conservation of Environment in the Tourism Industry, 2006

The purpose of this regulation is to protect the environment in the tourism industry and to encourage and facilitate sustainable development of tourism. It is strictly enforced to islands and land areas leased for development tourist resorts and tourist facilities by the Ministry of Tourism.

The key attributes of the Regulation include;

1. Protection of the environment during resort construction where the following activities are subject to prior approval of MOTAC;
    a. Dredging of the lagoon and reclamation of land
    b. Construction on the beach and lagoon
    c. Beach enhancement by pumping sand
    d. Construction of breakwater
    e. Construction of sea wall, revetment and groyne
    f. Dredging of lagoon for safe access
    g. Dredging of reef
    h. Felling trees
    i. Importing and exporting living species
    j. Conducting research of land, sea and lagoon
    k. Demolition of a building or facility
    l. Anything that may adversely affect the vegetation or freshwater lens of the island
2. An environmental impact assessment report prepared in accordance with the Protection and Conservation of Environment Act of Maldives (Law No. 4/93) shall be submitted to the Ministry of Tourism, Arts and Culture prior to the commencement of any construction project or any activity.
3. Protected birds or marine living species shall not be caught or kept in cages or other enclosed space in an island or land leased for the development of tourism.
4. All soils and chemicals used as pesticides and fertilizers imported for use in a tourist resort, Picnic Island, marina or such a place shall be imported after obtaining written permission from the relevant government authority.
5. Waste disposal in tourist resorts, picnic islands, and marinas operating in the Maldives shall be carried out in a manner that would have the least impact on the environment,

and in accordance with the laws and regulations and in accordance with the rules prescribed by the Ministry of Tourism, Arts and Culture.

6. For the purpose of provision of clean and safe water sufficient for use in the resort, every resort shall have a desalination plant. The plant shall be registered with the Environmental Protection Agency in accordance with the "Regulation on Desalination Plants", and shall comply with such regulation in the operation of the desalination plant.
7. Sewage shall be disposed in a manner that is least harmful to the environment.

If any provision of this regulation is contravened by any tourist resort, picnic island, marina, hotel, guest house, or tourist vessel, shall be guilty of an offence, and shall be liable to a fine, taking into consideration the seriousness of the non-compliance, between MRF 1,000.00 and MRF 10,000.00 in the first instance. Parties repeatedly in non-compliance shall be liable to a fine between MRF 50,000.00 and MRF 100,000.00 If non-compliance of a provision occurs more than once, the Ministry reserves the right to revoke the license.

5.5.9 Regulation on Operation of Tourist Guest Houses in the Maldives, 2014

The Regulation on Operation of Guest Houses in the Maldives, which is developed under the Tourism Law (2/99) outlines key operating procedures and standards that must be followed with regards to operating tourist guest houses in the Maldives. The key features of the regulation include;

1. Guest houses in the Maldives can only be operated after obtaining operation permit from the Ministry of Tourism, Arts and Culture. Such permissions are only granted to guest houses developed in private land plots, areas designated and leased by Ministry of Tourism, Arts and Culture and areas decreed by the President and leased by other government bodies for guest house development under Tourism Law (2/99).
2. Permission for operation of guest houses is granted for a period of 5 years.
3. Operational guidelines for tourist guest houses and provision for Employment Regulation for employing staff for guest house
4. Minimum standards and guidelines that need to be followed for provision of guestrooms, guest facilities such as toilets, restaurants, kitchens, and guest services.
5. Provision of firefighting and safety equipment at the premises.
6. Development of a disaster management plan.
7. Provision of local cover insurance.
8. Other provisions such as registration of guests at the guest house, sharing of information, and payment of tourism taxes.

6 EXISTING ENVIRONMENTAL CONDITIONS

This section describes the environmental conditions of Hanimaadhoo and specifically City Hotel development area at north western part of Hdh. Hanimaadhoo Island. The key environmental category of relevance to this project considered includes physical aspects in the project area. The components considered under the category include.

- Data collection Methodologies
- Geography
- Coastal and marine environment around Hanimaadhoo City Hotel development area
- Seawater and ground water quality
- Vegetation

6.1 DATA COLLECTION METHODOLOGY

This EIA draws information from existing resources on the project location as well as field investigations to collect some baseline data. Baseline data are important to fix a reference point from which future trends can be compared with. Various data collection methodologies were utilized to obtain information on the terrestrial and marine ecosystem. Field investigations were conducted to supplement the available data, where it was lacking. Both qualitative and quantitative methods were used to collect data including field surveys, visual observations using photos and videos and interviews with key project personals. This section briefly outlines the data collection strategies that were used and methods of data collection.

Both qualitative and quantitative methods have been used to collect data from the land plot allocated for Hanimaadhoo City Hotel development. Under water assessment was carried out by snorkelling and manta tow. Terrestrial environment was assessed and type of vegetation in the land plot was determined. Ground water was assessed by sampling water from a well in the land plot and the sample was analysed from the laboratory in Maldives Water and Sewerage Company. Island profiles were measured using a dumpy level to assess the beach topography at the land plot allocated for City Hotel Development in Hanimaadhoo Island.

6.1.1 Objectives

The main aim of surveys and assessments was to establish the existing baseline environmental conditions of Hanimaadhoo Island and the land plot for City Hotel development specifically. Environmental monitoring during construction and operation phase of the islands ensures the changes in environment are captured and remedial actions for the observed negatives impacts are addressed in a timely manner. The objectives of the present assessment were:

1. To determine the type and density of flora present in the project area
2. To determine the quality of groundwater of the project area
3. To determine the coastal conditions at the project area

6.1.2 Study Area and Survey Locations

The study area covers the terrestrial environment of the island is given in Figure 11, below shows the ground and sea water sampling locations, beach profile and marine survey locations with their respective GPS co-ordinates

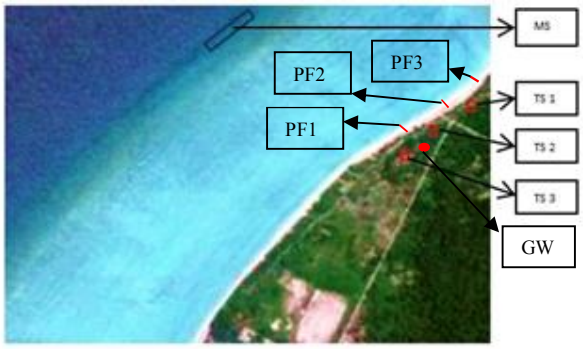


Figure 11: Study area and survey locations, MS = marine survey; TS = terrestrial survey; PF = Beach Profile; GW = Ground water samples

6.2 GEOGRAPHY

The island of Hanimaadhoo is a North-south oriented island located at the Eastern rim of Haadhall Atoll. The reef system hosting Hanimaadhoo Island is an elongated shape reef, which has a length of 6.9 km and width of 1.6km. The reef flat is wider at the western side and the island occupies the eastern half of the reef. The island of Hanimaadhoo is an inhabited island with a population of 1200 people is approximately 6.5m long and 40-700m wide and the with increases towards north. Hanimaadhoo is located at latitude 6.7536^{o} and longitude 73.1737^{o} in North Hadhaal Atoll (**Error! Reference source not found.**). It is approximately 288 km from the capital Male'.

Terrestrial flora Surveys:: In order to understand the vegetation content, qualitative and quantitative methods such as visual assessments, photography and 5x5m terrestrial transects were used during the surveys to collect site-specific information. Faunal presence was assessed by field observation, calls and encounters during surveys.

Marine Environment Assessment: The reef health including live coral cover content and other benthic cover was assessed by manta towing as well as visual assessments along 120-150m reefline parallel to the proposed development on land. The reef extent from the shoreline of the proposed development area is estimated to be 400m. Reef fish was assessed by visual fish census along a 50m transect area

6.3 METEOROLOGY AND CLIMATE

Meteorological observations in Maldives are limited to airports. Observation routinely monitored and measured include, wind speed and direction, daily minimum and maximum

temperature, humidity, cloud cover. Monitoring of sea-level height takes place only in Hulhu(centre), Gan Island (in south) and Hanmiaadhoo (in north) .

Meteorological observations from the Hanimaadhoo, and the climate condition are described below.

The average temperature ranges between 25°C to 30°C and relative humidity varies from 73 – 85%. The annual average rainfall is approximately 1,950mm. Significant variation is observed in the climate between the northern and the southern atolls.

The climate of Maldives is characterized by the monsoons of Indian Ocean. Monsoon wind reversal significantly affects weather patterns. Two monsoon seasons are observed in Maldives: the Northeast (Iruvai) and the Southwest (Hulhangu) monsoon. The parameters that best distinguish the two monsoons are wind and rainfall patterns. The southwest monsoon is the rainy season while the northeast monsoon is the dry season. The southwest monsoon occurs from May to September and the northeast monsoon is from December to February. Table 6 provides a summary of key meteorological findings for Maldives.

Table 6: General meteorological information about the Maldives.

Parameter	Data
Average Rainfall	9.1mm/day in May, November 1.1mm/day in February
Maximum Rainfall	184.5 mm/day in October 1994
Average air temperature	30.0 C in November 1973 31.7 C in April
Extreme Air Temperature	34.1 C in April 1973 17.2 C in April 1978
Average wind speed	3.7 m/s in March 5.7 m/s in January, June
Maximum wind speed	W 31.9 m/s in November 1978
Average air pressure	1012 mb in December 1010 mb in April

6.3.1 Winds

Winds affect sedimentation process both during the formation and development of islands. Winds help regenerate waves that are weakened by traveling over reefs and also cause locally generated waves over lagoons. The average wind speed for the sum of the years (2002-2011) is 9 knots for the entire country and the predominant wind directions are W, WSW and WNW, which is the main feature during the SW monsoon. During the NE monsoon, predominant wind occurs from ENE direction with an average wind speed of 6-7 knots. Thus,

strong winds are associated with the southwest monsoon season. Gales are uncommon, and cyclones are very rare in the Maldives.

The below Figure 12 is a regionalized prediction of wind direction for the Indian Ocean done on www.windfinder.com, which shows that the predominant wind direction during the month of December 2014 will be from the East with a wind speed of 6-8 knots.

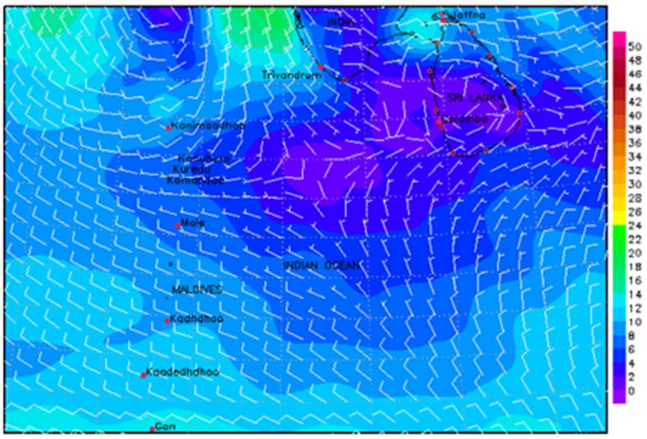


Figure 12: Wind speed and direction prediction for December 2014

Wind conditions in Hanimaadhoo is shown in Figure 13. Winds are predominantly from WNW with average speeds for 10-15 knots. These are Southwest monsoon winds. During the NE monsoon season, winds are from NE and NW with speeds for around 10 knots.

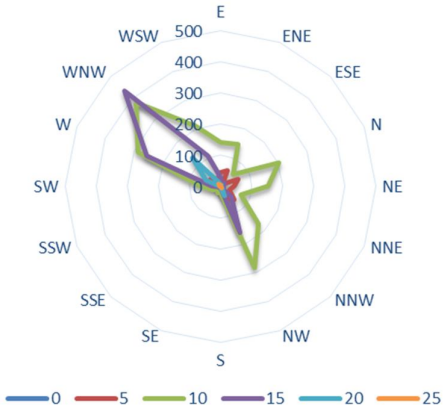


Figure 13: Average monthly wind speed (knot- colours at bottom) and direction for Hanimaadhoo for 2006-2012, data source: Maldives Meteorological Service.

6.4 HYDROLOGY

6.4.1 Currents, Tides and Swells

Tidal currents as well as oceanic currents are felt in the atoll. The exposure of the Atoll to the vast Ocean ensures that an immense body of water is constantly flowing across the atoll. The

currents can be extremely strong in the channels between the reef systems around the atoll especially during ebb and flow into the atoll.

Current speeds of four knots or more have been recorded in the atoll channels in the country. Oceanic currents are largely influenced by the direction of trade winds and can be of great strengths. Tidal currents which flow according the height of the tide and the direction of prevailing wind are much weaker than oceanic currents.

A regionalized swell prediction for the month of December 2014 for the Indian Ocean (Figure 14) done on www.windfinder.com, shows that the areas near the Maldives will experience a swell rage of 1 – 1.5m.

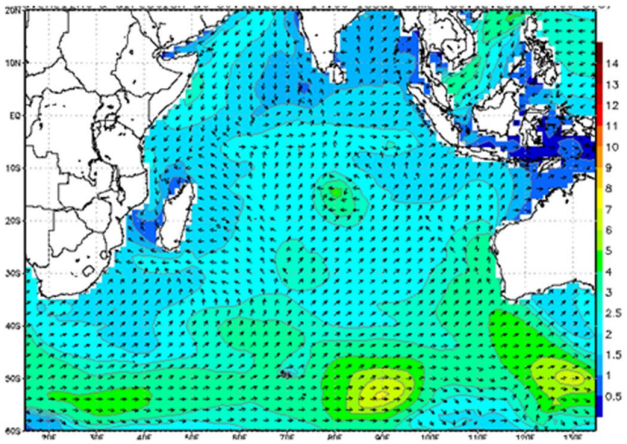


Figure 14: Indian Ocean swells prediction for December 2013 (www.windfinder.com)

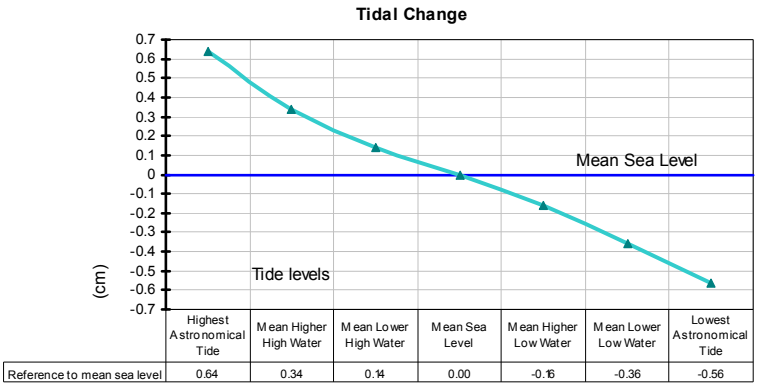


Figure 15: Astronomical tidal variation in Maldives

Like most of the places semidiurnal tides are experienced in the atoll, that is two high tides and two low tides a day. The tide varies from place to place, depending on the location and on the shape and depth of the basin, channels and reefs and also time of the year.

Figure 15 shows the astronomical tidal variation recorded in the country with respect to the mean sea level. Astronomical tides are related to the motion of the earth-moon-sun system, and have a range of periodicities. The highest astronomical tide was recorded as 0.64 cm

above the mean sea level and the lowest astronomical tide was recorded as 0.56 below the mean sea level. Tidal variation of 1.2m from lowest to the highest tide levels were recorded in the country.

6.5 HAZARD VULNERABILITY

The following information on the vulnerability of the islands in the Maldives are taken from published literature such as Developing a Disaster Risk Profile for Maldives by UNDP (2006) as site –specific information on vulnerability of Hanimaadhoo was not available. According to the UNDP (2006) the natural vulnerability of the islands and atolls of the country to potential hazards have been modelled to understand the risk factors of the country.

The disaster risk scenario for Maldives can be described as moderate in general. Despite this, Maldives is among the most severely affected countries hit by the Asian tsunami on December 26th, 2004. Maldives experiences moderate risk conditions due to a low probability of hazard occurrence and high vulnerability from exposure due to geographical, topographical and socio-economic factors.

Following are some of the risks that have been identified and potential areas that may be within the range of risks based on its sensitivity, location, exposure, historic events, etc.

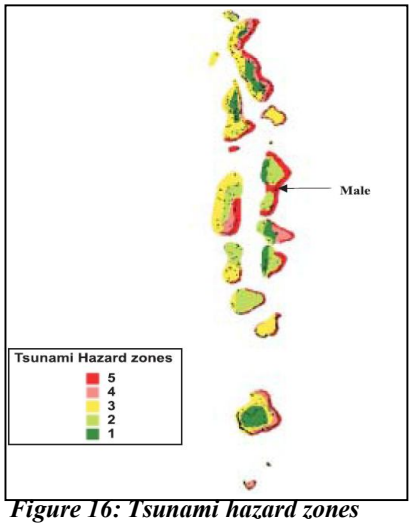


Figure 16: Tsunami hazard zones

The above Figure 16 show that Maldives faces tsunami threat largely from the east and relatively low threat from the north and south. So, islands along the eastern fringe are more prone to tsunami hazard than those along the northern and southern fringes. Islands along the western fringe experience a relatively low tsunami hazard. This map is produced based on the experience of the tsunami in 2004 and also occurrence of historic tsunami events in the greater region where most of the events have identified to have occurred from the Sumatra Region (UNDP, 2006).

Besides heavy rains and strong winds during monsoons, hazardous weather events which regularly affect Maldives are tropical storms or 'tropical cyclones', and severe local storms. At times, tropical cyclones hitting Maldives are destructive due to associated strong winds that exceed a speed of 150 kilometres per hour, rainfall of above 30 to 40 centimetres in 24 hours and storm tides that often exceed four to five meters (UNDP, 2006).
Cyclonic winds sometimes can cause a sudden rise in sea-level along the coast, leading to a storm surge. The combined effect of surge and tide is known as 'storm tide'. Storm tides can cause catastrophe in low-lying areas, flat coasts and islands such as Maldives.

