ENVIRONMENTAL MANAGEMENT PLAN

For the proposed development of a wreck dive site at Kubuladi thila; Fiyavi Dive Point project.

Prepared for Housing Development Corporation

Non-technical summary

1. The proposed development is the development of a wreck dive site at 'Sunlight Thila'. The project is a collaboration between HDC and local divers. The project will modify two decommissioned airplanes available at Hulhumale.

2. All cleaning, washing, repairing and reinforcing will be done at the workshop or work area, prior to moving them to location. These aeroplanes are planned be placed on concrete stands purpose-built for these aeroplanes.

3. The project also proposes to establish boat mooring stations near the dive site. These mooring floats will hopefully encourage dive boats to use the mooring buoys instead of anchors. This will also help the operators identify the occupancy of site

4. Survey of the natural environment shows that the area is dominated by sand. Some significant coral types were observed in the vicinity of the proposed project implementation site.

5. The project has the potential to impact the natural, and social, environment.

6. The most severe potential negative impact predicted from this project for the natural environment on land is the potential impact of chemicals drainage on the water layer during cleaning and repair. Therefore, a major mitigation recommended is to collect the chemicals in containers and store them for disposal.

7. During handling and moving of the airplane from one location to the other there are numerous possibilities for potential to health hazards. Similarly, during development of the dive site there are potential risks the laborer would face due to working in the marine environment.

8. Therefore, as a mitigation measure, to reduce the possibility of potential health hazards during

the project, the responsible party is required to train the laborers in safe work procedures. These mitigation measures are defined in this management plan

9. Similarly, during operation phase there are numerous possible potential hazards that can negatively impact the health of the divers. To protect the divers from these potential hazards the operators are expected follow certain procedures. It is the responsibility of the project proponent to inform the dive operators of these procedures. These mitigation measures are defined in this management plan

10. The project has the potential to induce positive social impacts on the residents. These activities it will raise interest for the project within the community. This can likely increase the chances of use of this site, resulting in public acceptance of the project.
As the project is likely to attract in more divers to dive to the proposed dive site, it is likely to positively financially impact the dive operators.

11. The financial impact of the project development stage for the project proponent is direct and negative.
Further, during the project operation stage, the financial impact for the project proponent is indirect and desired.
The only way for this project to positively financially impact the project proponent is by directly being involved in the operations.

12. In addition to the above stated, the potential negative impacts and likely positive impacts of the project are defined in this management plan. And this plan also defines the management steps, management costs and the responsible party for management.
Through project management the extent of possible negative impacts can be mitigated while the of possible positive impacts can be multiplied

13. It is recommended for the project proponent and project operator to abide by the procedures specified that can reduce the negative impacts defined in the management plan.

14. It is recommended for the project proponent to implement the specified monitoring program as per the specified schedule

15. This project is an effective way to give back to the dive, freediving, guesthouse, liveaboard and resort community of the Maldives. This investment, if made will have the capacity to provide long-term social, financial, and environmental positive impacts to the relevant stakeholders. .

14. ދަނޑުވެރިން ފުރިހަމަ ޖެހުމާއި ގުޅިގެން ކަނޑަށް ދާ ވަގުތުތަކުގައި ކަނޑުގައި ހުންނަ ކަންކަމާ ގުޅިގެން ކުރަންޖެހޭ ހިނދަށް ހިނދު ބަލަހައްޓަންވާ ގޮތް ބަޔާންކުރެއްވުން.

15. ދ ދަނޑުވެރިކަމާ ގުޅިގެން ކުރިއަށް ގެންދާ ކަންކަމާ، ގެސްޓްހައުސް، ލިވްއަބޯޑް ތަކާ ބެހޭ ކަންކަމާ ގުޅިގެން ދިވެހި ދަނޑުވެރި ދަނޑުވެރި ނޫން ފަރާތްތަކަށް ދެމަނާ ދާ ގޮތަށް ކުރެވޭ ކަންކަމެއް ކަމަށް ބެލެވޭ ކަމަށާއި، ދިގުދުވަހު ސާފު ގޮތަށް ސަރަހައްދުގެ ދަނޑުވެރިންނާ ގުޅިގެން ފައިދާ ލިބޭ ގޮތަށް ކުރެވޭ ކަމަށް ބެލެވޭ ކަމަށް ދެކެވޭ.

Environmental Protection Agency
ތަރުގަބުކުރާ ފާނާ ބެލެހެއްޓުމުގެ ތަނަވަސް

203-ECA/161/2022/8 :ނަންބަރ

ސްޓްރިނ ކުންދަނުގަ ނިންމުން

Screening Decision

ލިޔ ތަނަވަސް ދާއިރާއަށް ގެންދާ ސްޓްރިނ ކުންދަނުގަ ނިންމުން ތަކެއް ކުރުމަށް ކުރިއަށް ގެންދާ ތަހުލީލުގެ ނަތީޖާ ދަންނަވައިދިނުމަށް ތައްޔާރުކުރެވުނު ލިޔުމެކެވެ.

This is an official document issued to **Housing Development Corporation Limited,** for communicating the decision made after screening of the project: **Underwater terminal**

ލި ދަށުގެ ތަފާސީލުގައި ބަޔާންކުރާ ސަބަބުތަކުން ތަހުލީލުގެ ނަތީޖާ ބަލާއިރު، ލިޔ ތަނަވަސް ދާއިރާ ދިމާވާ ބޮޑެތި ނުބައި ތަރުތީބުތަކެއް ދިމާވާ ކަމަށް ބެލެވޭ ކަމުގައި ވާތީ، ތަފާސީލު ރިޕޯޓެއް ހުށަހަޅާ ދިނުން.	
This project is likely to cause significant negative environmental impacts. Hence, please submit an EIA report.	
ލި ދަށުގެ ތަފާސީލުގައި ބަޔާންކުރާ ސަބަބުތަކުން ތަހުލީލުގެ ނަތީޖާ ބަލާއިރު، ލިޔ ތަނަވަސް ދާއިރާ ދިމާވާ ބޮޑެތި ނުބައި ތަރުތީބުތަކެއް ދިމާވާ ކަމަށް ނުބެލެވޭ ކަމުގައި ވާތީ، ލި ދަށުގެ ތަފާސީލުގައި ބަޔާންކުރާ ސަބަބުތަކުން ތަހުލީލުގެ ނަތީޖާ ބަލާއިރު، ލިޔ ތަނަވަސް ދާއިރާ ދިމާވާ ބޮޑެތި ނުބައި ތަރުތީބުތަކެއް ދިމާވާ ކަމަށް ބެލެވޭ ކަމުގައި ވާތީ، ތަފާސީލު ރިޕޯޓެއް ހުށަހަޅާ ދިނުން.	
Submit an Initial Environmental Examination for this project.	
ލި ދަށުގެ ތަފާސީލުގައި ބަޔާންކުރާ ސަބަބުތަކުން ތަހުލީލުގެ ނަތީޖާ ބަލާއިރު، ލިޔ ތަނަވަސް ދާއިރާ ދިމާވާ ބޮޑެތި ނުބައި ތަރުތީބުތަކެއް ދިމާވާ ކަމަށް ބެލެވޭ ކަމުގައި ވާތީ، ތަފާސީލު ރިޕޯޓެއް ހުށަހަޅާ ދިނުން.	√
Submit an Environmental Management Plan for this project.	
ލި ދަށުގެ ތަފާސީލުގައި ބަޔާންކުރާ ސަބަބުތަކުން ތަހުލީލުގެ ނަތީޖާ ބަލާއިރު، ލިޔ ތަނަވަސް ދާއިރާ ދިމާވާ ބޮޑެތި ނުބައި ތަރުތީބުތަކެއް ދިމާވާ ކަމަށް ނުބެލެވޭ ކަމުގައި ވާތީ، ލި ދަށުގެ ތަފާސީލުގައި ބަޔާންކުރާ ސަބަބުތަކުން ތަހުލީލުގެ ނަތީޖާ ބަލާއިރު، ލިޔ ތަނަވަސް ދާއިރާ ދިމާވާ ބޮޑެތި ނުބައި ތަރުތީބުތަކެއް ދިމާވާ ކަމަށް ބެލެވޭ ކަމުގައި ވާތީ، ތަފާސީލު ރިޕޯޓެއް ހުށަހަޅާ ދިނުން.	
This project is unlikely to have a significant negative impact on the environment. Hence, you may proceed with the project.	
ލި ދަށުގެ ތަފާސީލުގައި ބަޔާންކުރާ ސަބަބުތަކުން ތަހުލީލުގެ ނަތީޖާ ބަލާއިރު، ލިޔ ތަނަވަސް ދާއިރާ ދިމާވާ ބޮޑެތި ނުބައި ތަރުތީބުތަކެއް ދިމާވާ ކަމަށް ބެލެވޭ ކަމުގައި ވާތީ، ތަފާސީލު ރިޕޯޓެއް ހުށަހަޅާ ދިނުން.	
The measures stipulated by this agency shall be used to mitigate the negative environmental impacts of the project.	

ލިޔ ތަނަވަސް ދާއިރާ ދިމާވާ ސްޓްރިނ ކުންދަނުގަ ނިންމުން ތަކެއް ކުރުމަށް ކުރިއަށް ގެންދާ ތަހުލީލެކެވެ. ވީ، ލި ދަށުގެ ތަފާސީލު ތަކުން ބަލާއިރު ތަނަވަސް ދާއިރާ ދިމާވާ ބޮޑެތި ނުބައި ތަރުތީބުތަކެއް ދިމާ ނުވާ ކަމަށް ބެލެވޭ ކަމުގައި ވާތީ، ލިޔ ތަނަވަސް ދާއިރާ ދިމާވާ ބޮޑެތި ނުބައި ތަރުތީބުތަކެއް ދިމާ ނުވުމަށް ބަލައި ގެންދާ ކަންތައްތަކާ ގުޅޭ ގޮތުން ލިޔ ތަނަވަސް ދާއިރާ ދިމާ ކުރާ ކަންތައްތަކަށް ކުރިން ލިބިގަތުމަށް ޖެހޭ ހުރިހާ ރުހުން ދިނުންތަކާ ދެމެހެއްޓުންތަކެއް ލިބިގަތުމަށް ބެލެހެއްޓުން ކަމަށް ވާ ކަމަށް ބެލެވޭ ކަމުގައި ވާތީ، ތަފާސީލު ރިޕޯޓެއް ހުށަހަޅާ ދިނުން.

This is an environmental screening. Hence, obtain all necessary approvals/permits from other relevant government authorities before commencement of the project activities. The date of expiry stated in this Environmental Screening Decision Statement is the duration given to implement the decision made by this agency.

Screening Institution: **Environmental Protection Agency of Maldives**

Date of issue: **30th May 2022**
Date of Expiry: **30th May 2023**

Name: **Mr. Ibrahim Naeem**
Designation: **Director General**

ސްޓްރީނިންގ ކުރި ބަޔަކު: ތަންކަޑަތަކުގެ ފުރިހަނޑުވެރިކަމާ ގުޅޭ ދާއިރާ، ތަރައްގީކުރުމުގެ

ދަށްވި ތާރީޚު: 30 ދެއްވަ 2022

ވަރަށްދަ ދުވަސް ތާރީޚު: 30 ދެއްވަ 2023

ނަން : ތަކުލީފުވެރި ބެލެނިވެރި ނަޞީމް

ވަޒީފާ: ޑިރެކްޓަރ ޖެނެރަލް

ސޮއި:

Signature:

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1. Introduction to the EMP

This Environment management plan (EMP) is compiled in response to the screening decision (SD) number 203-ECA/161/2022/8. The EMP is compiled by a team (on page 93) from Housing Development Cooperation (HDC) working with the autonomy to provide informed decisions so as to make the project a socially, financially and environmentally acceptable to the local and international recipients.

1.1. Main objectives of the EMP

The objective of this EMP is to:

A. identify and propose an environmentally sound solution for:
   a. deploying the objects to site,
   b. assembling structures on site, and
   c. operating, managing and using the component.
B. satisfy the obligations of the proponent to undertake an EMP under Clause 5 of the Environmental Protection and Preservation Act of the Maldives.
C. undertake the proposed project work with minimum damage to the environment.
D. promote informed and environmentally sound decision making.
E. propose recommendations to the proponent based on the assessments made.

1.2. Declaration of the consultant

This environment management plan has been prepared in accordance with the regulation 2012. I certify that the statements made in this environment management plan are true, complete, and correct to the best of my knowledge and abilities.

Mr Hassaan Aboul Muhsin

(EIA P02 2020)

1.3. Declaration of the proponent

Date: 29th August 2022

Mr Ibrahim Naeem

Director general

Environment Protection Agency

Male', Maldives.

Declaration and commitment to implement the proposed management plan during the development of a wreck dive site at Kubuladi thila; Fiyavi Dive Point project

The Management of Housing Development Corporation Ltd endorses this Management Plan and assures that this Management Plan is accurate and complete.

Further, we confirm our commitment to implement all mitigation and monitoring during the development phase as well as operation phase as specified in the management plan.

Sincerely,

Ahmed Athif

Deputy Managing Director

Housing Development Corporation Ltd

2. Introduction to the project

On the proposed marine location HDC, proposes a project to develop a purpose-built wreck dive site under the name Fiyavi Dive Point. At this point we must clarify that the name is different from the name given in the screening document above that is, 'Underwater terminal'.

Fiyavi Dive Point is a CSR initiative by HDC with a main objective to send an evocative message worldwide, "Sea level is on the rise". The plan is to submerge two out of order aircrafts in to KUBULADI (ކުބުޅަދި), or now known as Sunlight Thila (on page 26) to create a symbolic scene for a dive site and to send the message worldwide through this site.

Fiyavi Dive Point is a symbol of our eventual fate emphasizing the eventual fate of Maldives, the symbolic scenario if the world fails to act against climate change.

2.1. Project proponent

HDC Ltd is the proponent and the contractor for the project. HDC is a 100% state owned enterprise formed by a presidential decree, initially established in 2001. The project is a

2.2. Project formulation

The two aircrafts being submerged are Doniar 228, the 2nd aircrafts purchased by Air Maldives (The first airline company of Maldives) and the first domestic aircrafts flown between Gan International Airport & Velana International Airport. These two aircrafts were kept in industrial zone of Hulhumale' at municipal service operation (MSO) at HDC,.

The idea of the dive point came up when HDC had to clear up this land for a development. Initially it was decided to sell these decommissioned aircrafts. However, while in a discussion with a dive center in Hulhumale, the possibility of creating a dive site was taken into consideration.

Thus, after discussion internally and with external parties, the project seemed to be possible. Thus, the project was presented and endorsed by the senior management of HDC.

2.3. Proposed Project components

The project proposes to set up a dive site with the said decommissioned aeroplanes placed on stands reinforced, to ensure clearance to allow divers to hover underneath and avoid sediment collection inside the fuselage. the project details follow.

- the project places 2 cleaned, hollowed out and reinforced, damaged, decommissioned aeroplane on concrete foot padded stilts at a depth of – 20 m
- the project also reinforces the wings and attaches the wings to the concrete foot padded stilts,
- the project also proposes to place mooring buoys in the vicinity away from the structures so as to allow boats to dock.
- At MSO the proposal is to clean, reinforce and make the structures dive safe. Further it is proposed to cast the foot paddings and attached stands, and move the aeroplane from MSO to 2nd phase where the structures will be loaded on to loading crafts, and moved to the dive site.

Further details of the project are provided in Project construction details, on page 8.

Figure 1 structure 1, in service image

Figure 2 Structure 2, in service image

Figure 3 proposed concept for the dive site

2.4. Proposed project location

The proposed project location is 4° 18.039'N, 73° 32.020'E. a detailed description of the existing area is provided in the section existing environment (on page 26). The area was selected on recommendation from divers.

2.5. Proposed project duration

The project duration is divided to 2 parts. A development phase and a monitoring phase. The project takes 46 days for development to deploying and the rest is the monitoring process.

Detailed project duration is appended

Figure 4 Project timeline summary (full map attached)

2.6. Need of the project

2.6.1. Foreseeable social and economic advantages of the development

This dive site is proposed to be projected to the world as a call for, awareness, protection, and mitigation against climate change and also will be an added asset to the tourism sector of the Maldives

2.7. Proposed project stakeholders

The proposed project stakeholders are:

Katoll council

Hmmafushi council

Tourist resorts nearby

2.8. Relationship between stakeholders and project

The stakeholders being dive centres, nearby resorts, local islands and the dive community, the project was shared with some key players and professionals in industry. The proponent finalized the locations after discussing with professional divers of Maldives. The project is a collaboration with such stakeholders.

Further, the management of the site/wreck will be a collaboration with project stakeholders such as nearby resorts and dive centres.

2.9. Ultimate outcome of the project

To represents a symbolic scene calling worldwide for protection against climate change & a great addition to our destination marketing.

2.10. Proposed sustainability and longevity vision

The project will be managed and monitored by the proponent and partners. To ensure permanency of the project, the management has planned to get in person help from the local divers for further maintenance of the location in addition to the management from the proponent.

2.11. Proposed budget of the project

The proposed budget of the project is MVR 2.5 million. Finance is proposed to be raised through sponsorships by large organizations in Maldives.

2.12. Project construction details

Objective: to describe the various construction components, describe the construction details and inform the relevant authorities of the factors involved in the proposed project.

2.12.1. Summary of components of the project

The project requires submerging the airplanes to the proposed location. In order to achieve the said objective:

A. In the workshop, the plane will be prepared and made ready with the foot-base for submerging.
B. After preparation, the airplanes will be moved to the location prior to submerging, and will be set up in the workshop.
C. This will be followed by the movement of the airplanes with the foot-base (cargo) to the port for transportation of components separately.

D. To deploy the cargo, a barge with a crane or any other appropriate vehicle capable of bearing the load of the airplane, foot paddings, and any other gear, with the added stress of the unpredictable current shifts will be used.
E. Once on site, the divers will separately assemble the components of the structure appropriately.
F. Maintenance and management

2.12.2. Components of the project

Moving the airplane in the current location.

This section details the procedure to move and shift the airplane in the location.

A. The airplane will be prepared by trimming the weeds grown around it if any.
B. It will be cleaned and the rough dangerous edges smoothed out as much as possible
C. This will be followed by a simple double check of the internal frame to confirm the integrity of the airplane.
D. Next a crane will be used to lift the load to shift and adjust the system

Modification and preparation

This section details the procedure to make the airplanes and the stands submergible

A. Once in the workshop, the airplanes will be cleaned, washed and the structure repaired.
B. Next the structure will be made porous for the water to permeate in a timely manner that reduces stress on the crane.
C. After which the anchor sleeves will be welded to the inner body of the structure.
D. The wings and the cut outs will be reinforced to account for the stress of the currents.
E. The foot paddings will be cast, with the intention of achieving C30, with a concrete ratio of 1 cement: 2 river sand and 3 gravel with re-bar reinforcement and left for 21 days to cure.
F. Once hardened, the pad footing will be treated with a polymer layer to minimize porosity.

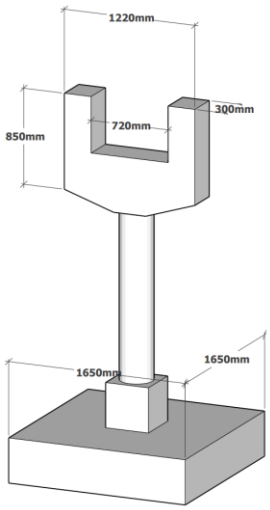


Figure 5 reduced diagram of basic concept of the stand (reduced map).

G. The proposed dimensions are a groove 300mm thick at a depth of 720mm. Foot padding covers 2722500mm^2 as the base and will be a weight of 4000kg

Mobilization

H Mobilization is proposed in three instalments. First the foot-paddings, followed by the frame and the main structure respectively.
I. Initially the crew will be informed of the location and the orientation of the structure.
J. The mobilization is proposed through a barge and crane. This will be followed by loading up of the cargo on the barge from MSO. The same crane will be used to lift the cargo from grip locations using sufficiently strong cable.
K Once lifted, with the aid of the ground crew, the cargo will be moved to a spud anchored barge capable of dispersing the weight. Ideally the barge should be able to disperse a minimum of 2000Kg, which is the maximum cargo weight. In addition to the cargo, the barge must disperse the weight of the vehicles and crew that will be used to deploy the system
L. The barge will be moved towards the location using a tug.
M Once on site, the barge will be anchored using the spuds, and the cargo will be deployed with divers on site.
N Once in the water, the pull from the crane will be released once the divers successfully attach the counter weight or bouncy balloons to the submerged system and once a positive bouncy is confirmed.
O. Then the cargo will be taken to the location, and through controlled release of air, lowered to the site and oriented just before touchdown.

Assemblage

P. Then the cargo will be taken to the location, and through controlled release of air, lowered to the site and oriented just before touchdown.
Q. Sections of the structure will be brought in separately and will have to fit into sleeves.
R Once sleeves are connected, they will be assembled together.
S. Mooring buoys capable of withstanding vessels of 150m will be set on location post implementation.

Operation

T. The dive site will be accessible to all however, all
U The general management, cleaning and reporting of damages will be as per the agreement between the tourist resorts in the vicinity and HDC.

2.12.3. Proposed movement paths

The following maps show the proposed path for the structures to be moved through the island. From location to the landing craft and from the landing craft to the proposed wreck site.

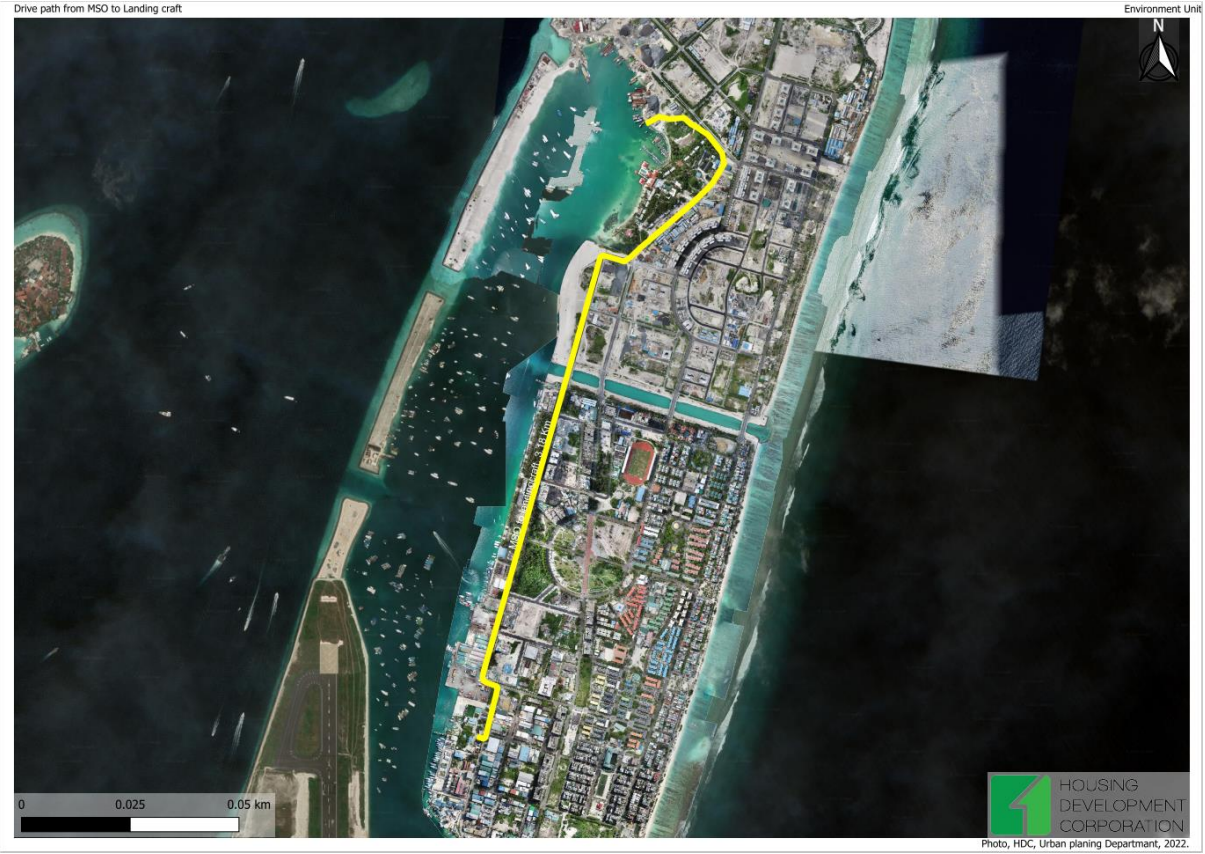


Figure 6 Map showing the proposed path from MSO to loading craft (full map attached)

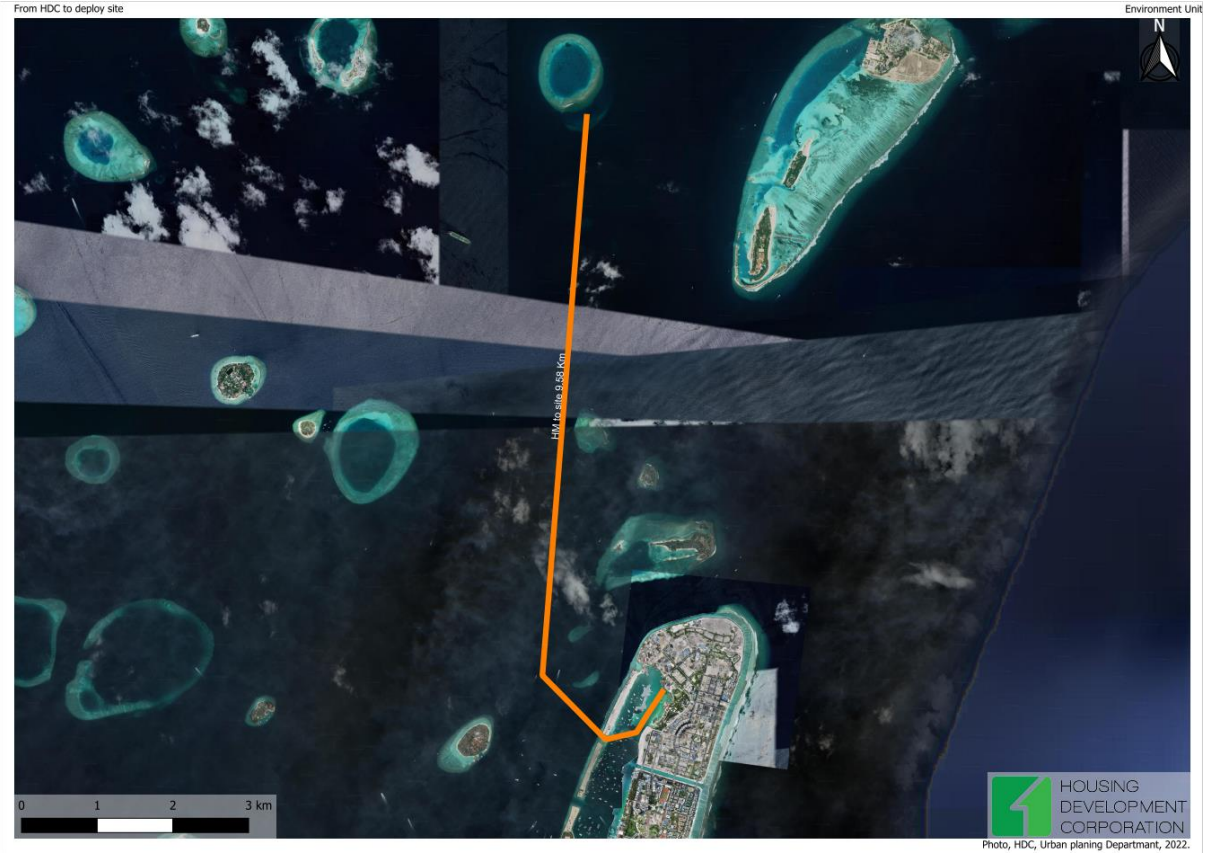


Figure 7 Map showing proposed path from Hulhumale Phase 2 to dive site on the landing craft (full map attached)

2.13. Project Inputs and outputs

2.13.1.1. Project inputs

The following are the estimated major inputs as per the work methodology specified. Since the management and operation is carried out inhouse, the inputs and outputs are greatly conserved. It must be noted that the anticipated quantities are assumed since the estimation is not finalised.

Input source	Source type	Anticipated quantities	How to obtain
Trainers	HDC staff	3 staff	Internal staff
Management and operation staff	HDC staff	20 staff total	Through the proponent's procurement process
Material for training	Books and pens	Enough for 23 staff	Through the proponent's procurement process
	Food	Enough for 23 staff per training	Through the proponent's procurement process
Material for construction	Safety shoes Goggles Gloves N25 masks	Enough for 23 staff for the operation	Internal acquisition
	Tow truck Crane	Sufficient for the operation	Internal acquisition and through stakeholder collaboration.
	Power tools Welding set	Sufficient for the operation	Internal acquisition
	Energy supply during construction	Approximately 100kW	From contractor generator and domestic grid.
Material for management and mobilisation	Dive gear / material First aid kit	Sufficient for the operation	
	Landing craft Barge Boat Dinghy	Sufficient for the operation	Internal acquisition and through stakeholder collaboration.

Products and waste	Anticipated quantities	Method of disposal
Urban canteen waste	Maximum 100 kg	Through WAMCO procedure
Construction waste	Maximum 20 kg	Through WAMCO procedure
Vehicle waste oil and grease waste.	Anticipated 25 barrels	Through MWSC/WAMCO procedure
Air pollution	Moderate quantity	Through sufficient screens surrounding the work frame.
Noise pollution	>65db(A)	Minimised by site demarcations

3. Policy and legal framework

3.1. Introduction

The following section addresses the legal, policy, administrative framework for the environmental management and some regulatory guidelines and standards relevant for the proposed project All the activities during both development and operation stage of the proposed project will be carried out in accordance with existing plans, policies, guidelines, laws and regulations of Maldives in addition to relevant international conventions to which Maldives is a party to.