Maldives is also affected by severe local storms- thunder storms/ thunder squalls. Hazards associated with thunder storms are strong winds, often exceeding a speed of 100 kilometres per hour, heavy rainfall, lightning and hail; they also give rise to tornadoes in some regions. In general, thunderstorms are more frequent in the equatorial region than elsewhere, and land areas are more frequently hit by thunderstorms as compared to open oceans. However, thunder storms close to the equator are less violent when compared with those in the tropical regions and beyond. Maldives being close to the equator, thunder storms are quite frequent but less violent here. Strong winds generated by severe local storms generate large wind-driven waves which are hazardous for Maldives (UNDP, 2006).

The islands of Maldives are less prone to tropical cyclones. The northern islands of the country were affected by weak cyclones that formed in the southern part of the Bay of Bengal and the Arabian Sea. The following shows the tracks of cyclones affecting Maldives during the period 1877 - 2004. The number of cyclones directly crossing Maldives is small. Only 11 cyclones crossed the islands over the entire span of 128 years. Most of the cyclones crossed Maldives north of 6.0^{o} N and none of them crossed south of 2.7^{o} N during the period (UNDP 2006).

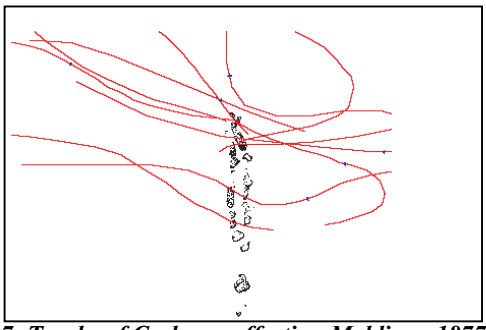


Figure 17: Tracks of Cyclones affecting Maldives, 1877-2004

UNDP (2006) stated that there were 21 cyclonic disturbances within the 500 kilometres radius during 1877-2004, of which 15 were depressions with an average wind speed of about 28 knots. The highest wind speed due to cyclonic disturbances that affected the islands during that time was about 65 knots. The following Figure 18 shows the tracks of cyclonic disturbances that passed through the circle with 500 kilometres radius.

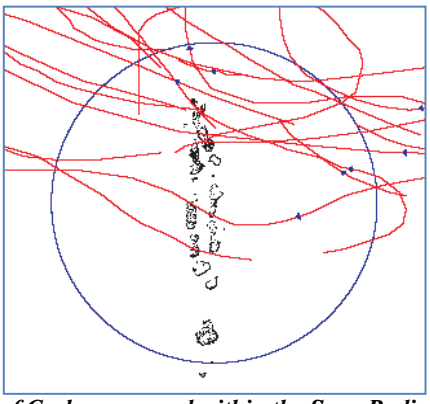


Figure 18: Tracks of Cyclones passed within the Scan Radius of 500 kilometres

Based on the above information, Maldives is divided into zones with varying scales of cyclone hazards based on based on a qualitative judgment based on the gradient of the storm tracks from north to south.

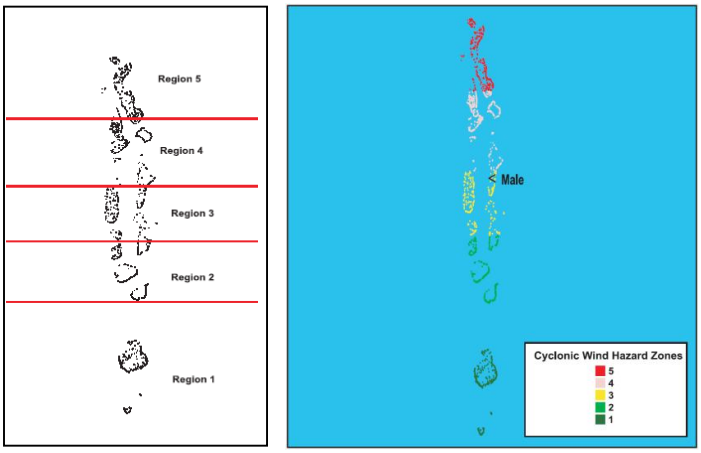


Figure 19: Regions to capture Cyclones passing through Maldives for Hazard Zoning

The above figure shows the regions used to compute the highest wind speed of each cyclone captured within the region. Majority of the cyclonic disturbances crossed the northern region. The frequency and wind speed decreases from northern region to southern region. Region 1 is not affected by any storm. Thus, Maldives can be divided into three cyclone hazard zones – the northern zone with high cyclone hazard, central zone with moderate cyclone hazard and the southern zone with very little cyclone hazard.

With regards to the storm surge potential, the bathymetry around the Maldives shows that the ocean slope close to the east coast is steeper than the west coast, hence it can be generalized that the eastern islands of the Maldives are vulnerable to higher surge hazard compared to the western islands. The following figure shows the bathymetry around Maldives. The next

Figure 20 shows storm surge hazard zones based on computed model with maximum pressure drops for 100 year return period and with historical data (UNDP, 2006).

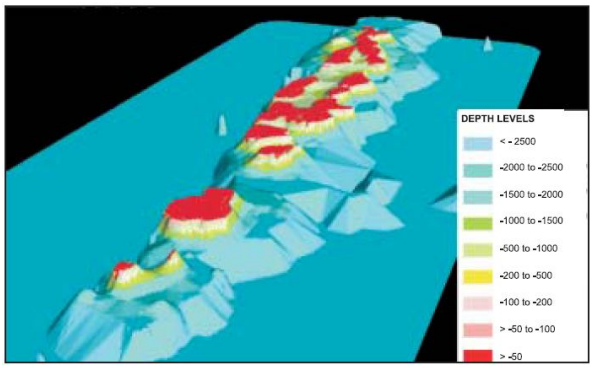


Figure 20: Three Dimensional View of Bathymetry of Maldives (depth in meters)

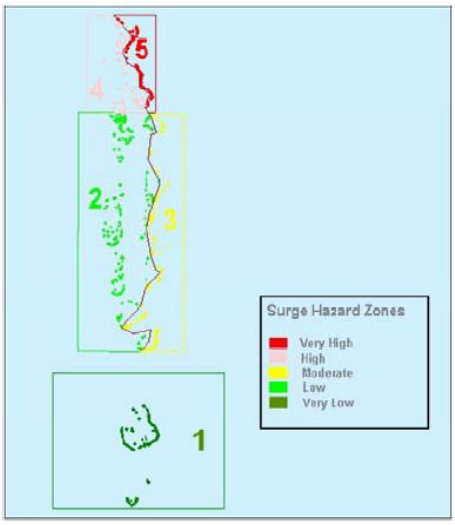


Figure 21: Storm Surge Hazard Zones with Cyclones Affected

Based on the above Figure 21, it can be said that the north-eastern parts where Hanimaadhoo Island is located is very vulnerable to storm surges.

Based on historical catalogues of earthquakes in the region, identifying seismic sources based on this historical information and based on numerical models, it was found that except for Seenu, Gnaviyani and Gaafu Atolls, earthquake hazard is low across the country. The probable maximum Modified Mercalli Intensity (MMI) is estimated between 7-8 in Zone 5. This level of MMI can cause moderate to high damages (UNDP, 2006).

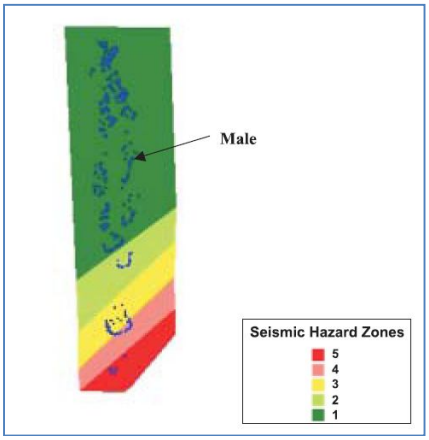


Figure 22: Maldives Seismic Hazard Zones

It can be summarized that the northern parts of the country are vulnerable to cyclones and storm surges while southern parts of the country are vulnerable to seismic activity. The eastern side of the country is more exposed to potential tsunamis and surges.

7 TERRESTRIAL ENVIRONMENT

7.1 FLORA AND FAUNA DATA COLLECTION

This report is based on information collected during site visits to Hanimaadhoo and the area allocated for City Hotel development during April 2014. During these site visits, a number of field surveys and observations were undertaken to understand the existing environmental status flora and fauna of the area. In order to understand the vegetation content, qualitative and quantitative methods such as visual assessments, photography and 5x5m terrestrial transects were used during the surveys to collect site-specific information. Faunal presence was assessed by field observation, calls and encounters during surveys.

7.2 FLORA

7.2.1 Inland Vegetation

H.Dh Hanimaadhoo is a fairly big island having approximately 155ha with thick vegetation mostly consisting of coconut palms and woody trees. The southern part of the island has been developed as a domestic airport, which was recently converted to an International Airport. Almost 50% of the land area on the southern parts occupies airport territories, hence, vegetation clearance and alteration was greatly seen. The settlement of the island is found on the mid-northern parts and is mainly concentrated on the western areas and extending towards north. The City Hotel development is proposed on the north-western parts after the current settlement areas.

Figure 23: Hanimaadhoo aerial view with airport development on the southern parts (left), settlement areas (middle) and area designated for city hotel development on the north (right).

Figure 24: Area allocated for city hotel development (marked in red) and proposed plan for city hotel buildings and facilities within the area

For the purpose of this EIA Report, vegetation assessment was only carried out for the land area allocated for the development of the City Hotel.

It was observed that the main vegetation within the area is fairly intact with coconut palms, *funa, dhigaa, hirundhu* and small amounts of *nika* and *dhonkeyo* as the main cover within the area, which makes up over 50% of the vegetation cover. Historical aerial photos of the area taken in 2006 reveal that the area has been previously used for various purposes, most probably for small-scale agriculture with large patches of the land cleared. Also, it was observed that more land has been cleared from vegetation in 2012 within the area allocated for city hotel development.

Figure 25: Cleared patches evident in 2006 with main roads and narrow pathway in the island periphery (left); more land clearance evident in 2012 near the cross road area (right).

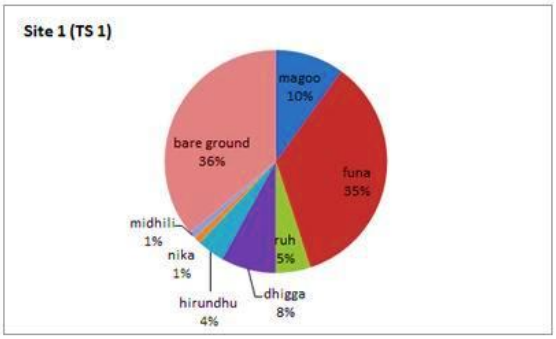
In order to assess the vegetation content of the city hotel development site, three 5x5m vegetation quadrats were taken from three different locations and the percent cover of vegetation within the quadrat was estimated.

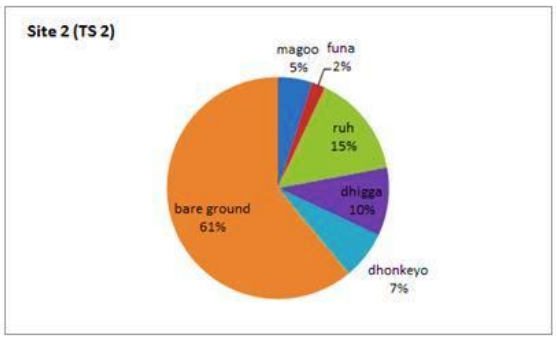
Figure 26: Survey area (left) and survey sites within the city hotel area (right), MS = marine survey; TS = terrestrial survey

In order to identify the existing status of trees and vegetation found within the area, 3 vegetation transects have been undertaken to collect data. All 3 transects have been placed within the boundary of the city hotel, hence to understand in detail the vegetation content of the area.

Except for the coconut palms and few *funa, dhigga* and *hirundhu,* most of the vegetation found on the site is fairly young with *magoo, uni* as well as *funa, hirundhu* and *dhigga.* The cover of young vegetation found on the site exceeds 20%. Other types of vegetation that are sparsely distributed on the site include *kaani, boashi, kashikeyo, dhonkeyo,* and *midhili* are found in a very small content. It was observed that the vegetation of the site has been greatly altered or to a great extent used by the local communities probably for collection of fire wood, wood and timber as well as for undertaking agriculture in small areas.

Site 1 (TS 1) was at the far end of the city hotel boundary, Site 2 (TS 2) was located by the planned guest room units and Site 3 (TS 3) was located by the planned restaurant area on the southern side of the boundary.





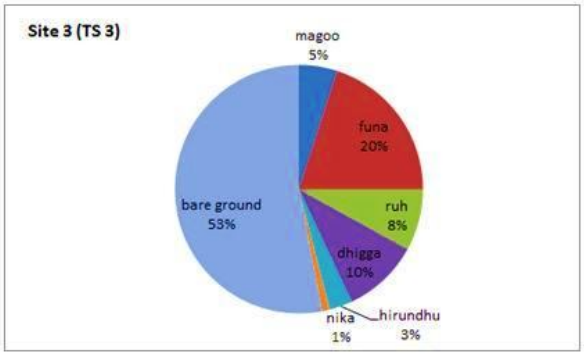


Figure 27: The main vegetation content at the three selected sites (TS 1, TS 2 and TS 3) based on the vegetation survey.

The main vegetation content at Site 1 was identified to be *funa* and *magoo* having 35% and 10% respectively. The vegetation cover at Site 2 had *ruh* and *dhigaa* as the main cover having 15% and 10% respectively. The vegetation at Site 3 had 20% *funa* and 10% *dhigga* as the main vegetation cover.

All the survey areas had large areas of bare land that exceed over 30% in Site 1, over 61% in Site 2 and over 53% in Site 3. This is mainly because land clearing, mainly underbushes have been undertaken for setting out of the city hotel facilities as well as for project mobilization and construction of a mockup guest unit. It was observed that no mature vegetation or trees or even coconut palms have been removed from the site. The setting out has been undertaken with incorporating mature trees and coconut palms.

Figure 28: Key vegetation characteristics at Site 1 (top left), Site 2 (top right), Site 3 (bottom left) and setting out without removing major vegetation (bottom right)

Figure 29: Some of the vegetation content within the city hotel boundary with kashikeyo, nika, ruh and funa

7.2.2 Coastal Vegetation

The vegetation found on the coastal environment is highly specialized and are adapted to withstand regular exposure to waves and sea spray. Thus, they are highly salt tolerant and have the tendency to withstand such conditions for prolonged periods. The coastal vegetation found at the site is typical of any other island found in the country, where *magoo, boashi, kuredhi* and *kashikeyo* compose the main content.

Figure 30: Coastal vegetation by the coastline of the city hotel mainly consists of magoo, kuredhi, boashi and to some extent kashikeyo.

7.3 FAUNA

The country does not support a rich terrestrial biodiversity due to the small size of the islands and absence of favorable environmental conditions such as thick forests, rich soils and various habitat types. Nonetheless, the animals and insects found in the country are very much unique to the islands due to the geographic position of the country completely separate from the continental land masses or the Indian subcontinent.

Not much terrestrial fauna have been observed from the site. Some of the animals found from the site are common crabs, lizards and spiders. Birds that are commonly found in the Atoll appear to be visiting the site, including common crow, fruit bats, herons and some visiting shore birds. Birds that are resident in Hanimaadhoo Island include Maldivian waterhen, crows and koel.

7.4 SPECIAL HABITATS AND SPECIES

As far as habitats are concerned on the terrestrial environment of the site, it does not have a unique or a special feature that has high value for conservation. Since the site has been previously used, the environment of the site has been altered to some extent. The trees and vegetation found from the island is typical of any other island in the Maldives.

However, some of the birds that are unique to the country and are protected by the Environment Protection and Preservation Act of Maldives (Law No. 4/93) have been observed from the island. These include; Maldivian waterhen, Asian koel and Maldivian crow. Other important animals found on the island include the only native mammal found in the Maldives, the common fruit bat.

7.5 GROUNDWATER ASSESSMENTS

The measurements of nine water quality parameters were obtained from the land plot allocated for city hotel development. The measurements are presented in (Table 7). The pH values of the sample is 7.6. Based on health considerations, the guidance value of 50 mg/L for nitrate has been set to protect infants. However, nitrate level up to 100 mg/L can be safely consumed by adults and children over three months of age. Based on these references, the present nitrate levels in the groundwater sample at the city hotel area is not likely to pose a health risk as the nitrate levels as the nitrate level recorded from the sample is 9.0 mg/L. High level of nitrate in the sample may be attributed to the fact that the area allocated for hotel development was used for agricultural purposes in the past. Therefore use of fertilizers in the area might have contributed to increase the nitrate level in the water. The obtained values for salinity for all the samples were well below the recommended value. For sulphates it is generally considered that taste impairment is minimal at levels below 250 mg/litre. The sulphate level indicated from the water sample obtained from Hanimaadhoo city hotel area is 325 mg/l which exceed this recommended value. According to the present levels of inorganic constituent in groundwater, they are not likely to have direct consequences to health. Nevertheless, concentrations of certain inorganic constituents in the groundwater is such that, the island's groundwater may be objectionable to some consumers for drinking purposes based on taste, odour and for aesthetic reasons. Based in this analysis ground water of Hanimaadhoo city hotel development site is safe to use for all purposes.

Table 7: Ground water quality test results for Hanimaadhoo Island. Original test results are attached in (Error! Reference source not found.)

	W4 (Ground)
Physical appear.	Pale yellow
Total suspended solids	<5(LOQ5 mg/L)
Total dissolved solids	4900 mg/L
Salinity	5.51 %
pH	7.16
Elec. Conduct.	9840 µs/cm
Nitrate	9.0 mg/L
Phosphate	0.91mg/l
Sulphate	325 mg/L

7.6 BEACH PROFILES AND COASTAL DYNAMICS

Beach material around in the City Hotel development area is a wide sandy beach with uniform material. The beach consists of fine-medium grained coral sand and biogenic material derived from the reef typical to low energy environment.

3 beach profiles were taken from the beach area that belongs to the city hotel. The area has a wide sandy beach with high berm and with gentle slopes. Signs of erosion were observed from the northern part of the city hotel beach. Figure 11 shows the location of profiles and Table 9 shows the geographic coordinates of profile location and profile line bearings. Measured beach profiles and the photographs of the profile locations are in Figure 31.

Table 8: Geographic coordinates of beach profile locations and bearing of profile lines

Profile #	Easting	Northing	Bearing
Profile 1	73.17918 °	6.773112 °	150 ° -335°
Profile 2	73.18054 °	6.773926 °	135 °-340°
Profile 3	73.18138 °	6.774485 °	120 °-305°

Figure 31: Beach profiles of the city hotel

8 MARINE ENVIRONMENT

8.1 CORAL REEF DATA COLLECTION

The proposed City Hotel development in Hanimaadhoo does not have major developments proposed to be undertaken in the marine environment. Only a small jetty having approximately 40m will be constructed within the nearshore environment, hence, environmental impacts in the marine environment from the proposed development are envisaged to be minimal.

The reef health including live coral cover content and other benthic cover was assessed by manta towing as well as visual assessments along 120-150m reefline parallel to the proposed development on land. The reef extent from the shoreline of the proposed development area is estimated to be 400m. Reef fish was assessed by visual fish census along a 50m transect area

8.2 GENERAL REEF CHARACTERISTICS

Hanimaadhoo Island is found in a large elongate single reef system having approximately 7km in the length and 1.6km in the width. The reef has a NE – SW orientation. The reef narrows to the north and widens to the south. However, although the island has somewhat the same orientation, it widens on the north and narrows on the south forming a narrow tail-like island formation curving from the SE corner and extending to the south.

It is not the scope of this report to undertake reef assessments on the entire island reef, hence, the reef assessment was only limited to the marine environment in close proximity to the proposed city hotel development. The following account only describes the general coral reef characteristics of the surveyed area.

The reef on the NW side of Hanimaadhoo is characterized by a large reef flat having approximately 50-70m in the width and a very large lagoon having approximately 290-310m in the width. The average depth of the reef flat is about 1m and the lagoon is about 1.5m. The reef crest is found at a depth of about 2-2.5m. The reef slope is observed to be slanted with the upper portion having the most live coral, while the lower portion (below 10-15m) are mostly covered with dead corals, sand and aged rocks.

Live coral is mostly found on the upper reef slope, crest and to some extent on the reef flat. Both the upper reef slope and the reef crest are characterized by new coral formations and young coral colonies mostly belong to Acropora. The reef flat is characterized by large dead corals, rubble and dead corals covered with algae. The visibility of the reef is greatly affected by sedimentation that is believed to be generated from the harbor area on the south. The visibility at the time of the survey was estimated to be around 5m. The diversity of marine life is observed to be generally low at the area surveyed.

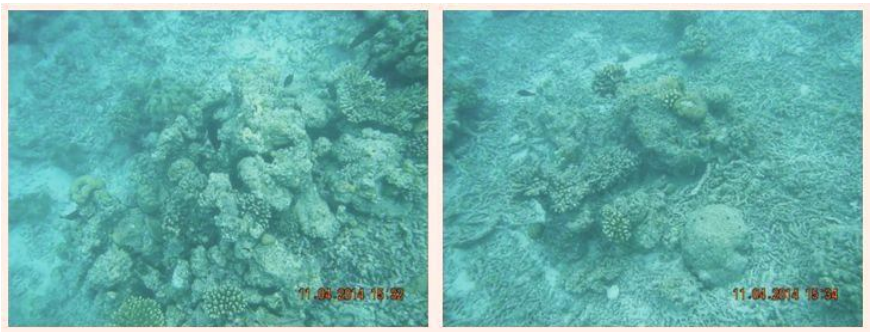


Figure 32:The main reef composition found on the reef flat area with dead corals, rubble, sand and few young Acropora corals.

F*igure 33: The reef crest had slightly more live coral cover and some diversity including seafans (left) and soft coral (right) as well as young corals is found.*

Figure 34: The upper reef slope is found to have the most live coral cover with many young coral of Acropor and Pocillopora

8.3 REEF HEALTH

Key aspects that have been taken into consideration for determining reef health was percent live coral cover and reef fish abundance as well as cover of other marine benthos and organisms such as soft corals, coral encrusts, algae, seacucumber, etc.

8.3.1 Coral Cover

Live coral cover in terms of percentages has been estimated during the manta tow survey with estimating number of counts of the main reef composition. In this regard, live coral cover along reef flat, reef crest and reef slope was estimated.

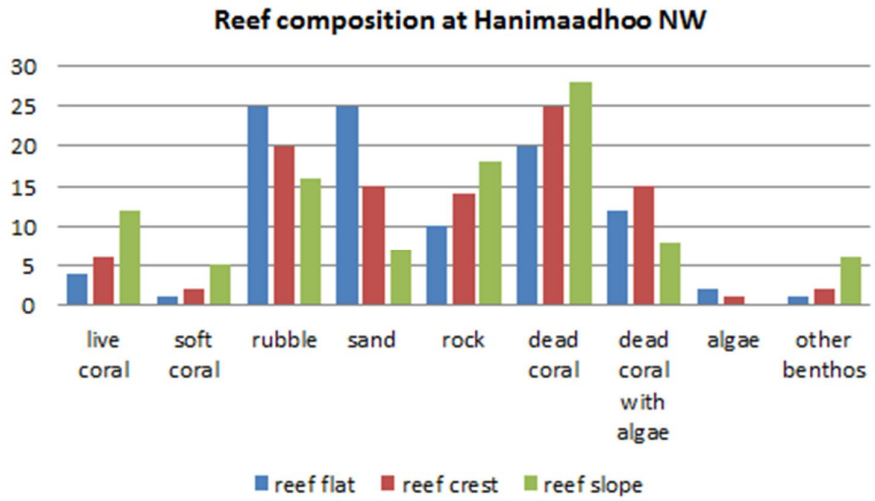


Figure 35: The reef composition at Hanimaadhoo NW

The live coral cover was generally low except for the upper reef slope where the live coral percentage estimated was 12%. The reef flat and the reef crest had 4% and 6% live coral cover respectively. Soft corals were also found in the three areas surveyed with the highest cover on the upper reef slope having 5% cover. Some very large soft corals were found in the area. High content of rubble, sand, rock, dead coral and dead coral covered with algae were observed on all the areas except for sand cover on the upper reef slope. Other benthos such as seafans, seacucumber, sponges, etc were highest on the upper reef slope having 6% cover.

8.3.2 Reef Fish Abundance

Most significant marine life of the reef system is the variety of fishes inhabiting the different habitats within the reef system. Abundance and diversity of selected families of fishes which are most commonly found in day time were estimated by visual fish census at the 3 sites surveyed in the reef.

The reef fish assessment was carried out by visual fish census along a 50m transect based on the reef crest area where number of fish encountered during the survey from the reef flat area and the slope were counted. The fish was not assessed to the species level as the abundance and diversity found was somewhat low. Only general categories such as damsels, angelfish, butterflyfish, wrasses, parrotfish, surgeonfish, unicornfish, goatfish, snappers, groupers, triggerfish were applied.

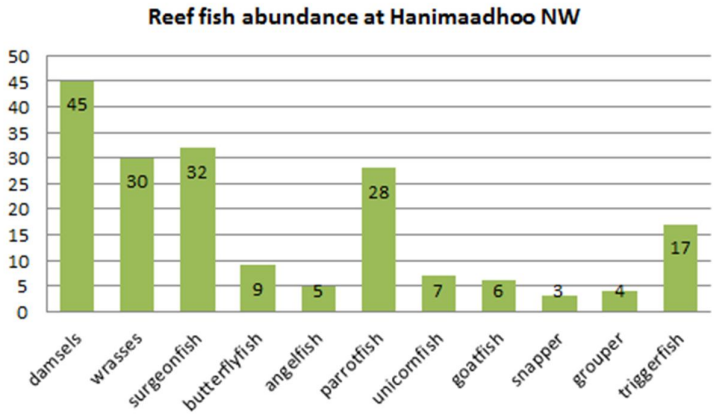


Figure 36: Reef fish abundance and diversity at Hanimaadhoo NW

The highest number of fishes was found from damsel, wrasse, surgeonfish as well as parrotfish and triggerfish. Both parrotfish and triggerfish were found in schools. The reef fish abundance and species diversity generally reflects the condition of the reef. Low numbers of butterflyfish and angelfish indicate that the reef that the reef generally has a lower level of live coral covers. Also, higher numbers of surgeonfish and parrotfish indicate that the reef has a high algal content has these fish feed on algae to a great extent. The current fish abundance and diversity found at the time of the survey may have affected the low levels of visibility as a result of sedimentation at the time of the survey.

8.3.3 Marine Water Quality Tests

A seawater sample from the lagoon of Hanimaadhoo City Hotel land plot was obtained and analysed at the MWSC laboratory (Table 9). Seawater sample can be used as a reference for post development water quality monitoring purposes

Table 9: Water quality test results for Hanimaadhoo City Hotel. Copies of the test results are given in (*Error! Reference source not found.* **).***

Parameter	W1
Physical appear.	Clear
Total suspended solids	5<(LOQ5 mg/L)
Total dissolved solids	26500 mg/L
Salinity	34.60 $^{o}/_{oo}$
pH	8.07
Hardness	
Magnesium.	5230mg/l
Conductivity	54300µs/cm

8.4 PROTECTED AREAS AND ECOLOGICAL SIGNIFICANCE

Currently there are no Marine Protected Areas (MPAs) in the vicinity of Hanimaadhoo, hence potential impacts to protected areas from the proposed city hotel development is negligible. Also, the reef around the island is not known to be significant in terms of protected biodiversity and spawning and breeding areas. Thus, the proposed development will not pose a risk or threat to the significant marine environment that are of high concern.

9 SOCIO-ECONOMIC ENVIRONMENT

9.1 POPULATION AND GEOGRAPHY

H.Dh Hanimaadhoo is a fairly large island with a fever population. According to Census carried out in 2006, the population of Hanimaadhoo was 1,184 with 583 males and 601 females. The total number of households on the island was 229 and the average household size was 5.2. The annual population growth in 2006 was estimated to be 2.7%, which is the highest for Haa Dhaalu Atoll and also one of the highest in the country. Ages between 26-64 years dominate the population structure of the island having 431 persons and the sex ratio was identified to be 97. It is estimated that the current population of the island will exceed 1,375 as per the population growth rate identified in 2006. The island has a higher literacy rate having almost 95%.

Hanimaadhoo is a focus area for various development activities including the recently announced International Airport, opportunities for agricultural, tourism, trade and other commercial opportunities, a number of people from different parts of the Atoll as well as other areas from the Maldives may have migrated to the island looking for various economic opportunities. This may be the main reason for having a higher population growth rate.

9.2 ECONOMIC ACTIVITIES

9.2.1 Fisheries and Agriculture

The main economic activities of Hanimaadhoo are fishing, agriculture, tourism and trade. There are about 3 large fishing vessels belonging to the island and a number of smaller fishing boats and trailing boats. Hanimaadhoo can be regarded as an agricultural island with a number of people engaged in the activity. Some of the agricultural products such as bananas, tomato, lettuce, papaya are produced locally and are also brought Male' local market. Also, there is an established agricultural center on the island for the purpose of developing agriculture and training people. The center is operated by the Ministry of Fisheries and Agriculture.

9.2.2 Tourism and trade

Tourism is a booming industry in Hanimaadhoo with 4 guesthouses and a planned city hotel as well as other guesthouses. A large area having 1,400m long has been declared as a tourism development zone by the President in 2013. The current city hotel is within the tourism zone and there are other opportunities for similar development in the zone. Also, there are a number of ongoing tourist resort development projects in nearby islands such as Hondafushi, which is expected to start operation in December 2014. Tourism sector creates good employment opportunities for the people of the island and contribute greatly to the local economy. Also, the tourism sector is expected to further develop with direct international flights from India and Sri Lanka.

As a result of direct and fast access to the island by having regular connectivity to Male', the trade sector in the island was identified to be generally good. There are over 30 shops and stores selling daily goods, general goods, garments, groceries and pharmaceuticals. With further development of the tourism sector, the trade sector is also expected to be developed with more outlets added and more people engaged in the activity.

9.2.3 Infrastructures and utilities

Some of the key infrastructures on the island include a large harbor and the international airport as well as 2 schools and a health center. The highest education level provided from the island is up to GCE O'level. Development of a number of housing units on the island are currently underway as part of providing housing for relocated populations affected by tsunami of 2004. Over 100 housing units have already been completed by the Island Expert Pvt. Ltd., and a few are currently been developed.

The power is provided by the FENAKA Corporation, who has the mandate for providing utility services such as water, sanitation and electricity to a number of islands. A sewerage system and a waste management system has been planned to be developed on the island by the Island Expert Pvt. Ltd. who will play a major role in developing the systems as part of a CSR component in lieu of the proposed city hotel development. Currently, there are no desalination plants on the island for supplying of freshwater to the residents, hence, the main source of drinking water on the island are rainwater and bottled water.

Hanimaadhoo Zuvaanunge Jamiyya, a local NGO is working on a number of issues for supporting the local communities in the areas of development and environment for the betterment of Hanimaadhoo.

10 POTENTIAL IMPACTS AND MITIGATION MEASURES

Various methods are available to identify the extent, magnitude and significance of socio-economic and environmental impacts of a development project, for instance checklists, matrices, expert opinion, modelling etc. Impacts from various activities of the proposed project both construction and operational phases have been identified through consultation with the project management team, field surveys, observations and assessment, as well as based on field experience and expert opinion on similar development projects in the country.

Other sources of information have been used wherever possible. Data collected during field surveys can be used to predict outcomes of various operational and construction activities on the various related environmental components. Data presented in this report can also be used as a baseline for environmental monitoring of the project activities.

Possible impacts arising from the construction and operation works are categorized into reversible and irreversible impacts. Reversible and irreversible impacts are further categorized by intensity of impacts (negligible, minor, moderate and major) for identifying best possible remedial (mitigation measures) action to be taken. Below are the impact categories

- **Negligible:** the impact is too small to be of any significance (Reversible)
- **Minor:** the impact is undesirable but accepted (Reversible)
- **Moderate:** the impact give rise to some concern but is likely to be tolerable in short-term, or will require value judgment as to its acceptability (May or may not be Reversible)
- **Major:** the impact is large scale giving rise to great concern; it should be considered unacceptable and requires significant change or halting of the project (Irreversible)

Severity of impact is assessed by reviewing the engineering design, detailed site plan as well as comparison of development with the existing environment and construction methodologies employed. Mitigation measures are derived based on the site specific assessment as well as similar project elsewhere in the Maldives. Impact identification matrix is provided in Table 10. Potential impacts and their mitigation measures and detail discussion is in the following sections. *Table 11* gives a summary of impacts their reversibility and significance.

Table 10: Impact Identification matrix

	Construction phase Activities								**Operational phase Activities**	
Impact	Site setup and mobilization	Work force	Vegetation clearance	Earthwork and foundations	Concrete waste and disposal	Equipment and vehicle operation and maintenance	Sewage and waste	Demobilization	Operation and Management of city hotel	Tourist activities
Noise										
Dusting -Air Quality										
GHG emission										
Coastal process										
Terrestrial flora										
Ground water										
Soil										
Marine water										
Hydro dynamics										
Marine habitat flora & Fauna										
Employment										
Socioeconomic										
Health and Environment										

(-) Negetive impact (+) Positive impact (X) no impact

10.1 IMPACT IDENTIFICATION

The following section describes in detail and discusses the main potential environmental impacts that have been identified and predicted for the proposed city hotel development on north western end of Hanimaadhoo Island. Identified potential impacts are divided into construction phase and operation phase environmental impacts.

10.2 LIMITATION/UNCERTAINTY OF IMPACT PREDICTION

The methods used to predict and evaluate the environmental impacts that may be associated with the proposed city hotel development may not be the most comprehensive as they are quite simple methods. The main shortcoming of these methods is that impacts are predicted by reviewing the survey data collected during the field visits and information revealed by the designers and engineers, therefore the assumptions have been made to predict the impacts

which may or may not be accurate. Also, the data collected during the field visit is limited, which subsequently limits the overall understanding of even the short term environmental conditions. Nonetheless, within the time limitation of EIA field data collection and report preparation the methods used are concise and provide a general overview as well as the range of impacts that can affect the environment.

10.3 IMPACTS AND MITIGATION MEASURES CONSTRUCTION PHASE

Construction phase can be considered as the period in any developmental project that causes major direct and indirect long and short-term impacts on the environment. Anticipated potential direct and indirect environmental impacts from the proposed city hotel development is includes the following:

- Mobilization of Equipment and Labour
- Marine habitat and coastal environment
- Ground water extraction
- Noise, Vibrations and Air Pollution
- Loss of Flora and Fauna during construction
- Equipment & vehicle maintenance
- Impact from waste
- Installation of water, powerplant,
- Socioeconomic impacts

10.3.1 Impacts from Mobilization of Equipment and Labour

Heavy machinery equipment and material needed for the hotel development will be transported to Hanimaadhoo Island via barges and cargo boats. Hanimaadhoo harbour can access and accommodate large vessels and barges this will minimize the physical damage to the reef that may cause if barges carrying heavy equipment and material tried to access the land plot allocated for city hotel development from the sea.

A temporary workforce of around 50-100 persons will be stationed on the site during the initial stages of construction activities. Most of the workforce would be located on the site while locals from the island will be transported back-and-forth from residence in the island on daily basis.

One of the most important environmental impacts may be generated from improper sewage and waste disposal mechanisms. Raw sewage may harm the marine environment as a result of contamination, which may cause an increase in coliform levels in seawater, eutrophication and coastal water pollution. Such impacts have potential in threatening the survival of both coral and fish communities found in the reef environment.