Relevant, Environment Legislation

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

This Act set the basic principles and rules for the protection of the environment in the Maldives and whereby the Environmental guidance shall be provided by the authorized government bodies. Under this Act Environmental Impact Assessments (EIA) is mandated to be undertaken for all development projects that may have an undesirable impact on the environment. This addresses the disposal of oil, waste, and toxic gas or any substance that may have harmful effects on the environment within the Maldivian territory. it also deals with the penalty for breaching the law, and damaging the environment. The following articles are relevant during the undertakings of this project:

Article 2 states that the instructions for environmental protection will be given from the competent authority and everyone must respectfully follow these instructions

Article 3 states that all matters relating to environmental protection and preservation must be handled by the Ministry of Planning, Human Resource and Environment (MPHRE);

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

Article 5 states that any projects which pose significant impacts to the environment, an EIA report has to be made and submitted to the MPHRE. The projects which require an EIA and the regulation must be made by MPHRE;

Article 6 states that if any project is found to cause significant adverse impacts, MPHRE have the right to stop the project;

Article 7 states that any waste, oil or hazardous gas must not be dumped into any part of the Maldives, however, if strictly needed to be disposed it should be disposed of in an area designated by the Government. If such hazardous gas, waste or oil is to be disposed by combustion, it should be done in a way it does not impact human health and environment;

Article 9 states that any party who violates this law or any regulation under this law is punishable to no more than MVR 100 million according to the offence. The fine will be applied by the MPHRE

Article 10 states that any offence to this law or any regulation under this law or any action resulting in environmental damage, the compensation for such damages can be taken through judicial processes.

1st addendum to Environmental Protection and Preservation Act (4/93) law no 12/2014

Article 3 and 11 of the Environmental Protection and Preservation Act (4/93) of Maldives is amended as follows:-

Under article 3, all matters relating to environmental protection and preservation must be handled by the Ministry charged with implementation of environmental policy.

Relevance to the project: the project is carried out in the existing environment of Maldives, hence must abide by all the regulatory requirements set forth.

Relevant Regulations and Guidelines

3.1.2. Environmental Impact Assessment Regulations 2012

The decision to go forward with an EIA will be decided upon the screening process. which dictates a category and the scope of the EIA. The proponent and the proponent's consultant (who is a registered consultant) will meet the EPA and stakeholders in a scoping meeting which will approve the TOR which will set the limits for the EIA. The EIA will start with the baseline studies, impact prediction and finally reporting the findings with impact mitigation and monitoring program. The EIA report will be reviewed by EPA, where a decision note will be given accordingly. After approval the project proponents will be required to follow the monitoring and implement the mitigation measures prescribed in the EIA.

3.1.3. Environmental Impact Assessment 2012 and Amendments

The EIA Regulation, which came into force in 2007, has been revised and this revised EIA Regulation is currently in force since May 2012. The Regulation sets out the criteria to determine whether a development proposal is likely to significantly affect the environment and is therefore subject to an EIA. Schedule D of the EIA Regulation defines the type of projects that would be subject to EIA. The main purpose of this Regulation is to provide step-by-step guidance for proponents, consultants, government agencies and the general public on how to obtain approval in the form of an Environmental DS.

3.1.3.1. 2nd addendum to the Environmental impact Assessment Regulation 2012

With the 2nd addendum to the environmental impact assessment regulation 2012, there were some procedural changes made to the EIA process. The most important was the shifting of tourism related development projects EIAs to the Ministry of Tourism. Other than that, slight changes were made to the process such as the finalization of the TOR during the scoping meeting (article 11(b)) and changes in the fees for the review processes under three different categories (article 7(c)).

3.1.3.2. 3rd addendum to the Environmental Impact Regulation 2012

One of the main modifications to the EIA regulation is that the EIA consultants are classified into 2 categories. To be eligible for a category A consultant, the applicant should hold a minimum of level 7 qualification in an environment related field recognized by the Maldives National Qualification Framework. Likewise, to be eligible for a category B consultant, the applicant should hold a minimum of level 7 qualification in specific fields relevant for the nature of the project recognized by the Maldives National Qualification Framework. As such, this report is prepared by registered category A EIA consultants.

3.1.3.3. 4th addendum to the Environmental Impact Regulation 2012

One of the main modifications to the EIA regulation is that the exclusive list for EIAs were changed such that EIAs are not required for reclaimed lands until three years from the reclaimed date unless the project involves dangerous chemicals, oil storage, incinerators, release of toxic chemicals to atmosphere, and fiberglass works.

Relevance to the project: The current project although not specifically specified, upon screening was categorized by EPA as a project that requires an EMP.

3.1.4. Regulation on Sand and Coral Mining

This regulation covers the ban on sand, coral, and aggregate mining from cost al zones, and uninhibited islands that have been leased.

The project notes, identifies and strictly follows the ban on coral mining from house reef, and atoll rim which has existed since 26 September 1990

3.1.5. Regulation of Dredging and Land Reclamation (2013/R-15),(2014/R-13)

2013/R-15 Since 2nd April 2013 the regulation of Dredging and Land Reclamation is in effect with the aim of reducing environmental impacts associated with dredging activities in islands, and reefs across Maldives

2014/R-13 Since 9th February 2014, through the amendment 2014/R-15, clause 13,(ز) it was declared that the cabinet could allow a project if they identify the project to be of social, and economic importance .given that the proponent fulfil the following;

- Carry out an extensive baseline study of the protected area
- The organisms and the fragile ecosystem of the protected area must be;

o Relocated

o Acclimatized to site of relocation

o Should be monitored according to a management plan

o The monitoring plan must be approved

- Preparation, and implementation of a management plan for a similar area larger than the site or number of areas as approved by the government.
- Identify the impact the proposed change will have on the water table, implement recovery actions, and monitor the changes and report to the authorities.
- Identify potential flood episodes due to changes, and develop a flood drainage system on the island.

This project does not have dredging components. However, it has a marine footprint.

3.1.6. Regulation on cutting down trees

Cutting down trees and relocating trees are regulated in the Maldives by law on cutting down, uprooting, digging out and exporting of trees and palms from one island to another. The regulation is made in accordance to Law No 4/93. The law states that the law is to educate the citizens and contractors and developers on the importance, and need of management of trees and provide preservation of the existing trees.

The law prohibits the following trees to be removed.

A. The riparian vegetation growing around the islands extends to about 15m from the vegetation line inland.
B. All trees and palms growing in mangroves and wetlands, and the vegetation surrounding the area; 15m from the wetland.
C. All trees in Government protected areas
D. Trees that are being protected by the Government in order to protect species of animal organisms that use the trees as habitat.
E. Trees / palms that are unusual, unique, and special in nature.
F. In case off removal, the law states
G. That prior permission must be obtained for removal or relocation of 10 or more palms.
H Un-specified removal and land clearance requires an EIA
I. The crown spread of the palms should be at +15 ft from the lowest point to qualify for removal.
J. The trees to qualify for removal should be more than 8ft from the lowest point of the trunk to the tip of the highest branch.
K It also states that all trees removed shall be removed under the supervision of the government authorities that holds jurisdiction.

Relevance to the project: the project does not propose cutting down trees. However, weed clearance is required for the project. Therefore the segment is inserted to the MEE.

3.1.6.1. The amendment to this regulation (regulation no 2014/R7)

The amendment to this regulation (regulation no 2014/R7) has specified a set of categories and any tree falling under these categories is not allowed to be removed unless it is a project of the government approved by the parliament.

Relevance to the project: The regulation has been specified and discussed with the contractor and proponent and by signing the EIA approves and acknowledges this.

3.1.7. The Environmental Liability regulation (Regulation 2011/R-9)

This regulation is also pursuant to Environment Protection and Preservation Act of Maldives (4/93). The regulation is aimed at maintaining equal standards for reprimanding and enforcing environmental liabilities, fines for those who violate the rules and regulations and give guidance to those who are involved in the implementation process of the regulations pursuant to Preservation Act of Maldives (4/93). Provide the basis for levying fines on environmentally damaging violations to avoid environmental deterioration, extinction of biological resources, environmental degradation and wastage of natural resources. One of the key objectives of the environmental liability regulation is also to practice polluter-pay- principles in the Maldives.

Relevance to the project: Apply with respect to the environmentally relevant aspects of the construction and operation phase and contractors shall take all practical measures to ensure that the mitigation proposed in this EMP is followed.

3.1.8. Construction Site Health and Safety Regulation (2019/R-156)

The regulation was published by Ministry of National Planning and Infrastructure on 30th January 2019 as supporting document to National Construction Act (4/2017) . The purposes of the regulation are

To define the minimum Health and Safety precautions that needs to be practiced to ensure the Health and Safety of workers and the public.

To define the fines and actions that will be taken against the parties that do not follow the regulation.

Ministry of National Planning and Infrastructure will be the implementing authority of the regulation. The regulation defines the responsibilities of the contractor and fines for breaching the regulation. As per the regulation it is mandatory for the contractor to carry out the following:

A. To provide Personal Protection Equipment (PPE) to all workers.
B. To conduct Health and Safety Inductions sessions for all workers.
C. All workers must complete the Health and Safety Training when they start work at a company.
D. All contractors must have a Health and Safety Plan and Emergency Plan and workers must be trained to follow the both plans.
E. Contractor must ensure all the works are carried out as per Health Safety Plan.
F. Contractor must install Health and Safety Boards at the Works site. Warning signs and speed limits should be installed accordingly at the site.

G. Contractor must ensure the safety of adjacent properties next the work site and take all necessary precautionary measures to prevent damages to nearby properties.
H Contractor must provide safe passage for the public when the works are carried out on public places and roads.
I. All work sites must have a Health and Safety Supervisor to assess the Health and safety of site and compile reports. He must record all accidents on site and inform the head office.

Relevance to the Project: The project must follow regulation to ensure a safe working environment for the workers, volunteers, and staff . The project will follow all the requirements of the regulation at all mediums; land and sea, to ensure the Health and Safety of workers and the Public.

Public health emergency regulation (2020/R40)

The guideline defines the procedures to follow in case of a public health emergency.

Relevance to the project: The contractor and the proponent is responsible for the general health of the staff involved. Hence must follow the procedures accordingly.

3.1.9. Regulation on treatment of the diseased in case of a contagious disease (2020/R34).

The guideline dictates the best practice for management and treatment of the diseased in case of suspected or confirmed contagious pathogen.

Relevance to the project: Although the project is carried out in an isolated lagoon a major component of the development is carried out in an inhibited island. Given the current climate of reoccurring COVID19 cases, the contractor must be informed and prepared for the proper procedure for such an unfortunate event.

3.1.10. Regulation on isolation and quarantine facility standards (2020/R35), amendment 1 (2020/R-76)

The regulation and the amendment define the requirements, and standards of the mandatory quarantine facilities for isolation of incoming, potential cases, and outgoing staff.

Relevance to the project: The contractor is required to follow the guideline to prepare proper quarantine facilities.

3.1.11. Regulation on waste management (58-R/2013), amendment 1 (10-R/2014), amendment 2 (29-R/2014), amendment 3 (90-R/2017), amendment 4 (63-R/2018), and amendment 5 (109-R/2021),

The waste management policy ensures that the Maldivians are well aware of the waste management techniques and maintains cleanliness as well as the natural aesthetics and clean air quality of the country is well maintained. Under this policy, all the inhabited islands need to implement a waste management plan and manage all the wastes generated from that island in accordance with that policy.

The policy was framed keeping in mind a healthy environment which is solid waste free. Ensuring safe disposal of Solid waste, chemicals and hazardous industrial waste. Encouraging recycling, and reducing of waste generated. It also allows development of guidelines on waste management and disposal and advocate enforcing such guidelines.

Relevance to the project: This project will comply with this guideline such that any wastes generated during the construction and operation phases of this project will be dealt with in accordance with the waste management plans of HDC and the government.

International Conventions

3.1.12. United Nations Convention on Biological Diversity(CBD)

Maldives is a party to the CBD The objective of the convention is "the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding".

Relevance to the project: It is recommended for the developer to use all mitigation measures including planning a pathway of infiltration to minimize negative impacts.

3.1.13. International Plant protection convention (IPPC)

Since 3rd Oct 2006 Maldives has followed the IPPC in order to protect the native plant species in the Maldives from the risk of disease from introduced and imported plants. Hence, it is advisable for the proponent to be aware of the requirements of the IPPC and obtain the necessary IPPC certifications if any plant is to be imported later on

3.1.14. National Biodiversity Strategy and Action Plan

The National Biodiversity Strategy and Action Plan 2016-2025 (NBSAP 2016-2025) seeks to ensure that threats to biodiversity are addressed, biodiversity is conserved, sustainably used and benefits arising from them are shared equitably. It also encompasses ways of addressing gaps, challenges and constraints highlighted in earlier sections. It is a living document that will have the capacity to adapt to changes in national conditions, capacities and to the changes in the in- transactional arena.

Relevance to the project: Will be applied with respect to minimizing the threats to terrestrial and marine biodiversity during construction works, by ensuring that all mitigation measures are taken so there is no harm to endangered species

3.1.15. Relevant Environmental permits required for the project

3.1.15.1. Environmental Management Plan (EMP) Decision Note

The decision note is based on the comments of the EIA reviewer. The note may request further information from the proponent or may declare that the EIA provides sufficient details to proceed with a decision. If the EIA is not rejected, the decision note will administer the scope of the project and strengthens the EIA which binds the proponent, contractor and sub-contractors to the monitoring and implementation of the mitigation measures prescribed in the EIA

Relevance to the project: This EMP will also be subjected to review after completion, and will be put into effect after a decision note legally binding the proponent and the contractor to the terms in the EIA

It must also be noted that the project proponent and contractor upon coming to an agreement will adhere to all the relevant laws, regulations and guidelines put into effect during implementation even if it is not specified in the above section in the EMP.

4. Methodology

The following chapter describes the methodology of work used in the EMP.

4.1. Stakeholder consultation

Stakeholder consultation was carried out by the project formulation and management team. Each consultation followed the following steps.

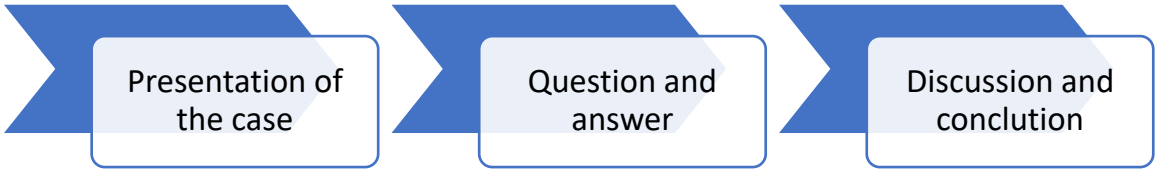


Figure 8 the basic method used in stakeholder consultation

At the end of each meeting the team requested for an official executive summary of the conclusions in written form.

4.2. Existing environment

4.2.1. Geological survey

Geological survey was carried out using a single beam sonar. A grid of the location of interest was mapped, a zig zag pattern was followed for maximum surface area coverage. The bathymetry was modelled and profiles of the required section extracted.

4.2.2. Benthic survey

Due to the unique nature of the location and due to the unique structures encountered two methodologies had to be utilised.

4.2.2.1. Method 1

This method was used on Significant feature 1, and Significant feature 2. A simple quadrat analysis had to carried out for both the sights as the structures were a simple rock formation. To achieve this, it is advised to use a quadrat to define the borders. However, as the structures had fragile coral growth on it, the team used a 2m pole to attain 1m elevation from substratum and took a picture.

The picture was taken to CPCe and set the border to 1m by 1m, through definition or manually using the meter stick as a guide. Then the data point distribution was set to 5 columns by 5 rows and analysed.

4.2.2.1. Method 2

Methodology 2 was used on Significant feature 3, Monitoring location 1, and Monitoring location 2. Here, the sample sites could be horizontally analysed hence a transect of 20m on a quadrat of 1m^2 was utilised. the photo was taken above 1m from the substratum using the 2m pole.

The picture was taken to CPCe and set the border to 1m by 1m, through definition or manually using the meter stick as a guide. Then the data point distribution was set to random sampling and analysed.

4.2.1. Fish count

The fish count method used is a modification of the Reef Check methodology. It was carried out by tallying encounter, size and type of specific fish species list borrowed from Reef Check. This was used for Significant feature 3, Monitoring location 1, and Monitoring location 2.

Dark butterflyfish, Arabian butterflyfish, Longfin bannerfish, Butterflyfish, Barramundi cod, Humphead wrasse, Grey grunt, Black spotted grunt, Spotted grunt, Haemulidae, Bumphead parrot, Parrotfish, Snapper, Moray eel

4.2.2. Vegetation count

Since the project does not require vegetation modification, and the location does not have significant vegetation on site, the vegetation was simply counted and identified to be presented with the data.

4.3. Impact prediction

Environmental impacts are predicted by using checklists and its significances are evaluated using matrices that are widely adopted in IEE/EIA/MP studies and in the Maldives. Expert judgment and professional opinion as well as a thorough literature review of relevant publications and IEE/EIA/MP studies were used throughout the impact assessment and evaluation process. These methods are described in detail in the relevant section of this Report.

5. Existing environment

The following section deals the existing environment of the proposed project. the methodology is specified in the relevant section.

5.1. Location of the existing structures

The two Doniar 228 that are proposed to be submerged to make the dive sites are placed in the MSO area that is in the industrial area of phase 1, Hulumale'. The structures are in 4 major parts. Two fuselages and two wings. Vegetation can be seen growing under and around it which is noted in this chapter.

5.1.1. Existing structure condition

Due to numerous structural damages the structures measurements are different. On Figure 11, the areal image shows the extent of the damage in its previous storage location (Figure 9). It must be also noted that the structures were used in this location as a habitat and shelter by numerous displaced people and individuals who lack resources or support networks to remain in housing.

The two structures have been vandalised and further destroyed and striped of its electronics in the previously placed location and prior. Chipped off debris can be seen scattered on the previously placed location.

Figure 9 Reduced map of the structure on previous location (full map attached)

Figure 10 Conditional survey of both structures by engineers in the previous location.

The structure 1 is structurally intact, while structure 2 is not. However, as per the findings of the engineers the fuselages can be moved post few structural modifications. In the work station structures will be reinforced and prepared for the project. It was also noted by the engineers that the structures must be cleaned thoroughly prior to modification.

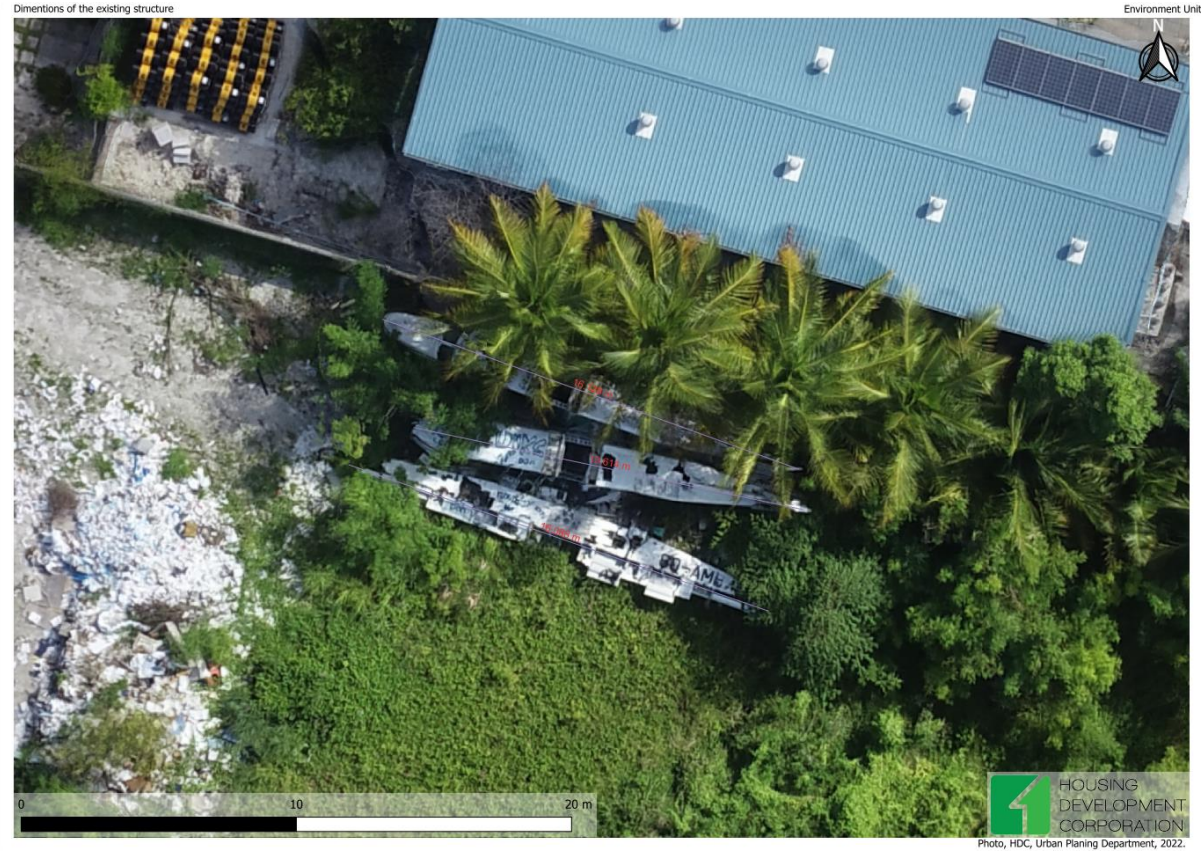


Figure 11 Dimensions of the structures, at previous location (full map attached)

5.1.2. Features on the current site of placement and work

The current site of placement is the MOS area at HDC grounds Hulumale'. The site houses accommodation for few staff further east of the site of placement.

The immediate footprint of the plot of work area is deliberately left as bare ground for major management of machinery work.

Figure 12 placed location view1

Figure 13placed location view2

Figure 14placed location view 3

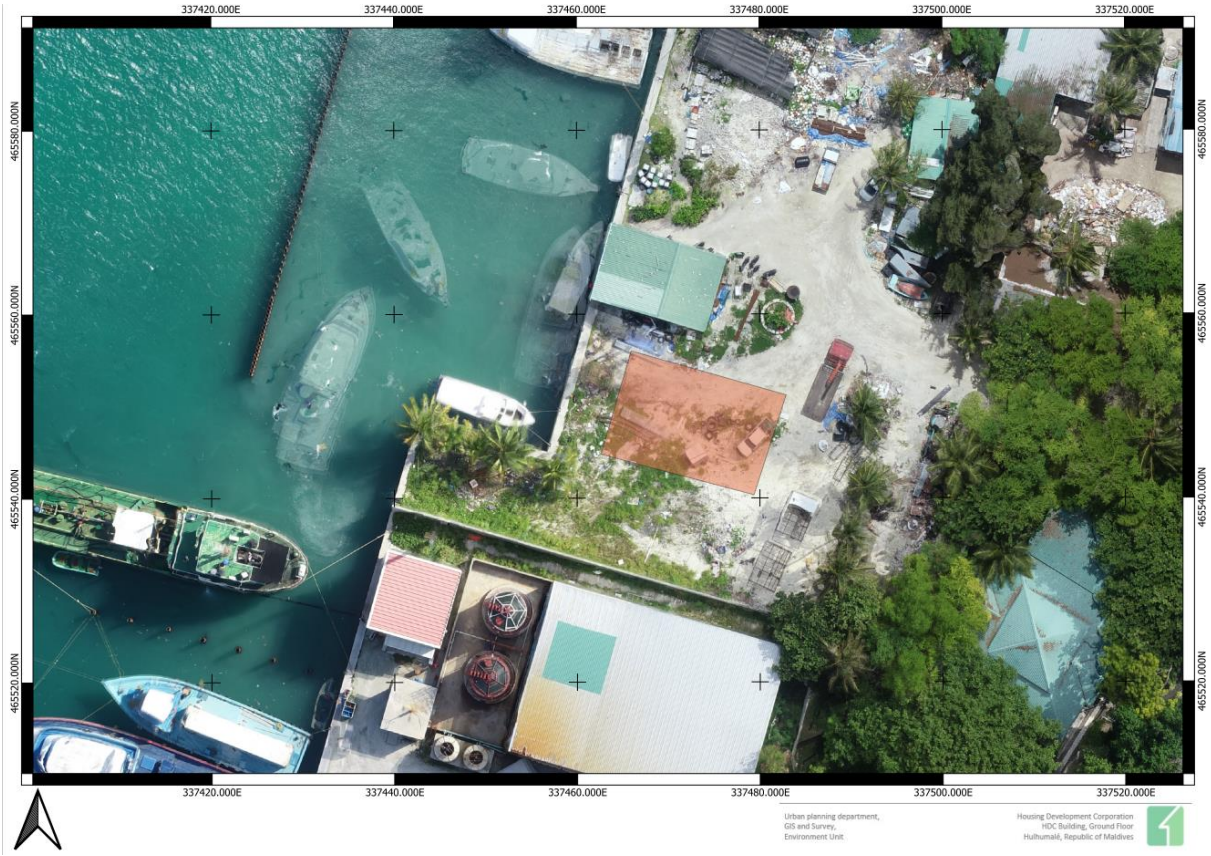


Figure 15 Currently placed location of both airplanes

5.2. Project area

Below is the area of proposed project implementation. The maps below show the sites of study and the table below provides the coordinates to location.

Site name	Coordinates	Document reference for navigation
Significant feature 1	4° 18.000'N, 73° 31.902'E	on page 32
Significant feature 2	4° 17.987'N, 73° 31.913'E	on page 33
Significant feature 3	4° 18.089'N, 73° 32.111'E	on page 34
Monitoring point 1	4° 18.064'N, 73° 31.838'E	on page 37
monitoring point 2	4° 18.227'N, 73° 32.106'E	on page 38

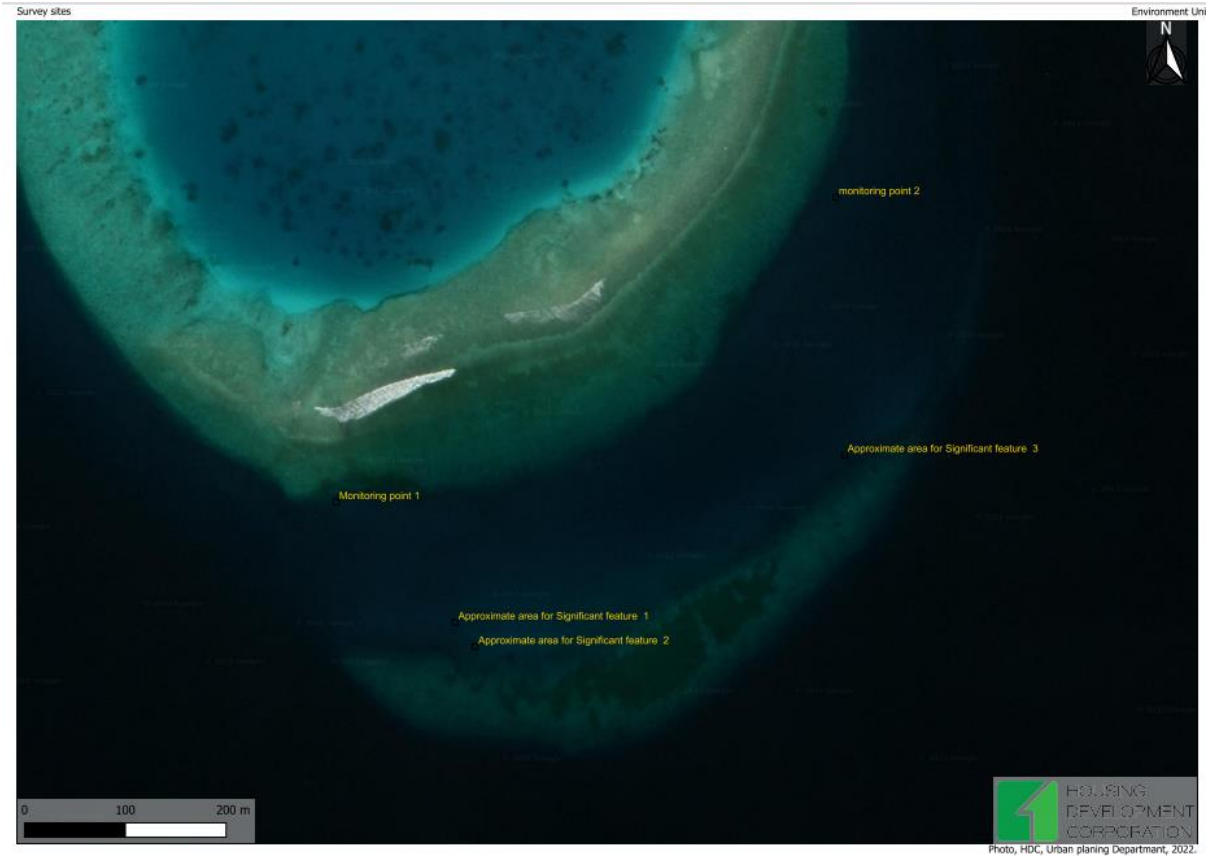
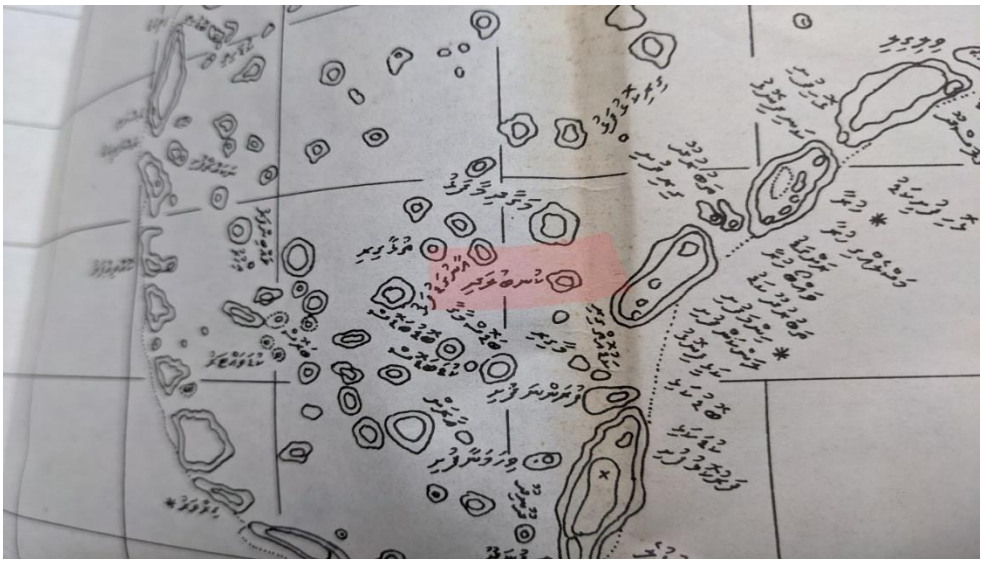


Figure 16 Benthic survey sites(full map attached)

5.2.1. Description of the project area

The project is proposed in a natural coral reef. The official name as per the records is KUBULADI (ކުބުލަދި). The GPS coordinates for the location is 43N336899.107 476081.698.