Improper and inappropriate methods of domestic waste such as home and kitchen garbage, construction waste such as cement, iron and concrete as well as other waste such as paints, wastewater and waste oil disposal will impose serious implications on the environment through various negative impacts. The most significant impacts associated with such waste disposal on the island environment range from reduced aesthetic beauty of the of the island

and reef environment, marine pollution to water quality degradation, increased sedimentation and turbidity as well as changes in the reef community structure.

During constructions, a number of construction machinery will be used on the site including loaders, concrete machines, earth moving vehicles, pickups, cranes, etc. which may have direct impacts on the island including compaction and cracking of the ground due to the heavy load. In addition to environmental damages, use of construction machinery generates sound, vehicular emissions and dust, may however, temporary in nature.

Mitigation Measures:

- Construction areas should be clearly marked and fenced.
- Large trees and vegetation that needs to be retained must be clearly marked and communicated to the construction workers.
- Signs should guide workers to proper environmental care.
- Use water transported from Kulhudhuffushi for potable water
- Special arrangements should be made to use the existing harbour for loading and unloading.
- The supervisor should check compliance of the workers to the environmental guidelines set for the project including avoidance of removal of unmarked vegetation, proper waste management, marine water pollution and ground water pollution.

10.3.2 Marine habitat and coastal environment

Direct impact to Hanimaadhoo marine and coastal environment associated with the city hotel development project will mainly be from construction of arrival jetty related work. Direct impact of this activity is limited to Hanimaadhoo lagoon only and to the island. This includes:

- Loss of habitat in jetty construction area
- Physical damage substrate habitats particularly bottom dwelling and burrowing organisms: The effect of this would be in the immediate to short term with the loss of substrate and its fauna.
- Change of near shore hydrodynamic and longshore current pattern
- Degradation of sea water quality due to turbidity
- Sedimentation and associated impacts
- Physical disturbance of the lagoon substrate will result in loss of habited for some lagoon infauna such as polychaete amphipods, worms, and mollusks etc.

Mitigation Measures:

A range of possible outcomes is expected as have been mentioned. The most important mitigation measure is to monitor the area and respond to the changes in the coast line.

In order to minimize the impact from sediment, jetty construction work should be completed in shortest time possible. Conducting the work during low tides or slack tides will minimize the release of sediment to the area and reduce the impacts associated with it.

10.3.3 Ground Water Contamination

Vegetation removal work and earthwork will require the operation of heavy machinery which may involve accidental spill of oil and toxic substances. Such an event will contaminate the groundwater.

In the Maldives, groundwater contamination is an irreversible impact due to the absence of impermeable layers to separate the freshwater lens in independent reservoirs. Accordingly, any point sources of pollution would cause the contamination of the entire island groundwater resources. If human consume such contaminated groundwater, it may lead to serious health risks leading to increased public and private health costs. Furthermore, contamination of groundwater may affect the urban population of Hanimaadhoo island who entirely depends on ground water for their daily consumption. Therefore, special care should be taken when handling oil, solid waste and hazardous waste to entirely avoid any accidental spills and leakage.

Mitigation measures:

- All paints, lubricants, and other chemicals used on site will be stored in secure and bunded location.
- Oil, solid waste and hazardous waste will be handled carefully and transported in sealed containers in properly bunded vehicles/vessels
- Construction activities will be carried out under the supervision of a suitably experienced person.
- Vessels, equipment and machinery used for the work should be properly maintained at all times during the operation.
- Littering and accidental disposal of any construction wastes can be avoided by pre-planning modalities for waste disposal or re-use wherever possible. Careful planning of the work activities can also reduce the amount of waste generated.

10.3.4 Noise, Vibrations and Air Pollution

During the mobilisation of equipment and operation of heavy machinery for vegetation removal, also the construction method adopted for city hotel construction requires use of heavy machinery such as cranes loaders, lorries etc., it is anticipated that significant noise will be generated during the construction period. Furthermore, noise vibrations may alter species behaviour. In addition, dust and emissions from vehicle and machinery exhausts will degrade the air quality. However, these adverse impacts will be short term and can be mitigated to avoid nuisance to the urban population of the island. Therefore it is very important that the contractor communicates construction and heavy vehicle operation times to the public. Also the contractor should refrain from operating the machinery late hours of

night and early hours of the morning. With proper mitigation measures, it is unlikely that noise and air pollution impacts will cause long term effects such as human health risks leading to increased public and private health costs.

Hanimaadhoo climate observatory is located very close to the city hotel development area. The scientific equipment in the observatory continuously records air quality of the area and aerosol partials. The equipment in the observatory are very sensitive and air pollution from burning of waste and vegetation will record abnormal readings. Therefore it is very important to coordinate and communicate with the observatory on work schedules of city hotel construction and keep them informed particularly while conducting work that will generate excess amount of dust and smoke related work.

Mitigation measures:

- All construction works will be carried out during day time to minimise nuisance to the urban population of the island and disturbances caused to nocturnal fauna such as birds and fruit bats that uses auditory communication.
- All vehicles and machinery will be tuned and well maintained to minimise air pollution
- To minimize dust from construction works close to the fish processing plant, ground/soil will be kept damp.

10.3.5 Loss of Flora and Fauna during City Hotel construction

Vegetation clearing is the most significant environmental impacts associated with the city hotel development project in Hanimaadhoo Island. It is anticipated that 4920.25m2 are will be cleared for construction of buildings. This is about 18% of the total area allocated for city hotel on the north western end of Hanimaadhoo Island. This loss is irreversible as the area has to be left cleared for the rest of the hotel operation period.

- Loss of vegetation means, loss of fauna that depend on those vegetation. Such species include birds, rats, fruit bats and invertebrates.
- Degradation of the topsoil due to exposure to sunlight and heavy rainfall.
- Changes to the vegetation regime of the island. The dominant species on the island will be replaced by busy vegetation, grass and creeper varieties.
- Equipment mobilisation for the proposed project may require additional vegetation clearance on the sides of the roads, noise pollution and dust pollution on the island.

Mitigation measures for loss of species:

- Most of the large and mature trees removed will be replanted elsewhere in the land plot
- The developer plans to replant large tree lost from the activity. Extensive landscaping activity will be carried out in the vegetation cleared areas that are not used for construction.
- Measures are taken to ensure at least 70% of the replanted trees to survive at the new sites. Monitoring of these sites will have to ensure that the target is achieved.

- Vegetation clearing will be only done for the trees that will require clearing. Any trees that can be retained will be retained.
- Strict guidelines and construction monitoring is required during the vegetation removal stage to ensure that every single large tree could be replanted.
- All clearing works will be carried out during day time to minimise disturbances caused to nocturnal fauna such as birds and fruit bats that uses auditory communications.

10.3.6 Greenhouse Gas Emissions

Vegetated areas are known to act as carbon sinks for greenhouse gases particularly carbon-dioxide. The proposed project involves clearing of vegetation during site preparation. However, the removed large trees are planned to be replanted in other islands.

10.3.7 Equipment & vehicle maintenance

All sorts of motorized equipment, from generators to trucks, requiring fuel, lubrication and maintenance will be used on the construction site. Many will be fitted with lead batteries. Therefore the potential will exist on the site for spillage and contamination of the soil and the sea by hydrocarbons as well as the careless disposal of batteries.

Mitigation measures:

- Confine vehicle maintenance to specially prepared areas with impermeable pads.
- Ensure changed engine oil is collected in drip pans and stored in covered drums until it can be properly removed from the site for appropriate disposal
- Ensure used batteries are properly stored and kept under cover.

10.3.8 Impacts from Waste

Inappropriate disposal of construction waste or remains of earth work or temporary waste mounds on vegetation could destroy them or will cause significant negative impact on the environment. Often construction activities generate large amounts of construction waste and disposal of such waste material into the island and surrounding environment often pollutes the island environment. Disposal of construction material such as cement, concrete, oil, paint, cleaning agents will damage both flora and fauna found on the island as well as will contaminate the groundwater lens of the island. Groundwater pollution negatively impacts the environment by deteriorating the flora and fauna of the island. Additionally, disposal of construction waste into the immediate surrounding marine environment will pollute the marine and coastal waters as well as will have direct and indirect consequences on coral reefs and associated habitats. For instance, corals and reef fish may instantly die off as a result of severe pollution. Strict measures will be followed and implemented on generation, disposal and monitoring of solid waste during the construction period. Solid waste, waste water and sewage generated by the workforce may affect the groundwater and general terrestrial environment of the island

Mitigation measures

- Regular transportation of the waste to the island dumpster on daily basis and eliminate any potential accumulation in the island.
- All hazardous and dangerous waste such as fuel, empty paint buckets, broken glass etc., will be separated and transported to island dumpster on daily basis.
- Contractor will be required to train staffs to ensure appropriate and efficient separation of solid wastes at the point of source;
- A solid waste reduction strategy will be implemented with the goal of decreasing the amount of packaging materials arriving on the island, with specific attention to cans, bottles, and plastics.
- Containment and control of waste
- Daily waste clean-up, collection, containment, removal and disposal
- Awareness of potential waste issues among employees and workers
- Commitment to good solid waste management practice

10.4 POTENTIAL POSTIVE IMPACTS

10.4.1 Positive socio-economic impacts

Socio-economic impacts of city hotel development in Hanimaadhoo can be summarized largely as beneficial for the Maldives and nearby atolls and islands and particularly for the people of Hanimaadhoo Island. Direct benefit of the hotel development in Hanimaadhoo to the nearby islands and atolls in general and people of Hanimaadhoo in particular, include creation of employment opportunities during construction and operational phase of the project, increased income, improved services and flow of much needed foreign currency into the economy. The following direct and indirect benefits are identified for the Maldivians particularly for Hanimaadhoo and islands nearby in the following economic sectors.

- Agriculture: market for locally grown fruits and vegetables
- Fisheries: market for local fishermen engaged in lobsters, reef fish and tuna
- Employment: Temporary (50-100 job opportunities during construction period) permanent (over 80 jobs during operational phase)
- Travel and Trade: development of business opportunities in organizing excursions, fishing trips, establishing souvenir shops and other services for guest
- Creation of conference and seminar related tourism in northern part of Maldives
- Cultural promotion: opportunity for locals to perform in the hotel (eg: Kulhudhuffushi, Baarah, Hoarafushi etc.)

Overall city hotel development in Hanimaadhoo will increase government revenue and contribute to expansion of service industries as direct benefits of the project. Indirect benefits of the project include improvement of public facilities and infrastructure, general

improvement of social conditions and service industry activities in Hanimaadhoo Island, in addition to the increased national tourism and economic infrastructure.

10.4.2 Negative socio-economic impacts

Northern end of Hanimaadhoo reef is one of the popular reef fishing grounds for locals particularly leisure fishing folks and visitors to the island. Restriction imposed in, association with city hotel development, on using northern end of Hanimaadhoo for such activities in the future may raise resource use conflict between local population and hotel.

The land plot allocated for city hotel development was used by the locals for agricultural purposes to grow mainly banana and other fruits. Although the land has been taken by the government after compensation to the tree owner, hotel development in Hanimaadhoo will reduce accessible space available for agricultural purposes in the island.

Mitigation measures:

- Arrangements and understandings should be reached beforehand to avoid conflicting situations.

10.5 OPERATIONAL PHASE IMPACTS

Impacts associated from operations of the hotel will generate the greatest concern on the environment of the island. This is mainly due to the continuous activities associated during the operations of the hotel, which will probably last for the entire duration of the project, and will continue to generate impacts for lasting periods. Such impacts are characterized as long-term impacts.

10.5.1 Use of water & resource depletion

Operation of the hotel implies a net increase in water usage due to better services and increased number of visitors to the hotel will mean an increase in the demand for water resources. The hotel should put the following water conservation devices or technologies in place.

Mitigation measures:

- Provide adequate water storage facilities to ensure adequate supplies for the hotel.
- Install aerators/flow restrictors on all taps
- Install water filtration and treatment systems in guest accommodations
- Install low flush and dual flush toilets.
- Install water efficient taps in bathrooms, toilets and operational areas such as kitchen and laundry
- Install high quality water efficient showerheads in all guest showers
- Collect grey-water separately from sewage effluent and re-use for irrigation.
- Install gutters and collect rainwater from building roofs and store for grounds irrigation.

10.5.2 Use of electricity

Main source of electric power needed during construction and operation of City Hotel will be provided by FENAKA who operates powerhouse in Hanimaadhoo and provides electricity for the island. Electricity needed for the city hotel during day time will be produced using solar panels installed on roof tops of all buildings of the hotel. Total capacity of electricity generation from solar panels installed in the City Hotel will be 250 Kilowatts. The powerhouse of the city hotel will contain 2x100 kVA generator set for backup only. Therefore unlike other islands environmental impact related to power generation and operation of powerhouse and subsequent negative impacts associated with greenhouse gas emission will be minimized. However the e following mitigation measures will be adopted in the hotel.

Mitigation measures

- Incorporating and improving energy management and conservation practices.
- Sub-meters and real-time energy monitoring equipment, timers, photoelectric cells, thermostats, etc. should be installed in the room blocks and other facilities.
- Install translucent shades and fluorescent lighting.
- Pipe insulation, tank lagging (not asbestos!) and heat recovery systems should be installed wherever it is practical to do so.
- All lighting in the hotel will be energy saving light bulbs
- Energy efficient Inverter type air conditioner system with ozone friendly refrigerants will be used for the air conditioning of the buildings/areas such as the guest rooms, kitchens, guest facilities, laundry and staff accommodation
- All air-conditioning ducts and condensation pipes will be insulated as appropriate.
- Electrical machinery will also be energy efficient machinery.
- Waste oil from the generators will be collected and incinerated appropriately.

10.5.3 Solid waste management & disposal

Inadequate methods of solid waste disposal during the operation of the hotel will generate a number of impacts on the island. For instance, waste such as garbage, plastic bags, glass and plastic bottles, aluminum cans and other discarded items will generate marine pollution in the surrounding area, which in turn will have detrimental impacts on coral reefs as well as on reef fish populations. Also, such pollution can be seen on the island as well as washed onto the beaches of the island if not properly taken care of, thus, the island will become aesthetically unattractive, which can tremendously affect the prime use of the city hotel. Poor waste management at the hotel would lead to unsanitary conditions including vermin and fly infestation, odours and unsightly conditions. However, garbage management and good housekeeping will be practiced at the hotel and potential issues related to improper solid waste storage will therefore be avoided. It is anticipated that dedicated hotel waste will be transported to Hanimaadhoo waste management area on daily basis. Construction of a waste management system for the Hanimaadhoo community is included as part of the infrastructure development project associated with the city hotel development project.

Mitigation Measures:

- A designated waste collection and management area will be established in the hotel
- The proponent will establish and integrated waste management plan for the hotel once its operational
- Ensure all waste management equipments required by the Ministry of Tourism are put in place and maintained in working order and dedicated waste management staff be employed by the hotel management and EPA waste regulation is strictly followed.
- Awareness raising among guests are conducted on ways to reduce and avoid solid waste
- Dustbins for collection of different types of waste will be placed on various locations including public areas, kitchens and restaurants, etc.
- Waste materials that are not segregated at the source will be manually segregated at the waste management area.
- Metals, glassware, plastics, paper and organic waste like leaves and twigs will be separated from other materials.
- Metals such as tins and cans will be compacted at the waste management area
- Glass bottles and other glass items will be crushed using a bottle crusher and will be taken out of the island for final disposal at Hanimaadhoo waste management area.
- Paper will be separated from other organic material as it can be more readily recycled into fresh paper.
- Hazardous waste such as used appliances that contain some degree of harmful chemical waste like battery acids and heavy-metals and other chemical and medical waste will be contained in closed containers and will be periodically transported to Hanimaadhoo dumpster.

10.5.4 Boating activities

Sea transport activities will increase with the commencement of hotel operations, which are used for guest transfer by sea, daily diving trip and excursions and to bring supplies for the hotel. Intense boating activities have proven chronically detrimental to marine environment especially coral reefs both resulting from direct and indirect impacts such as physical damage to the benthos especially to corals through anchor damage and littering by boat crew and indirectly through disturbing the lagoon bottoms especially in shallow areas.

Small usually insignificant amounts of oils will be released from operation of boats in and around the arrival areas. Leaching of antifoulants, maybe insignificant given the flushing rates in the boating areas, but will be considered as an issue in the long-term. Boat grounding and anchor damage to the reef are potential risks especially in bad weather conditions and boat operations at night.

Mitigation measures:

- All supply boats and dive boats should be equipped with trash bins within easy reach and requested to use of trash bins.
- Crew members as well as passengers should be made aware of that littering to the marine environment is strictly prohibited.

- Effluent from toilets should not be discharged while boats are moored, anchored or close to the island.
- Appropriate safety measures and care should be taken during refuelling boats to avoid any spillage of oils.
- Mooring facilities should be provided to avoid any possible anchor damages to corals and benthic organisms.
- Codes-of-practice for boating should be formulated and implemented. Environmental awareness of boat crew and passengers should be raised on environment friendly practices.
- Mooring buoys should be installed in the reefs used for recreational fishing by tourists to avoid anchor damage.
- Reefs used for night fishing activities should be regularly cleaned of broken fishing lines and any litter.

10.5.5 Tourist activities SCUBA & snorkelling - misuse of coral reef resources

One of the greatest and highly significant impacts on the marine environment is imposed by tourist activities during the entire operation of the hotel, which have both direct and indirect effects. As a large portion of the tourism in the Maldives are marine-based, most of the tourist-related activities and its implications on the environment are somewhat foreseen due to the current state of experience and knowledge gained from the past.

Recreational diving and snorkelling are major tourist activities in the resorts. Studies have shown that approximately 26% of the tourist arrivals in the Maldives were divers and an estimated 1200 dives were performed per month per resort which is 14,400 dives per year per resort. Also studies have shown that over 5000 divers per site per year will deteriorate coral reefs.