The site is approximately 9.8 km from Hulhumale and 3 Km in the westerly direction to Kanifinolhu, Lankan finolhu, and Hmmafushi reef.

The reef is a patch reef structure surfacing just under the mean sea level inside the main atoll structure. The reef has an inner lagoon surrounded by sloping outer reef from all directions. On the south-south eastern side, exists a pinnacle structure that shows clear separation from the main system

5.2.1.1. Bathymetry

The bathymetry shows a maximum depth of -3m at the edge of the reef on the main structure and a sharp fall from -4m to -12m to -28m if moved in the south-south east direction and reaches a minimum depth of -30m at depth and gradually rises to -3m if moved in the same trajectory.

Figure 17 superimposed reduced map of the bathymetry for reference (full map attached).

The model and profiles below repeat the same trend. However, on the eastern opening, the opening is deeper and on the western end the opening is shallower. This is mostly due to the structure rising past profile 5.

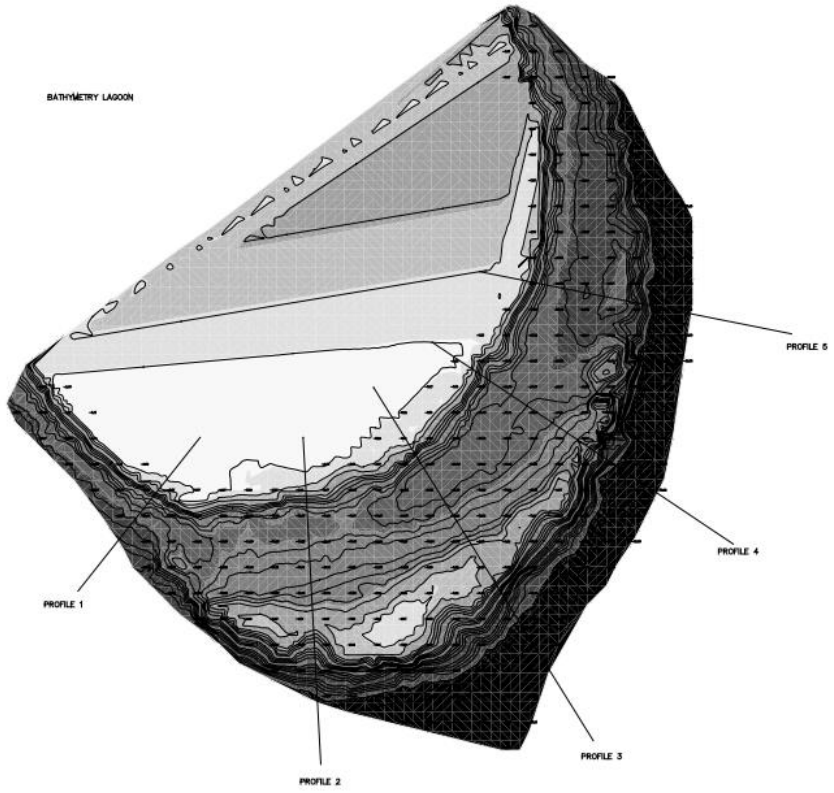


Figure 18 Bathymetry model render of the location (full map attached)

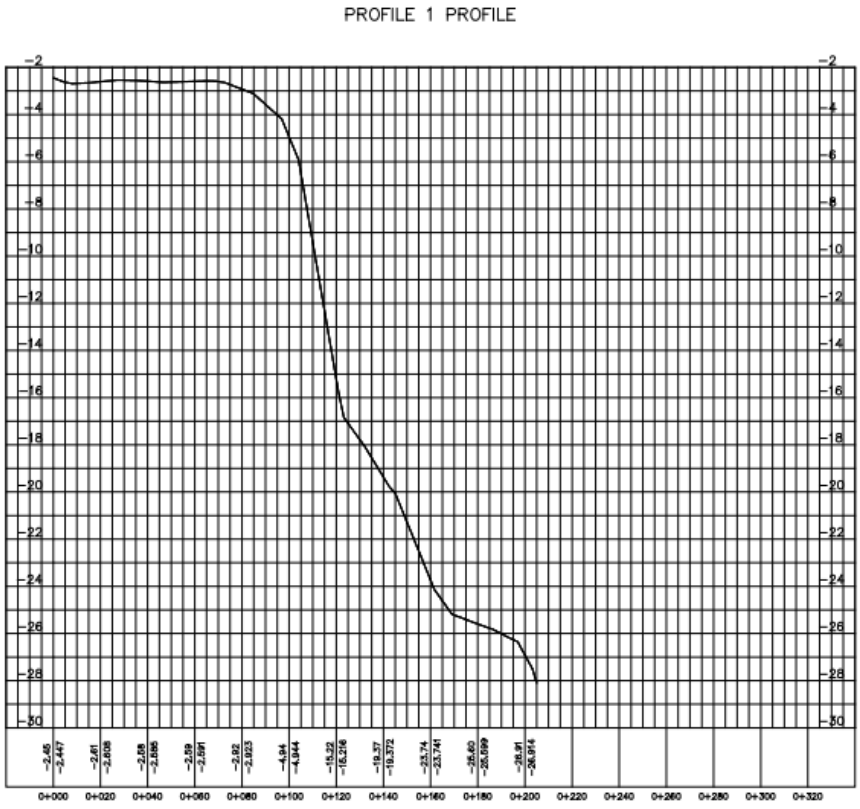


Figure 19 Profile 1 of model (full map attached)

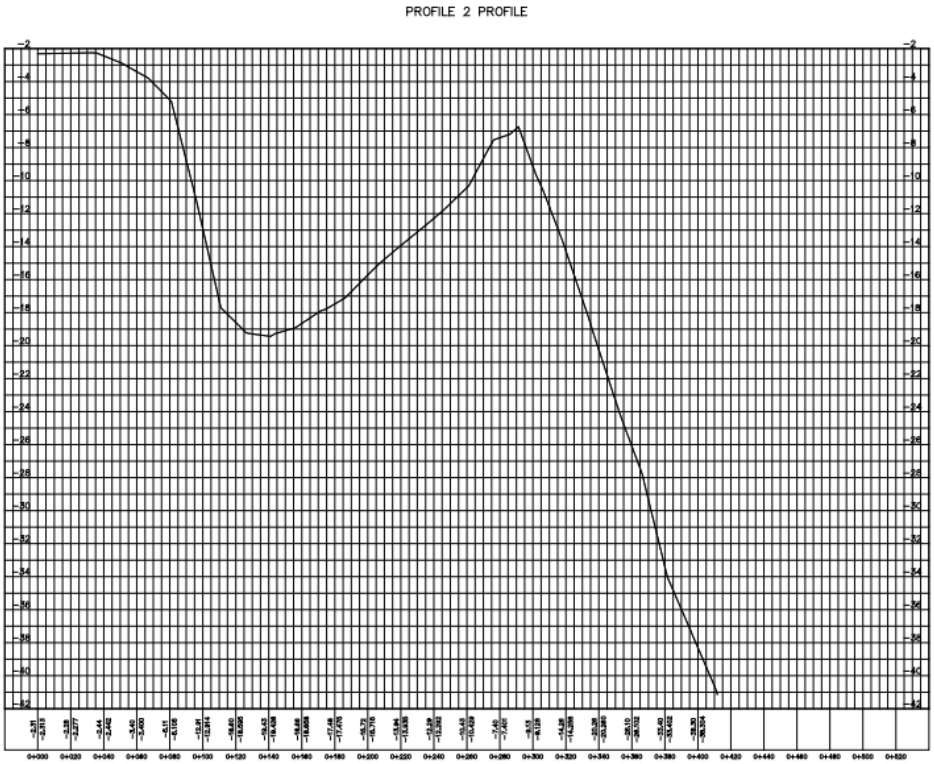


Figure 20 Profile 2 of model (full map attached)

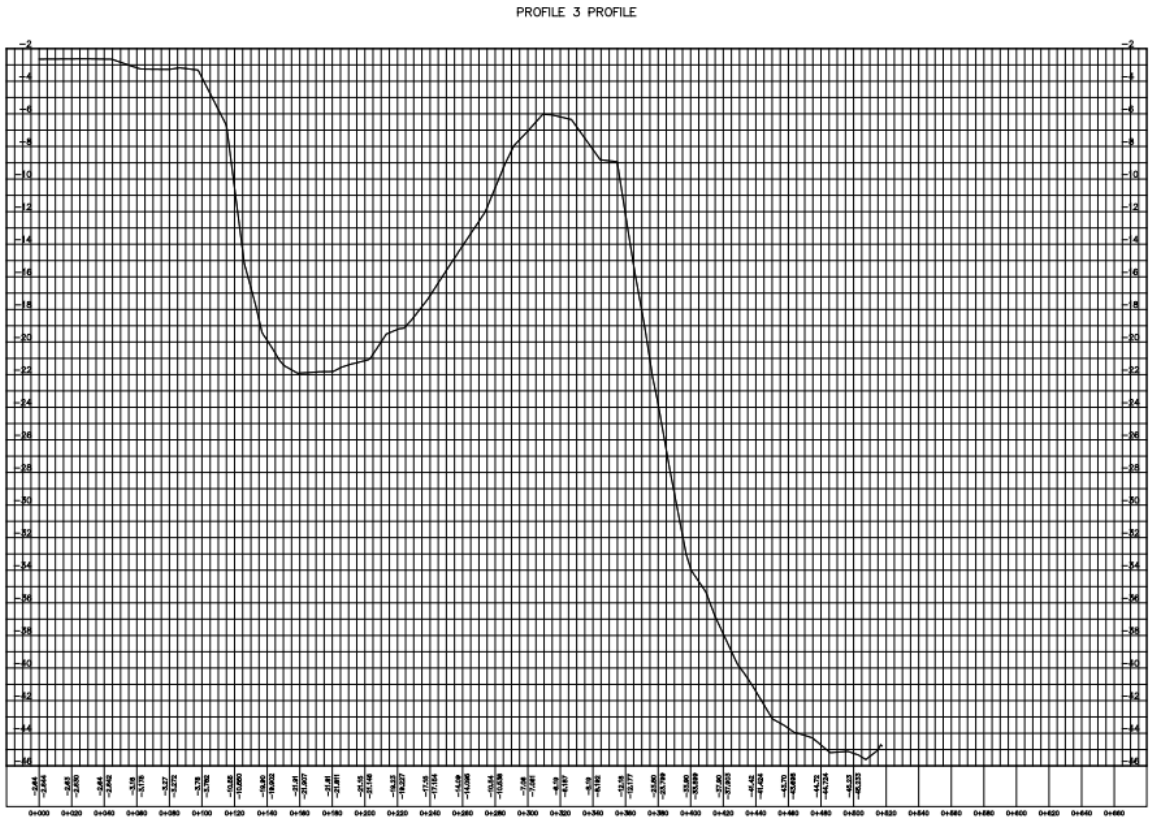


Figure 21 Profile 3 of model (full map attached)

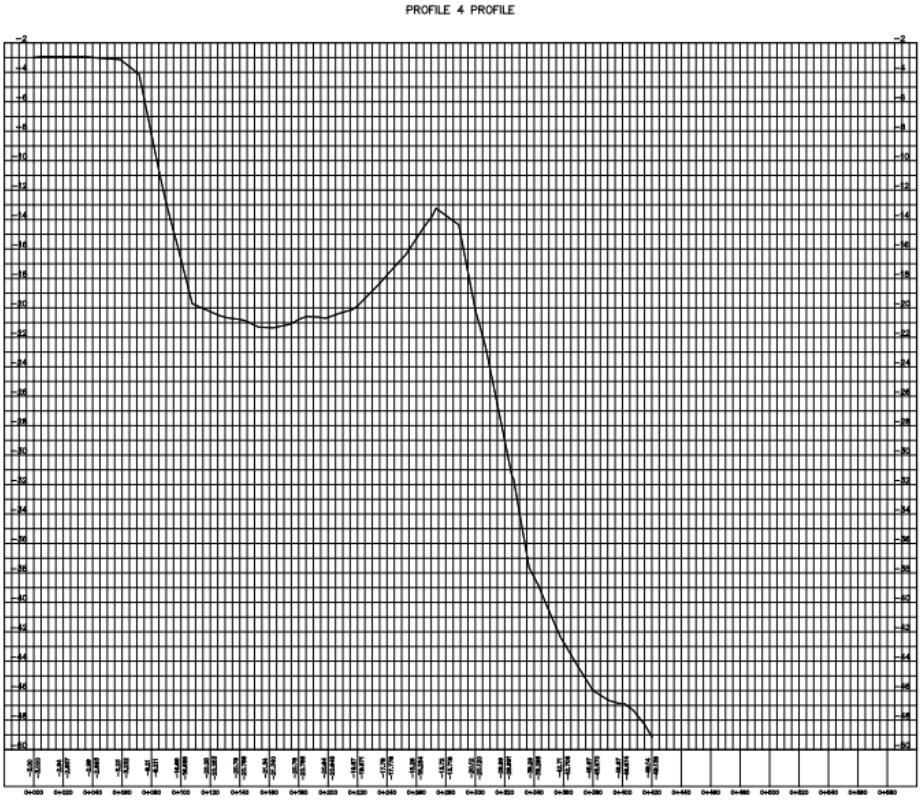


Figure 22 Profile 4 of model (full map attached)

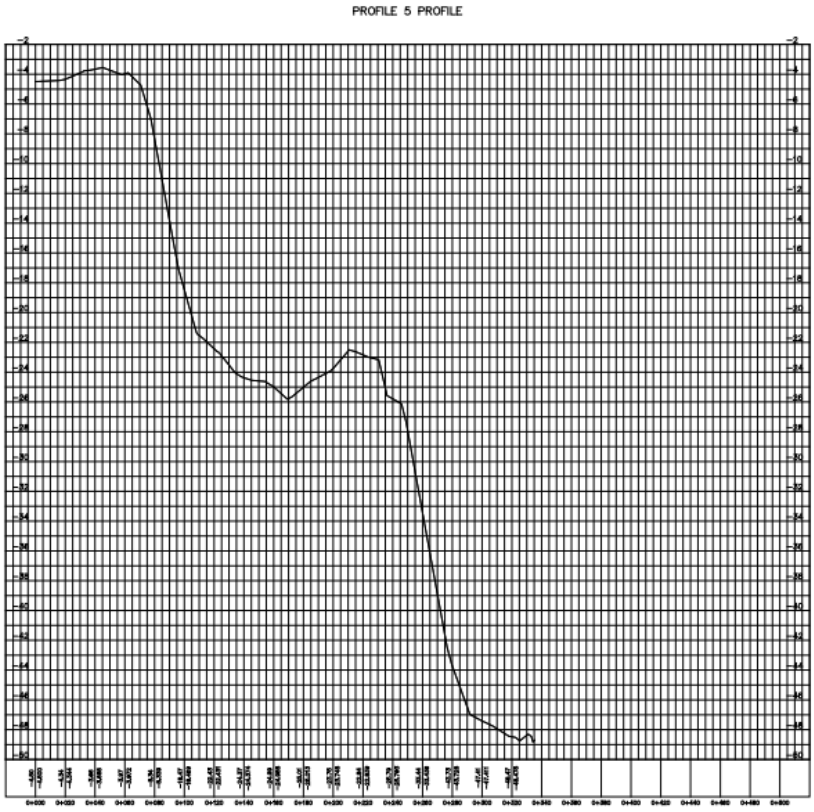


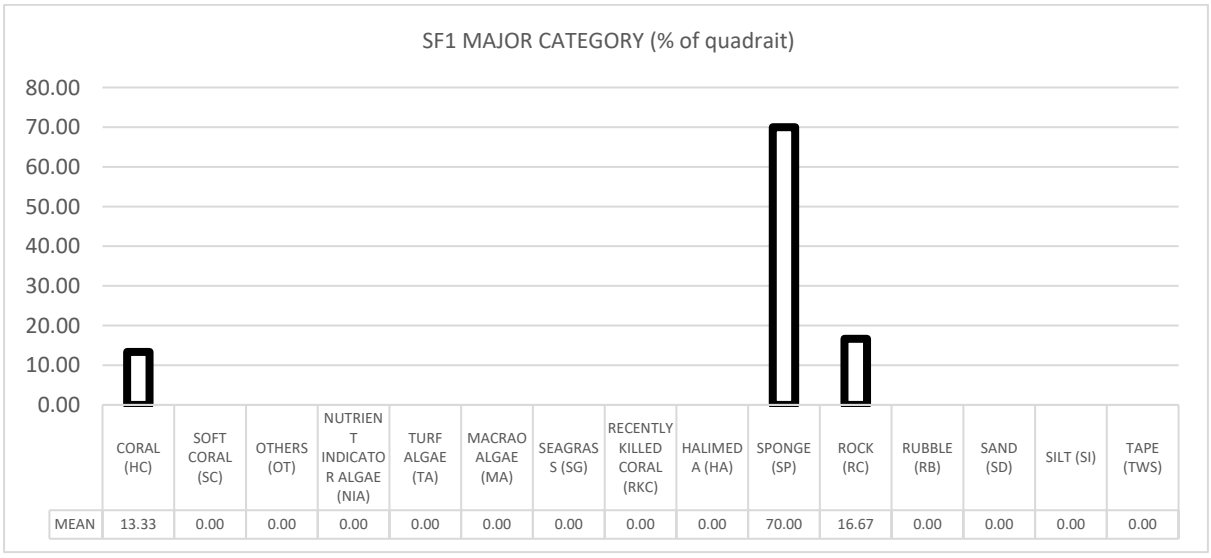
Figure 23 Profile 5 of model (full map attached)

5.2.1.2. Significant features

The proposed project area lacks significant features as the area is mostly rubble and silty sand at the time of survey dive. Therefore, during the dive any significant feature that was encountered was geo tagged and assessed.

5.2.1.2.1. Significant feature 1

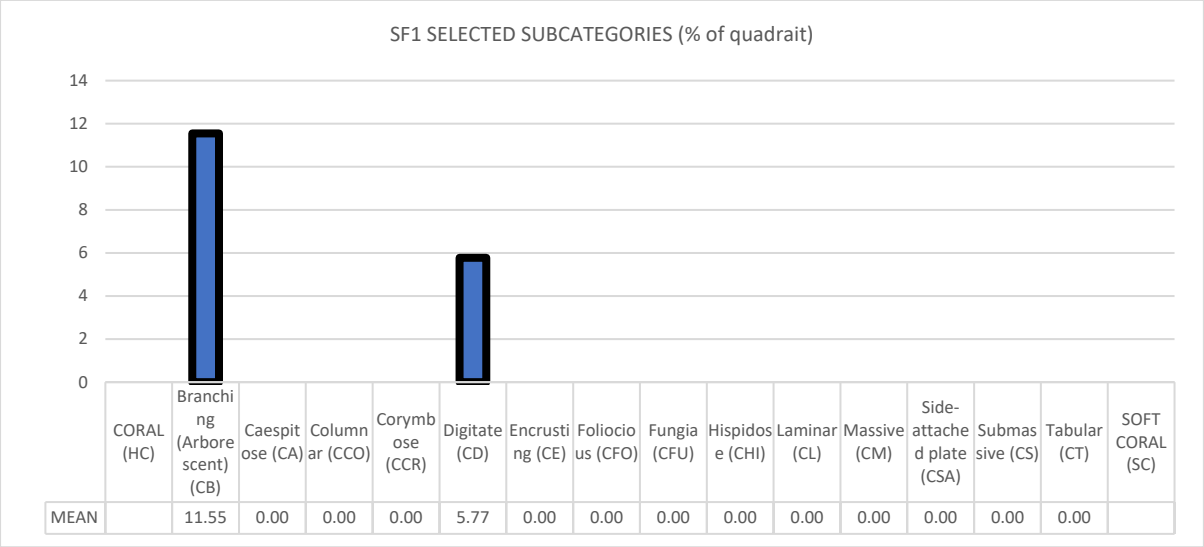
Figure 24 Significant feature 1



	CORAL (HC)	SOFT CORAL (SC)	OTHERS (OT)	NUTRIENT INDICATOR ALGAE (NIA)	TURF ALGAE (TA)	MACRAO ALGAE (MA)	SEAGRASS (SG)	RECENTLY KILLED CORAL (RKC)	HALIMEDA (HA)	SPONGE (SP)	ROCK (RC)	RUBBLE (RB)	SAND (SD)	SILT (SI)	TAPE (TWS)
MEAN	13.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.00	16.67	0.00	0.00	0.00	0.00

Figure 25 percentage categories analyzed on the quadrat (SF1)

Significant feature 1 is a small deposit substratum in which has numerous life forms growing on it. The majority of the life forms visible on the structure include didemnums, sponges, and feathers covering the substratum community.



	CORAL (HC)	Branching (Arborescent) (CB)	Caespitose (CA)	Columnar (CCO)	Corymbose (CCR)	Digitate (CD)	Encrusting (CE)	Foliocious (CFO)	Fungia (CFU)	Hispidose (CHI)	Laminar (CL)	Massive (CM)	Side-attached plate (CSA)	Submassive (CS)	Tabular (CT)	SOFT CORAL (SC)
MEAN		11.55	0.00	0.00	0.00	5.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

Figure 26 percentage sub categories of coral analyzed (SF1)

There were 2 major forms of corals on the structure; a branching coral form and a digitate coral form. The structure was surrounded by at least 30m radius of sand, rubble and silt.

5.2.1.2.2. Significant feature 2

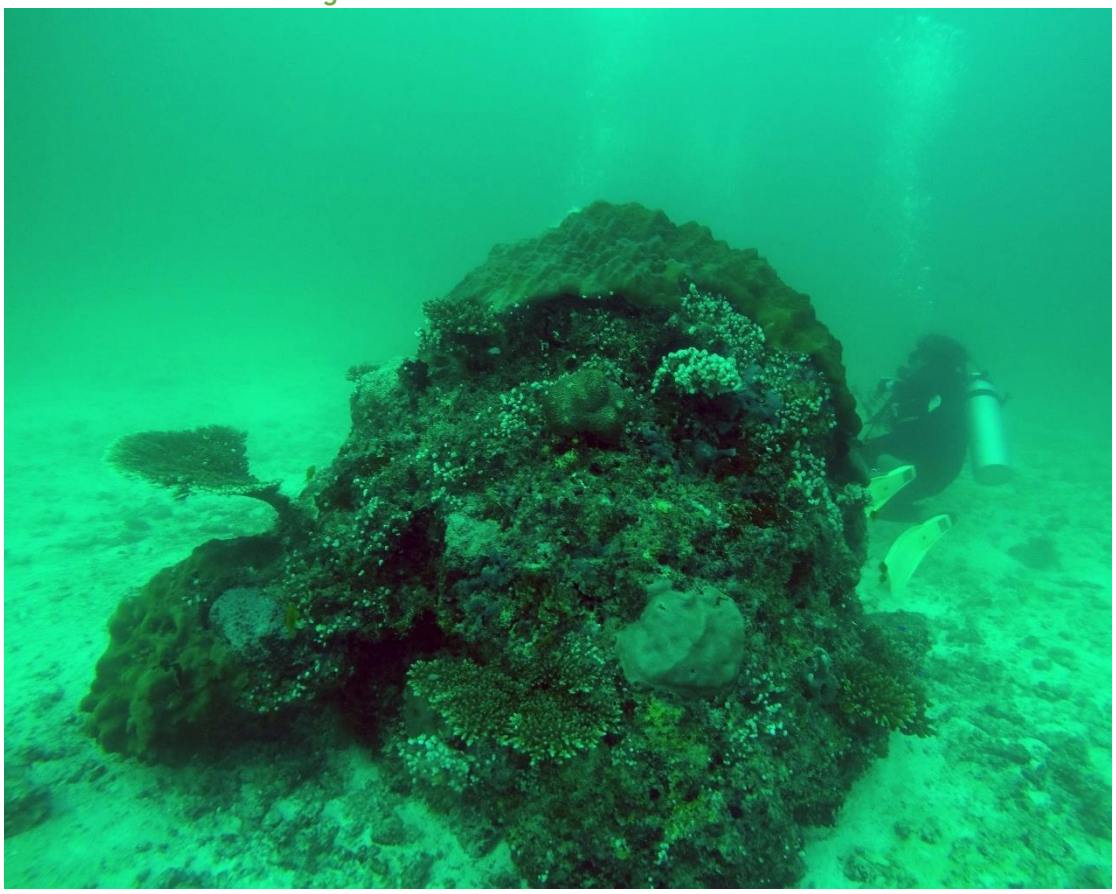
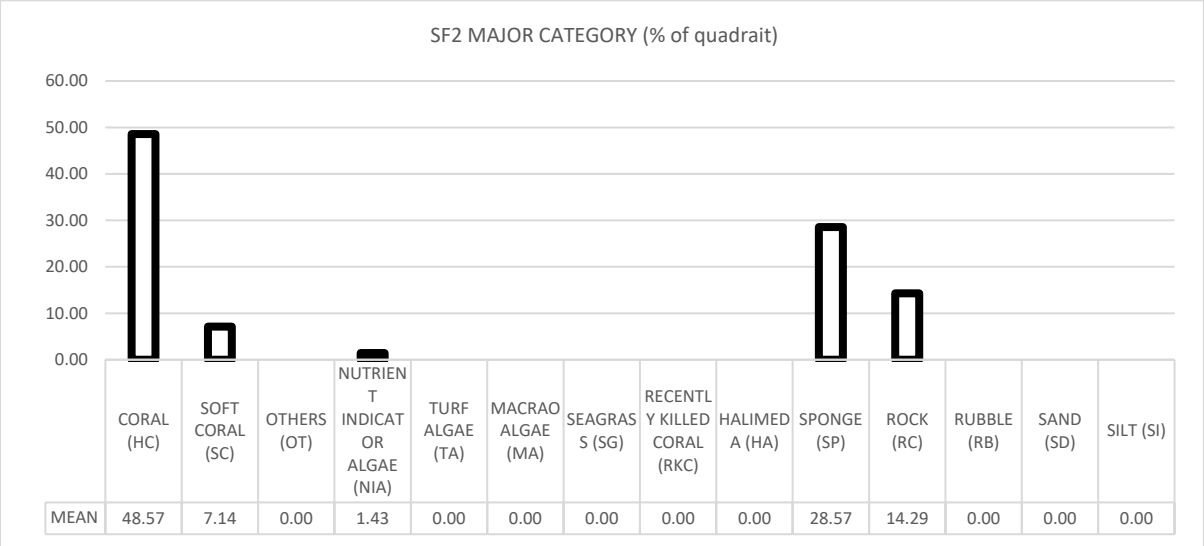


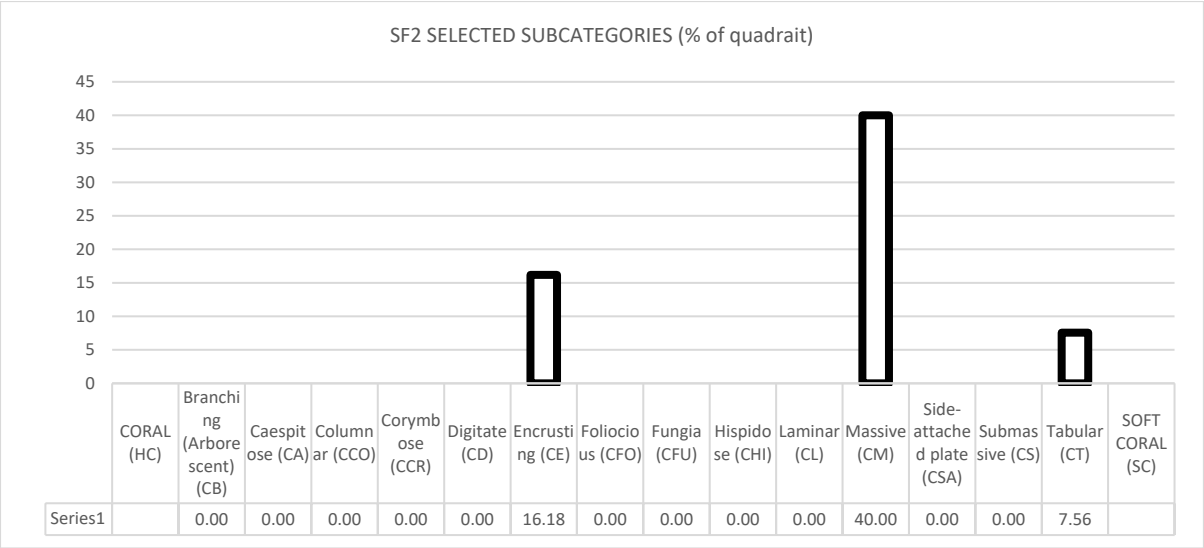
Figure 27 Significant feature 2

Significant feature 2 is similar to significant feature 1, but slightly larger. The feature is surrounded by rubble and sand similar to feature 1 here too didemnums, sponges, and feathers covered the substratum and allowed had various coral forms growing on it.



	CORAL (HC)	SOFT CORAL (SC)	OTHERS (OT)	NUTRIENT INDICATOR ALGAE (NIA)	TURF ALGAE (TA)	MACRAO ALGAE (MA)	SEAGRASS (SG)	RECENTLY KILLED CORAL (RKC)	HALIMEDA (HA)	SPONGE (SP)	ROCK (RC)	RUBBLE (RB)	SAND (SD)	SILT (SI)
MEAN	48.57	7.14	0.00	1.43	0.00	0.00	0.00	0.00	0.00	28.57	14.29	0.00	0.00	0.00

Figure 28 percentage categories analyzed on the quadrat (SF2)



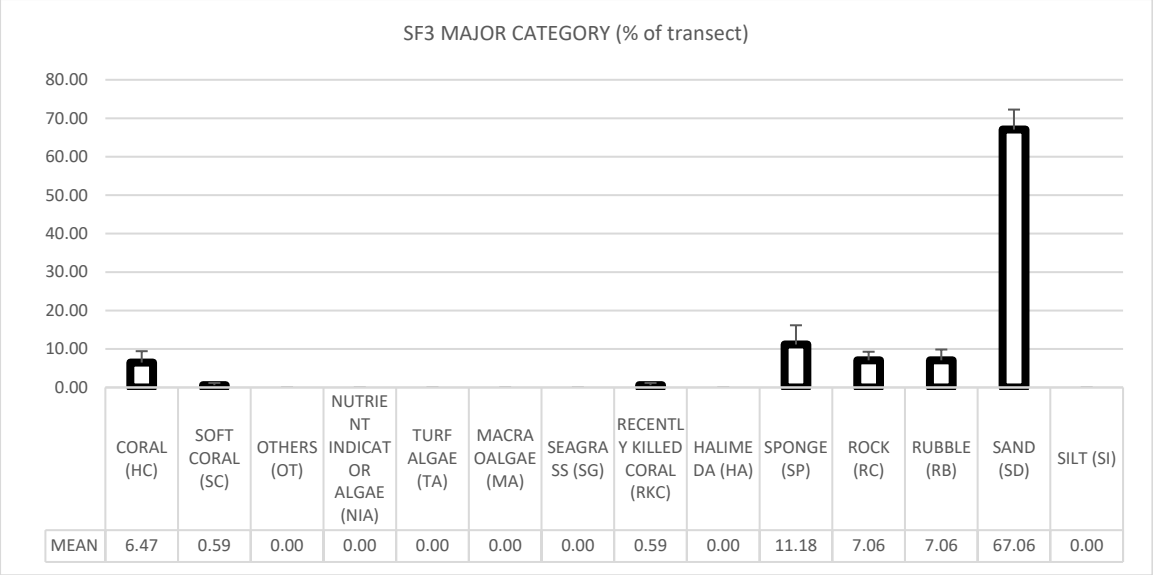
	CORAL (HC)	Branching (Arborescent) (CB)	Caespitose (CA)	Columnar (CCO)	Corymbose (CCR)	Digitate (CD)	Encrusting (CE)	Foliocious (CFO)	Fungia (CFU)	Hispidose (CHI)	Laminar (CL)	Massive (CM)	Side-attached plate (CSA)	Submassive (CS)	Tabular (CT)	SOFT CORAL (SC)
Series1		0.00	0.00	0.00	0.00	0.00	16.18	0.00	0.00	0.00	0.00	40.00	0.00	0.00	7.56	

Figure 29 percentage sub categories of coral analyzed (SF2)

The major coral form observed on the substratum was a massive form likely an evermanni. The protruding sections surrounded by other reef forms showed massive coral forms and tabular forms. Surrounding the structure expanded a vast area of rock, rubble and sand.

5.2.1.2.1. Significant feature 3

Here a transect was laid across the structure, the structure was further from the others and consisted of numerous segments. The transect laid was 20m which covered the entire area apart from one substrate rock. Given the above stated conditions, it is understood that the sand and rubble of the segment was the highest.



	CORAL (HC)	SOFT CORAL (SC)	OTHERS (OT)	NUTRIENT INDICATOR ALGAE (NIA)	TURF ALGAE (TA)	MACRAOALGAE (MA)	SEAGRASS (SG)	RECENTLY KILLED CORAL (RKC)	HALIMEDA (HA)	SPONGE (SP)	ROCK (RC)	RUBBLE (RB)	SAND (SD)	SILT (SI)
MEAN	6.47	0.59	0.00	0.00	0.00	0.00	0.00	0.59	0.00	11.18	7.06	7.06	67.06	0.00

Figure 30 percentage categories analyzed on the transect (SF3)

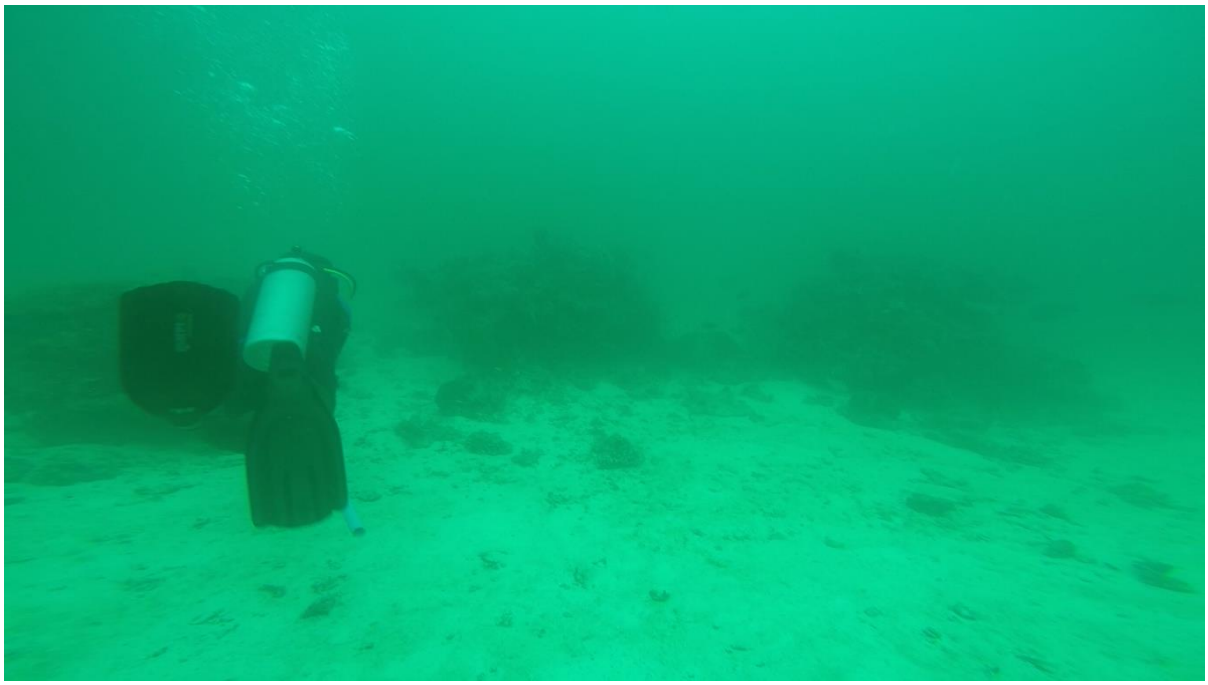


Figure 31 head on view of the significant feature 3

Soft coral and sponge was observed scattered throughout the area , namely mushroom leather coral, and blue finger sponge. Various algae forms such as nutrient indicator algae and crustose coralline algae were also visible. However, was not recoded on the transect as it did not fall under the transect sample point.

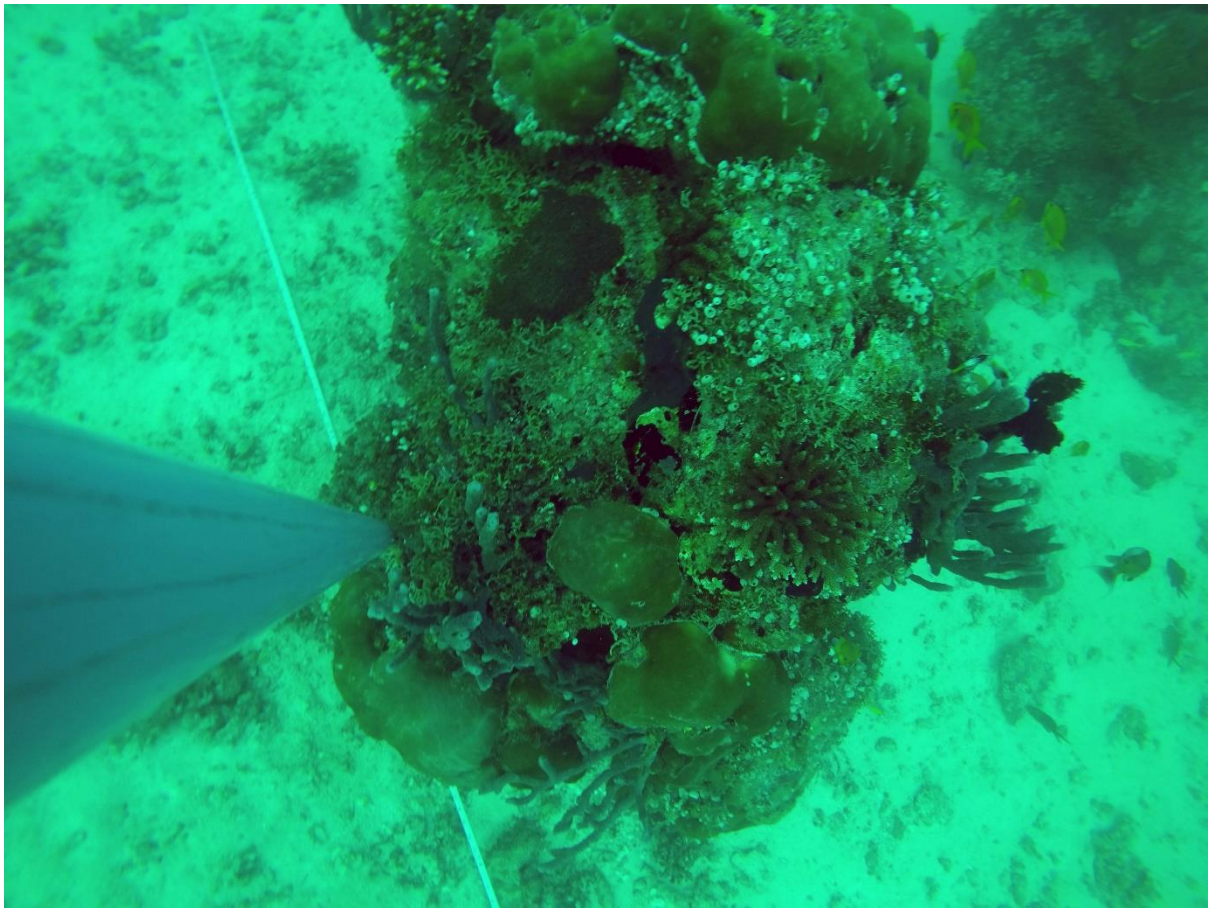
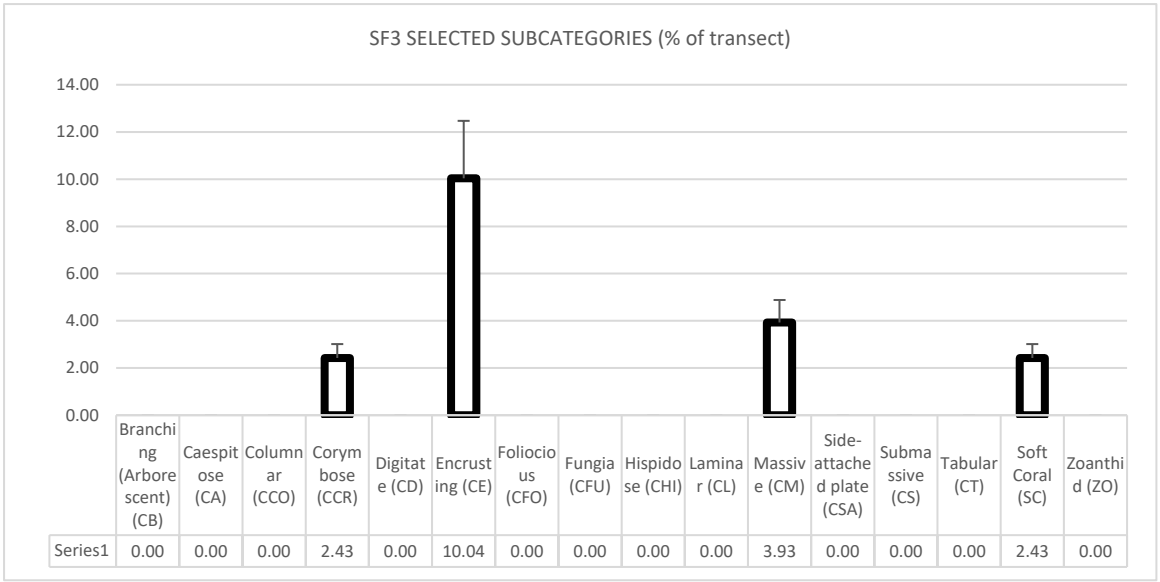


Figure 32 transect sample of Significant feature 3



	Branching (Arborescent) (CB)	Caespitose (CA)	Columnar (CCO)	Corymbose (CCR)	Digitate (CD)	Encrusting (CE)	Foliocious (CFO)	Fungia (CFU)	Hispidose (CHI)	Laminar (CL)	Massive (CM)	Side-attached plate (CSA)	Submassive (CS)	Tabular (CT)	Soft Coral (SC)	Zoanthid (ZO)
Series1	0.00	0.00	0.00	2.43	0.00	10.04	0.00	0.00	0.00	0.00	3.93	0.00	0.00	0.00	2.43	0.00

Figure 33 percentage sub categories of coral analyzed (SF3)

Within the transect, of the major forms of note were corymbose, encrusting, massive and soft corals. Encrusting forms dominated sloping substratum in two-dimensional direction.

5.21.3. Monitoring locations

Due to a lack of large scale significant features close to the proposed work area site, the monitoring locations were selected from the northern reef at an approximate depth of 5m

5.21.4. Monitoring location 1

Monitoring location 1 was at around a depth of 5m at high tide. The location sloped steeply to the depths of the western side gradually

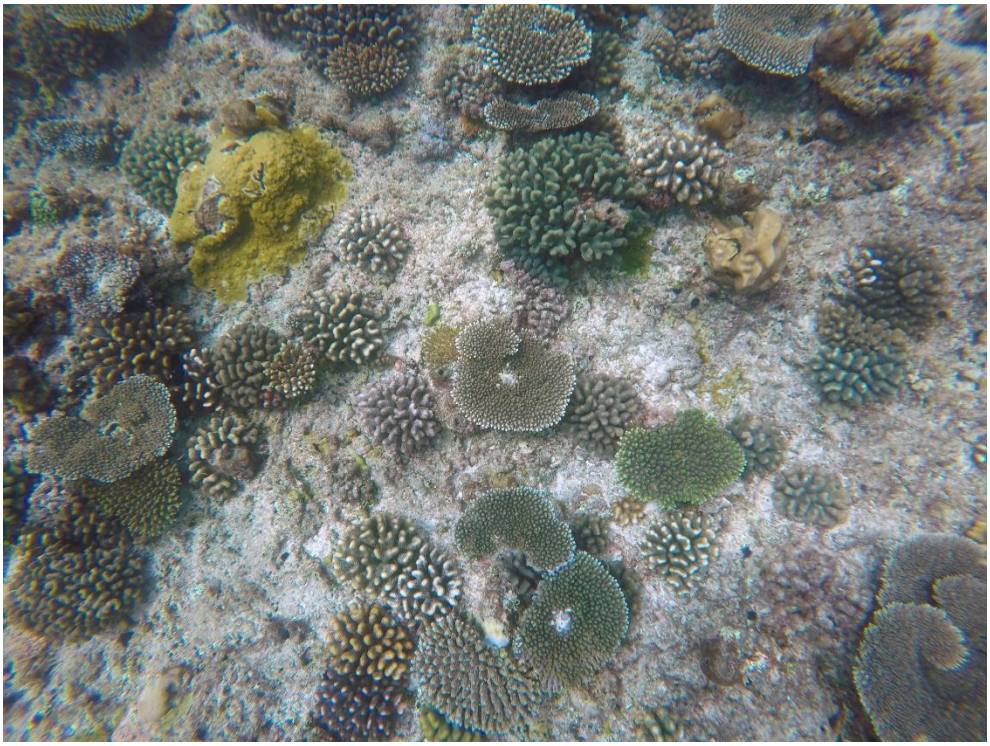
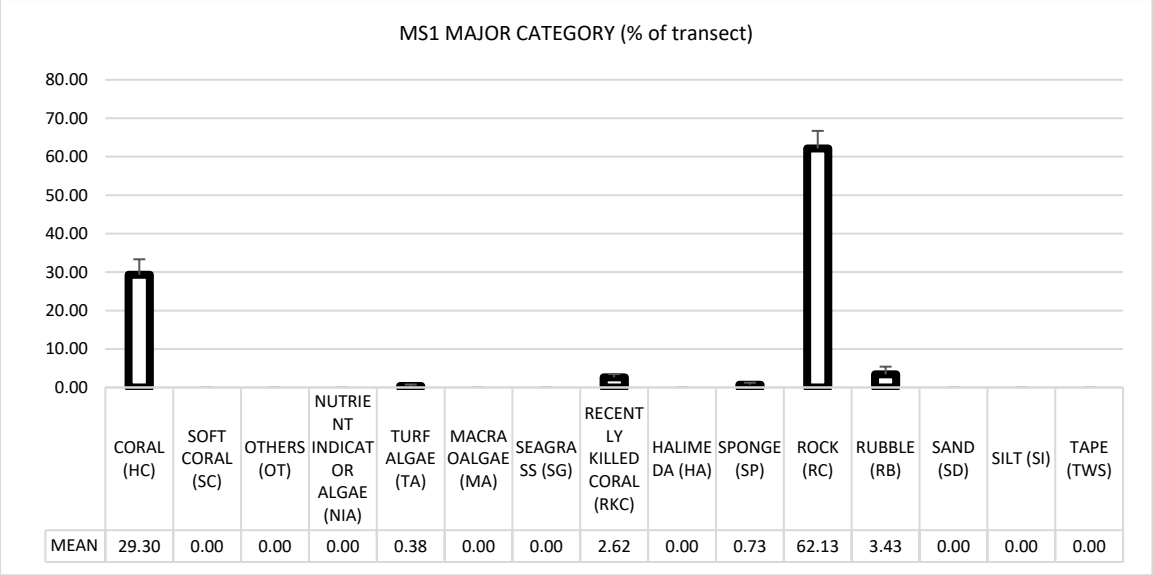


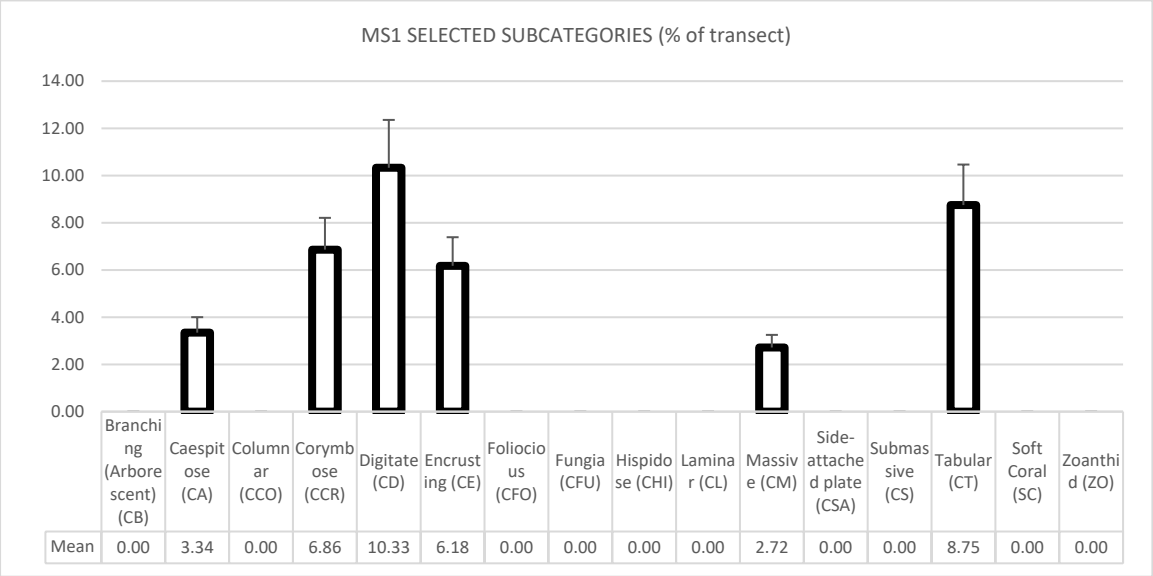
Figure 34 transect sample of MS1



	CORAL (HC)	SOFT CORAL (SC)	OTHERS (OT)	NUTRIENT INDICATOR ALGAE (NIA)	TURF ALGAE (TA)	MACRAOALGAE (MA)	SEAGRASS (SG)	RECENTLY KILLED CORAL (RKC)	HALIMEDA (HA)	SPONGE (SP)	ROCK (RC)	RUBBLE (RB)	SAND (SD)	SILT (SI)	TAPE (TWS)
MEAN	29.30	0.00	0.00	0.00	0.38	0.00	0.00	2.62	0.00	0.73	62.13	3.43	0.00	0.00	0.00

Figure 35 percentage categories analyzed on the transect (MS1)

The monitoring station 1 was a typical reef of a sock base substratum and varying distribution of coral hard coral, few sponges and recently algae. . digitate coral forms dominated the reef slope, followed by tabular forms, the reef also had corymbose forms, encrusting forms and some branching, few lamina and submassive forms.



	Branching (Arborescent) (CB)	Caespitose (CA)	Columnar (CCO)	Corymbose (CCR)	Digitate (CD)	Encrusting (CE)	Foliocious (CFO)	Fungia (CFU)	Hispidose (CHI)	Lamina r (CL)	Massive (CM)	Side-attached plate (CSA)	Submassive (CS)	Tabular (CT)	Soft Coral (SC)	Zoanthid (ZO)
Mean	0.00	3.34	0.00	6.86	10.33	6.18	0.00	0.00	0.00	0.00	2.72	0.00	0.00	8.75	0.00	0.00

Figure 36 percentage sub categories of coral analyzed (MS1)

5.2.1.5. Monitoring location 2

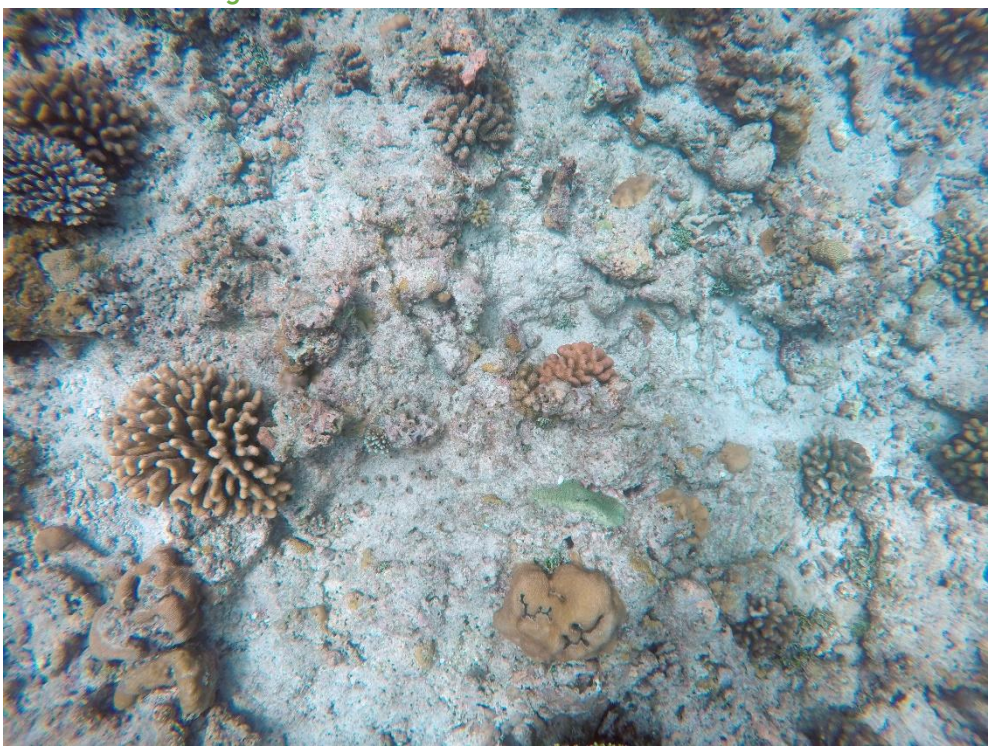
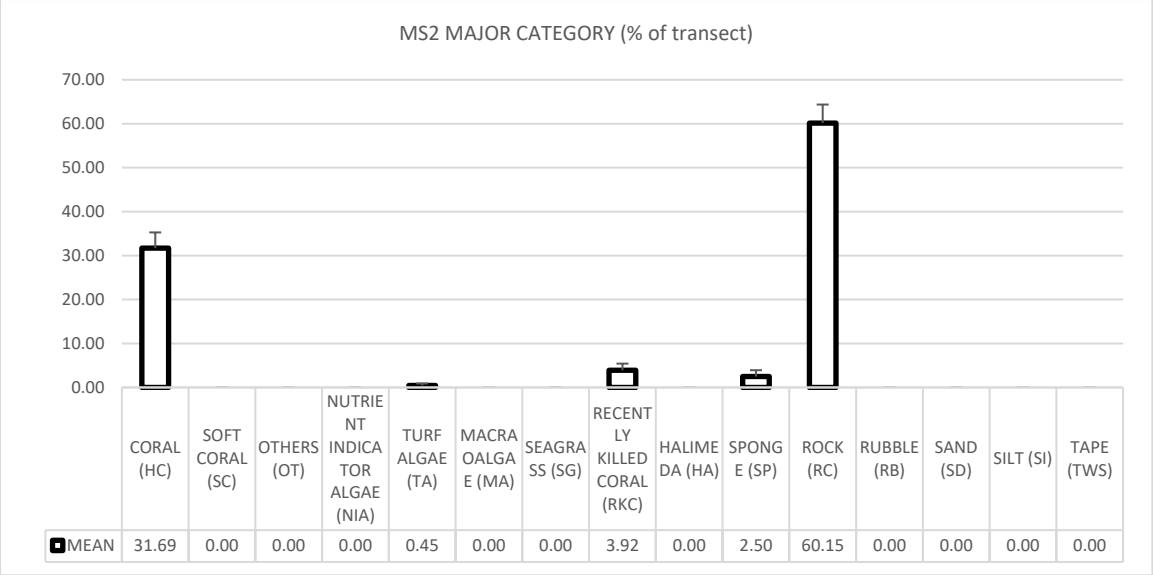


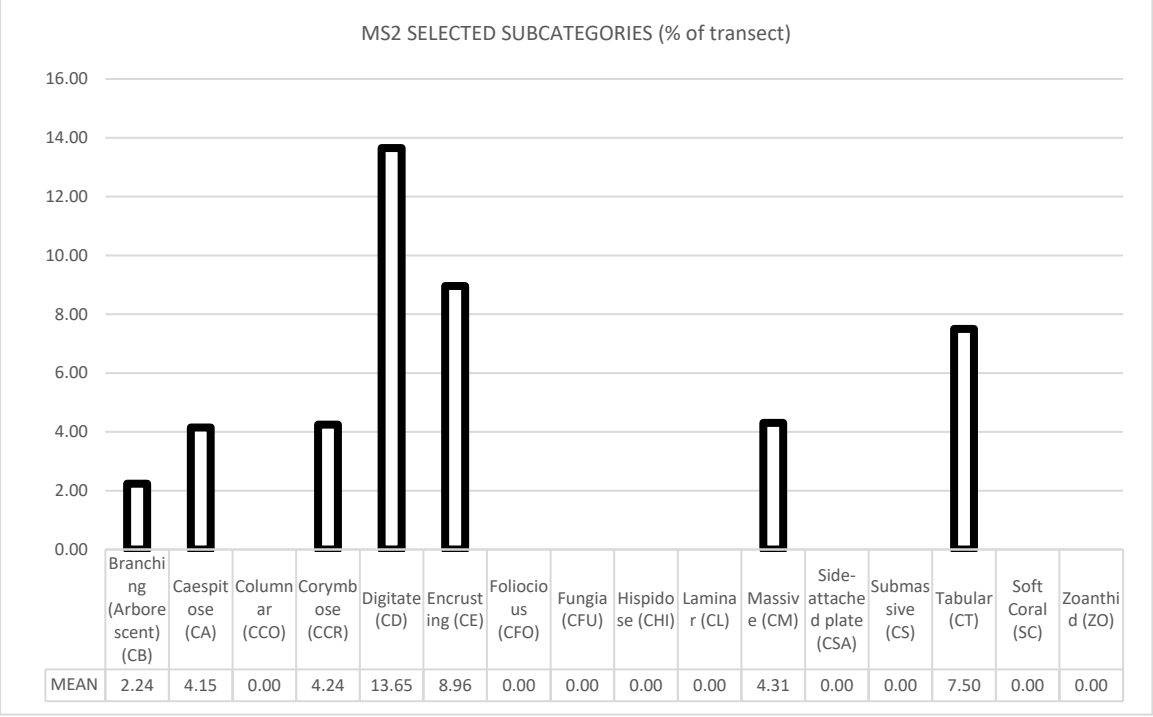
Figure 37 transect sample of MS2

Monitoring location 2 was at around a depth of 6m at high tide. The location sloped gradually to the depths of the eastern side gradually. Similar to SF1, SF3 had rock substratum, on which hard corals were seen on various distributions.



	CORAL (HC)	SOFT CORAL (SC)	OTHERS (OT)	NUTRIENT INDICATOR ALGAE (NIA)	TURF ALGAE (TA)	MACRAOALGAE (MA)	SEAGRASS (SG)	RECENTLY KILLED CORAL (RKC)	HALIMEDA (HA)	SPONGE (SP)	ROCK (RC)	RUBBLE (RB)	SAND (SD)	SILT (SI)	TAPE (TWS)
MEAN	31.69	0.00	0.00	0.00	0.45	0.00	0.00	3.92	0.00	2.50	60.15	0.00	0.00	0.00	0.00

Figure 38 percentage categories analyzed on the transect (MS2)



	Branching (Arborescent) (CB)	Caespitose (CA)	Columnar (CCO)	Corymbose (CCR)	Digitate (CD)	Encrusting (CE)	Foliocious (CFO)	Fungia (CFU)	Hispidose (CHI)	Laminar (CL)	Massive (CM)	Side-attached plate (CSA)	Submassive (CS)	Tabular (CT)	Soft Coral (SC)	Zoanthid (ZO)
MEAN	2.24	4.15	0.00	4.24	13.65	8.96	0.00	0.00	0.00	0.00	4.31	0.00	0.00	7.50	0.00	0.00

Figure 39 percentage sub categories of coral analyzed (MS2)

Encrusting forms dominated the area, followed by digitate forms, followed by tabular forms, and massive corals.