The increased demand for tourist boating can also damage coral reefs by anchorage from diving boats and safaris. The most susceptible corals to anchor damage are those of the branching varieties as they are highly fragile. In addition to physical damage, boats can cause chemical pollution of the reef environment. Corals can resist floating pollutants, but high concentrations of compounds that dissolve easily in seawater are a threat. In addition, tourism development increases demand for souvenir collection, which can lead to commercial collection of large number of marine organisms ranging from shells, corals to reef fish.

Mitigation measures:

- Provide educational and environmental sensitization material on coral reefs for guests and for hotel staff.
- Promulgate user guidelines.
- Install boat mooring buoys for use of dive boats and ban boat anchoring on coral substrate.
- Ban collection of coral reef souvenirs.
- Institute and support coral reef monitoring programmes.

10.5.6 Mosquito fogging

Hotels in coastal areas where mosquitoes are prevalent often use insecticide foggers as a technique to control the pest populations. This of course kills other beneficial insects, such as butterflies, as well. This causes a serious negative impact, especially in a situation where it is desirable to encourage and maintain butterfly populations.

Mitigation Measure: Use trapping as an effective and alternative method to control mosquito populations.

Table 11: Summary of impacts their reversibility and significance.

Impact	Reversibility	Significance
Noise pollution: Operation of vehicles, machineries during site preparation, excavation and earthwork.	Reversible	Insignificant – short term
Dusting and air quality degradation: negligible level of air and dust emissions during operation of machineries and vehicles at project site.	Reversible	Insignificant – short term
GHG gas emission in atmosphere; from vehicles operation will results in negligible increase in GHG emission in the atmosphere.	Reversible	Insignificant –short term
Contamination of marine environment; During jetty construction work sediment plumes are anticipated to be generated. This will degrade the overall quality of marine water. In addition, there is possibility of accidental spillage of fuel to the sea.	Reversible over time	Insignificant low level of sedimentation
Increased turbidity and sedimentation-caused by installation process of the jetty, this will result in smothering of coral and loss of substrate habitat infauna and corals	Reversible over time	Insignificant low level of sedimentation
Vegetation Clearance: loss of fauna that depend on those vegetation. Degradation of the topsoil Changes to the vegetation regime of the island	Reversible over time	Short term Moderately significant change in terrestrial hebitat
Social impact: Creation of employment opportunities; Increased lagoon space for local recreational activities	NA	Significant temporary employment Long term socio-economic improvement

11 ALTERNATIVES

11.1 NO DEVELOPMENT OPTION

Considering the current pace of resort development in Ha, H.Dh. and Shaviyani Atoll and passenger movement through Hanimaadhoo Airport and the difficulties people of this area have in transport of guests to ensure that the passengers can travel back to the country without missing the flight there is a definite need to develop a transit City Hotel in Hanimaadhoo Island. This hotel will provide airport transit accommodation and facilities for Hanimaadhoo' International Airport, additional three star quality tourist bed capacity and opens up the northern part of the Maldives for small-medium conference tourism.

It is believed that a number of environmental impacts will be generated from the proposed development of a City Hotel in Hanimaadhoo Island. Although no impacts on the environment will be associated if the proposed development of the hotel does not go ahead, the development of the city hotel will bring numerous benefits. Some of these benefits include socio-economic benefits as well as environmental and socioeconomic benefits to the island and people. In terms of socio-economic benefits, the proposed city hotel will bring socio-economic development, create jobs and improve living standard of people of Hanimaadhoo and the northern region. City hotel development in Hanimaadhoo will also contribute to meet current and projected bed capacity needs in the Maldives to reach the strategic targets outlined in the 4th Tourism Master Plan 2013-2017 and generate much needed foreign currency and contribute to the economy through tax revenue and annual rent.

Also, the environmental benefits are numerous with the proposed city hotel since environmental matters will be given important status such as environmentally-friendly design, technology and practices for environmental protection. Given the range of benefits that the proposed development of the hotel will bring to the local economy and people, the proposed development project has been considered important.

11.2 DEVELOPMENT OPTION

Having decided and followed the development option city one has to consider the alternative options in Hanimaadhoo city hotel that would have least environment impact. Following have been considered for the alternatives.

11.2.1 Alternative layout and design

There are a number of possible alternative layouts for the proposed development of the city hotel; however, considerations has been given to the maximum land use and preserve the existing trees and minimise vegetation clearance which will have more impacts on the island. Thus, the proposed development has been very much integrated with the island environment by giving important consideration during the layout of the city hotel to reduce impacts from the proposed development.

The layout does not have allocated space for waste collection and management center. Despite the fact that waste will be directly transported to the island dumpster, it is

recommended to allocate space for waste collection and management which will serve as a waste collection and segregation area prior to transportation to Hanimaadhoo dumpster.

Space allocation for the front of the house facilities such as reception, restaurant, and kitchen are very large, readjustment and reallocation of space could be considered to save space for future developments.

The proposed jetty is directly connected to the kitchen and restaurant area, it is envisaged that the guest arriving from the neighbouring resorts through the sea transport will have to go through the kitchen and restaurant area which might be the best vies of the hotel for the arriving guests. Therefore it is suggested to move the jetty further north to give access to reception area.

12 MONITORING

Environmental monitoring is essential to ensure that post-construction and operational impacts are known and eliminated in a timely manner. Dealing with impacts earlier would save money and also help planning and operationalize the process.

The parameters that are most relevant for monitoring the impacts that may arise from the proposed project are included in the monitoring plan. These include ground water (pH, dissolved oxygen, electrical conductivity, total oil (Hydrocarbon) and faecal coliforms), water quality (turbidity, dissolved oxygen, phosphates, nitrates and BOD), sediment deposition. Also are the shoreline changes that may occur due to the medium to long term impacts from the changes in coastal processes.

Shoreline, Beach Profiles and Coastal Process:

Parameter	Indicators	Baseline / Reference Values	Method / Technique	Frequency	Estimated cost in USD
Shorelines (high / low tides)	Beach morphology	Baseline to be re-established immediately after construction is complete	Differential GPS	Bi-annually in the first two year and yearly thereafter	400/ trip
Beach profiles	coastal changes	Requires to re-establish the baseline following the construction	Beach profile surveys	Bi-annually in the first two year and yearly thereafter	400 / trip
Currents	Nearshore currents	Baseline to be collected immediately constructions are over, especially on western side	Drogue survey	Bi-annually in the first two year and yearly thereafter	400/trip

Reef Surveys:

Parameter / Method	Frequency of Monitoring	Purpose	Estimated cost (USD)
Benthic cover by major life forms (live, dead, rock rubble and sand)	Annually	Indicative of the changes in the live coral cover	150/trip
Fish population / visual census	Annually	To assess broad scale change in the ecological status of the coral reefs (increase / decrease of herbivores, etc)	

Water Quality:

Type	Parameters	Locations	Frequency	Estimated cost (USD)
In situ monitoring / sampling and testing from a laboratory	Dissolved oxygen Turbidity (NTU) Nitrates Sulphates COD TDS	All locations marked	Bi-annually	500/ set of tests

12.1 MONITORING COSTS

It is understood that costs of monitoring be borne by the airport operator and the developer of the Hotel. It is also understood the mitigation measures would be accommodated in the contract costs. A commitment letter confirming compliance on mitigation measures is given in **Error! Reference source not found.**.

13 STAKEHOLDER CONSULTATION

The stakeholder consultation undertaken for this EIA report as decided at the Scoping Meeting included Hdh. Hanimaadhoo council and people of Hanimaadhoo in general. The procedure adopted for the consultation was that first a letter was first sent to the respective president of Hanimaadhoo council explaining the project and requirement for the consultation. It was through this contact point the meetings were organized in various islands.

Meetings were held in Hanimaadhoo Council office and the invitation to attend the meeting was open to everyone interested in the development project. It is therefore assumed NGOs and community groups attended the meeting. The full list of participants at the meetings is in **Error! Reference source not found.**. At the meeting, the project was introduced and plans for construction were presented. Following that, the floor was opened for the questions and questions were responded, either with the help of political appointees or by the Consultant's team.

Notes were kept for the each meeting. Major concerns raised by the council members from Hanimaadhoo are:

1. Absence of proper documentation from the council office regarding the processes agreement and other documentation from the council office. The present council is newly elected in February 2014. All the procedures and communications relating to the boundary of City Hotel land plot, bidding and lease agreements were signed by the previous council members at their tenure in office. Therefore the present council is claiming that proper documentation of the is not properly filed at the council office.
2. The council mentioned that infrastructure development projects, waste management and school construction are part of the CSR component of the project as informed by the previous council member to the people of Hanimaadhoo Island. Discussions with the proponent revealed that infrastructure development projects will be developed from the five years advance land rent payments as per the bid proposal. The agreement signed between Hanimaadhoo City Hotel Pvt.Ltd and the government of Maldives (represented by Hanimaadhoo Council) does not clearly specify how the infrastructure development projects will take place (**Error! Reference source not found.**).
3. The Major concern of the council is, as they claim, that the northern boundary of the city hotel has been shifted south and therefore the council is losing land from the southern end of the land allocated for tourism development. As per the council member the total length of the land allocated for tourism development on the north western side of Hanimaadhoo is 2400 feet of which 1600 feet long beach area is leased to develop City Hotel. The interest of the Hanimaadhoo council is to lease the remaining 800 feet long beach area for guest house development to generate revenue for the council. Therefore the issues is as they claim, since the proponent has shifted northern boundary to of the city hotel to the south, part of the remaining 800 feet land allocated for tourism development is reduced substantially.
4. Hanimaadhoo council is at the opinion that they have the obligation and legal right to oversee all the activities including minor details that are going on in the land plot allocated for the city hotel development. So based on this understanding of the council they regularly go into the premises of the city hotel without prior information or permission from the proponent. These actions of the council has unease the relationship between the council and the developer. We strongly believe that the agreement signed between the developer and the government of Maldives does not give such an authority to Hanimaadhoo council. Also ethically it is not acceptable to enter premises of someone else land without their permission and this could be considered trespassing.

5. During the scoping meeting, EPA raised the issue of the land plot allocated for city hotel development which falls within the 500 meter boundary of the Climate Observatory located on the northern end of Hanimaadhoo Island. As per EPA the government has a signed an agreement with foreign parties to not to undertake any developmental activities within 500 meter boundary of the Climate Observatory. At present the northern boundary of city hotel land plot is 150 meters away from the climate observatory. If 500 meter boundary of climate observatory rule is applied and the land plot allocated for city hotel is shifted 500 meters south city hotel land plot will fall within the urban areas of Hanimaadhoo. During the consultation with Hanimaadhoo council and the developer this issue was raised. Hanimaadhoo council is reluctant to give away land from the island without an income revenue to the council. The developer is ready to shift southwards provided that they will be given agreed amount of land area from the southern end of the land plot allocated for city hotel. This issues needs to be resolved through consultation with government ministries, Ministry of Housing and Infrastructure, Ministry of Tourism, Ministry of Energy and Environment and the President's office.

13.1 SUGGESTED RECOMMENDATIONS

Strengthening the local council's administrative procedures is vital for the success of developmental projects. Record keeping and proper filling procedures, availability and accessibility to the documents, should be continued from the previous council to newly elected councils. Unavailability, inaccessibility of documents and lack of understanding of the work done by the earlier island council should not hamper the developmental activities. Councils should respect the agreements and communications done by the previous councils and unavailability of proper documentation is not a responsibility of the developer and should not be a reason to jeopardise the whole development process.

It is equally important for the incumbent council members to understand the agreements and communication conducted by the previous council prior to interacting with the developer on various terms of the agreement by the previous council.

The existing misunderstanding on the land plot allocated for city hotel development should be resolved through consultation with various stakeholder including government ministries and council as soon as possible.

Roles and responsibilities of island councils on the various development projects must be clearly defined and unauthorised access and trespassing to the land allocated for city hotel development must be stopped immediately.

14 CONCLUSIONS

The environmental impact assessment study for the 41 bed three City Hotel development project on H.Dh Hanimaadhoo Island found based on the assessment that the development will bring minor-moderate negative environmental impacts during the construction and operational phase of the project. The most significant environmental impacts associated with the project are:

Terrestrial environment (earthwork for construction and vegetation clearance)
Marine habitat and coastal environment (jetty construction)

Of these a long term impact would be vegetation clearance. Fortunately clearance area is not extensive only 4920m^2 this represents only 18% of the total land area allocated for city hotel development. However, impacts on the terrestrial environment are likely in the immediate and short term. Based on the scale of infrastructure and development and work projects that is taking place in Maldives at the time of this writing, impacts associated with city hotel development in north western side of Hanimaadhoo is insignificant.

The report has assessed and presented major finding of the ongoing work at the land plot allocated for Hanimaadhoo city hotel development following a report by Hanimaadhoo council during the EIA scoping meeting that the developer has already started construction and site clearance work prior to EIA approval.

The study has evaluated alternative options for the project activities and has suggested that the path proposed in this EIA report is the best option as it is moderate and environmental impacts is minimal with significant socioeconomic benefit. The report has come-up with an extensive monitoring programme that will keep on monitoring the environmental changes associated with the development and make necessary adjustment to the activities of the project based on the findings of various measured environmental parameters suggested in the monitoring plan.

The report has identified the following beneficial effects form city hotel development in Hanimaadhoo:

- Increased direct employment and training opportunities;
- Improvements in environmental quality of the island;
- Stimulation of local economy, cultivation and small business opportunities within the nearby island communities; and
- Increased government revenue and increased GDP.

The report found no evidence that the city hotel development in Hanimaadhoo requires or involves any of the following environmental or socio-economic impacts.

- loss of unique habitat or wilderness areas;
- resettling of local communities;
- removing or destroying cultural properties;
- contravening national government of the Republic of Maldives, or island community policies, regulations, criteria, customs or aspirations concerning environment, economy, employment, cultural traditions or life styles.

On the basis this environmental impact assessment study and the impact mitigation measures proposed in the report will be duly implemented and recommendations are given due consideration, it is concluded that the benefits of the planned city hotel development in Hanimaadhoo Island will substantially outweigh its imposition on the environment.

15 REFERENCES

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16 ANNEXES

Annex 1: Approved Terms of Reference (ToR) for the Project
Annex 2: Hanimaadhoo City Hotel lease agreement
Annex 3: Approved site plan and detail drawings
Annex 4: Letter from Hanimaadhoo Council which gives permission for site mobilization
Annex 5: Laboratory results of sea and ground water analysis
Annex 6: Commitment letter from the proponent
Annex 7: List of Attendees at the stakeholder consultation meetings

Annex 1: Approved Terms of Reference (ToR) for the Project

Environmental Protection Agency

EPA/TOR/2014/43

Terms of Reference for Environmental Impact Assessment for a City Hotel Development in Hanimaadhoo,Haa Dhaal Atoll

The following is the Terms of Reference (ToR) following the scoping meeting held on *07/04/2014* for undertaking the EIA of the proposed City Hotel development at *H. Dh Hanimaadhoo*

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 and rationale** –Describe the purpose of the project and, if applicable, the background information of the project/activity and the tasks already completed..Objectives of the development activities should be specific and if possible quantified. Define the arrangements required for the environmental assessment including how work carried out under this contract is linked to other activities that are carried out or that is being carried out within the project boundary. Identify the institutional arrangements relevant to this project. .

2. **Study area** – – Submit a minimumA3 size scaled plan with indications of all the proposed infrastructures. Specify the agreed boundaries of the study area for the environmental impact assessment highlighting the proposed development location and size. The study area should include adjacent or remote areas, such as relevant developments and nearby environmentally sensitive sites (e.g. coral reef, marine protected areas, special birds site, sensitive species nursery and feeding grounds).Relevant developments in the areas must also be addressed including residential areas, all economic ventures and cultural sites

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

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

   The main activities of the resort development are:

   - Land clearance (up to 20% of island vegetation);
   - Jetty construction;

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- Infrastructure construction including power house, water desalination plant, sewerage plant, oil storage tanks, waste management facility and hardware workshop;
- Construction and operation of accommodation, restaurants, spa, sports and marine centre facilities (include an A3 land use map);
- Environmental monitoring during construction activities;
- Measures to protect environmental values during construction and operation phase;
- Project management (include scheduling and duration of the project and life span of facilities; communication of construction details, progress, target dates, construction/operation/closure of labour camps, access to site, safety, equipment and material storage, fuel management and emergency plan in case of spills)

Land clearance:

- Define the total area of cleared vegetation;
- Methods of clearance and vegetation waste disposal.

Jetty Construction:

- Justification for the selection of these locations;
- Method and equipment used for Jetty Construction;
- Justification for selecting the methods and equipment;
- Duration;
- Labour requirements and (local) labour availability;
- Housing of temporary labour, and
- Emergency plan in case of spills (diesel, grease, oil)

The EIA report should investigate possibilities for alternatives:

- Operation and positioning options;
- Other available alternative options

Water desalination plant:

- Location, desalination capacity, technology and water quality monitoring system;
- Pipeline construction methods, scheduling and drawings;
- Justification for the location of the water intake and brine outfall pipelines;
- Emergency water supply plan.

Power supply plant and oil storage:

- Location and size of generators and facility;
- Fuel transportation technique and volume required;
- Cooling water system including cooling pipe location (if any) and justification;
- Emergency power supply plan;
- Low energy consumption ventures and awareness.

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Sewerage plant:

- Plant location, capacity and justification;
- Water collection points and pipeline drawings;
- Describe operations for dewatering excavations for pump stations and sewer trenches;
- Describe rain water collection and mechanisms used to avoid pipe leakages protecting ground water contamination;
- Discharge water quality testing system, leakage detection system and emergency plan;
- Justify outfall site selection including the distance from the reef and depth of the pipe using oceanographic and ecological information. Currents and waves ought to quickly disperse the discharged water with little to no impacts on marine ecosystems and economic activities. Illustrate the extent of the sediment plume. The public and stakeholders should support the location of the outfall site.
- Describe equipment needed and construction methods for laying the offshore pipeline including handling transportation.
- Detail solid waste disposal mechanisms, equipment used and periodicity (how often?).
- Specify materials, equipment, heavy machinery, staff estimate (quantity and period of time), key personnel positions, intermittent technical expertise required;
- Specify an emergency plan if system fails.