5.2.1. Fish count

Below is the analysis of the fish count carried out on site

	SF3	MS1	Ms2
Pomacentridae	14	26	36
Serranidae	1	3	5
Haemulidae,	0	0	1
Lutjanidae	0	2	15
Humphead wrasse	0	0	0
Parrotfish	0	2	6
Butterflyfish	0	3	30
Moray eel	0	0	1
Turtle	0	0	0
Shark	0	0	0
Ray	0	0	0

5.2.2. Water samples

Water sample result is typical of the depth and visibility on site during the time of survey. The sample was taken at the bottom at 28m on the proposed site of project.

Male' Water & Sewerage Company Pvt Ltd
Water Quality Assurance Laboratory
Quality Assurance Building, 1st Floor, Male' Hingun, Vilimale', Male' City, Maldives
Tel: +9603323209, Fax: +9603324306, Email: wqa@mwsc.com.mv

LB-TEST-090

WATER QUALITY TEST REPORT
Report No: 500191639

Customer Information:
Housing Development Corporation Ltd

HDC Building, 3rd Floor
Male 20120

Report date: **08/06/2022**
Test Requisition Form No: **900194613**
Sample(s) Recieved Date: **06/06/2022**
Date of Analysis: **06/06/2022 - 07/06/2022**

Sample Description ~	N04 13.084 & 073 32.241 (WSI)	**TEST METHOD**	**UNIT**
Sample Type ~	Sea Water		
Sample No	83229652		
Sampled Date ~	02/06/2022 04:00		
PARAMETER	**ANALYSIS RESULT**		
Physical Appearance	Clear with particles		
Conductivity *	50500	Method 2510 B. (adapted from Standard methods for the examination of water and waste water, 23rd edition)	µS/cm
pH *	8.1	Method 4500-H+ B. (adapted from Standard methods for the examination of water and waste water, 23rd edition)	-
Salinity	32.98	Method 2520 B. (adapted from Standard methods for the examination of water and waste water, 23rd edition)	‰
Temperature	20.8	Electrometry	°C
Total Dissolved Solids	25200	Electrometry	mg/L
Total Suspended Solids	<5 (LoQ 5 mg/L)	HACH Method 8006	mg/L
Turbidity *	0.132	HACH Nephelometric Method (adapted from HACH 2100N Turbidimeter User Manual)	NTU

Keys: µS/cm : Micro Seimen per Centimeter, **‰** : Parts Per Thousand, **°C** : Degree Celcius, **mg/L** : Milligram Per Liter, **NTU** : Nephelometric Turbidity Unit

Checked by

Aminath Sofa
Laboratory Executive

Approved by

Mohamed Eyman
Assistant General Manager, Quality

Notes:
Sampling Authority: Sampling was not done by MWSC Laboratory.
This report shall not be reproduced except in full, without written approval of MWSC.
This test report is ONLY FOR THE SAMPLES TESTED.
~ Information provided by the customer. This information may affect the validity of the test results.
*Parameters accredited by EIAC under ISO/IEC 17025:2017

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

Figure 40 Water sample report

5.2.1. Traffic data

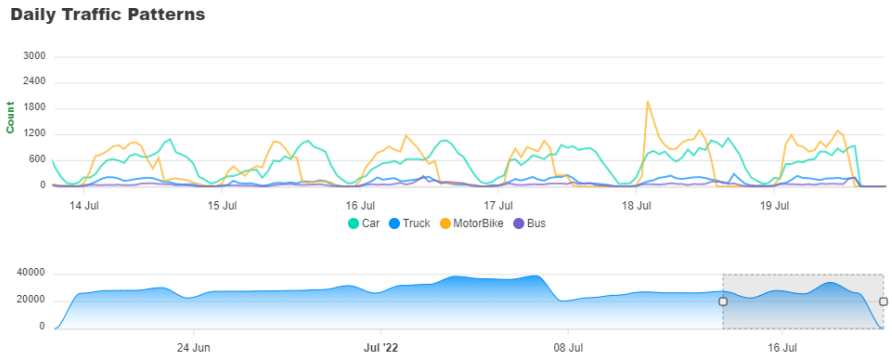


Figure 41 Traffic data patterns, monthly, moving out of Hulhumale

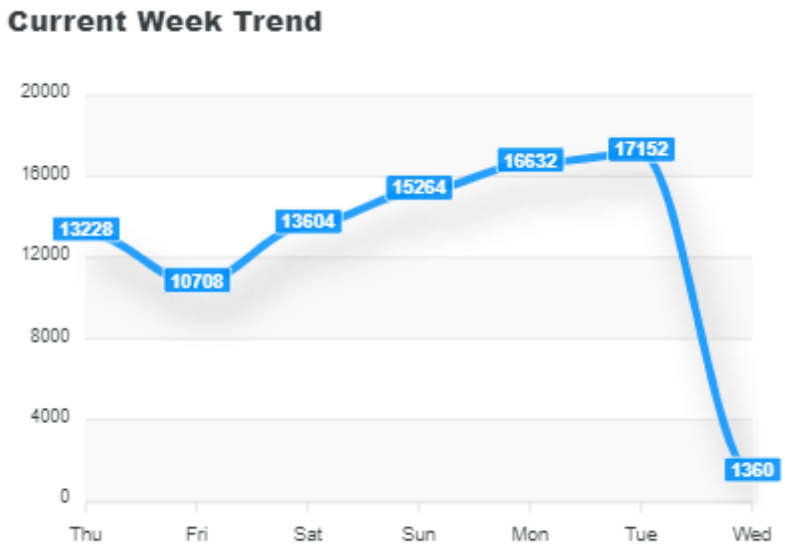


Figure 42 Traffic data patterns, monthly, moving out of Hulhumale

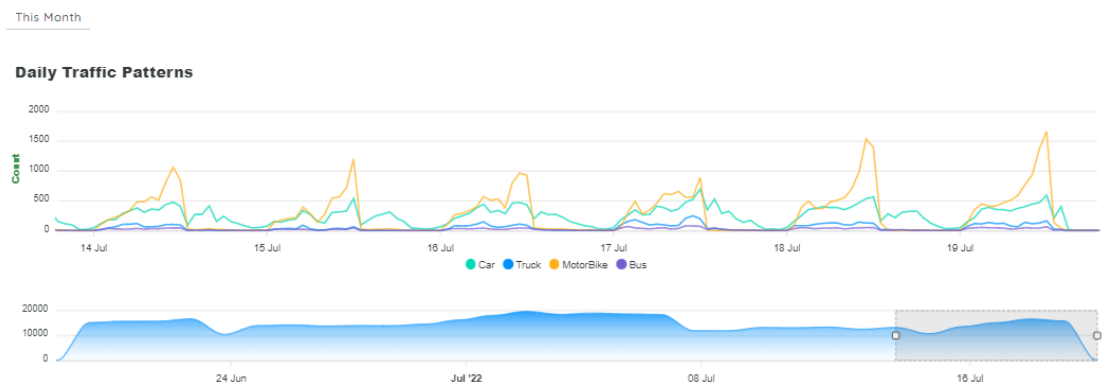


Figure 43 Traffic data patterns, monthly, moving in to Hulhumale

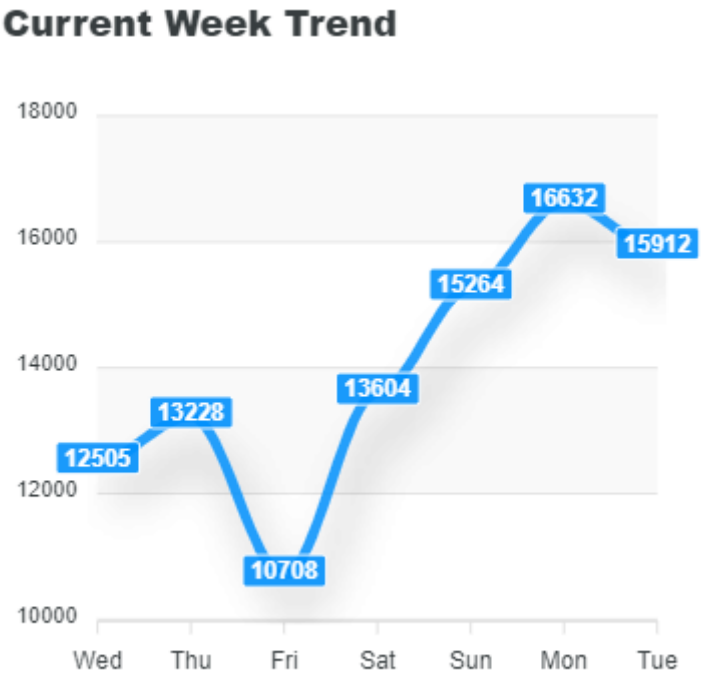


Figure 44 Traffic data patterns, monthly, moving into Hulhumale

The traffic data shows that the majority of vehicles moving into and out of Hulhumale are motor cycles. The weekly trend analysis shows a drop on Fridays. The high peak observed on Monday is due to Sunday being a rainy day, otherwise usually shows a similar pattern throughout the week. This is also true for the out going traffic. It must be noted that Wednesday is the day of data extraction, as the data sampling is not complete, it shows a drop.

The trend shows that it is ideal to utilise Friday morning for the inter Hulhumale movement of the proposed project

6. Stakeholder consultation

6.1. Meeting with Male atoll council

The meeting was requested as the project is proposed in Male, atoll. The meeting was held online. In the meeting the council emphasised on the need of such a dive site more accessible to the islands on the south eastern ridge of the southern Male'. They also stated that the project is most welcome and a good contribution to the guest house, boating and dive community of the atoll..

Further they emphasised that all development must be carried out after attaining the clearance from the required government bodies. (Figure 45 letter from Male' atoll council)

6.1. Meeting with K Himmafushi Council

The meeting was held online, the island was consulted as the site is in the jurisdiction of the island and was the closest island to the dive site and most likely the population that will frequent the site. The council welcomed the idea of the dive site and stated that the development would be a good addition to the location. (Figure 46 letter from Himmafushi council)

6.1. Meeting with Paradise island resort, Villa

The meeting was held as the establishment is one of the longest standing resorts in the area and is aware of the various changes the site has gone through in the past. The consultation summery is attached on Figure 47 Minutes for the meeting with Paradise island resort, Villa

Secretariat of the Maaleatholhu Atoll Council
Ameeru Ameen Magu, K. Thulusdhoo, Republic of Maldives

މާލެއަތޮޅު އަތޮޅު ކައުންސިލްގެ އިދާރާ
އަމީރު އަމީން މަގު، ކ.ތުލުސްދޫ، ދިވެހިރާއްޖެ

ނަންބަރު: 232-CD/161/2022/3

ހައުސިންގ ޑިވެލޮޕްމަންޓް ކޯޕަރޭޝަންގެ ހެޑް އޮފް ސަސްޓެއިނަބިލިޓީ [illegible]

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29 ޝައްވާލް 1443
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މާލެ، ދިވެހިރާއްޖެ

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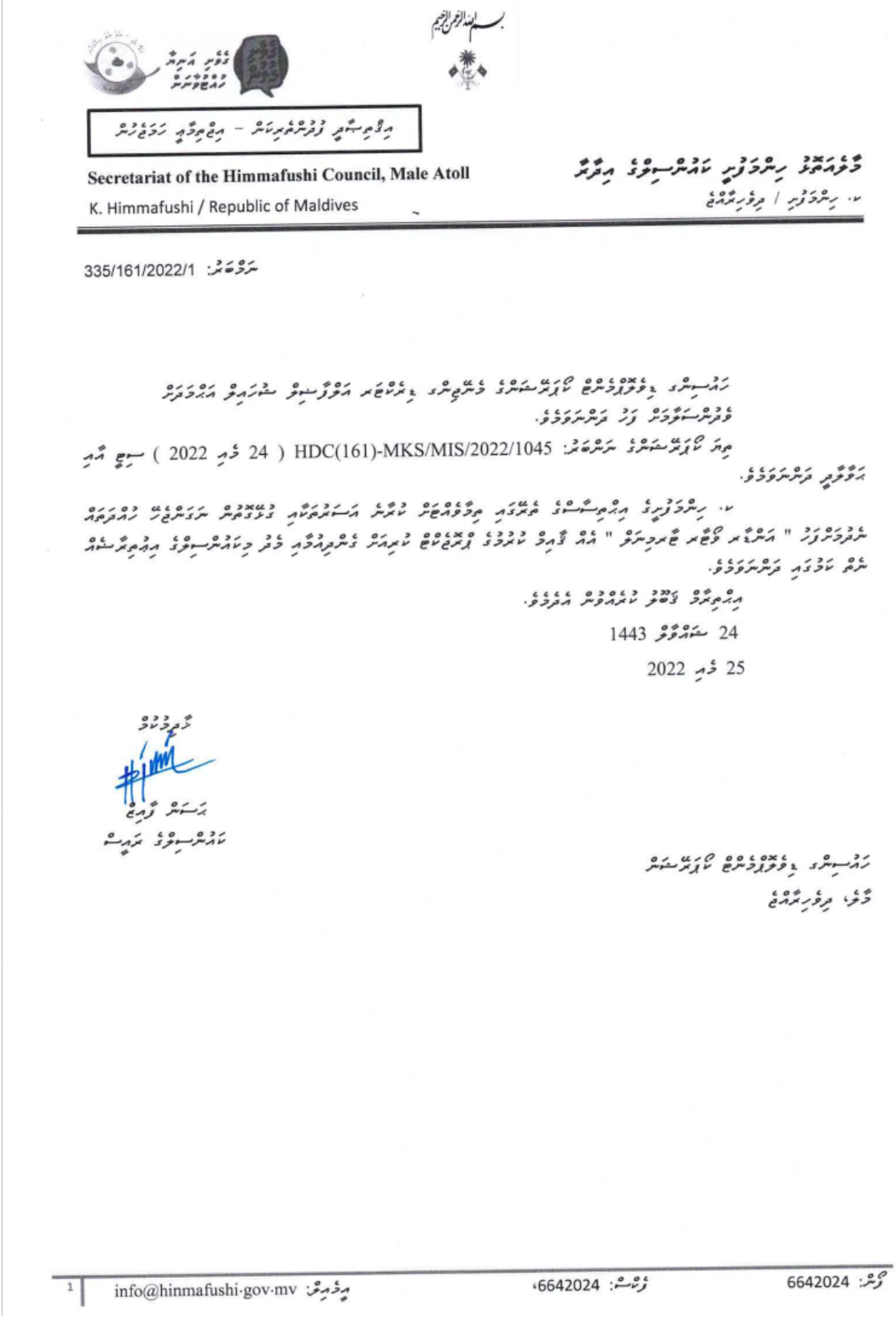
Figure 45 letter from Male' atoll council



بسم الله الرحمن الرحيم

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ދ. ހިމަފުށި ކައުންސިލް ދަފްތަރު - ދިވެހިރާއްޖެ

Secretariat of the Himmafushi Council, Male Atoll

K. Himmafushi / Republic of Maldives

ދ. ހިމަފުށި ކައުންސިލްގެ ކާރިސްދޫގެ ތަކެއްޗާ ގުޅޭ ދަފްތަރު

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Figure 46 letter from Hmmafushi council

HOUSING DEVELOPMENT CORPORATION

Regarding Fiyavi Dive Point		
Date: 06/06/2022	Time: 10:00 AM	Location: HDC Head Office

Attendees

Participants

1	Shauzab Adam	Corporate Social Responsibility Officer, HDC
2	Ahmed Mimrah	Marketing Officer, HDC
3	Mohamed Seeneen	Director of Operations, Dive Oceans, Paradise Island Resort

Purpose of the Meeting: To present the project to Paradise Island Resort

Issues to discuss:

The meeting was held by HDC to present the CSR project "Fiyavi Dive Point" to Paradise Island Resort since the resort is a stakeholder of this dive point.

Discussion:

Mohamed Seeneen mentioned that the chosen dive point is suitable and mentioned that this will be a positive to the diving industry.

Mohamed Seeneen mentioned Paradise Island Resort will support HDC to go forward with the project. Mentioned that if HDC plans to carry out a coral restoration program along with this project, the resort will be supporting.

HDC mentioned that the project is being carried out to raise awareness about climate change and sea level rise.

Mohamed Saneen mentioned that this will be first of its kind in Maldives and there will be pros and cons in this project.

Mohamed Seeneen also suggested to share the project with other stakeholders as well.

Conclusion

Paradise Island Resort will support HDC in this CSR initiative.

Page 1 of 1

Figure 47 Minutes for the meeting with Paradise island resort, Villa

7. Impact prediction

The following section deals the impact identification. The methodology is specified in the section named Methodology

7.1. Identification of impact

Impact definition was carried out where, specific activities were analysed and environmental factors were cross checked. If an impact is evident, then the component was further looked into

Type of impact (positive, negative, none)

time frame (a = 1 year, b = 1-10 years, c = 10-50 years, d = irreversible impact).

Environmental Factors	Specific Activities	Y	N
Health and Safety (Staff, Contractors, Customers and members of the public)	Pre-preparation	Y	
	Modification and preparation	Y	
	Mobilization	Y	
	Assemblage	Y	
	Operation	Y	
Environment	Pre-preparation	Y	
	Modification and preparation	Y	
	Mobilization	Y	
	Assemblage		N
	Operation	Y	
Social factors	Pre-preparation		N
	Modification and preparation	Y	
	Mobilization	Y	
	Assemblage	Y	
	Operation	Y	
Finance	Pre-preparation		N
	Modification and preparation	Y	
	Mobilization		N
	Assemblage		N
	Operation	Y	

7.2. Impact evaluation and criteria

In assessing project impacts, we adopted an extrapolative analogue model by comparing the impacts of proposed development with similar existing developments and comparing with sites with similar environmental conditions in Maldives and other similar countries. This was developed based on site visits, literature searches and monitoring of similar projects. This method is the most suitable for the current project due to a lack of long-term data for mathematical modelling, and the given timeline of the MP process. To assess impact, we took the following criteria into consideration.

Since the current project requires a MP, importance was given to the impact, and magnitude of impact of specific methodology activities so as to specify the mitigation and management requirements and activities of the mitigation. The attributes and scale is given below.

Criteria	Scale	Attribute
Magnitude The level of effect or influence an impact could have on the environment on a scale of 1 to 6	+ive	1 Very Significant 2 Significant 3 Major 4 Moderate 5 Minor 6 Insignificant
	-ive	6 Insignificant 5 Minor 4 Moderate 3 Major 2 Severe 1 Catastrophic
multiplication factor	1 2 3 4 5 6 7 8 9	Low range - low exposure Low range – medium exposure Low range – high exposure medium range - low exposure medium range – medium exposure medium range – high exposure high range - low exposure high range – medium exposure h high range – high exposure

	10	extreme range – high exposure

Once potential predicted impact is identified, the summation of negative and positive impact is presented as the overall isolated component impact. Further, post prediction of the isolated component impact the Potential Predicted cumulative impact is further identified by multiplying with a factor of magnitude ranging from 1 to 10 on the extent of range and impact exposure.

In this section the objective is to investigate the potential impacts of the proposed project on the existing environment. The identification of an impact does not ensure the occurrence of the impact and it does not mean that it cannot be mitigated. However, it informs the authorities that the proponent is made aware of the impacts and the contractor is informed of the expected mitigation measures for the proposed project prior to awarding of the work.

7.3. Limitations of impact prediction

The limitations of the impact prediction are stated below, due to time constrains and scheduling, long term data necessary for impact prediction is unavailable. Thus, this becomes a major limitation. Long term data is necessary to understand the complex systems of the project area A limited understanding of the unique island systems, and how these features change over time, and the impact the locals have on these features due to their activities and a lack of documented historical data is another limitation.

The possible bias in the available historical data, stakeholder's consultation and the proponent's information is also considered. Impact prediction is carried out using the available data during site visit. Hence, is another major limitation.

7.4. Impact zone analysis.

The impact zone is presented in Figure 48. In the marine zone, the predicted impact is typical of any marine disturbance that does not disturb benthic sediment. The zones cover a marine area and minor terrestrial area while transport. The maximum impact is predicted to be seen on the radius marked. The it is predicted that the impact diminishes as the distance increases from the general work area.

It must also be noted that the impact of preparation and cleaning is limited to the MSO area, and it is not included in the MP as the area is built for such activities. However, the MP specifies mitigation and management actions for the area as well.

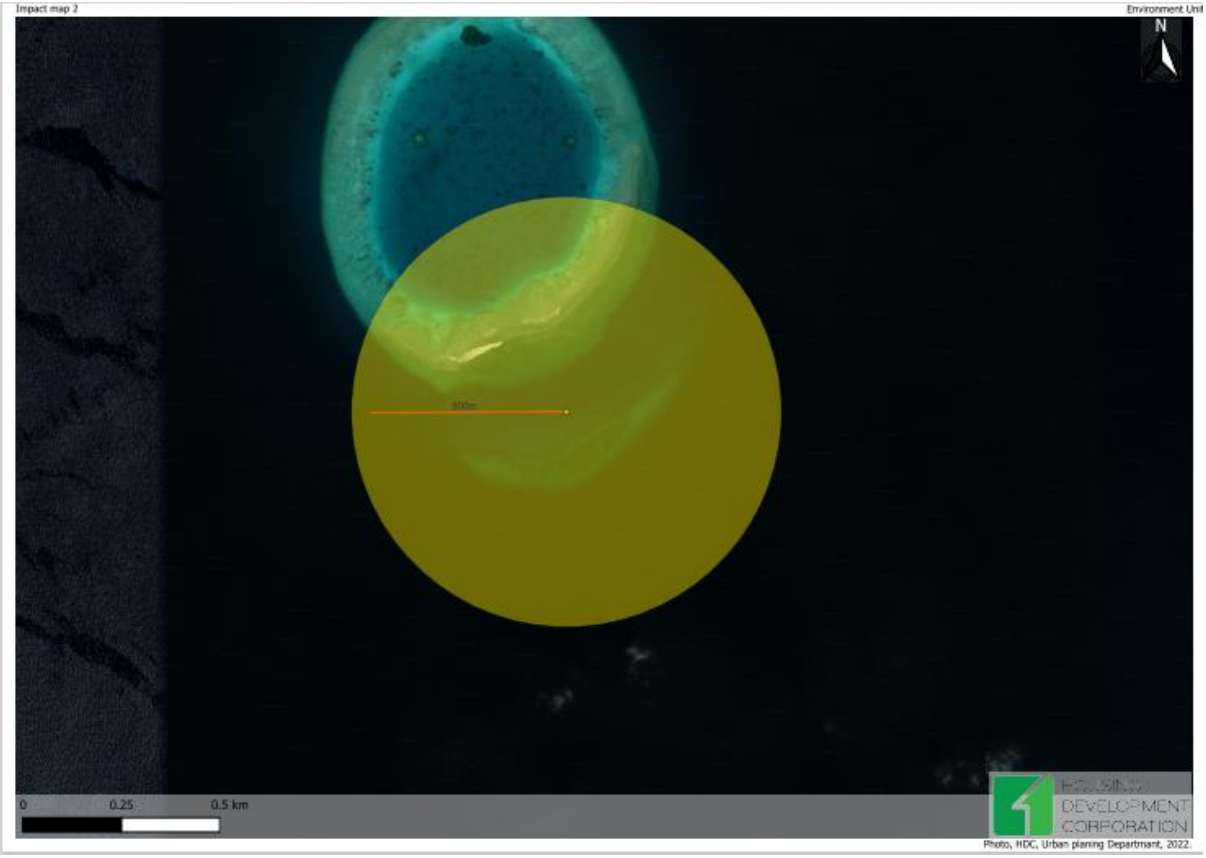


Figure 48 Predicted impact zone 2

7.5. Impact Analysis

Impacts are identified keeping in mind the methodology of work. Each component is analysed taking into consideration the existing environment, human health, social implications and economic growth.

7.6. Impact prediction

The following are the predicted impacts.

Table 1 Predicted impacts according to the methodology proposed

	Potential positive impacts	Potential negative impacts
Pre preparation		
It will be cleaned and the rough dangerous edges smoothed out as much as possible	reduce potential hazard during handling	Potential for injury to staff during initial cleaning due to the current state of the plane
		potential for injury to staff
This will be followed by a simple double check of the internal frame to confirm the integrity of the airplane.	ensures safety of the workers while they attach the system to the crane	none
Next a crane will be used to lift the load to adjust and modify the frame for better access.		has the potential for major harm in case of an emergency
Modification and preparation		
In the workshop, the airplanes will be cleaned, washed and the structure repaired.	Makes work area clean for the staff, reduces cumulative exposure time to hazardous substances	Generates hazardous waste, potentially oils.
Next the structure will be made porous for the water to permeate in a timely manner that reduces stress on the crane.	work is carried out in an industrial area, less exposure to residential zones	workers will be exposed to particulate matter. Can cause long term health problems.
After which the anchor sleeves will be welded to the inner body of the structure.		
The wings and the cut outs will be reinforced to account for the stress of the currents.		
The foot paddings will be cast, with the intention of achieving C30, with a concrete ratio of 1 cement: 2 river sand: and 3 gravel with re-bar reinforcement and left for 21 days to cure.	none	Workers will be exposed to cement. Long-term exposure can lead to diseases
Once hardened, the pad footing will be treated with a polymer layer to minimize porosity.	none	The polymer maybe flammable, can cause major harm in case of a fire.
Mobilization		
Mobilization is proposed in three instalments. First the foot-paddings, followed by the frame and the main structure respectively.	Submerges easily as it takes up water reduces the number of sudden gushes of air.	unpredictable projectile maypop out as a result of difference in buoyancy
Initially the crew will be informed of the location and the orientation of the structure.	Conditional awareness will reduce potential disorientation	none
The mobilization is proposed through a barge and crane. This will be followed by loading up of the cargo on the barge from MSO. The same crane will be used to lift the cargo from grip locations using sufficiently strong cable.	Timely achievement of the objective, reduces fatigue due to extension.	there is a high chance of injury while lifting due to snapping of the cable
Once lifted, with the aid of the ground crew, the cargo will be moved to a spud anchored barge capable of dispersing the weight. Ideally the barge should be able to disperse a minimum of 2000Kg, which is the	the barge would be able to carry most of the load and will be able to carry more than one component.	the barge may topple due to over loading

	Potential positive impacts	Potential negative impacts
maximum cargo weight. In addition to the cargo, the barge must disperse the weight of the vehicles and crew that will be used to deploy the system		
The barge will be moved towards the location using a tug.	none	none
Once on site, the barge will be anchored using the spuds, and the cargo will be deployed with divers on site.	the possibility of anchorage reduces the risk of hazard due to motion	during anchorage, the drop of spud can cause injuries to the bystanders
Once in the water, the pull from the crane will be released once the divers successfully attach the counter weight or bouncy balloons to the submerged system and once a positive bouncy is confirmed.	holding and controlling the release of the plane with the added resistance from the buoyancy devices reduces the possibility of hazard due to the sudden submerge of mass.	if a diver wonders under the base, there is the likely chance of severe harm
Then the cargo will be taken to the location, and through controlled release of air, lowered to the site and oriented just before touchdown.		
Assemblage		
Sections of the structure will be brought in separately and will have to fit into sleeves.	Unassembled sections brought in reduces the chances of potential hazard.	increased number of dives, increases the chances of hazard
Once sleeves are connected, they will be assembled together.		
Mooring buoys capable of withstanding vessels of 150m will be set on location post implementation.	mooring capability on location reduces the chances of accidents during operation	none
Operation		
The dive site will be accessible to all	none	there will always be a chance of loss of life during operation.
		there is always a chance of structure being hit by the anchor
The general management, cleaning and reporting of damages will be as per agreed terms between the tourist resorts in the vicinity and HDC.	the locals and stakeholders will take ownership of the project. As a result, high traffic can be managed.	Disparities over ownership is not unlikely
Pre-preparation		
It will be cleaned and the rough dangerous edges smoothed out as much as possible	None significant	The location does not have vegetation considered as significant.
This will be followed by a simple double check of the internal frame to confirm the integrity of the airplane.		
Next a crane will be used to lift the load to adjust and modify the frame for better access.		
Modification and preparation		
This section details the procedure to make the airplanes and the stands submergible		
Once moved to the workshop, the airplanes will be cleaned, washed and the structure repaired.	none	washing can potentially mobilize chemicals immobilized on the structure. This can sweep into the environment and cause potential negative impacts.

	Potential positive impacts	Potential negative impacts
Next the structure will be made porous for the water to permeate in a timely manner that reduces stress on the crane. 7. After which the anchor sleeves will be welded to the inner body of the structure. 8. The wings and the cut outs will be reinforced to account for the stress of the currents.	This ensures that primary producers can flow into the sections which can kickstart ecological processes. A solid structure ensures longevity during operation and makes sure that the structure does not break under the weight of the deposited substratum	if the frame is made too pours it can potentially destroy the main structure through structural failure
		the metal generated during metal works can potentially cause harm to the respiratory tract of the staff, wildlife in the vicinity. It can also add metal dust to the air and metal dust to the sand. This can potentially cause long-term harm to the existing sub urban and proposed ecosystem in the area.
The foot paddings will be cast, with the intention of achieving C30, with a concrete ratio of 1 cement: 2 river sand: and 3 gravel with re-bar reinforcement and left for 21 days to cure.	the substratum will be a strong enough to hold the coral habitat so that as layers pile on, the structure withstands the layers.	during construction, due to cement being used the particulate matter concentration can increase and as a result can lead to respiratory illnesses.
Once hardened, the pad footing will be treated with a polymer layer to minimize porosity.	once in place, the polymer layer can minimize the long-term exposure and relativity of the substratum with the biota that will adhere to it.	during application, it may cause harm to the terrestrial biota as it can easily flow into the food.
Mobilization		
Mobilization is proposed in three instalments. First the foot-paddings, followed by the frame and the main structure respectively.	Phase wise mobilization will provide the proponent an opportunity to observe the environmental changes at every point post mobilization and fix any problems if any.	Phase wise mobilization increases the number of exposure occurrences and will have a negative impact on the biota initially.
Initially the crew will be informed of the location and the orientation of the structure.	none	none
The mobilization is proposed through a barge and crane. This will be followed by loading up of the cargo on the barge from MSO. The same crane will be used to lift the cargo from grip locations using sufficiently strong cable.	none	none
Once lifted, with the aid of the ground crew, the cargo will be moved to a spud anchored barge capable of dispersing the weight. Ideally the barge should be able to disperse a minimum of 2000Kg, which is the maximum cargo weight. In addition to the cargo, the barge must disperse the weight of the vehicles and crew that will be used to deploy the system		Whenever a vessel places a spud anchor, it can cause destruction of footprint on placement location.
The barge will be moved towards the location using a tug.		
Once on site, the barge will be anchored using the spuds, and the cargo will be deployed with divers on site.		
Once in the water, the pull from the crane will be released once the divers successfully attach the counter weight or bouncy balloons to the submerged system and once a positive bouncy is confirmed. 18. Then the cargo will be taken to the location, and through controlled release of air, lowered to the site and oriented just before touchdown. Assemblage Then the cargo will be taken to the location, and through controlled release of air, lowered to the site and oriented just before touchdown. Sections of the structure will be brought in separately and will have to fit into sleeves. Once sleeves are connected, they will be assembled together.	Making the descend, movement, and assemblage a controlled movement ensures that the biota is not destroyed during the process.	In case the descend, movement, or assemblage loses control, there is likely a chance of damage to the benthic biota.

	Potential positive impacts	Potential negative impacts
Mooring buoys capable of withstanding vessels of 150m will be set on location post implementation.	placement of mooring buoys will reduce the chances of dropping anchor on site. As a result, it decreases the possibility of destruction through drop weights	none
Operation		
The dive site will be accessible to all.	none	access to all will increase the chances of disturbance to the biota.
The general management, cleaning and reporting of damages will be as per the agreement between the tourist resorts in the vicinity and HDC.	this will promote potential ownership, and ensure cleanliness and maintains of the area.	conflict of ownership may occur
Modification and preparation	modification and preparations are not likely to have a major impact as the area of work is not a locally accessible area. However, during movement of the structure, it is likely to draw attention and spark curiosity.	The accretion of locals to work location may disrupt the workflow, and may lead to unwanted external pressure.
Mobilization	movement of the airplane can attract a feedback from the locals, and spark a curiosity from the locals.	There is always a chance of negative press which is inevitable.
Assemblage	none	if all health hazards are mitigated, none
Operation	the creation of a dive site will boost social moral and local pride which will bring about a positive social interaction with the locals and management. This will also allow promote historical pride as the structures used has a historical value.	politicizing the development and bringing about negative social pressure is a possibility.
Pre-preparation		
Modification and preparation	finances are required for development, and is a necessary modification.	excessive expenditure on redundant procedures and procurement can be a negative impact.
Operation	creation of a dive site will potentially increase new business possibilities of the local divers.	flooding the area with divers can have a negative impact on the experience and hence the business.

7.6.1. Impact magnitude

	Magnitude / Positive Consequences [Opportunity]							Magnitude / Negative Consequences						PI	multiplication factor	NI	multiplication factor	PI-NI	+	-	Cumulative
	C1 Very Significant	C2 Significant	C3 Major	C4 Moderate	C5 Minor	C6 Insignificant	Consequence Type	C6 Insignificant	C5 Minor	C4 Moderate	C3 Major	C2 Severe	C1 Catastrophic								
Pre preparation																					
1. The airplane will be prepared by trimming the weeds grown around it.				4			Health and Safety (Staff, Contractors, Customers and members of the public)		5					4	1	5	3	1	4	15	-11
2. It will be cleaned and the rough dangerous edges smoothed out as much as possible		2								4				2	1	4	3	2	2	12	-10
3. This will be followed by a simple double check of the internal frame to confirm the integrity of the airplane.			3					6						3	1	6	3	3	3	18	-15
Next a crane will be used to lift the load to adjust and modify the frame for better access.	1												1	1	1	1	3	0	1	3	-2
3.2.2. Modification and preparation																					
5. Once moved to the workshop, the airplanes will be cleaned, washed and the structure repaired.			3									2		3	2	2	3	-1	6	6	0
6. Next the structure will be made porous for the water to permeate in a timely manner that reduces stress on the crane.						1						2									
7. After which the anchor sleeves will be welded to the inner body of the structure.																					
8. The wings and the cut outs will be reinforced to account for the stress of the currents.																					

	Magnitude / Positive Consequences [Opportunity]						Consequence Type	Magnitude / Negative Consequences						PI	multiplication factor	NI	multiplication factor	PI-NI=CI	+	-	Cumulative
	O1 Very Significant	O2 Significant	O3 Major	O4 Moderate	O5 Minor	O6 Insignificant		C6 Insignificant	C5 Minor	C4 Moderate	C3 Major	C2 Severe	C1 Catastrophic								
9. The foot paddings will be cast, with the intention of achieving C30, with a concrete ratio of 1 cement: 2 river sand: and 3 gravel with re-bar reinforcement and left for 21 days to cure.						6			5					6	1	5	3	-1	6	15	-9
10. Once hardened, the pad footing will be treated with a polymer layer to minimize porosity.						6					3			6	1	3	3	-3	6	9	-3
3.2.3. Mobilization																					
11. Mobilization is proposed in three installments. First the foot-paddings, followed by the frame and the main structure respectively.		2											1	2	3	1	3	-1	6	3	3
12. Initially the crew will be informed of the location and the orientation of the structure.	1							6						1	3	6	1	5	3	6	-3
13. The mobilization is proposed through a barge and crane. This will be followed by loading up of the cargo on the barge from MSO. The same crane will be used to lift the cargo from grip locations using sufficiently strong cable.		2										2		2	2	2	4	0	4	8	-4
14. Once lifted, with the aid of the ground crew, the cargo will be moved to a spud anchored barge capable of dispersing the weight. Ideally the barge should be able to disperse a minimum of 2000Kg, which is the maximum cargo weight. In addition to the cargo, the barge must disperse the weight of the vehicles and crew that will be used to deploy the system						6							1	6	3	1	5	-5	18	5	13

	Magnitude / Positive Consequences [Opportunity]							Magnitude / Negative Consequences						PI	multiplication factor	NI	multiplication factor	PI-NI=CI	+	-	Cumulative
	C1 Very Significant	C2 Significant	C3 Major	C4 Moderate	C5 Minor	C6 Insignificant	Consequence Type	C6 Insignificant	C5 Minor	C4 Moderate	C3 Major	C2 Severe	C1 Catastrophic								
15. The barge will be moved towards the location using a tug.																			0	0	0
16. Once on site, the barge will be anchored using the spuds, and the cargo will be deployed with divers on site.			3									2		3	3	2	5	-1	9	10	-1
17. Once in the water, the pull from the crane will be released once the divers successfully attach the counter weight or bouncy balloons to the submerged system and once a positive bouncy is confirmed.			3									2	2	3		4	3	1	0	12	-12
18. Then the cargo will be taken to the location, and through controlled release of air, lowered to the site and oriented just before touchdown.																			0	0	0
3.2.4. Assemblage																					
20. Sections of the structure will be brought in separately and will have to fit into sleeves.			3									2		3	5	4	6	1	15	24	-9
21. Once sleeves are connected, they will be assembled together.			3								3			3	2	3		0	6	0	6
22. Mooring buoys capable of withstanding vessels of 150m will be set on location post implementation.	1							6						1	3	6	1	5	3	6	-3
3.2.5. Operation																					
23. The dive site will be accessible to all						6						2		6	1	2	3	-4	6	6	0

	Magnitude / Positive Consequences [Opportunity]							Magnitude / Negative Consequences						PI	multiplication factor	NI	multiplication factor	PI-NI	+	-	Cumulative
	01 Very Significant	02 Significant	03 Major	04 Moderate	05 Minor	06 Insignificant	Consequence Type	06 Insignificant	05 Minor	04 Moderate	03 Major	02 Severe	01 Catastrophic								
24. The general management, cleaning and reporting of damages will be as per agreed terms between the tourist resorts in the vicinity and HDC.	1								5					1	5	5	1	4	5	5	0
Pre preparation							Environment														
1. The airplane will be prepared by trimming the weeds grown around it.						6			5					6	1	5	2	-1	6	10	-4
2. It will be cleaned and the rough dangerous edges smoothed out as much as possible																			0	0	0
3. This will be followed by a simple double check of the internal frame to confirm the integrity of the airplane.																			0	0	0
Next a crane will be used to lift the load to adjust and modify the frame for better access.																			0	0	0
3.2.2. Modification and preparation																					
This section details the procedure to make the airplanes and the stands submergible																			0	0	0
5. Once moved to the workshop, the airplanes will be cleaned, washed and the structure repaired.						6				4				6	1	4	3	-2	6	12	-6
6. Next the structure will be made porous for the water to permeate in a timely manner that reduces stress on the crane. 7. After which					6									6	4	0	5	-6	24	0	24
																0		0	0	0	0

	Magnitude / Positive Consequences [Opportunity]							Magnitude / Negative Consequences						PI	multiplication factor	NI	multiplication factor	PI-NI=CI	+	-	Cumulative
	01 Very Significant	02 Significant	03 Major	04 Moderate	05 Minor	06 Insignificant	Consequence Type	06 Insignificant	05 Minor	04 Moderate	03 Major	02 Severe	01 Catastrophic								
the anchor sleeves will be welded to the inner body of the structure. 8. The wings and the cut outs will be reinforced to account for the stress of the currents.																0		0	0	0	0
9. The foot paddings will be cast, with the intention of achieving C30, with a concrete ratio of 1 cement: 2 river sand: and 3 gravel with re-bar reinforcement and left for 21 days to cure.					5					4				5	3	4	6	-1	15	24	-9
10. Once hardened, the pad footing will be treated with a polymer layer to minimize porosity.	1									4				1	3	4	2	3	3	8	-5
3.2.3. Mobilization																					
11. Mobilization is proposed in three installments. First the foot-paddings, followed by the frame and the main structure respectively.						6			5					6	3	5	6	-1	18	30	-12
12. Initially the crew will be informed of the location and the orientation of the structure.						6		6						6	1	6	1	0	6	6	0
13. The mobilization is proposed through a barge and crane. This will be followed by loading up of the cargo on the barge from MSO. The same crane will be used to lift the cargo from grip locations using sufficiently strong cable.						6		6						6	1	6	1	0	6	6	0

	Magnitude / Positive Consequences [Opportunity]							Magnitude / Negative Consequences						PI	multiplication factor	NI	multiplication factor	PI-NI=CI	+	-	Cumulative
	O1 Very Significant	O2 Significant	O3 Major	O4 Moderate	O5 Minor	O6 Insignificant	Consequence Type	C6 Insignificant	C5 Minor	C4 Moderate	C3 Major	C2 Severe	C1 Catastrophic								
14. Once lifted, with the aid of the ground crew, the cargo will be moved to a spud anchored barge capable of dispersing the weight. Ideally the barge should be able to disperse a minimum of 2000Kg, which is the maximum cargo weight. In addition to the cargo, the barge must disperse the weight of the vehicles and crew that will be used to deploy the system						6							1	6	1	1	9	-5	6	9	-3
15. The barge will be moved towards the location using a tug.																			0	0	0
16. Once on site, the barge will be anchored using the spuds, and the cargo will be deployed with divers on site.						5							1	5	1	1	9	-4	5	9	-4
17. Once in the water, the pull from the crane will be released once the divers successfully attach the counter weight or bouncy balloons to the submerged system and once a positive bouncy is confirmed. 18. Then the cargo will be taken to the location, and through controlled release of air, lowered to the site and oriented just before touchdown. 3.2.4. Assemblage 19. Then the cargo will be taken to the location, and through controlled release of air, lowered to the site and oriented just before touchdown. 20. Sections of the structure will be brought in separately and will have to fit into sleeves.				4									1	4	1	1	10	-3	4	10	-6

	Magnitude / Positive Consequences [Opportunity]							Magnitude / Negative Consequences						PI	multiplication factor	NI	multiplication factor	PI-NI=CI	+	-	Cumulative
	O1 Very Significant	O2 Significant	O3 Major	O4 Moderate	O5 Minor	O6 Insignificant	Consequence Type	C6 Insignificant	C5 Minor	C4 Moderate	C3 Major	C2 Severe	C1 Catastrophic								
21. Once sleeves are connected, they will be assembled together.																					
22. Mooring buoys capable of withstanding vessels of 150m will be set on location post implementation.	1							6						1	10	6	1	5	10	6	4
3.2.5. Operation																			0	0	0
23. The dive site will be accessible to all.						6						2		6	1	2	3	-4	6	6	0
24. The general management, cleaning and reporting of damages will be as per the agreement between the tourist resorts in the vicinity and HDC.	1								5					1	6	5	2	4	6	10	-4
3.2.2. Modification and preparation					5		Social factors			4				5	2	4	3	-1	10	12	-2
3.2.3. Mobilization						6		6						6	2	6	3	0	12	18	-6
3.2.4. Assemblage						6		6						6	1	6	3	0	6	18	-12
3.2.5. Operation	1								5					1	1	5	3	4	1	15	-14
Pre preparation							Finance Budget, Costs or Revenue														
3.2.2. Modification and preparation				4						4				4	1	4	3	0	4	12	-8
3.2.3. Mobilization														0		0		0	0	0	0
3.2.4. Assemblage														0		0		0	0	0	0
3.2.5. Operation	1									4				1		4		3	0	0	0

Table 2 Predicted Impact magnitude and cumulative impact multiplication factors to calculate the cumulative impacts

Component	Specific impact predicted magnitude, with multiplication factor					Cumulative impact prediction taking into account the multiplication factor		
	PI	multiplication factor	NI	multiplication factor	PI-NI=CI	+	-	Cumulative
Pre preparation	2.5		4.0			1.4	6.9	
1. The airplane will be prepared by trimming the weeds grown around it.	4.0	1.0	5.0	3.0	1.0	4.0	15.0	-11.0
2. It will be cleaned and the rough dangerous edges smoothed out as much as possible	2.0	1.0	4.0	3.0	2.0	2.0	12.0	-10.0
3. This will be followed by a simple double check of the internal frame to confirm the integrity of the airplane.	3.0	1.0	6.0	3.0	3.0	3.0	18.0	-15.0
Next a crane will be used to lift the load to adjust and modify the frame for better access.	1.0	1.0	1.0	3.0	0.0	1.0	3.0	-2.0
3.2.2. Modification and preparation	5.0		3.3			2.6	4.3	-1.7
This section details the procedure to make the airplanes and the stands submergible								
5. Once moved to the workshop, the airplanes will be cleaned, washed and the structure repaired.	3	2	2	3	-1	6	6	0
6. Next the structure will be made porous for the water to permeate in a timely manner that reduces stress on the crane.								
7. After which the anchor sleeves will be welded to the inner body of the structure.								
8. The wings and the cut outs will be reinforced to account for the stress of the currents.								
9. The foot paddings will be cast, with the intention of achieving C30, with a concrete ratio of 1 cement: 2 river sand: and 3 gravel with re-bar reinforcement and left for 21 days to cure.	6	1	5	3	-1	6	15	-9
10. Once hardened, the pad footing will be treated with a polymer layer to minimize porosity.	6	1	3	3	-3	6	9	-3
3.2.3. Mobilization	2.8		2.7			4.0	4.4	-0.4
11. Mobilization is proposed in three installments. First the foot-paddings, followed by the frame and the main structure respectively.	2	3	1	3	-1	6	3	3
12. Initially the crew will be informed of the location and the orientation of the structure.	1	3	6	1	5	3	6	-3
13. The mobilization is proposed through a barge and crane. This will be followed by loading up of the cargo on the barge from MSO. The same crane will be used to lift the cargo from grip locations using sufficiently strong cable.	2	2	2	4	0	4	8	-4
14. Once lifted, with the aid of the ground crew, the cargo will be moved to a spud anchored barge capable of dispersing the weight. Ideally the barge should be able to disperse a minimum of 2000Kg, which is the maximum cargo weight. In addition to the cargo, the barge must disperse the weight of the vehicles and crew that will be used to deploy the system	6	3	1	5	-5	18	5	13
15. The barge will be moved towards the location using a tug.								
16. Once on site, the barge will be anchored using the spuds, and the cargo will be deployed with divers on site.	3	3	2	5	-1	9	10	-1
17. Once in the water, the pull from the crane will be released once the divers successfully attach the counter weight or bouncy balloons to the submerged system and once a positive bouncy is confirmed.	3		4	3	1	0	12	-12
18. Then the cargo will be taken to the location, and through controlled release of air, lowered to the site and oriented just before touchdown.								
3.2.4. Assemblage	2.3		4.3			6.0	7.5	-1.5

Component	Specific impact predicted magnitude, with multiplication factor					Cumulative impact prediction taking into account the multiplication factor		
	PI	multiplication factor	N	multiplication factor	PI-N=CI	+	-	Cumulative
						0	0	0
20. Sections of the structure will be brought in separately and will have to fit into sleeves.	3	5	4	6	1	15	24	-9
21. Once sleeves are connected, they will be assembled together.	3	2	3		0	6	0	6
22. Mooring buoys capable of withstanding vessels of 150m will be set on location post implementation.	1	3	6	1	5	3	6	-3
3.2.5. Operation	3.5		3.5			1.6	1.6	0.0
23. The dive site will be accessible to all	6	1	2	3	-4	6	6	0
24. The general management, cleaning and reporting of damages will be as per agreed terms between the tourist resorts in the vicinity and HDC.	1	5	5	1	4	5	5	0
Pre preparation	6.0		5.0			1.5	2.5	-1.0
1. The airplane will be prepared by trimming the weeds grown around it.	6	1	5	2	-1	6	10	-4
2. It will be cleaned and the rough dangerous edges smoothed out as much as possible								
3. This will be followed by a simple double check of the internal frame to confirm the integrity of the airplane.								
Next a crane will be used to lift the load to adjust and modify the frame for better access.								
3.2.2. Modification and preparation	4.5		2.0			6.9	6.3	0.6
5. Once moved to the workshop, the airplanes will be cleaned, washed and the structure repaired.	6	1	4	3	-2	6	12	-6
6. Next the structure will be made porous for the water to permeate in a timely manner that reduces stress on the crane. 7. After which the anchor sleeves will be welded to the inner body of the structure. 8. The wings and the cut outs will be reinforced to account for the stress of the currents.	6	4	0	5	-6	24	0	24
9. The foot paddings will be cast, with the intention of achieving C30, with a concrete ratio of 1 cement: 2 river sand: and 3 gravel with re-bar reinforcement and left for 21 days to cure.	5	3	4	6	-1	15	24	-9
10. Once hardened, the pad footing will be treated with a polymer layer to minimize porosity.	1	3	4	2	3	3	8	-5
3.2.3. Mobilization	5.5		3.3			5.6	8.8	-3.1
11. Mobilization is proposed in three installments. First the foot-paddings, followed by the frame and the main structure respectively.	6	3	5	6	-1	18	30	-12
12. Initially the crew will be informed of the location and the orientation of the structure.	6	1	6	1	0	6	6	0
13. The mobilization is proposed through a barge and crane. This will be followed by loading up of the cargo on the barge from MSO. The same crane will be used to lift the cargo from grip locations using sufficiently strong cable.	6	1	6	1	0	6	6	0
14. Once lifted, with the aid of the ground crew, the cargo will be moved to a spud anchored barge capable of dispersing the weight. Ideally the barge should be able to disperse a minimum of 2000Kg, which is the maximum cargo weight. In addition to the cargo, the barge must disperse the weight of the vehicles and crew that will be used to deploy the system	6	1	1	9	-5	6	9	-3
15. The barge will be moved towards the location using a tug.								

Component		Specific impact predicted magnitude, with multiplication factor					Cumulative impact prediction taking into account the multiplication factor		
		PI	multiplication factor	NI	multiplication factor	PI-NI=CI	+	-	Cumulative
16. Once on site, the barge will be anchored using the spuds, and the cargo will be deployed with divers on site.		5	1	1	9	-4	5	9	-4
17. Once in the water, the pull from the crane will be released once the divers successfully attach the counter weight or bouncy balloons to the submerged system and once a positive bouncy is confirmed. 18. Then the cargo will be taken to the location, and through controlled release of air, lowered to the site and oriented just before touchdown. 3.2.4. Assemblage 19. Then the cargo will be taken to the location, and through controlled release of air, lowered to the site and oriented just before touchdown. 20. Sections of the structure will be brought in separately and will have to fit into sleeves. 21. Once sleeves are connected, they will be assembled together.		4	1	1	10	-3	4	10	-6
22. Mooring buoys capable of withstanding vessels of 150m will be set on location post implementation.		1	10	6	1	5	10	6	4
3.2.5.	Operation	3.5		3.5			1.3	1.8	-0.4
23. The dive site will be accessible to all.		6	1	2	3	-4	6	6	0
24. The general management, cleaning and reporting of damages will be as per the agreement between the tourist resorts in the vicinity and HDC.		1	6	5	2	4	6	10	-4
3.2.2.	Modification and preparation	5.0	2.0	4.0	3.0	-1.0	10.0	12.0	-2.0
3.2.3.	Mobilization	6.0	2.0	6.0	3.0	0.0	12.0	18.0	-6.0
3.2.4.	Assemblage	6	1	6	3	0	6.0	18.0	-12.0
3.2.5.	Operation	1	1	5	3	4	1.0	15.0	-14.0
3.2.2.	Modification and preparation	4.0	1.0	4.0	3.0	0.0	4.0	12.0	-8.0
3.2.5.	Operation	1.0		4.0		3.0	0.0	0.0	0.0

7.7. Discussions

The following table shows the summery of potential impacts and the cumulative impacts as per the analysis.

		PI	NI		+	-	
Health and Safety (Staff, Contractors, Customers and members of the public)	Pre preparation	3	4	-2	1	7	-5
	Modification and preparation	5	3	2	3	4	-2
	Mobilization	3	3	0	4	4	0
	Assemblage	2	4	-2	6	8	-2
	Operation	4	4	0	2	2	0
Environment	Pre preparation	6	5	1	2	3	-1
	Modification and preparation	5	2	3	7	6	1
	Mobilization	6	3	2	6	9	-3
	Operation	4	4	0	1	2	0
Social factors	Modification and preparation	5	4	1	10	12	-2
	Mobilization	6	6	0	12	18	-6
	Assemblage	6	6	0	6	18	-12
	Operation	1	5	-4	1	15	-14
Finance	Modification and preparation	4	4	0	4	12	-8
	Operation	1	4	-3	0	0	0

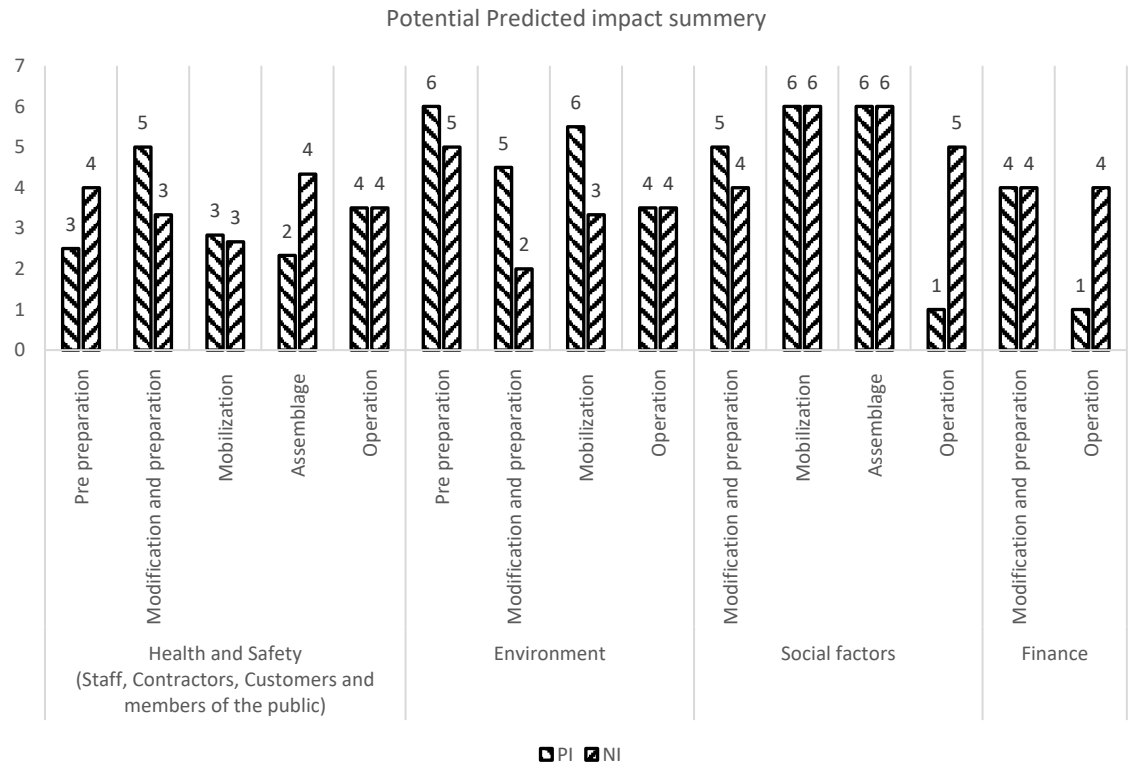


Figure 49 specific potential impact magnitude

As can be seen on Figure 51 the highest positive impact from the overall project is predicted to be on the environment. This is mostly due to the positive impacts of removal of the discarded wreck considered trash currently, from the location, and introduction of this potential habitat and shelter the proposed project to the deployed general area. The highest potential

negative impact is predicted for the potential social unrest the project is likely to create. This is likely if the proponent is not transparent with the purpose of the project, the procedure, and operations of the project. The predicted fanatical impact is negative due to the project not generating a revenue as of the current plan of action. The cumulative potential impacts of the project are defined below the specific chart.

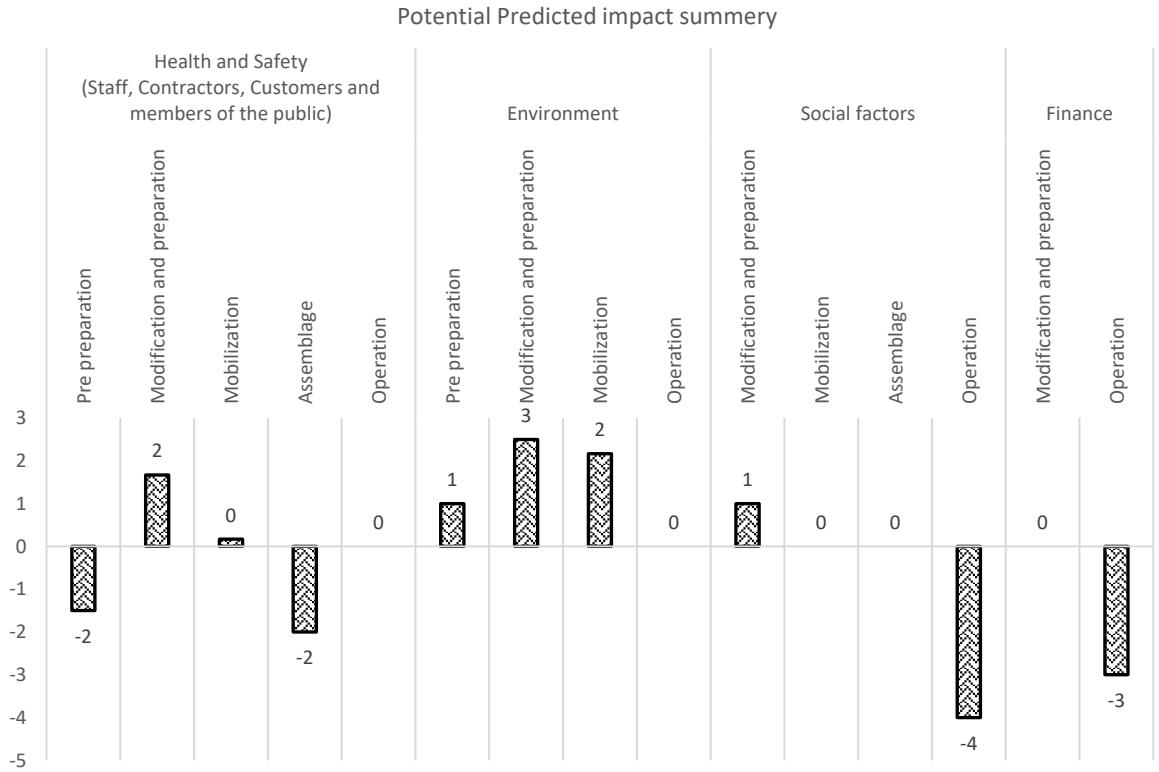


Figure 50 overall specific potential impact magnitude

The within the analysed factors predicted cumulative impacts are negative mostly due to factors specified on impact prediction on Table 1. Further analysis shows that the cumulative impacts on the health of the exposed, and general environment are negative due to the age, current condition, and potential material the structure is made of. The metal fuselage on pre-treatment, and treatment is predicted to potentially mobilize hydrocarbon, polymeric fibre, and particulate matter. Hence, the exposure is accounted for in the cumulative impact prediction.

Similarly, the social and financial cumulative potential impact of the project, specifically the impact of assemblage and operation is negative if transparency in not maintained. In case of quarries, focal points must be able to clarify to the stakeholders to the best of their abilities. If not able to clarify, it may lead to social disapproval. During operations, if negative social issues such as social clashes over ownership, management, and dive time clashes take place, the cumulative impact can be highly negative as it can lead to potential social disapproval to the project.