Waste management facility:

- Location justification, carrying capacity, materials to be collected and equipment required for waste reduction and recycling;
- Transportation mechanisms and costs;
- Recycling ventures and awareness activities within the resort.

Jetties:

- Location justification, capacity and design;
- Construction methodologies activities.

Vents and chimneys:

- Identify any building that may need to have vents/chimneys
- Identify compositions of the air comes out from the vents/chimneys identified
- Identify the mitigations measurers required for reducing the aerosols from the vents/chimneys

Temporary facilities:

- Construction methods, scheduling and operation of temporary facilities including power generation, oil storage, water supply, waste water treatment, accommodation facilities, waste management and decommissioning.

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Absence of facilities in the country to carry out the water quality tests will not exempt the proponent from the obligation to provide necessary data. The report should outline the detailed methodology of data collection utilized to describe the existing environment.

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

The baseline data will be collected before construction and from at least two benchmarks. All survey locations shall be referenced with 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:

**There is a description of the specific data collection requirements attached in the appendix of this TOR template.*

Climate

- Temperature, rainfall, wind, waves, evaporation rates (including extreme conditions)
- Risk of hurricanes and storm surges;

Geology and geomorphology

- Offshore/coastal geology and geomorphology (use maps);
- Bathymetry (bottom morphology) (use maps);
- (Seasonal) patterns of coastal erosion and accretion (see appendix for monitoring details), and
- Characteristics of seabed sediments to assess direct habitat destruction and turbidity impacts during construction;

Hydrography/hydrodynamics (use maps)

- Tidal ranges and tidal currents;
- Wave climate and wave induced currents;
- Wind induced (seasonal) currents;
- Sea water quality measuring these parameters: temperature, pH, salinity, turbidity, sedimentation rate, phosphate, nitrate, ammonia, sulphate, BOD and COD.

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Ecology

- Identify marine protected areas (MPAs) and sensitive sites such as breeding or nursery grounds for protected or endangered species (e.g. coral reefs, spawning fish sites, nurseries for crustaceans or specific sites for marine mammals, sharks and turtles). Include description of commercial species, species with potential to become nuisances or vector.
- Benthic and fish community monitoring around the island (see appendix for monitoring guidelines);
- Landscape integrity, and
- Include ground water monitoring (See appendix for parameter healthy ranges);

Socio-economic environment

- Demography: total population, sex ratio, density, growth and pressure on land and marine resources;
- Income situation and distribution
- Economic activities of both men and women (e.g. fisheries, home gardening, fish processing, employment in industry, government);
- Seasonal changes in activities;
- Land use planning, natural resource use and zoning of activities at sea;
- Accessibility and (public) transport to other island;
- Services quality and accessibility (water supply, waste/water disposal, energy supply, social services like health and education);
- Community needs;
- Sites with historical or cultural interest or sacred places (mosques, graveyard).

Hazard vulnerability:

- Vulnerability of area to flooding and storm surge.

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.

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

Impacts on the natural environment

- Loss of terrestrial vegetation and fauna from land preparation works;
- Impacts on marine habitats including damages to coral reefs, fish stocks, protected areas and protected species;

- Changes in erosion/sedimentation patterns, which may impact shore zone configuration/coastal morphology;
- Temporary sediment dispersal in water column, possibly resulting in changes in visibility, smothering of coral reefs and benthic communities and affecting fish and shellfish etc.;
- Impacts on ground water table and quality as a result of construction and operation activities (leaching of salts in the deposited sediments and change in ground water quantity);
- Impacts on landscape integrity/scenery.

Impacts on the socio-economic environment

- Impacts on employment and income, potential for local people to have (temporary or long term) job opportunities (and what kind) in the execution of the works;
- Disturbance to local natural resource users such as fishing areas, research facility (observatory) other tourism ventures;
- Impacts to nearby resorts and dive sites;
- Level of protection against hazards like sea level rise, storm surges, etc.
- Impact equity (economic activities, employment, income);
- Impacts on accessibility and transportation of goods to island.

Construction related hazards and risks

- Pollution of the natural environment (e.g. oil spills, discharge of untreated waste water and solid waste, including construction waste);
- Risk of accidents and pollution on workers and local population.

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 the *"no action option"* should be presented. Determine the best practical environmental options. Alternatives examined for the proposed project that would achieve the same objective including the "no action alternative". 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 to acceptable levels. These will include both environmental and socio-economic mitigation measures. Mitigation measures to avoid or compensate habitat destruction, e.g. temporal sediment control structures, coastal protection structures to reduce erosion, coral reconstruction and MPA replacement areas. 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. Development of monitoring plan (see appendix)– Identify the critical issues requiring monitoring to ensure compliance to mitigation measures and present impact management and monitoring plan for coastal modification, beach morphology, sediment movement around the island. Ecological monitoring will be submitted to the EPA to evaluate the damages during construction, after project completion and every three months thereafter, up to one year and then on a yearly basis for five years after. The baseline study described in task 2 of section 2 of this document is required for data comparison. Detail of the monitoring program including the physical and biological parameters for monitoring, cost commitment from responsible person to conduct monitoring in the form of a commitment letter, detailed reporting scheduling, costs and methods of undertaking the monitoring program must be provided.

- Water quality, especially turbidity;
- Erosion and accretion changes;
- Condition of the sensitive ecosystems and marine resources;
- Re-colonization of the benthic organisms in the borrow areas;
- Environmentally sound site clearance;
- Environmentally sound removal of dredging and other equipment including construction materials, and
- Employment of available local labour force.
- Air quality monitoring (for aerosols from the vents/chimneys)

* This TOR contains an outline of the parameters that have to be tested (see appendix). All projects are different, therefore additional or less data will be collected for recovery and impact assessments.

Task 8. Stakeholder consultation, Inter-Agency coordination and public/NGO participation) – Identify appropriate mechanisms for providing information on the development proposal and its progress to all stakeholders, government authorities such as

Island council, Ministry of Environment and Energy (EPA), Ministry of Housing and Infrastructure, Tourism Ministry, government agencies, NGOs, engineers/designers, development managers, staff and members of the general public. The EIA report should include a list of people/groups consulted, their contact details and summary of the major outcomes.

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, 2007

Timeframe for submitting the EIA report – The developer must submit the completed EIA report within12 months from the date of this Term of Reference.

24th April 2014

Annex 2: Hanimaadhoo City Hotel lease agreement

AGREEMENT FOR THE LEASE THE PLOT OF LAND IN HANIMADHOO IN SOUTH THILADHUNMATHEE ATOLL, REPUBLIC OF MALDIVES

FOR THE DEVELOPMENT AND OPERATION OF A TOURIST HOTEL

BETWEEN

THE GOVERNMENT OF MALDIVES REPRESENTED BY THE MINSTRY OF TOURISM

AND

CITY HOTEL HANIMADHOO PRIVATE LIMITED

Signed under the Maldives Tourism Act, 2/99

INTRODUCTION

THIS AGREEMENT is made on the 19th day of December 2013 under the Maldives Tourism Act (Law No. 2/99) (the **"Act"**) to lease a plot of land in Hanimadhoo in Haa Dhaalu Atoll (the **"Plot of Land"**), for the development and operation of a Tourist Hotel under the Act and to provide for the terms and conditions applicable to the lease, its continuance and termination and other relevant matters.

PARTIES

THIS AGREEMENT is made between:

The **Government of the Republic of Maldives** (hereinafter referred to as the **"Government")** represented by the **Thiladhunmathee Dhekunuburee Hanimaadhoo Council** (hereinafter referred to as the **"Lessor"**) on the one part;

And

City Hotel Hanimadhoo Private Limited a company duly registered and existing under the laws and regulations of the Maldives ("the **Maldives Law**") under registration number C-0706/2013 and having its registered office at 4th Floor, H. Meerubahuruge, Ameeru Ahmed Magu, Male' 20077, Maldives (hereinafter referred to as "the **Lessee**" which expression includes heirs, successors-in-title and assigns) on the other part.

WHEREAS:

A. The Plot of Land is state owned whose legal ownership is duly vested in the Government; and

B. The Government acting through the Lessor, has on the 20th day of August 2013 accepted subsequent to its invitation to Bid made on the 08th day of July 2013, a Bid (the **"Bid"**) submitted by the Lessee to lease the Plot of Land for the Lease Rent specified in this Agreement and subject to the terms and conditions of the Bid and those that are provided in this Agreement; and

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C. The Government being desirous of leasing the Plot of Land for the development and operation of a tourist hotel had issued a Notification of Award to the Lessee; and

D. The Lessor and the Lessee now desire to conclude this Agreement for the purposes of leasing the Plot of Land to the Lessee for the development and operation of a tourist hotel; and

E. The Act requires this Agreement to be concluded to provide for the terms and conditions under which the Plot of Land is leased to the Lessee.

The Parties to this Agreement agree as follows:

1. **Definitions**

Unless the context requires otherwise, the following words and expressions shall have the following meanings:

"Act" means the Maldives Tourism Act enacted by Law Number 2/99 on 16th May 1999 including any Regulations made under the Act and any amendments made to that Act or those Regulations.

"Commencement Date" means the date on which this Agreement is signed by the parties to this Agreement and on which date this agreement is brought into biding effect between them.

"Commission Date" means the date on which the Ministry of Tourism as the Competent Authority gives permission for the commencement of the operation of the Hotel for business.

"Compensation" means the compensation payable under and the manner of its calculation specified in section 7 of the Maldives Tourism Act in respect of Hotels that are returned to the Government in the manner provided in that section.

"Competent Authorities" refers to Ministries, Departments, Offices, Agencies, Courts or other Authorities of the Government of the Maldives having jurisdiction over the matter in question.

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"Government" means the Government of the Republic of Maldives duly constituted under the Constitution of the Republic of Maldives and includes all its representative authorities, agencies and persons.

"Hotel" means all the buildings, installations, structures, facilities, machinery, equipment, tools, furniture, fixture and fittings, cutlery and crockery and linen forming part of or are directly associated with the operation and management of the Hotel..

"Infrastructure Development Project" means the projects for the development of a waste management system and the school in Hanimaadhoo in Thiladhunmathee Dhekunuburee Atoll proposed by the Lessee in the Bid.

"Plot of Land" means the 28.8 hectares plot of land in Hanimaadhoo in Thiladhunmathee Dhekunuburee Atoll demarcated in site map attached hereto in the third Schedule.

"Just Compensation" means the compensation payable under and the manner of its calculation specified in section 14 of the Maldives Tourism Act in respect of Hotels that are returned to the Government in the manner provided in that section.

"Lease Rent" means the annual lease rent payable to the Lessor by virtue of Clause 11 of this Agreement.

"Local Staff" means employees who are nationals of the Republic of Maldives

"Maldives Law" means all the Laws and Regulations and Government Practices having the force of law in the Maldives and enforced or ought to be enforced as such in the Courts of Law in the Maldives. It shall also include all amendments or replacements made to Laws and Regulations.

"Support Land Rent" means the MVR 5.20 (Maldivian Rufiyaa Five and Laari Twenty Only) per square feet rent to be paid for the support land of the Hotel as per Clause 12 (i) (a) of this Agreement.

"This Agreement" means this Lease Agreement, including its Schedules.

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"Year" means each successive period of 12 (twelve) calendar months commencing from the date of signing this Agreement.

2. **Agreement**

i. In consideration of payment by the Lessee of the Lease Rent specified in this Agreement and fulfillment by the Lessee of all the terms and conditions contained in this Agreement to be observed and performed on its part, the Lessor hereby leases to the Lessee the Plot of Land for a period of 50 (fifty) years effective as of the Commencement Date for the purpose of developing, operating and managing a tourist Hotel on the Plot of Land during that period.

ii. The number of tourist beds that can be developed on the Plot of Land shall be determined subject to the relevant and applicable laws, regulations and policies of the Ministry.

iii. The Lessee hereby declares that it has checked or otherwise verified the suitability of the Plot of Land with the reservation for any hidden or latent environmental defects for which the lessee does not unconditionally acquiesce for the purpose for which the Plot of Land were tendered.

iv. The Lessor and the Lessee agrees that the Lessor shall not entertain any request by the Lessee to relocate the Plot of Land after the commencement of the term of this Agreement. The Lessee agrees not to request for any such relocation after the commencement of the term of this Agreement.

v. The Lessee shall have vacant possession and quiet enjoyment of the Plot of Land during the period of this Agreement. The Lessee shall command total responsibility for the operation, management, control and maintenance of the Plot of Land during that period. The Lessee shall also have the rights of access to common areas to and from the Plot of Land.

vi. In case of any conflict or discrepancy between this Agreement and the Schedules to this Agreement pursuant to Clause 26, the express provisions of this Agreement shall prevail. In case of any conflict or discrepancy between any two parts of the same document, be it this Agreement or the Schedules, the spirit of this Agreement or that document whichever is applicable or reasonable to follow under the circumstances shall prevail.

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3. **Infrastructure Development Project**

i. The Lessee agrees to develop a waste management system and the school in Hanimaadhoo in North Thiladhunmathee Atoll as per the Bid submitted by the Lessee.

ii. The Lessee shall complete Infrastructure Development Project within 06 (six) months from the date of this Agreement.

iii. The Lessee shall complete the Infrastructure Development Project within 06 (six) months from the Commencement Date.

iv. The Lessee agrees that the development of the waste management system and the school in Hanimaadhoo in South Thiladhunmathee Atoll shall comply with the relevant Government laws and regulations and shall conform to the standards set forth by the Lessor.

4. **Development Concept, Environmental Impact Assessment and Work Plan**

i. The Lessee shall, within 90 (ninety) calendar days from the Commencement Date, submit the Development Concept and a Work Plan for the development of the Hotel on the Plot of Land.

ii. Within 30 (thirty) calendar days from the date of approval of the Development Concept by the Ministry, the Lessee shall submit the Application for Environmental Impact Assessment Report (EIA Application) to the Ministry.

iii. Within 90 (ninety) calendar days from the date of approval of the EIA Terms of Reference (TOR) the Lessee shall submit the Environmental Impact Assessment Report (EIA) for the development of the Hotel on the Plot of Land.

iv. The Government may require changes to be made to the Development Concept, the EIA and/or the Work Plan. If any changes need to be made to the Development Concept, the EIA and/or the Work Plan,

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the Lessee shall re-submit a revised Development Concept, EIA and/or the Work Plan within 21 (twenty one) calendar days of the notification to change. If major changes are required and deemed necessary to provide a time period beyond 21 (twenty one) days, the Lessor may do so and the Bidder will be required to submit changes before the deadline provided.

5. Detailed Drawings

i. The Lessee shall, within 90 (ninety) calendar days of approval of the EIA, submit the following detailed drawings to the Lessor for its approval:

a) Site plan (hard copy and soft copy in AutoCAD format) showing the location of the Hotels and the adjacent sites, buildings and all building lines (scale not less than 1:1000).

b) architectural detailed drawing (scale not less than 1:200) with technical specifications:
   i) site and layout plans showing the total site area, built up area, open area and percentage, building lines, sewer mains, electricity, water supply and drainage;
   ii) floor plans with furniture and machinery layout;
   iii) sections with finishes;
   iv) roof plans;
   v) elevations; and
   vi) other architectural details such as handrails to describe the building

c) structural detailed drawings (scale not less than 1:200) with technical specifications:
   i) foundation details;
   ii) roof details;
   iii) flooring and supporting structural details;
   iv) other structural details to describe the structure of the buildings; and
   v) soil investigation report

d) building services drawings with technical specifications;
   i) electrical layouts;
   ii) plumbing layouts; and
   iii) other mechanical and information / communication network details

e) details of power distribution including single line diagram of engine control and distribution panels and network;

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f) details of water supply and sewage systems including distribution network diagrams;

g) details of fire safety and fire fighting systems;

h) all detailed drawings/designs should adhere to existing statutory requirements and regulations such as, building, electrical, fire and public health regulations.

6. Construction Period of the Hotel

i. The Lessee shall construct and develop the Hotel in accordance with the Development Concept submitted by the Lessee and approved by the Lessor, approved detailed drawings and the Work Plan within a maximum period of 12 (twelve) months from date of approval of the detailed drawings. This period of 12 (twelve) months shall be referred to as the **"Construction Period"**.

ii. Where the Lessee fails to construct and develop the Hotel within the Construction Period, the Lessor may at its own discretion exercise any one or more following options:

a) impose liquidated damages;

b) terminate this Agreement.

iii. The Lessor shall not exercise any of the options mentioned in paragraph (ii) of this Clause where there are reasonable grounds to believe that the Lessee failed to construct and develop the Hotel within the Construction Period due to war, civil war, civil commotion, storm, tempest, flood, inevitable accident or other irresistible force or event beyond the Lessee's control and which the Lessee could not have prevented even with reasonable diligence.

iv. If the Lessee is faced with a circumstance mentioned in paragraph (iii) of this Clause, the Lessee shall promptly notify the Lessor in writing of the existence of such event and its likely duration and its known cause(s). As soon as practicable thereafter, the Lessor shall evaluate the circumstance and if it finds that the circumstance so warrants it, grant an extension to the Construction Period. Any such extension granted by the Lessor shall be deemed to be a modification of the relevant Clauses of this Agreement.

v. Where liquidated damages are levied on the Lessee for failure to construct or develop the Hotel in accordance with the Development Concept and the EIA, the approved detailed drawings and/or the

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Work Plan or within the Construction Period, those damages will be calculated in United States Dollars for each day of delay based upon the following formula:

National Average Occupancy of the relevant period of the previous year multiplied by the Bed Capacity multiplied by USD 8 (United States Dollars Eight)

7. Inspection during Development

i. The Lessor or its representative shall have the right to inspect the process of construction and development of the Hotel and ascertain the work's conformity to Work Plan and the Development Concept and the approved detailed drawings and the relevant Maldives Law.

ii. In any such inspection, all reasonable facilities and assistance, including access to drawings and relevant data, shall be granted at no charge to the Lessor or its representative.

iii. If the process of construction and development of the Hotel fails to conform to the Work Plan and the Development Concept and the approved detailed drawings or the Maldives Law, the Lessee shall, at its own cost, make alterations necessary to ensure conformity with them. However the Construction Period will not be extended to accommodate time taken to complete those alterations.

iv. The Lessor may conduct several inspections in respect of a single Hotel, at different points of time falling within its Construction Period. Rights available to the Lessor under paragraphs (i), (ii) and (iii) of this Clause shall in no way be limited hindered or waived by reason of the fact that there has been any previous inspection or inspections in respect of the same Hotel.