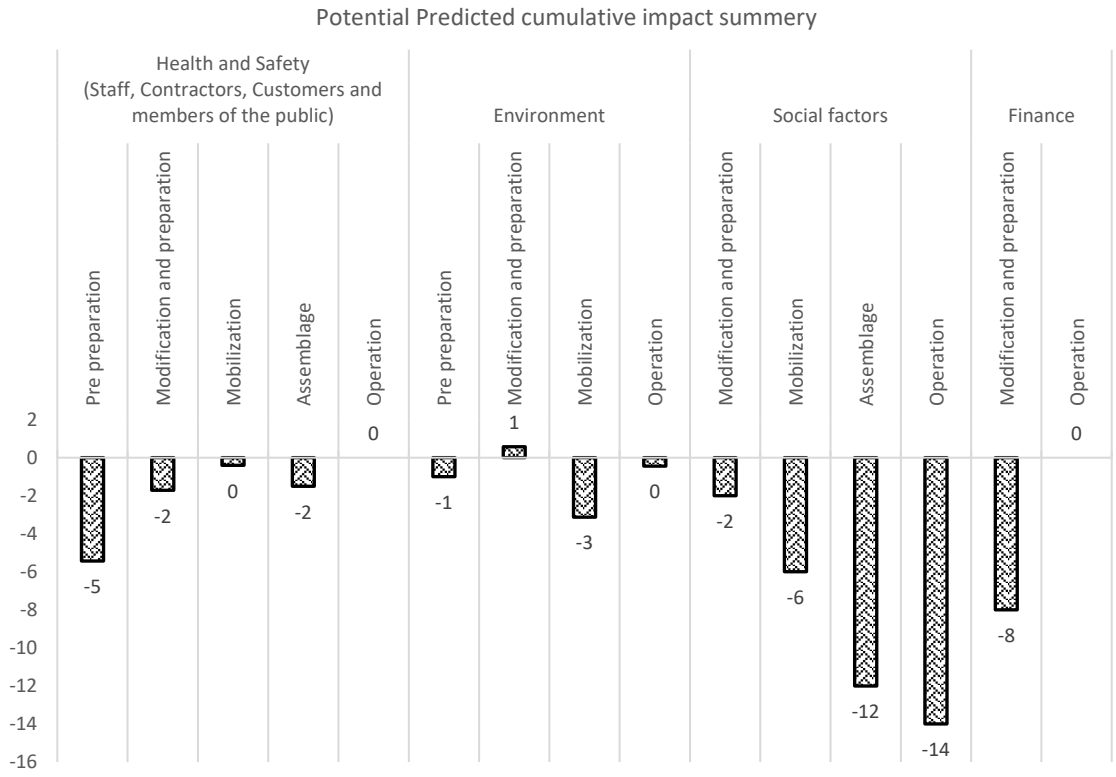


Figure 51 cumulative potential impact magnitude.

The financial cumulative impact of the project is negative since the company will utilise many company staff for monitoring and operation. At the same time, the project does not provide any financial growth to the company both in modification and operation plan as of now. The potential for revenue generation through tours is possible for the proponent once if the organization establishes a way for lease generated income. As of now, the generated income is sustained by other means and this project is not predicted to contribute to the proponent financially.

For the foreseeable impacts. It is the duty of the proponent to ensure mitigation of the negative impacts and to maximize the impact of potential positive impacts through management actions.

8. Mitigation actions and management

8.1. Mitigation and management of the negative impacts

Impact of the environment from various activities have been identified in the respective chapter. The mitigation measures for the possible impacts and management actions with the estimated cost of the measure have been provided in this section.

8.2. Overall mitigation and management actions

The mitigation and management actions are provided for all significant actions. The actions proposed fosters for 4 major areas;

1. health hazards,
2. natural environment,
3. social environment, and
4. finances.

The mitigation and management actions required for the first two areas specified above are on site, mostly executed by the proponent during various procedures in coordination with the workforce and the main stakeholders. The latter components require information sessions with the stakeholders for transparency. This requires preparation of material from the proponent, input from the main stakeholder for effective execution.

For the social areas, 2 major sessions are proposed. One session for the staff and the another for the interested locals.

8.3. Impact mitigation

Table below further details the potential impacts identified and details the corresponding implementing party. The mitigation suggested is identified by the specific implementing party. This is done so as the project has responsibilities for the proponent and stakeholders / user.

8.3.1. Mitigation Summery

8.3.1.1. Health and safety

Pre-preparation

1. Provide safety boots and shin guards to staff
2. Inform staff of the proper safety measures
3. Provide safety googles and gloves
4. Maintain power tools
5. Ensure that the supervisors use a checklist to ensure that all structural points are observed.
6. All staff must be made aware of the plan of work

Modification and preparation

7. Inform staff of the Construction Site Health and Safety Regulation (2019/R-156), ensure that all staff abide by it.
8. Assign working staff N25 masks that can mitigate the impact of the dust.
9. Assign working staff N25 masks that can mitigate the impact of the dust.

10. Inform the staff of the flammable nature of the material

Mobilization

11. Inform the dives and staff of the potential hazard

12. Inform the staff of the likelihood of projectiles during submerging.

13. Keep first aid crew ready

14. Employ at least 3 lead divers.

15. Ensure the cables are strong and can withstand the tension

16. Ensure that the barge can carry the maximum load that is proposed.

17. Ensure that the spud is dropped deliberately, in a controlled manner.

18. Inform the staff of the deliberate action and ensure that all necessary staff are accounted for before touchdown of the plane.

Assemblage

19. Repeat all briefs at every dive and ensure that all staff are aware of the potential hazards at every dive

Operation

20. Ensure that the dive site is used by professionals.

21. Ensure the management actions are informed to the users upon initiation and publish the management actions

22. Inform using notices on floaties and other structures the importance of not anchoring on site

23. Terms of agreement must be defined between the parties involved and stakeholders.

24. Management actions must be defined and agreed upon

8.3.1.2. Environment

Pre-preparation

25. Ensure that the staff are informed that no significant, protected and endangered plant will be cut during the process.

26. Ensure that the generated waste is dealt with accordingly: use oil traps, ensure that the water is not drained to the ground, use mesh filters to recover metal debris and discard them in separate containers, etc. Follow relevant regulations

27. Ensure porosity to make sure that the input nutrient and output nutrient is matched so that the water does not stagnate and promote NA

28. The metal dust generated during metal works needs to be vacuumed, contained and disposed accordingly.

29. Ensure that the main structural strength is not compromised.

30. Ensure use of mitigation measures to prevent particulate matter dispersal.

31. Ensure that application is carried out in a closed area and make sure to collect and dispose any polymer components accordingly.

Mobilization

32. Plan on manageable workloads to deploy during project phase out.

33. Ensure the spud location is clear of significant coral before placement.

34. Double check the inflation device before placement of device.

35. The operators must be informed of the need of the mooring capacity and capability.

Operation

36. Inform operators of the importance of controlled and limited interaction with the biota.

37. Ensure that the terms of environment monitoring and management are understood by the stakeholders.

38. Ensure that the management actions are explained in understandable forms (boards and text) on site.

8.3.1.3. Social

Modification and preparation

39.on site, inform any local who wishes to clarify the purpose of the move.

Mobilization

40.preparation of a focal point for negative press management

Assemblage

42.Operation

43.inform the locals of the use of the move.

8.3.1.4. Financial

Pre-preparation

Modification and preparation

44.ensure all expenses are accounted for

Operation

45.Try to manage the use of the site through a booking system

8.3.2. Management actions summery

8.3.2.1. Health and safety

Pre-preparation

1. Inform staff of the general procedure prior to conducting any work

2. Train staff site safety measures

2.1 do not work, if the weather conditions are unfavourable

3. Procure safety boots, goggles and gloves.

4. Periodic management and militance of power tools.

5. Make a checklist to note down and mark the structural modifications and reinforcements.

6. Inform all staff of the plan of work.

Modification and preparation

7. Inform staff of the labour management procedures.

Https://www.environment.gov.mv/v2/wp-content/files/2020/downloads/20200311-pub-labour-management-procudures-arise-project.pdf

8. Inform staff of the hazardous impact of the metal dust

9. Procure masks capable of filtering particulate matter.

10. Procure masks capable of filtering particulate matter.

11. Maintain a no naked fire policy in the workshop once the polymer is out.

Mobilization

12. Carryout briefing and inform all staff of the impacts of: projectile positively buoyant material, fall risk, crush risk, and potential loss of life.

13. Ask the divers, camera crew and support marine staff to maintain a barrier.

14. Procure medical assistance.

15. Inform and employ 4 lead divers as safety monitors and enforcers.

16. Inform the service provider of the potential tension and confirm the minimum weight can be held.

17. Inform the surface provider of the potential load and confirm that they can bare it.

18. Inform the staff of the drop of the spud and prepare them for the process.

19. Make a headcount before the release of the component.

Assemblage

20. Inform the project management the importance of briefing the staff and volunteers at every opportunity.

21. Ensure that the mooring blocks can withstand sufficient weight

Operation

22. Inform the operators, to priorities safety at every trip to ensure accident free and incident free dives.

23. Inform the users of the importance of site safety during dives

24. Ask dives not to alter the setup of the existing system

25. Ask dives not attach SMBS or flags on the structure

26. Make public announcements on the importance of not anchoring on site during initiation.

27. All stakeholders must be informed of the management actions

28. Through a booking system, high traffic can be managed.

8.3.2.2. Environment

Pre-preparation

29. Inform the staff of the regulation on uprooting trees, (2014/R-7) 1st amendment to the regulation on uprooting trees, and (2021-R25) regulation on protected species.

30. Inform the staff of the regulation on Regulation for Protection and Preservation of Island Vegetation and Flora in the Maldives 2022/R-92

30.1 Carryout waste management as per the regulations on waste management (58-R/2013), amendment 1 (10-R/2014), amendment 2 (29-R/2014), amendment 3 (90-R/2017), amendment 4 (63-R/2018), and amendment 5 (109-R/2021).

31. Inform the staff that they will have to use oil traps for their work.

32. Make sure to inform the staff to make the structure pours enough so as to make sure circulation can take place.

33. Make structure pours

34. Ensure that the structure is made pours in the presence of an engineer.

35. Use simple but effective mitigation measures to ensure minimum negative impact

36. Upon analyzing the potential, collected, polymer and refereeing to 2013/R-58, appendix B (page 33, 34) the waste can be considered under 'fibre resin' (tear 2, C). Therefore, must be dealt with as ' special waste' as specified under Appendix (A), clause 1.6, A, page 24.

37. All 'special waste' generated must be contained in a closed container. Ready to be taken up by waste management authorities.

Mobilization

38. Ensure that the project spaces out the deployment so as to reduce stress on the biota.

39. Ensure assignment of an observation group which acts as a standalone party that will ensure observation of area post implementation at each step.

40. Initially the crew will be informed of the location and the orientation of the structure.

41. Inform the staff of the importance of the spud location and importance of placement of spud on a clear area.

42. Procure a bouncy device that can withstand the weight of the load.

Operation

43. Ask the operators to provide proper conduct guidelines as a briefing prior to dive.

44. Ask the users not to touch the structure, especially when marine life engages as a substratum

45. Ask the users not to pick remove or destroy any structure on the system

46. Ask the users / dive trainers to follow good dive ethics and ensure competent divers use the location.

47. Monitoring procedure must be budgeted, proposed and agreed upon prior to development.

48. Procedural monitoring

49. Make sure that a written document is agreed upon between the stakeholders, operator and proponent

50. Ensure provision of and placement of salt tolerant message boards that can be placed on site.

8.3.2.3. Social

Modification and preparation

51. Inform the workers to direct all quarries to the focal point on site.

52. Keep the focal point informed of the project.

Mobilization

53. Make sure to assign inform and guide a capable individual to mitigate negative press on time.

8.3.2.4. Financial

Assemblage

Operation

54. Prepare public relational and marketing material informing the purpose and need of the project.

Pre-preparation

Modification and preparation

55. Proper estimation must be carried out pre and post construction

56. Utilize quantity surveyors for the project.

Operation

57. Prepare a management booking portal that can be used by service providers that assigns a time for dives.

8.3.3. Detailed mitigation and management actions

The table below shows the detailed mitigation and management actions for the proposed work areas. The total cost of mitigation and management action is estimated at MVR **589,639.00**. This considers transportation fee and dive equipment fee as it may not be an addition to the initial coasting.

Impact on				Mitigation	Management	breakdown	Material	Cost factor 1	Factor 1 details	Cost factor 2	Factor 3 details	Cost factor 3	Factor 3 details	cost	Responsible party
Environment	Health and safety	Social implications	Finances												
Pre-preparation															
	X			1. Provide safety boots and shin guards to staff	1. Inform staff of the general procedure prior to conducting any work	1. General procedure of the process.	Power point presentation Staff location		+overtime cost					No cost added	
	X			2. inform staff of the proper safety measures	2. train staff site safety measures 21. do not work, if the weather conditions are unfavorable	2. Teach how to wear safety clothes, shoes, etc 3. Wear safety clothes, shoes, etc 4. Always ask: what is the aim of the work done? What are we doing? Where are we going? How are we doing it? Can we change the procedure? What is the minimum number of people required for the process? Am I in a team?	Power point presentation Staff location		+overtime cost					No cost added	Project Management team
							Books and pen for the workshop	07	MVR per unit	20	people			140	
								12	MVR per unit	20	people			240	
	X				3. procure safety boots, goggles and gloves.		Safety shoes	365	MVR per unit	20	people				Procurement team
							Goggles	200	MVR per unit	20	people			7300	Procurement team
							Gloves	0.75	MVR per unit	20	people			4000	Procurement team
	X			3. provide safety googles and gloves										15	
X	X	X		4. maintain power tools	4. periodic management and militance of power tools.	5. Ask if the power tools have been maintained? 6. Teach and learn how to use a power tool. 7. Don't use if you do not know to use the machine	Servicing	500	per unit	12	units . est				Procurement team
							Training sessions	5000		1	trainer			6000	Project management team

				5. ensure that the supervisors use a checklist to ensure that all structural points are observed.	5. Make a checklist to note down and mark the structural modifications and reinforcements.	8. Search for the checklist 9. Clarify the procedure from the focal point 10. Ensure that the pressure points are known and the need for incorporation of the pressure points are understood before movement. 11. Follow instructions of the site manager	Making the checklist		No cost added						Project management team
	X			6. All staff must be made aware of the plan of work	6. inform all staff of the plan of work.		Power point presentation Staff location	+ overtime cost						No cost added	
Modification and preparation															
	X			7. Inform staff of the Construction Site Health and Safety Regulation (2019/R-156), ensure that all staff abide by it.	7. inform staff of the labour management procedures. https://www.environment.gov.mv/v2/wp-content/files/2020/downloads/20200311-pub-labour-management-procudures-arise-project.pdf		Power point presentation Staff location	+ overtime cost						No cost added	
	X			8. Assign working staff N25 masks that can mitigate the impact of the dust.	8. inform staff of the hazardous impact of the metal dust	12. Inform the staff of the impact of PM particles and related mitigation action during construction.	Power point presentation Staff location	+ overtime cost						No cost added	
	X				9. Procure masks capable of filtering particulate matter.		N25 Masks	200	Per unit	12	units . est		2400		Procurement team
	X														
	X			9. assign working staff N25 masks that can mitigate the impact of the dust.	10. Procure masks capable of filtering particulate matter.									No cost added	Project management team
	X			10. inform the staff of the flammable nature of the material	11. maintain a no naked fire policy in the workshop once the polymer is out.	13. Inform all staff of the importance of maintaining / mitigating the no exposed potential fire hazards during use of flammable material.	Power point presentation Staff location		+ overtime cost					No cost added	
Mobilization															

	X			11. Inform the dives and staff of the potential hazard	12. Carryout briefing and inform all staff of the impacts of: projectile positively buoyant material, fall risk, crush risk, and potential loss of life.	14. Carryout briefing and inform all staff of the impacts of: projectile positively buoyant material, fall risk, crush risk, and potential loss of life.	Power point presentation Staff location		+ overtime cost				No cost added	
	X			12. inform the staff of the likelihood of projectiles during submerging.	13. ask the divers, camera crew and support marine staff to maintain a barrier.	15. Inform the staff of the proper ques for the operation.	Power point presentation Staff location		+ overtime cost				No cost added	
	X			13. Keep first aid crew ready	14. procure medical assistance.	16. Keep the cost guard, sea ambulance, and a capable paramedic inbound ambulance on location.	First aid kit	500	Per unit	2	Kits		1000	Procurement team
							Ambulance	2000	Per unit	1	unit per day	X 4 days	8000	Procurement team
	X			14. Employ at least 3 lead divers.	15. Inform and employ 4 lead divers as safety monitors and enforcers.		Dive gear	1500	Per unit	4	units per day	4 days	24000	Project management team
	X			15. ensure the cables are strong and can withstand the tension	16. inform the service provider of the potential tension and confirm the minimum weight can be held.		Power point presentation Staff location		+ overtime cost				No cost added	Project management team
X	X			16. ensure that the barge can carry the maximum load that is proposed.	17. inform the surface provider of the potential load and confirm that they can bare it.	17. Inform the ground staff and the ferry staff of the procedure proposed. Check the feasibility at the proposed depth. Confirm if the methodology can be applied. If not go for the alternative.	Power point presentation Staff location		+ overtime cost				No cost added	Project management team
	X			17. ensure that the spud is dropped deliberately, in a controlled manner.	18. inform the staff of the drop of the spud and prepare them for the process.		Power point presentation Staff location		+ overtime cost				No cost added	Project management team
	X			18. inform the staff of the deliberate action and ensure that all	19. Make a headcount before the release of the component.	18. Make a tally of the number of divers on site, and in dive	Divers own writing material						No cost added	Project management team

	X			necessary staff are accounted for before touchdown of the plane.										No cost added	Project management team
Assemblage															
	X			19. repeat all briefs at every dive and ensure that all staff are aware of the potential hazards at every dive	20. inform the project management the importance of briefing the staff and volunteers at every opportunity.		Power point presentation Staff location		+overtime cost					No cost added	Project management team
	X				21. Ensure that the mooring blocks can withstand sufficient weight		Power point presentation Staff location		+overtime cost					No cost added	Project management team
Operation															
	X			20. Ensure that the dive site is used by professionals.	22. Inform the operators, to priorities safety at every trip to ensure accident free and incident free dives.		Power point presentation Staff location		+overtime cost					No cost added	Project management team
	X			21. Ensure the management actions are informed to the users upon initiation and publish the management actions	23. Inform the users of the importance of site safety during dives	19. Training of trainers for the operators, service providers.	Power point presentation Staff location		+overtime cost					No cost added	Project management team
	X				24. Ask dives not to alter the setup of the existing system										
	X				25. ask dives not attach SMBs or flags on the structure										
	X			22. inform using notices on floaties and other structures the importance of not anchoring on site	26. Make public announcements on the importance of not anchoring on site during initiation.	20. Incorporate safety bits in the PR and marketing events related to the structure.	PR material		+overtime cost					No cost added	Project management team
	X			23. terms of agreement must be defined between the parties involved and stakeholders.	27. All stakeholders must be informed of the management actions	21. Inform and collect grievances	Power point presentation Staff location		+overtime cost					No cost added	Project management team

X	X			24. Management actions must be defined and agreed upon	28. through a booking system, high traffic can be managed.	22. Inform of the booking system	Power point presentation Staff location		+overtime cost					No cost added	Project management team
						23. Create and manage the booking system	IT facilities		+overtime cost					No cost added	IT staff and project management team
Pre-preparation															
X				25. Ensure that the staff are informed that no significant, protected and endangered plant will be cut during the process.	29. Inform the staff of the regulation on uprooting trees, (2014/R-7) 1st amendment to the regulation on uprooting trees, and (2021-R25) regulation on protected species.	24. Inform the staff of the site analysis and proposed footprint area for the crane so as to minimize negative impact on the vegetation.	Power point presentation Staff location		+overtime cost					No cost added	Project management team
					30. Inform the staff of the regulation on Regulation for Protection and Preservation of Island Vegetation and Flora in the Maldives 2022/R-92 30.1 Carryout waste management as per the regulations Regulation on waste management (58-R/2013), amendment 1 (10-R/2014), amendment 2 (29-R/2014), amendment 3 (90-R/2017), amendment 4 (63-R/2018), and amendment 5 (109-R/2021).		Power point presentation Staff location		+overtime cost					No cost added	Project management team
X				26. Ensure that the generated waste is dealt with accordingly: use oil traps, ensure that the water is not drained to the ground, use mesh filters to recover metal debris and discard them in separate containers, etc. follow relevant regulations	31. inform the staff that they will have to use oil traps for their work that	25. Inform the staff of the need and use of the oil traps.	Power point presentation Staff location		+overtime cost					No cost added	Project management team
						26. Incorporate drain areas with oil traps	cement	130	Per unit	3	Units			390	Procurement team

							rock	55	Per unit	1	Units			55	Procurement team
							River sand	55	Per unit	1	Units			55	Procurement team
							Water proofing material	360	Per unit	1	Units			360	Procurement team
							Plumbing material	300	Per unit	3	Units			900	Procurement team
X				27. Ensure porosity to make sure that the input nutrient and output nutrient is matched so that the water does not stagnate and promote NA	32. make sure to inform the staff to make the structure pours enough so as to make sure circulation can take place.	27. Inform the staff of the need for the porosity.	Power point presentation Staff location		+ overtime cost					No cost added	Project management team
					33. Make structure pours	28. Make structure pours enough.	Power point presentation Staff location		+ overtime cost					No cost added	Project management team
X	X			28. The metal dust generated during metal works needs to be vacuumed, contained and disposed accordingly.	34. ensure that the structure is made pours in the presence of an engineer.		Engineer on site		+ overtime cost					No cost added	Project management team
				29. ensure that the main structural strength is not compromised.		29. Make the structure porous as per the specification of the engineer.	Work staff		+ overtime cost					No cost added	Project management team
X				30. ensure use of mitigation measures to prevent particulate matter dispersal.	35. Use simple but effective mitigation measures to ensure minimum negative impact	30. Use dust screen in the working area.	Dust screens	200	Per meter	100	M			20000	Procurement team
						31. Use GI pipes to reinforce	GI pipes	4500	Per pipe	7	pipes			31500	Procurement team
						32. Use angle clamps to reinforce the frame	Clamps	70	Per unit	30	clamps			2100	Procurement team
						33. The work area should be paved.	cement	130	Per unit	6	unit			780	Procurement team
							rock	55	Per unit	3	unit			165	Procurement team

							River sand	55	Per unit	3	unit			165	Procurement team
							Water proofing material	360	Per unit	3	unit			1080	Procurement team
X				31. ensure that application is carried out in a closed area and make sure to collect and dispose any polymer components accordingly.	36. Upon analyzing the potential, collected, polymer and refereeing to 2013/R-58, appendix B (page 33, 34) the waste can be considered under 'fiber resin' (tear 2, C). Therefore, must be dealt with as ' special waste' as specified under Appendix (A), clause 1.6, A, page 24.	34. Inform the staff that the water needs to be collected in order to contain the water and prevent water contamination. 35. Collect in special containers.	Filtrate collection barrels	750	Per unit	12	unit			9000	Procurement team
							Residue collection barrels	750	Per unit	3	unit			2250	Procurement team
							Personal protection equipment	999	Per unit	1	unit	7 kits		6993	Procurement team
						36. Place on elevated paved ground	GI pipes	4500	per 1 pipe	7	pipes			31500	Procurement team
						37.	Clamps	70		30	clamps			2100	Procurement team
X					37. All 'special waste' generated must be contained in a closed container. Ready to be taken up by waste management authorities.	38. Inform the waste management party of the potential waste								No cost added	Project management team
						39. discard through waste management party accordingly	Personal protection equipment	999	Per kit	7	kits	7 kits		48951	Procurement team
							Transportation fee	22000	Per trip	1	trip 7 tons capacity			22000	Procurement team
Mobilization															
X				32. Plan on manageable workloads to deploy during project phase out.	38. Ensure that the project spaces out the deployment so as to reduce stress on the biota.	40. A sudden introduction of the component may be too stressful to the biota visible on location and to the work team. Hence it must be spaced out.	Transportation fee	22000	Per trip	0	trips			Included in the project cost	Procurement team
X		X	X		39. ensure assignment of an observation group which acts as a standalone party that will ensure observation of area post implementation at each step.	41. Initiate selection of the observation divers 42. Inform the divers of the schedule of divers during observation. These divers will review the previous footage and observe the project location again.	Power point presentation Staff location		+ overtime cost					No cost added	Project management team

						43. Deploy the divers for monitoring	Dive gear		Cost accounted for under monitoring . (37)					No cost added	Project management team
X					40. Initially the crew will be informed of the location and the orientation of the structure.	44.	Power point presentation Staff location		+ overtime cost					No cost added	Project management team
X			X	33. Ensure the spud location is clear of significant coral before placement.	41. Inform the staff of the importance of the spud location and importance of placement of spud on a clear area.	45. Inform the staff to ensure that the base anchor location on the benthos of the spud is clear of live corals and significant corals.	Power point presentation Staff location		+ overtime cost					No cost added	Project management team
X			X	34. double check the inflation device before placement of device.	42. Procure a bouncy device that can withstand the weight of the load.	46. Inform the staff of the proper methodology. 47. Inform the proper que to inflate the bouncy device	Power point presentation Staff location		+ overtime cost					No cost added	Project management team
						48. Procure bouncy devices	Bouncy device	16000	Per device	5	devices			80000	Procurement team
X				35. The operators must be informed of the need of the mooring capacity and capability.		49. Inform in the stakeholders in the consultations and information sessions of the importance of the need of the mooring capacity.	Power point presentation Staff location		+ overtime cost					No cost added	Project management team
Operation															
X				36. inform operators of the importance of controlled and limited interaction with the biota.	43. Ask the operators to provide proper conduct guidelines as a briefing prior to dive.	50. Provide a contact guide sheet to the operators as the proponent. 51. Proper procedural guidelines in photo modes. 52. Proper dive Etiquette in photo models.	Power point presentation Staff location		+ overtime cost					No cost added	Project management team
					44. Ask the users not to touch the structure, especially when marine life engages as a substratum		PR material,		+ overtime cost					No cost added	Project management team
					45. ask the users not to pick remove or destroy any structure on the system										
					46. ask the users / dive trainers to follow good dive ethics and ensure competent divers use the location.										

x				37. ensure that the terms of environment monitoring and management are understood by the stakeholders.	47. Monitoring procedure must be budgeted, proposed and agreed upon prior to development.	53. Inform and set up for the monitoring party of the monitoring parameters (benthic, bathometric, social, financial) monitoring procedures, and monitoring needs	Setting up procedural parameters		+overtime cost					No cost added	Project management team
					48. Procedural monitoring	54. Deploy the divers for monitoring	Dive gear	1500	Per unit	4	units per day	36	Days total	216000	Project management team
							Water samples to MWSC	600	Per unit	2	Units per monitoring			43200	Project management team
x				38. ensure that the management actions are explained in understandable forms (boards and text) on site.	49. make sure that a written document is agreed upon between the stakeholders, operator and proponent	55. Agree upon with the stakeholders regarding monitoring	Eteam		+overtime cost					No cost added	Project management team
					50. ensure provision of and placement of salt tolerant message boards that can be placed on site.	56. Provision of salt tolerant boards	Ideal material,		+overtime cost					No cost added	Procurement team
						57. Placement of salt tolerant boards	Dive gear	1500	Per unit	4	units per day	2	days	12000	Project management team
Modification and preparation															
X		X		39. on site, inform any local who wishes to clarify the purpose of the move.	51. inform the workers to direct all quarries to the focal point on site.	58. Provide proper grievance redress								No cost added	Project management team
					52. keep the focal point informed of the project.	59. Provide proper update meetings to social focal points.								No cost added	Project management team
Mobilization															
		X		40. preparation of a focal point for negative press management	53. make sure to assign inform and guide a capable individual to mitigate negative press on time.	60. Designate the PR and HR team for negative press mitigation.	PR material,		+overtime cost					No cost added	Project management team
Assemblage															
				41.											
Operation															

		X		42. inform the locals of the use of the move.	54. prepare public relational and marketing material informing the purpose and need of the project.	61. Designate the PR and HR team to prepare related PR material.	PR material,		+ overtime cost					No cost added	Project management team
Pre-preparation															
Modification and preparation															
			X	43. ensure all expenses are accounted for	55. proper estimation must be carried out pre and post construction	62. Specifically employ a capable team of quantity surveyors and quantify the procedure.	estimation		+ overtime cost					No cost added	Project management team
			X		56. utilize quantity surveyors for the project.										
Operation															
			X	44. Try to manage the use of the site through a booking system	57. Prepare a management booking portal that can be used by service providers that assigns a time for dives.	63. Prepare and initiate a proper management booking portal for the project.	Preparation of a booking system		+ overtime cost					No cost added	Project management team
							Incorporation of a booking system to the website		+ overtime cost					No cost added	Project management team
Mtigation costing														MVR 589,639.00	

9. Monitoring

The objective of the section is to state the requirements of monitoring, inform an estimated cost of monitoring and layout the required parameters of monitoring.

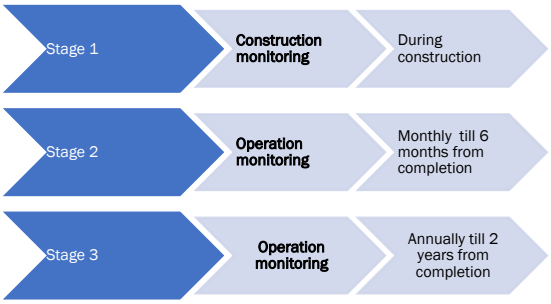
The monitoring program and plan is set out for the construction and operation of the development. It is necessary to conduct a monitoring operation because;

- The monitoring will determine if potential impacts are minimized.
- The monitoring can help shape impact management
- The monitoring in the long-term aids improve impact management.

The program is divided to the construction phase and the operation phase. The methodology used, will be similar to the environment assessments as much as possible. The cost of monitoring is added to the monitoring program to act as a guideline for monitoring.

9.1. Recommended monitoring program

The monitoring program is divided to 2 sections as per the TOR, construction monitoring and operation monitoring.



The report must be compiled by a registered environmental consultant with a permanent EIA consultant license as per the EPA regulations. If the contractor employs other staff for the project, final supervision must be carried out by the consultant.

9.2. Monitoring parameters

Table 3 Defined parameters for monitoring to use as a guideline.