8. Alterations

If the Lessee requests in writing, the Lessor may, at its discretion, approve alterations or amendments to any one or more of the documents submitted under Clause 6 of this Agreement or the facilities and services of the Hotel as propose d in the Development Concept found in the Sixth Schedule. However all such alterations or amendments will be approved if they fall within the context and scope of this Agreement.

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9. **Commencement of Operation**

i. The Lessee shall commence operation of the Hotel within the time period as specified in the Work Plan.

ii. The maximum period allowed for completion of construction and commencement of operation of the Hotel will be 60 (sixty) months from the Commencement Date.

10. **Inventory**

Within 30 (thirty) days from the date on which the operation of the Hotel is commenced (the "**Commission Date**"), the Lessee shall furnish to the Lessor an inventory of all movable and immovable items forming part of or are directly associated with the operation and management of the Hotel. The inventory shall be verified by the Lessor and countersigned by the Lessee and attached to this Agreement as the Fourth Schedule. This Schedule shall be adjusted from time to time during the currency of this Agreement to reflect any additions and/or omissions to the then current inventory of the Hotel and all variations to the Schedule shall be verified by the Lessor and countersigned by the Lessee.

11. **Annual Lease Rent**

i. The Lessee shall pay to the Lessor the Lease Rent as follows:

a) The Lease Rent, shall be paid in accordance with and in the manner stipulated in the Section 7 of the Law No. 2/99 (i.e. Section 3 of the Second Amendment to the Tourism Law (Law No 2/99)) and relevant regulations made therein under from the date of expiry of the Construction Period or the Commission Date, which ever happens earlier.

b) Subject to Clause 11 (i) (a), Lease rent shall be paid regardless of whether the Hotel has commenced operation.

c) The Lease Rent shall be paid in quarterly installments in advance before the commencement of the quarter for which such payment is due.

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d) If the Lease Rent or any installment or part of it is in arrears the Lessee shall pay liquidated damages. The damages will be determined at the rate of 0.5% of the amount outstanding in arrears, calculated on a daily basis, for each day of delay. The damages shall be paid in addition to the full payment of all amounts of the Lease Rent in arrears.

12. Support Land Rent

i. The L:essee shall pay to the Lessor the rent for the Support Land of the City Hotel as follows:

a) Support Land Rent shall be paid as provided in the Bid presented by the Lessee, which is MVR 5.20 per square feet for the support land to the Hotel. Payment of the Support Land Rent shall commence within 12 months from the date of execution of this Agreement.

b) Subject to Clause 11 (i) (a), Support Land Rent shall be paid regardless of whether the Hotel has commenced operation.

c) The Support Land Rent shall be paid in quarterly installments in advance before the commencement of the quarter for which such payment is due.

d) If the Support Land Rent or any installment or part of it is in arrears the Lessee shall pay liquidated damages. The damages will be determined at the rate of 0.5% of the amount outstanding in arrears, calculated on a daily basis, for each day of delay. The damages shall be paid in addition to the full payment of all amounts of the Support Land Rent in arrears.

13. Undertakings of the Lessee

The Lessee shall during the currency of this Agreement:

a) duly settle with the appropriate agencies, Government or private, all charges, rates and taxes levied in respect of the Hotel;

b) maintain the Hotel in good order, repair and condition, reasonable wear and tear excepted;

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c) keep the Hotel in a clean and sanitary state, free from noxious weeds and pests, and conform to relevant Maldives Law;

d) preserve the flora of the Hotel;

e) endeavor to conserve and improve the environmental condition of the Hotel and maintain the natural beauty of the Hotel;

f) not cause any trees to be felled, destroyed or damaged except with written approval of Competent Authorities;

g) Provide reasonable terms and conditions of employment to its entire staff in accordance with relevant Maldives Law. The accommodation, benefits and amenities provided to staff shall not be at a standard lower than those provided for in this Agreement, the Development Concept and in the Maldives Law or regulations and standards decided by Competent Authorities.

h) The Lessee shall not demolish, remove or alter any building, installation or structure specified in the Inventory without the approval of the Lessor.

14. Employment in the Hotel

The Lessee shall at all times provide reasonable terms and conditions of employment to its entire staff in accordance with the laws and regulations relating to employment in the Republic of Maldives. Facilities, benefits and amenities provided to such staff shall be at a standard not lower than that provided for in this Agreement, and in the relevant regulations made by the Lessor or any other Government body or bodies.

15. Insurance

i. The Lessee shall, during the currency of this Agreement after the Commission Date, insure and keep insured the Hotel to their full reinstatement value. The reinstatement value shall include fees of

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architects and surveyors, Lease Rent for one year, cost of demolition and site clearance. The insurance shall cover for loss or damage by fire, storm, flood and other risks as may be notified by the Lessor. The insurance shall be obtained from an insurer acceptable to the Lessor.

ii. The Lessee shall pay punctually all premiums and make any other payments necessary to maintain the Insurance Policy mentioned in paragraph (i) of this Clause, and shall not do anything which might invalidate the insurance. Upon being requested by the Lessor, the Lessee shall produce the policy of such insurance and receipt of the last premium paid.

iii. All sums received from insurance shall be laid out and expended in rebuilding or repairing or otherwise reinstating the Hotel or payment of the Lease Rent as the case may be.

16. Redevelopment

i. Where the Lessee is desirous of redevelopment of the Hotel or any part of it after the Commission Date, such redevelopment shall be carried out with prior approval of the Lessor and in conformity with the plans approved in writing by the Lessor and other Competent Authorities. The Lessor may not approve any redevelopment that may be contradictory to or that may defeat the development concept found in the Sixth Schedule

ii. Every redevelopment shall be reflected in the Inventory found in the Fourth Schedule

iii. Whenever any new building is constructed or installed after the Commission Date, the Lessee shall,

a. Notify the Lessor of the commencement of the work
b. Allow agents of the Lessor to inspect the work in progress
c. Comply with any written instructions from the Lessor to require conformity with the approved plans; and
d. Notify the Lessor of the date of completion and commission of the building

17. Regular Inspection

i. After giving an advance notice of 24 (twenty four) hours to the Lessee the Lessor may cause a Representative to enter upon the Hotel at all reasonable hours in order to view and examine the physical

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state and condition of the Hotel and the items listed in the Inventory. Where the Lessee is informed in writing of any requirement for repair or replacement subsequent to such an inspection, the Lessee shall within a reasonable period, cause such repair or replacement to be effectively made.

ii. During the inspection mentioned in paragraph (i) of this Clause, the Lessor may call for information or data, or access to books of accounts and records and require copies or extracts of documents or records to be taken. The Lessee shall in every such instance accord the necessary assistance with speed and diligence.

iii. The right of the Lessor in relation to inspection as mentioned in paragraphs (i) and (ii) of this Clause extends to all Competent Authorities as well.

iv. Where there are reasonable grounds to believe that the Lessee has acted or is acting in contravention of any relevant Maldives Law and/or this Agreement, then the Lessor or the Competent Authorities may enter upon the Hotel without having to give the advance notice mentioned in paragraph (i) of this Clause.

18. Grant of Right or Interest

i. The Lessee may, from the Commencement Date, grant any right, interest or possession of the Hotel under this Agreement to any party by way of sale, assignment, transfer, sublease or management contract or any other similar device, or if the Lessee is a legal entity, transfer of shares of the entity.

ii. The Lessee shall in the exercise of options provided in paragraph (i) of this Clause be subjected to written approval of the Lessor and any conditions that may be stipulated by the Lessor in accordance with the relevant Laws and Regulations made thereinunder. And the approval of the Lessor shall always be subjected to the rights and interests of the Lessee not being adversely affected.

iii. The Lessee shall have the right even before the Commission Date to enter into agreements, that are usually entered into in the ordinary course of business to enhance the business prospects of the Hotel when it becomes commissioned, provided always that the duration of such agreements shall not exceed the currency of this Agreement. That right includes conclusion of sale of rights to proposed beds, allotment of proposed rooms, lease of proposed Plot of Land.

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iv. The Lessee shall in the exercise of options provided in paragraph (iii) of this Clause be subjected to written approval of the Lessor and any conditions that may be stipulated by the Lessor. And the approval of the Lessor shall always be subjected to the rights and interests of the Lessor not being adversely affected.

v. The Lessee shall have the right prior to the Commission Date and within the currency of this Agreement to mortgage, hypothecate or otherwise encumber the interests in the Hotel.

vi. The Lessee shall in the exercise of options provided in paragraph (v) of this Clause be subjected to written approval of the Lessor and any conditions that may be stipulated by the Lessor in accordance the relevant Laws and Regulations made thereinunder. And the approval of the Lessor shall always be subjected to the rights and interests of the Lessor not being adversely affected and Lessee undertaking to release the Hotel from every encumbrance prior to the expiry or earlier termination of this Agreement.

19. Provision for Impossibility of Performance

i. Where the Hotel or any essential part thereof suffers total destruction due to war, civil war or civil commotion or storm, tempest, flood, inevitable accident or other irresistible force or event beyond the Lessee's control the term of this Agreement shall be deemed temporarily suspended from the date of destruction until the date of resuming operation of the Hotel and the operation of the Hotel shall remain fully suspended during that period.

ii. Where the Hotel or an essential part thereof suffers partial destruction due to war, civil war or civil commotion or storm, tempest, flood, inevitable accident or other irresistible force or event beyond the Lessee's control the operation of the Hotel shall be suspended in part.

iii. Occurrence of an event as mentioned in paragraph (i) or (ii) of this Clause, or the Lessee not having insured to cover for one year Lease Rent as specified under Clause 15 of this Agreement shall not release the Lessee of its obligation to pay the Lease Rent as specified in this Agreement. However, the Government may grant extensions to the due dates for the payment of the Lease Rent. It shall be the responsibility of the Lessee to have properly insured for such risk as specified in this Agreement.

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iv. Where damage as specified in paragraph (i) or (ii) of this Clause occurs to the Hotel, the Lessee shall give written notice of such damage to the Lessor as soon as practicable. And within 7 (seven) days after the receipt of that notice, the Lessor shall cause an inspection of the Hotel and inform the Lessee in writing of its analysis.

v. The Lessee shall only be entitled to the benefits outlined in paragraphs (i) and (ii) of this Clause in respective circumstances if the Lessor concludes the inspection in favor of the claim of the Lessee or where paragraph (vi) of this Clause applies, if the Court of Law finds in favor of the claim of the Lessee.

vi. If the Lessor is not agreeable to the fact that such damage has been caused to the Hotel as may be claimed by the Lessee, the Lessee shall be entitled to refer the matter to the relevant Court of Law.

vii. Where the Lessee refers the matter to a Court of Law, the parties shall to the best of their endeavors take all necessary steps to expedite the business of that Court.

20. Emergency and Public Purposes

i. In a situation of emergency the Lessor may suspend this Agreement and take over the Hotel.

ii. The period of such suspension shall be excluded from the computation of the term of this Agreement.

iii. The existence, continuance and cessation of the emergency referred to in paragraph (i) of this Clause shall be determined solely by the Lessor and any instructions issued by the Lessor in this regard shall be adhered to by the Lessee.

iv. Where the Plot of Land is required for the defense of the Maldives, the Lessor shall be entitled to terminate this Agreement and take possession of the Hotel after giving reasonable prior notice to the Lessee.

v. Where the Plot of Land is required for a public purpose, the Lessor shall be entitled to terminate this Agreement and take possession of the Hotel after giving two years written notice.

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vi. In the event of termination of this Agreement under this Clause, Just Compensation shall be paid by the Lessor to the Lessee for the investment made on the Plot of Land.

vii. Where Just Compensation is paid by the Lessor under this Agreement it may deduct such sums of money due to it from the Lessee in respect of the Hotel under this Agreement.

21. Handover of the Hotel

i. The Lessee undertakes to yield up possession of the Hotel to the Lessor in good operational condition and repair and at the standard at which it was operating upon the expiry or earlier termination of this Agreement.

ii. Where the Hotel is handed back to the Lessor on expiry of the term of this Agreement, or where this Agreement is brought to an end other than at the request of the Lessee or on breach of Agreement by the Lessee, Compensation shall be paid to the Lessee within two years from the date of handing the Hotel back to the Lessor.

iii. During the last six (6) months of this Agreement or in the event of earlier termination at any time before termination becomes effective, the Lessor shall inspect the Hotel to examine that all the items in the Inventory are in good operational condition.

iv. If any item is found to be damaged, missing or defective the Lessor may require the repair, replacement, payment of cost or compensation, for the damaged, missing or defective item. The Lessee shall oblige with any such requirement made by the Lessor. However, in demanding payment of cost or compensation, the Lessor shall take into account reasonable wear and tear of the item or depreciated value of the item. This does not include damage or defect caused by the Lessee's misuse or neglect to properly maintain and upkeep any such item.

22. Termination by the Lessor

i. Without prejudice to any other rights which the Lessor may have under this Agreement or in law, the Lessor may terminate this Agreement, in any of the following circumstances:

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a) if the Lessee fails to pay the Lease Rent specified in paragraph (a) of Clause 11 when it has fallen due or if the Lessee fails to pay liquidated damages imposed in consequence of default in paying Lease Rent as specified in paragraph (d) of Clause 11 ; or

b) if the Lessee fails to comply with the notices referred to in paragraph (i) and/or (ii) of Clause 25 of this Agreement; or

c) if the Lessee fails to complete the development of the Hotel in accordance with the timeline provided under this Agreement; or

d) if the Lessee fails to complete any redevelopment or reconstruction project carried on the Hotel within the timeframe approved by the Lessor; or

e) if the Lessee fails to complete the Infrastructure Development Project as per Clause 3 of this Agreement; or

f) if the Lessee becomes bankrupt or is wound up whether voluntarily or compulsorily or otherwise, than for purposes of amalgamation or reconstruction.

ii. Where the Lessor intends to terminate this Agreement in any of the circumstances provided in paragraph (i) of this Clause, it will serve a written notice of termination specifying the reason for such termination.

iii. Where such a notice of termination is served as provided in paragraph (ii) of this Clause, this Agreement will stand terminated on the expiry of the seventh (7th) day of that notice.

iv. Once the Agreement is terminated, the Lessor may enter upon and take possession of the Hotel. The Lessor may keep a representative on the Hotel during the period of the notice and the Lessee shall provide full board accommodation to the representative without any charge;

v. Where the Agreement is terminated, the Lessee shall have the right to remove, sell or otherwise dispose of all such tools, machinery, equipment, goods and materials not forming part of the Inventory found in

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the Fourth Schedule. If the Lessee has not removed any such items within a reasonable time then the Lessor may remove and sell those items.

vi. The Lessor shall pay to the Lessee the sum of the proceeds of the sale referred to in paragraph (v) of this Clause, less the cost of removal and sale of such items and sum of any money due to the Lessor by the Lessee including any loss caused to the Lessor due to the default of the Lessee which in the first instance led to the termination of the Agreement.

vii. In the event of any such termination, the Lessor shall make its best effort to cause any subsequent Lessee who takes the Hotel on lease to accept an assignment of all contracts made by the erstwhile Lessee in relation to the management and operation of Hotel or any facilities of the Hotel. The Lessor may not cause such an assignment to take place if it involves any financial detriment to the subsequent Lessee.

23. Termination by the Lessee

i. Without prejudice to any other rights which the Lessee may have under this Agreement or in law, if the Lessor refuses or persistently neglects to perform and observe any term or condition of this Agreement the Lessee may serve a written notice to the Lessor asking for its compliance. If the Lessor fails to comply with the notice and rectify the default and fails to offer any valid reason within 60 (sixty) days from the date of that notice, then the Lessee may serve a written notice of termination of this Agreement specifying the reason for termination.

ii. Where such a notice of termination as provided in paragraph (i) of this Clause is served, this Agreement will stand terminated on the expiry of the 60th (sixtieth) day of that notice

iii. It is expressly agreed that no such notice as provided in paragraph (i) of this Clause shall be given for frivolous or vexatious purposes.

iv. Once the Agreement is terminated the provisions contained in paragraphs (iv), (v), (vi) of Clause 22 shall come into operation as if they were reproduced here in their entirety.

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24. Termination without Cause by the Lessee

i. The Lessee may terminate this Agreement without cause upon giving written notice of termination to the Lessor. Where such a notice of termination is served, this Agreement will stand terminated on the expiry of the 180th (one hundred and eightieth) day of that notice.

ii. Even where such a notice of termination is served, this Agreement will not be considered to have been terminated on the date appointed for the expiry of the notice if any of the following circumstances existed on that day:

a) If there is any obligation to be fulfilled or liability to be settled by the Lessee under this Agreement or in law; or

b) If the Hotel is in want of good operational condition and repair;

c) If the Hotel are subject to any form of encumbrance.

25. Breach of non-financial nature

i. Except where the Lessee has defaulted in respect of the provisions contained in Clause 11 paragraphs (i), where there is any non-performance, non-observance, infringement or violation by the Lessee of any other term or condition of this Agreement, the Lessor shall not terminate the Agreement in the first instance but impose upon the Lessee a penalty of an amount not exceeding US$ 25,000 (Twenty Five Thousand United States Dollars) as liquidated damages and give up to thirty (30) days notice in writing to the Lessee to remedy the default.

ii. If the Lessee fails to comply with the notice referred to in paragraph (i) of this Clause, the Lessor shall impose upon the Lessee a further penalty of an amount not exceeding US$ 100,000 (Hundred Thousand United States Dollars) as liquidated damages and if the Lessee fails to comply with the notice given under paragraph (i) of this Clause for a further period of up to fifteen (15) days, the Lessor may invoke its right of terminating this Agreement under Clause 22.

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26. Schedules

i. The following Schedules and their contents shall be deemed to be an integral part of this Agreement and shall be construed accordingly. Unless the context requires otherwise, any reference to this Agreement shall include a reference to each of them; and any reference to any one of them shall be deemed to be a reference to this Agreement.

a) First Schedule: Notification of Award issued by the Council

b) Third Schedule: Site plan of the Hotel

27. Entire Agreement

This Agreement embodies the entire agreement between the Lessor and the Lessee with respect to the subject matter and operates to nullify any earlier oral or written agreements, understandings, negotiations, or representations on the subject matter of this Agreement.

28. Variation

No part of this Agreement including the Schedules and their contents as listed in Clause 26 shall be varied except by mutual agreement of both parties executed in writing.

29. Waiver

The non exercise of a right given to the Lessor under this Agreement shall not be considered as a waiver of that right nor shall a waiver duly granted by the Lessor on one occasion be taken as a waiver applicable on a different occasion.

30. Notices

All notices required to be given under this Agreement or communications that need to be exchanged under this Agreement or with reference to Maldives Law shall be deemed to be sufficiently served or delivered to the relevant party if sent by registered post to the address of that party as set out in this Agreement and/or such other address as may be duly informed by that party to the other in writing.

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31. Disputes

i. Any disputes arising from or in relation to or connected with the Agreement shall first be attempted to be resolved amicably through discussions between the parties. Where a dispute remains unresolved even after a reasonable period has lapsed, it shall be referred to the relevant Courts of law or Authorities of the Maldives.

ii. This Agreement does not exclude the parties from referring a matter in dispute to arbitration in accordance with any Arbitration Act or rules that may be enacted in the Maldives on the subject matter by which Parties agree to be bound.

32. Governing Law

This Agreement shall be subject to, construed in accordance with and governed by Maldives Law. The relevant Courts of Law and Authorities of the Maldives shall have the exclusive jurisdiction to entertain, hear and decide disputes arising from or in relation to or connected with the Agreement.

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Having read and understood the terms of this Agreement and intending to honour them and to be bound by them, the Parties have signed this Agreement at the Ministry of Tourism, Arts and Culture in Male' in four identical and original counterparts on the date specified at the outset.

Abdul Salaam Ali
President
(For and on behalf of the Lessor)

Anon Songpanya
Director
(For and on behalf of the Lessee)

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WITNESSES:

Masood Adam
(Vice President of Hanimadhoo Council)

Mohamed Ashraf Ahmed
M. Jupiter,
Male'
A007440

SECRETARIAT OF THE HANIMAADHOO COUNCIL
SOUTH THILADHUNMATHEE MALDIVES

FIRST SCHEDULE

Notification of Award issued by the Council

Reference to Clause 26 (i) (a)

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بسم الله الرحمن الرحيم

ތިލަދުންމަތީ ދެކުނުބުރީ ހަނިމާދޫ ކައުންސިލްގެ އިދާރާ
ހދ. ހަނިމާދޫ
ދިވެހިރާއްޖެ.

ނަންބަރު: (S)258/2013/285

ނޫމަލޭ ރިސޯޓްސް އެންޑް ރެސިޑެންސް އިންވެސްޓްމަންޓްސް ގެ ޗެއަރމަން މިސްޓަރ އަޙްމަދު
ސުލައިމާން.

ވެދުން ސަލާމަށްފަހު ދަންނަވަމެވެ.

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ވީމާ، މި ކައުންސިލާއި ބިޑަށް ކަންފުޅުނީ ދުވަހުގެ އެއްބަސްވުމުގައި ސޮއި ކުރުމަށް ތާރީޚް އަންގައި ދެއްވުން އެދި ދަންނަވަމެވެ.

އިޚްތިރާމް ފެއްބަކުރަމުން އެދެމެވެ.

١٥ مُحَرَّم ١٤٣٥
19 ނޮވެމްބަރު 2013މ.

އަބްދުއްސައްތާރު އަލީ
ހަނިމާދޫ ކައުންސިލްގެ ރައީސް

Page 1

ތިލަދުންމަތީ ދެކުނުބުރީ ހަނިމާދޫ ކައުންސިލްގެ އިދާރާ، އަމީނީމަގު، ހދ. ހަނިމާދޫ، ދިވެހިރާއްޖެ
ފޯން: 6520028 ފެކްސް: 6520028 އީމެއިލް: hanimaadhoooffice@gmail.com

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SECOND SCHEDULE

Site Plan of the Hotel

Reference to Clause 26 (i) (b)

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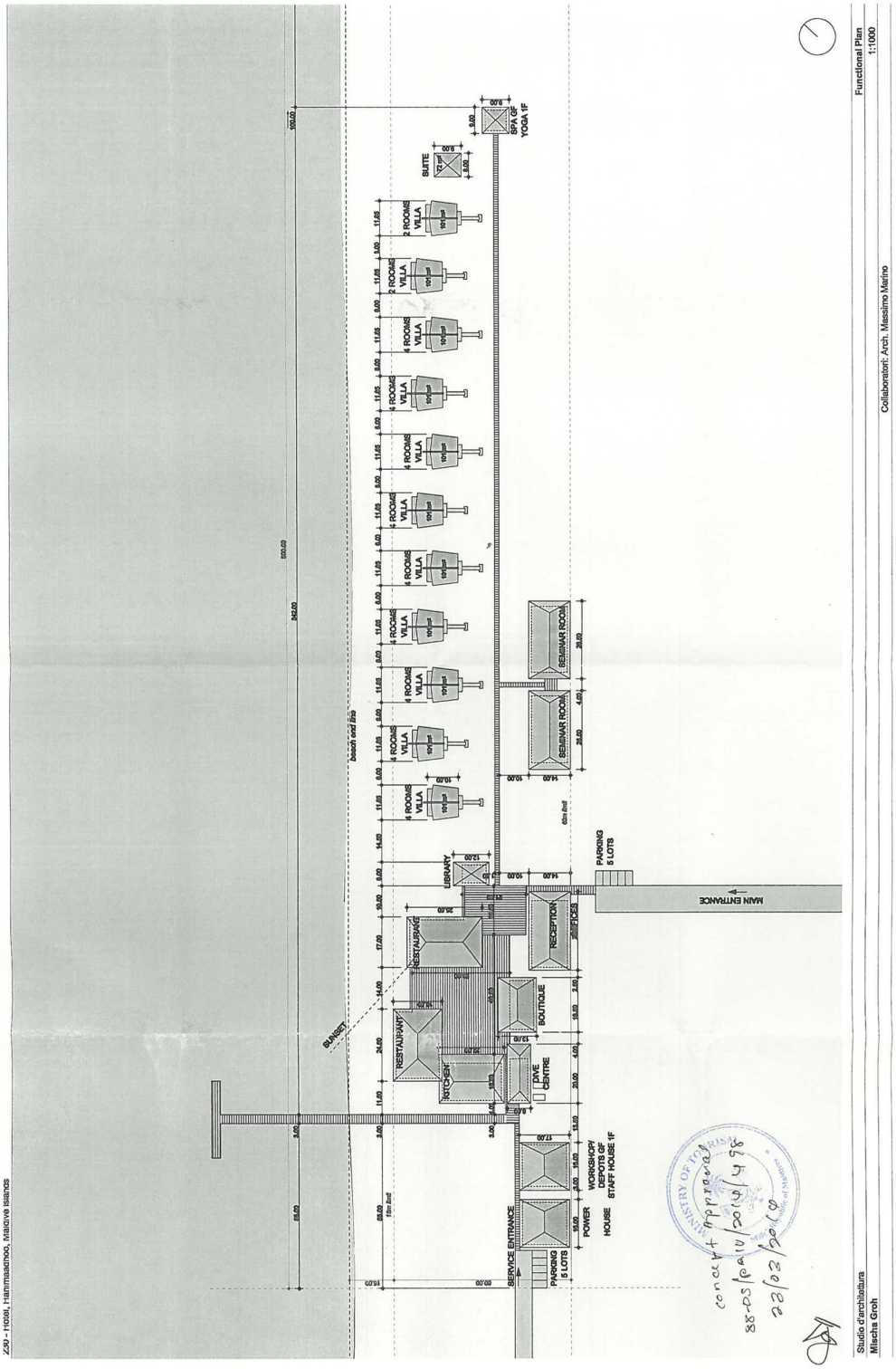
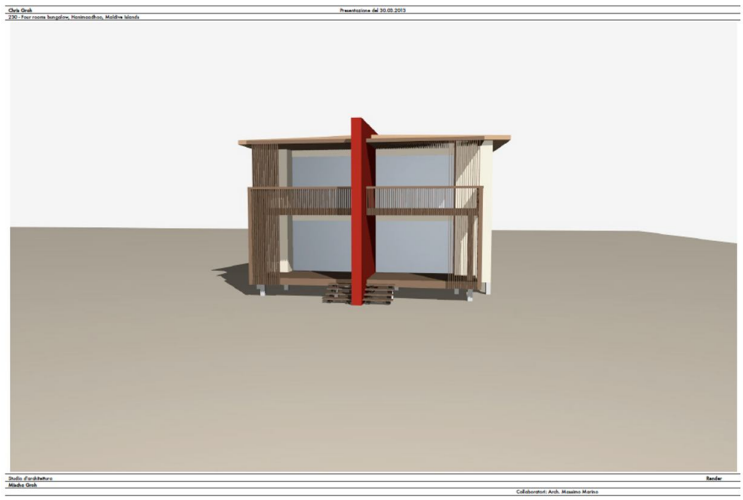
03.06.13
Siteplan
1:2000
Collaboratori Arch. Massimo Marino
Siteplan
Chris Groh
230 Hotel, Hanimaadhoo, Maldive Islands
1 - SERVICE ENTRANCE
2 - POWER HOUSE
3 - WORKSHOP, DEPOT, STAFF HOUSE
4 - BOATS ARRIVAL
5 - BOAT PARKING
6 - MAIN ENTRANCE
7 - RECEPTION/FOYER
8 - RESTAURANT
9 - BAR
10 - KITCHEN
11 - CONFERENCE
12 - SEMINAR ROOM
13 - 30 ROOMS VILLA
14 - 30 ROOMS VILLA
15 - 6 ROOMS VILLA
16 - SPA
17 - POOL
Studio d'architettura
Mischa Groh
CITY HOTEL
HANIMADHOO
PRIVATE LIMITED
Reg No: C-0706/2013

Annex 3: Approved site plan and detail drawings



Chris Grech
230 - Hotel, Hanimaadhoo, Maldive Islands
03.06.13
Site plan
1:2000
Collaborator: Arch. Massimo Morino
Studio Architettura
Mirko Grech
1 - SERVICE ENTRANCE
2 - POWER HOUSE
3 - WORKSHOP, DEPOTS, STAFF HOUSE
4 - BOATS ARRIVAL
5 - DIVE CENTRE
6 - BOUTIQUE
7 - RECEPTION/OFFICES
8 - KITCHEN
9 - RESTAURANT
10 - BAR
11 - LIBRARY
12 - MAIN ENTRANCE
13 - SEMINAR ROOMS
14 - 4 ROOMS VILLAS
15 - 2 ROOMS VILLAS
16 - SUITE
17 - SPA

Masterplan
Functional Plan
1:1000
Collaborator: Arch. Massimo Marino
Studio d'architettura
Mladen Gnoh
Chris Gnoh
230 - Hotel, Hanimaadhoo, Maldive Islands
03.06.13
SUITE
5 ROOMS VILLA
4 ROOMS VILLA
SEMINAR ROOMS
RECEPTION
BOUTIQUE
RESTAURANT
BAR
DIVE CENTRE
WORKSHOP/ DEPOTS OF STAFF HOUSE 1?
POWER HOUSE
SERVICE ENTRANCE
PARKING 5 LOTS
MAIN ENTRANCE



Annex 4: Letter from Hanimaadhoo Council which gives permission for site mobilization

بسم الله الرحمن الرحيم

ތިލަދުންމަތީ ދެކުނުބުރީ ހަނިމާދޫ ކައުންސިލްގެ އިދާރާ

ހދ. ހަނިމާދޫ

ދިވެހިރާއްޖެ.

ހަނިމާދޫ އުތުރު ކޮޅުގައި ފަތުރުވެރިކަން ތަރައްޤީ ކުރުމަށް ދޫކުރެވިފައިވާ ބިމުގައި އިމާރާތް ކުރުން.

ހަނިމާދޫގައި ޓޫރިސްޓް ސިޓީ ހޮޓެލް ތަރައްޤީ ކުރުމަށް މިއުއްދާއިން ސަރުކާރުގެ ގެޒެޓްގައި ޝާއިޢުކުރި ނަންބަރު: (IUL)/288/2013/27 (2013-07-08) އިޢުލާނުގެ ބޭނުމަށް އެއްވެސް ފުރަތަމަ ވިލާތު ... 19 ޑިސެމްބަރ 2013 ގައި ... 19 ޑިސެމްބަރ 2013 ... ހަނިމާދޫ ... 50 (ފަންސާސް) އަހަރަށް ކުއްޔަށް ދޫކުރެވިފައިވާ ބިމުގައި ... ދަންނަވަމެވެ. ކުއްޔަށް ދޫކުރެވިފައިވާ ބިމުގައި ... ހަނިމާދޫ ... ދަންނަވަމެވެ.

އިދާރީ ގޮތުން ... ހަނިމާދޫގެ ތަރައްޤީއަށް ... މަސައްކަތްތަކުގައި ... ދަންނަވަމެވެ!

20 ޑިސެމްބަރ 2013

އަބްދުއްސަލާމް އަލީ

ހަނިމާދޫ ކައުންސިލްގެ ރައީސް

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

WATER QUALITY TEST REPORT

Test Report No: 300974/2014/01

Customer Informations : ***City Hotel Hanimaadhoo Pvt Ltd,***
H. Meerubahuruge 4th floor,
Ameer Ahmed Magu,
Male'
Rep. of Maldives

Date: 16/04/2014

Sample Description / Location~	City Hotel		TEST METHOD	UNIT
	Ground water	Sea water		
Sample Type~	Ground water	Sea water		
Sampled Date~	15/4/2014			
Sample Received Date	20/4/2014			
Test Requisition Form No.	900156873			
Sample No.	810912	810913		
Date of Analysis	20/4/2014-24/4/2014			
PARAMETER	ANALYSIS RESULT			
Physical Appearance	Pale Yellow	Clear	Visual	-
Conductivity	9840	54300	Method 2510 B. (adapted from Standard methods for the examintation of water and waste water, 21st edition)	µS/cm
Nitrate	9.0		Method 10049 (Adapted from HACH DR5000 Spectrophotometer procedure Manual)	mg/L
pH	7.16	8.07	Method 4500-H+ B. (adapted from Standard methods for the examintation of water and waste water, 21st edition)	-
Sulphate	325		Method 8051 (Adapted from HACH DR5000 Spectrophotometer procedure Manual)	mg/L
Salinity	5.51	34.60	Method 2520 B. (adapted from Standard methods for the examintation of water and waste water, 21st edition)	‰
Hardness, Magnesium		5230	HACH Method 8329	mg/L
Phosphate	0.19		Method 8048 (Adapted from HACH DR5000 Spectrophotometer procedure Manual)	mg/L
Total Dissolved Solids (TDS)	4900	26500	Electrometry	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

Keys:

UNITS: mg/L: Milligrams per litre, **µS/cm:** Micro Siemens per centimeter, **‰:** Parts per thousand

LOQ: Limit of Quantification

Checked by:	Approved by:
Mohamed Eyman Senior Quality Control Officer	Adam Rasheed Assistant Manager, WQA

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**********

Annex 6: Commitment letter from the proponent

CITY HOTEL
HANIMADHOO
PRIVATE LIMITED

4th floor, H. Meerubahuruge, Ameer Ahmed Magu, Male' 20077, Maldives | Tel: 960 332 3032, Fax: 960 332 3033

Our Ref: CHH/EPA/023/2014

Mr. Thoriq Ibrahim
The Minister
Ministry of Environment and Energy
Ameenee Magu, Maafannu,
Malé-20392 , Republic of Maldives

7th May 2014

Dear Mr. Ibrahim,

Re: EIA – For Development of a City Hotel at HDh. Hanimaadhoo.

As the proponent responsible for environmental compliance for the above project, We hereby give our commitment implement the monitoring plan and to comply with the issues identified in the Environmental Impact Assessment Report submitted to your agency.

Thank You!

Yours sincerely,

Khadeeja Umeyla
Director

CITY HOTEL
HANIMADHOO
PRIVATE LIMITED
Reg No: C-0706/2013

Annex 7: List of Attendees at the stakeholder consultation meetings

Environmental Protection Agency
Male', Rep of Maldives

Meeting:
Date: 7-4-2019
Time: 09

ATTENDANCE FORM

	Name	Designation	Office	Email	Phone No.	Signature
01	Mohamed Mushfiq	Director	EPA			
02	Ahmed Ibrahim.	Councilor (Addl.)	HDh. Atoll Council			
03	Abdul Sattar Hassan	Counselor	HDh. Hanimaadhoo			
04	Mohamed Razi	Councilor	HDh. Hanimaadhoo		7991426	
05						
06	Mahmoodh Rifa	EIA Consultant			7890302	
07	Mohamed Zuhair	"				
08	ALI MISHAL	EPA Asst. Eng	EPA		7766679	
09	Ibrahim Zaman	Asst Project officer	EPA		9975167	
10	Mohamed Asim	Director	MICT		7914997	