Mtigation	Methodology	Monitoring component	Monitoring stage
Provide safety boots and chin guards to staff provide safety googles and gloves assign working staff N25 masks that can mitigate the impact of the dust. ensure that the supervisors use a checklist to ensure that all structural points are observed Keep first aid crew ready double check the inflation device before placement of device.	Checklist	Safety compliance monitoring	construction
inform staff of the proper safety measures All staff must be made aware of the plan of work	Checklist	Construction health and safety	construction

Mtigation	Methodology	Monitoring component	Monitoring stage
Inform staff of the Construction Site Health and Safety Regulation (2019/R-156), ensure that all staff abide by it inform the staff of the flammable nature of the material Inform the dives and staff of the potential hazard of their work inform the staff of the likelihood of projectiles during submerging. inform the staff of the deliberate action and ensure that all necessary staff are accounted for before touchdown of the plane. repeat all briefs at every dive and ensure that all staff are aware of the potential hazards at every dive.		management monitoring	
Inform the staff that on site, if any local who wishes to clarify the purpose of the construction / operation and inform them preparation of a focal point for negative press management inform the locals of the use of the move.	Checklist	Social impact management monitoring	construction
Ensure that the staff are informed that no significant, protected and endangered plant will be cut during the process. Ensure that the generated waste is dealt with accordingly: use oil traps, ensure that the water is not drained to the ground, use mesh filters to recover metal debris and discard them in separate containers, etc. follow relevant regulations Ensure porosity of the hull to make sure that the input nutrient and output nutrient is matched so that the water does not stagnate and promote NIA The metal dust generated during metal works needs to be vacuumed, contained and disposed accordingly. ensure that the main structural strength is not compromised.	Checklist	Environment management monitoring	Construction

Mtigation	Methodology	Monitoring component	Monitoring stage
ensure use of mitigation measures to prevent particulate matter dispersal during cement work. ensure that application is carried out in a closed area and make sure to collect and dispose any polymer components accordingly. Ensure the spud location is clear of significant coral before placement.			
ensure all expenses are accounted for	Checklist	Financial management monitoring	Construction
maintain power tools ensure the cables are strong and can withstand the tension ensure that the barge can carry the maximum load that is proposed. ensure that the spud is dropped deliberately, in a controlled manner.		Equipment management monitoring	construction
Ensure that the dive site is used by professionals. Ensure the management actions are informed to the users upon initiation and publish the management actions terms of agreement must be defined between the parties involved and stakeholders. Management actions must be defined and agreed upon repeat all briefs at every dive and ensure that all staff are aware of the potential hazards at every dive The operators must be informed of the need of the mooring capacity and capability at the mooring float inform operators of the importance of controlled and limited interaction with the biota. ensure that the management actions are explained in understandable forms (boards and text) on site.	Checklist	Operation management monitoring	Operation

Mtigation	Methodology	Monitoring component	Monitoring stage
Try to manage the use of the site through a booking system			
ensure that the terms of environment monitoring and management are understood by the stakeholders.	Checklist	Site monitoring management monitoring	Operation

inform using notices on floaties and other structures the importance of not anchoring on site
 	
Monitor the specified environmental parameters.
• Benthic monitoring locations
  ○ Significant benthic sites within the site
  ○ 2 monitoring locations
• Structural monitoring
  ○ 2 significant features
• Water sampling
	• CPCE, 20m belt 1.5M from substratum, 90 degrees perpendicular,
	• Fish count, significant species,
	• MMSC water sampling
		Environment monitoring	Operation

9.3. Monitoring schedule

The monitoring is scheduled into the project. The table below details the monitoring schedule. As can be seen under attachment 1.1 below, the construction monitoring is linked to the initiation date and will proceed for the entire 41 days of construction taking into account the parameters defined on Table 3. The first monitoring is to commence one month after the kick off date. This will be followed by monthly monitoring for 5 more months. after the 6th monitoring cycle, the monitoring will space out to an annual monitoring that will proceed for 2 years.

Task Mode	Task Name	Duration
	Monitoring	732.63 days
1	construction monitoring	41 days
2	M1	3 days
3	M2	3 days
4	M3	3 days
5	M4	3 days
6	M5	3 days
7	M6	3 days

8	one-year monitoring	7 days
9	second year monitoring	7 days

9.4. Monitoring cost

Monitoring in the proposed project will be managed inhouse with the help of the stakeholders. The monitoring coast is included in the management coast. However, it is repeated to maintain the consistency of typical management plan format. It must also be noted that since monitoring is proposed to be carried out internally, the cost of transportation and the service cost of monitoring is not reflected here.

Table 4 Estimated cost for stage 1 and stage 2 monitoring

Monitoring component	Cost per unit	Factor 1	Factor 2	Cost in MVR
Construction monitoring				
Printing fee	Overtime charges			No added cost
Monitor fee	Overtime charges			No added cost
Dive gear charges	In project cost			No added cost
Operation monitoring				
Dive gear charges	1500	4 divers	36 days per project	216,000.00
Water sample charges	600	2 samples per monitoring	36 days per project	43,200.00
Transportation charges	Internal transportation			No added cost
Report	Internal process			No added cost

Total 259,200.00

The coast of monitoring is included in the mitigation and management cost.

9.5. Monitoring report format

The monitoring report is to follow the typical format accepted in Maldives. The monitoring should include Sample Format

- Introduction
- Aims and Objective
- Method
- Results
- Conclusion and recommendations

The monitoring should also follow the various checklists and methodology provided for the purpose (Monitoring checklist)

10. Recommendations and conclusion

The development of a shallower wreck dive site that is safe and purpose built is a novel project for Maldives. The message attached to the project will have a minor impact on the cause and must be made impactful through strategic marketing and public relations events.

The negative impacts of the project can be potentially caused through bad management of the project such as; using uninformed labour, not providing health and safety measures and not implementing proper mitigation measures. Therefore, to maximise positive impacts and to bring about the negative impacts to acceptable levels, the proponent must implement the recommended Mitigation actions and management actions. It is also recommended that if an external party is involved, the proponent will share the EMP with the involved parties as a part of the contract or memorandum of understanding. It is also recommended to carry out monitoring during construction and operation phase.

The financial impact of the project is negative as the project does not provide any financial growth to the company both in construction and operation stages after using the companies staff on company payroll utilizing tools, machinery, and other resources, as of now. The potential for revenue generation through tours is through the established lease generated income. As of now this project is not predicted to contribute to the proponent financially unless the proponent actively gets involved in the operation.

Although the project is not necessary for the organisation to thrive, it is an effective way to give back to the dive, freediving, guesthouse, liveaboard and resort community of the Maldives. This investment, if made will have the capacity to provide long-term social, financial, and environmental positive impacts to the stakeholders.

11. Bibliography

Laws and regulations

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

Environmental Impact Assessment Regulations 2012 and Amendments

Regulation on Sand and Coral Mining

Regulation of Dredging and Land Reclamation (2013/R-15),(2014/R-13)

Regulation on cutting down trees

The Environmental Liability regulation (Regulation 2011/R-9)

Construction Site Health and Safety Regulation (2019/R-156)

Regulation on treatment of the diseased in case of a contagious disease (2020/R34).

Regulation on isolation and quarantine facility standards (2020/R35), amendment 1 (2020/R-76)

Regulation on waste management (58-R/2013), amendment 1 (10-R/2014), amendment 2 (29-R/2014), amendment 3 (90-R/2017), amendment 4 (63-R/2018), and amendment 5 (109-R/2021),

United Nations Convention on Biological Diversity(CBD)

International Plant protection convention (IPPC)

National Biodiversity Strategy and Action Plan

Literature

Argyropoulos, Vassilike & Stratigea, Anastasia. (2019). Sustainable Management of Underwater Cultural Heritage: The Route from Discovery to Engagement-Open Issues in the Mediterranean. Heritage. 2. 10.3390/heritage2020098.

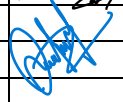
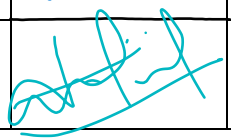
Rubin, Stephen & Grossman, Eric & Koontz, Lynne & Paulson, Anthony & Sexton, Natalie & Reisenbichler, Reg. (2022). Needs Assessment and Scoping Study for Sinking Ships as Diving Sites in Puget Sound.

Stratigea, Anastasia & Argyropoulos, Vassilike. (2019). Linking Land and Underwater Cultural Heritage Management to Technology in Smart Cities and Communities.

Şensurat Genç, Tuğçe & Özgül, Aytaç & Lök, Altan. (2017). The Use of Artificial Reefs for Recreational Diving. Turkish Journal of Maritime andMarine Sciences. 3. 27-33.

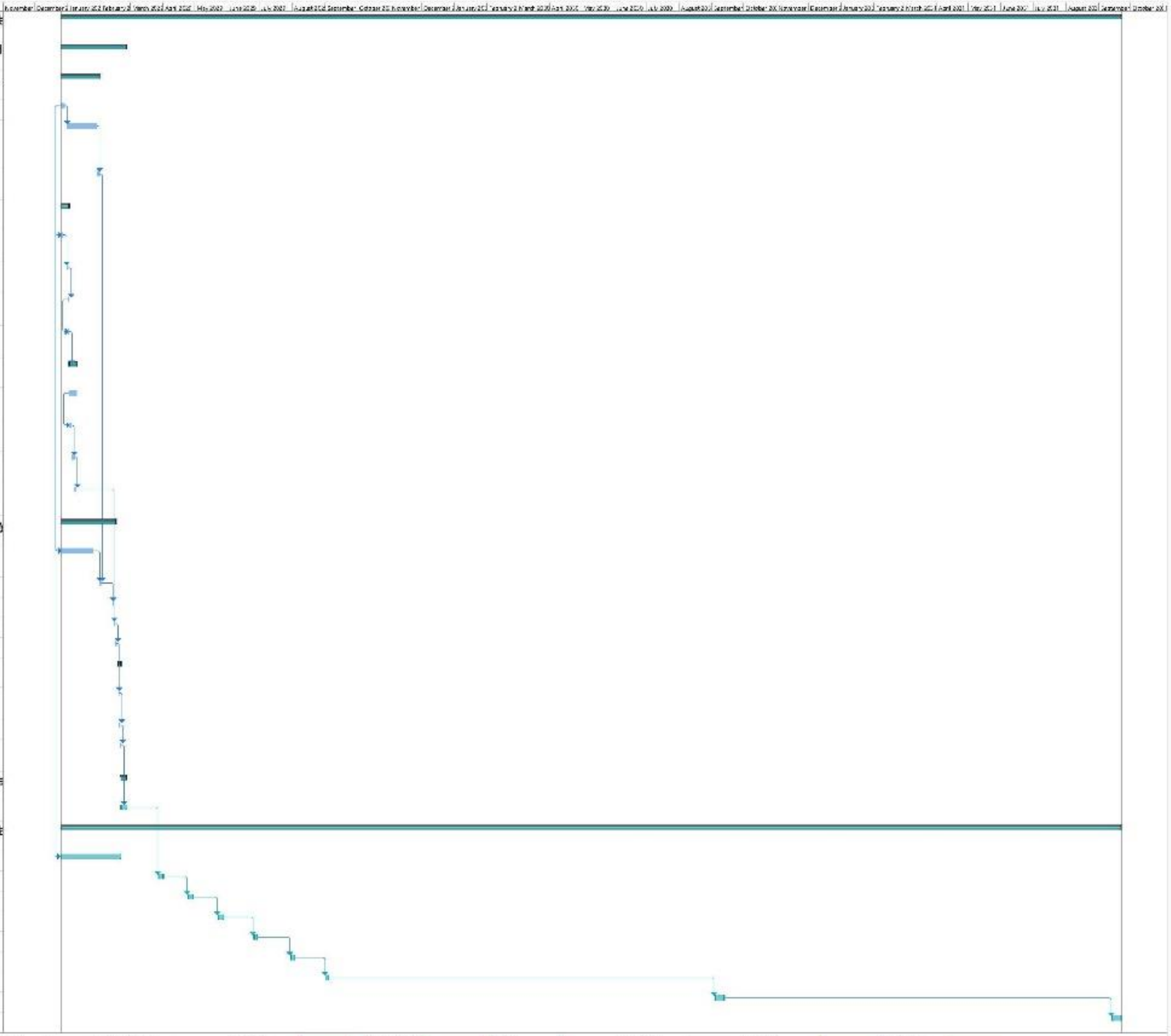
12. Attachments

12.1. Project Team

Name	Signature	Designation	Other qualifying licences	Professional Licence Number	Report Compilation Function	Project Role
Hassaan Abdul Muhsin		Environment Consultant		EIA P02/2020	Introduction to the EMP Introduction to the project Policy and legal framework Methodology Existing environment Impact prediction Mitigation actions and management Monitoring Recommendations and conclusion	Management Plan compilation
			Diver	1107EDI410		
			Speciality Diver , DaDs	1608EY4017		
			Eco diver	Maldives/ Eco Diver/82		
Shauzab Adam		Senior Program Officer			Introduction to the project Stakeholder consultation	Project Formulation Project management Stakeholder consultation
Hussain Saliq		Civil Engineer		BPR2022044A1, DPR2019097LE		Design Engineering
Mohamed Yameen		Senior Building Services Engineer		GPR2019054CE GPR2019056CM GPR2019055PM BIR2019006BI1		
Ahmed Asnadh		Graduate Architect		GPR2020353AP		
Ahmed Nhureer		Surveyor			Existing environment	Bathymetry and Survey
Muhammad Ibraahim		Geomatic Engineer		BP04206	Existing environment	
Thorif Ibrahim		Assistant Surveyor			Existing environment	
Aishath Nazaha Faisal		Interior Architect			Existing environment	Marine survey
			Diver	732083R5234136811147-MV		
			Free diver	RAID licence limit 20m		

12.2 Project timeline

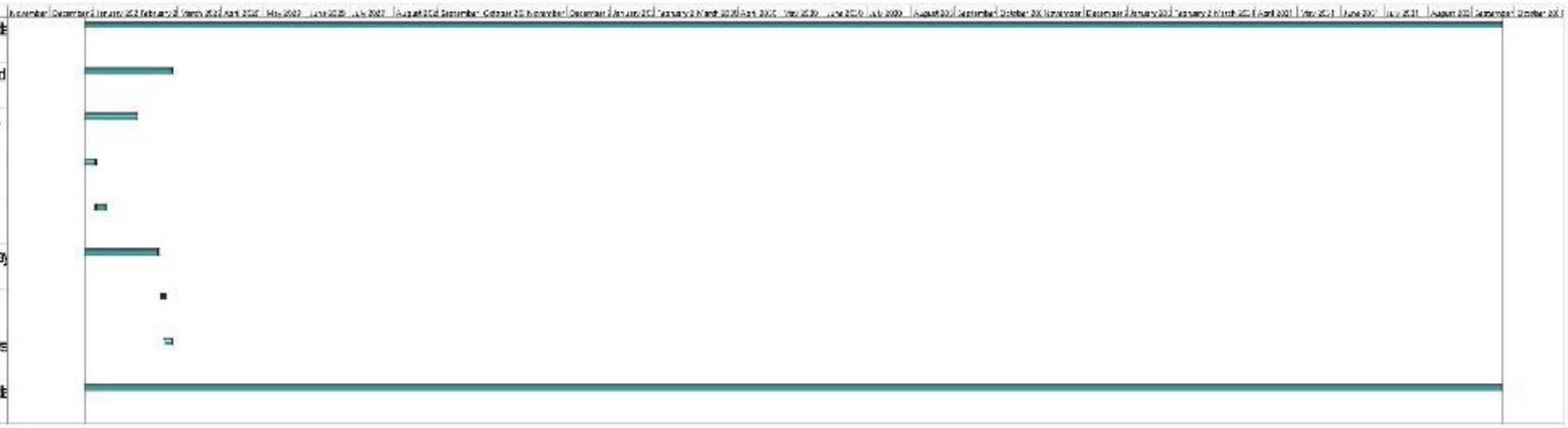
ID	Task Name	Duration
1	Project	732.63 da
2	Development	45.13 d
3	Footpadding Casting	27 days
4	Build the molds for the foot paddings	3 days
5	The foot paddings will be cast, with the intention of achieving C30, with a concrete ratio of 1 cement: 2 river sand: and 3 gravel with re-bar reinforcement and left for 21 days to cure.	21 days
6	Once hardened, the padfooting will be treated with a polymer layer to minimize porosity	3 days
7	Pre preperation	6 days
8	The airplane will be prepared by trimming the weeds grown around it.	2 days
9	It will be cleaned and the rough dangerous edges smoothed out as much as possible	2 days
10	This will be followed by a simple double check of the internal frame to confirm the integrity of the airplane.	1 day
11	Next a crane will be used to lift the load to the platform of the truck and lift it.	1 day
12	Modification and preparation	5 days
13	Once moved to the workshop, the airplanes will be cleaned, washed and the structure repaired	5 days
14	Next the structure will be made porous for the water to permeate in a timely manner that reduces stress on the crane	2 days
15	After which the anchor sleeves will be welded to the inner body of the structure	1 day
16	The wings and the outside will be reinforced to account for the stress of the currents	1 day
17	Mobilization	38.88 day
18	Initially the crew will be informed of the location and the orientation of the structure.	21 days
19	Mobilization of foot-paddings	1 day
20	Mobilization of the frame	1 day
21	Mobilization of the main structure 1	1 day?
22	Mobilization of the main structure 2	1 day
23	Assemblage	3 days
24	Sections of the structure will be brought in separately and will have to fit into sleeves.	1 day
25	Once sleeves are connected they will be assembled together	1 day
26	Mooring buoys capable of withstanding weeds of 150m will be set on location post implemented time.	1 day
27	Completion date	4.13 days
28	Marketing event	3 days
29	Monitoring	732.63 da
30	construction monitoring	41 days
31	M1	3 days
32	M2	3 days
33	M3	3 days
34	M4	3 days
35	M5	3 days
36	M6	3 days
37	one year monitoring	7 days
38	second year monitoring	7 days



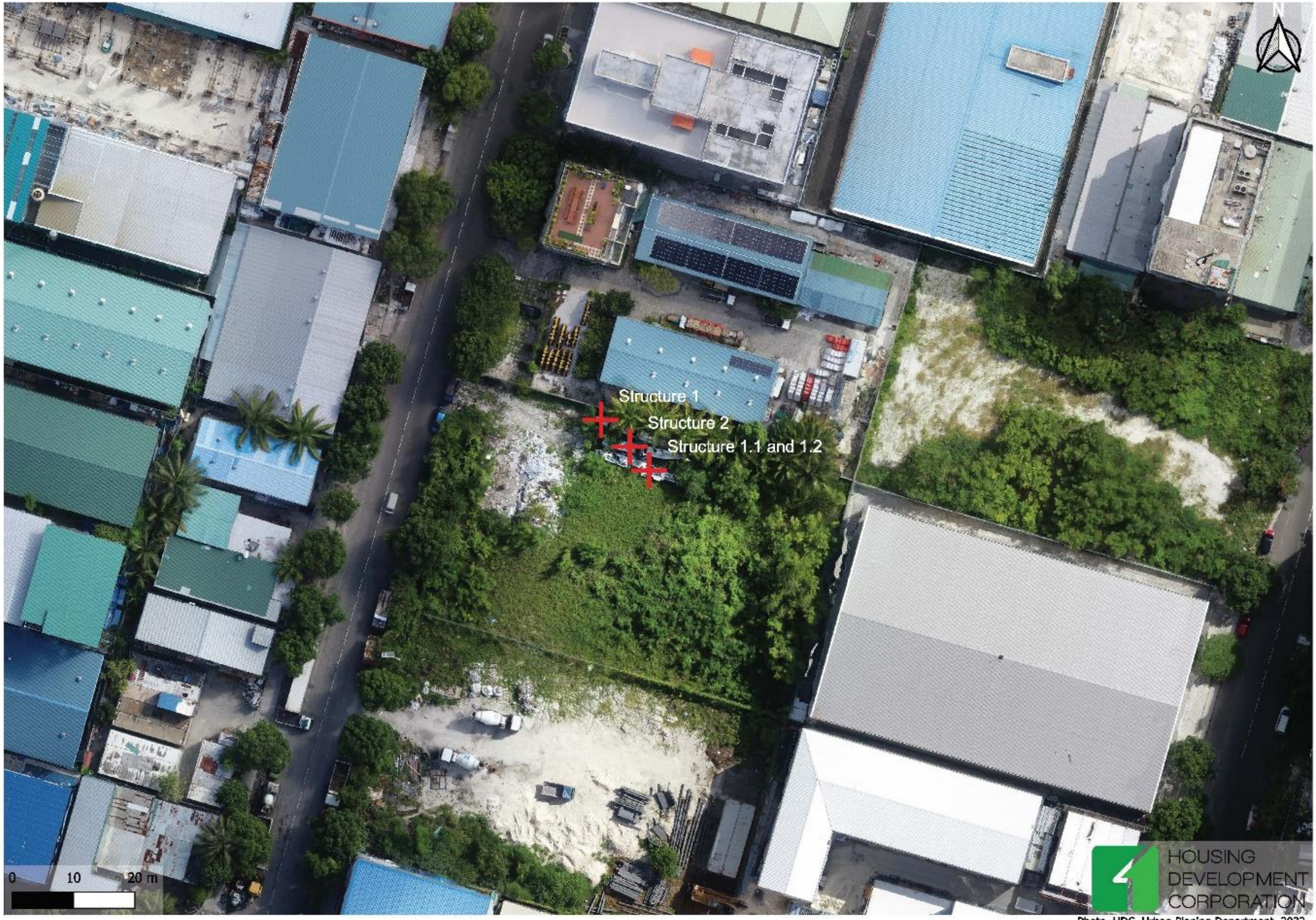
Project: Timeline
Date: Wed 7/6/22

Task · Split · Milestone · Summary · Project Summary · Inactive Task · Inactive Milestone · Inactive Summary · Manual Task · Duration-only · Manual Summary Rollup · Manual Summary · Start-only · Finish-only · External Tasks · External Milestone · Deadline · Progress · Manual Progress

ID	Task Mode	Task Name	Duration
1		Project	732.63 da
2		Development	45.13 d
3		Footpedaling Casting	27 days
4		Pre preperation	6 days
12		Modification and preparation	5 days
17		Mobilization	38.88 day
24		Assemblage	3 days
27		Completion date	413 days
29		Monitoring	732.63 da



12.1. Project components



Photo, HDC, Urban Planing Department, 2022.

HOUSING DEVELOPMENT CORPORATION

Photo, HDC, Urban Planing Department, 2022.

12.1. Project movement paths

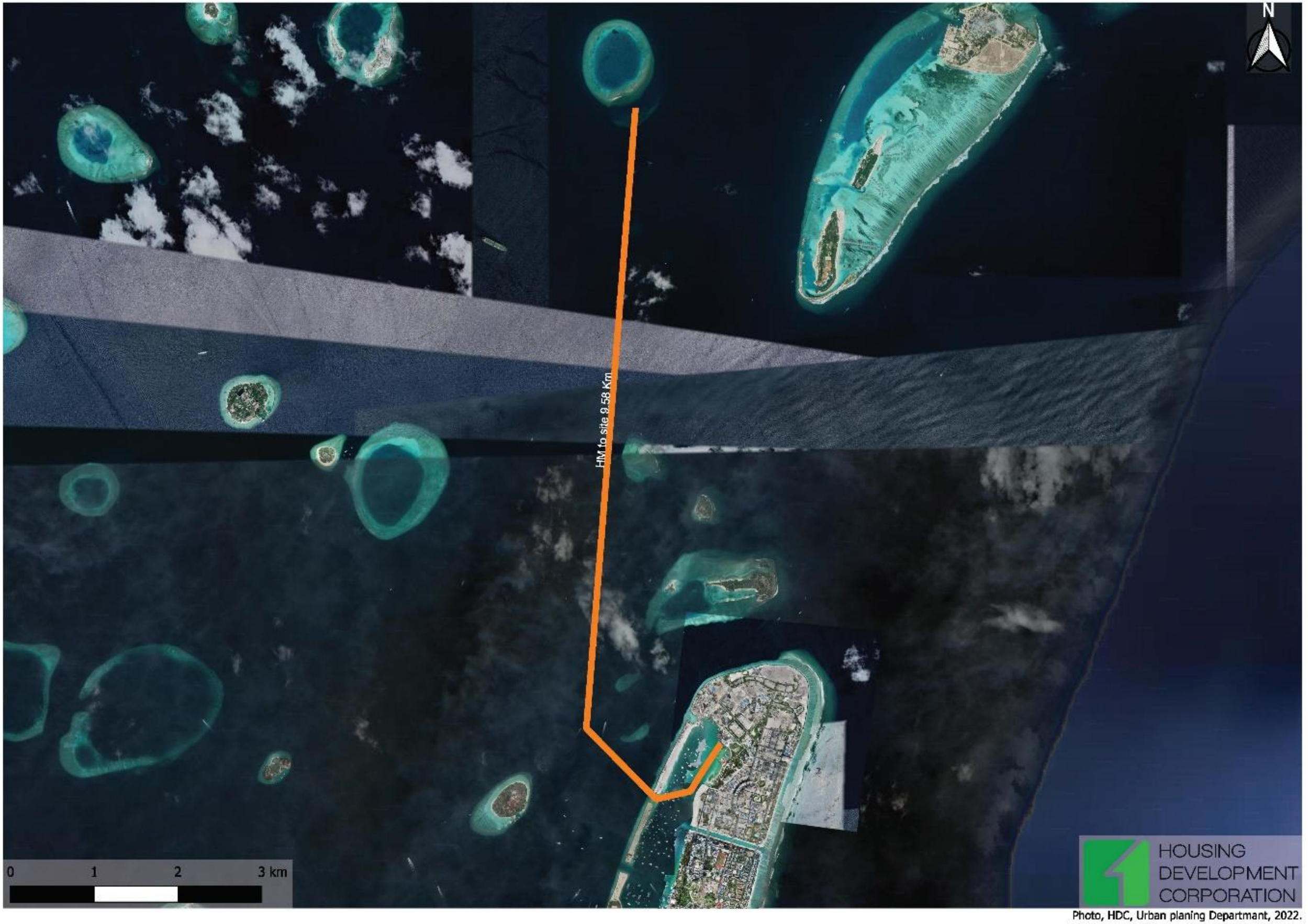
Drive path from MSO to Landing craft

Environment Unit

Photo, HDC, Urban planing Departmant, 2022.

From HDC to deploy site

Environment Unit

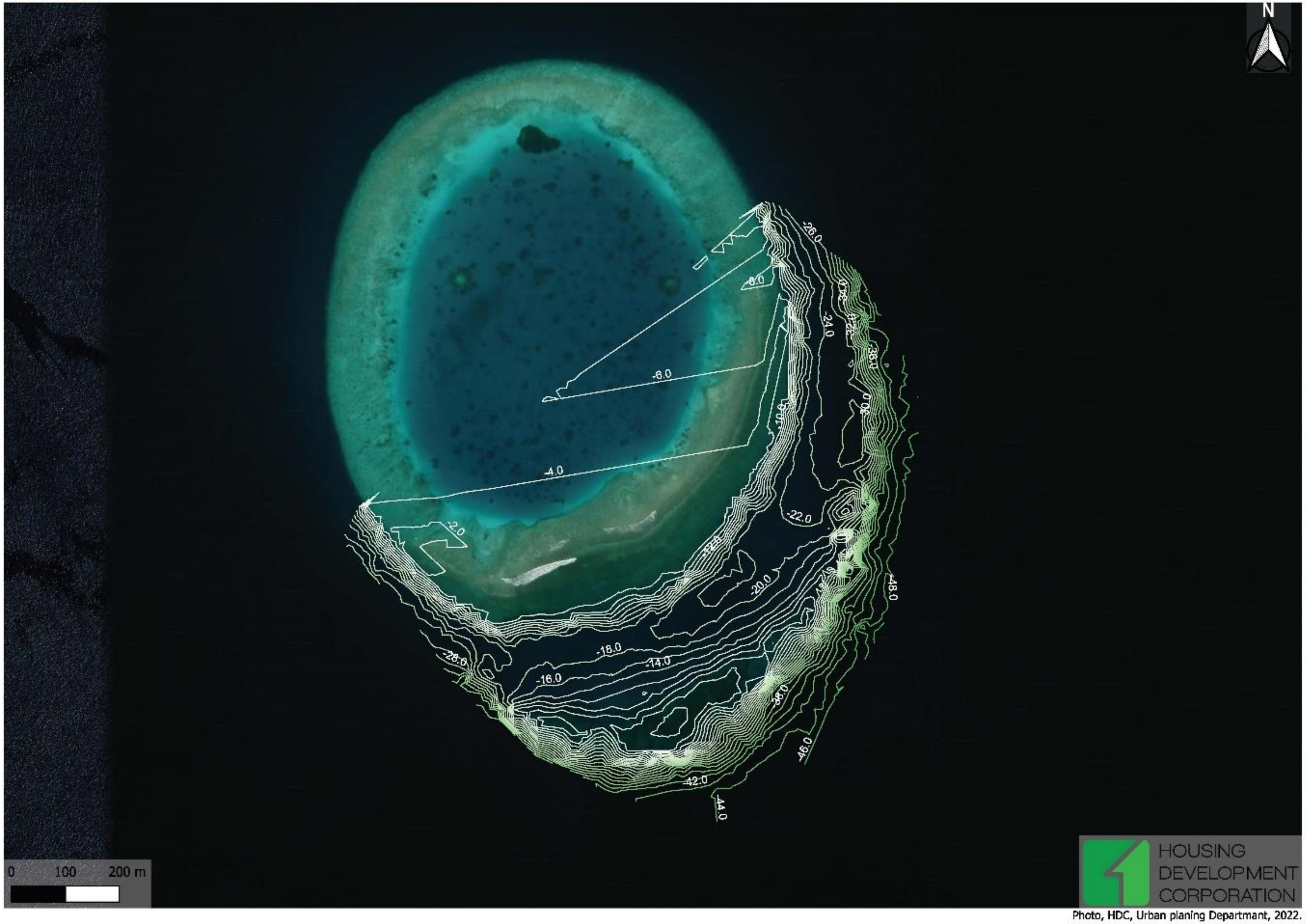


Photo, HDC, Urban planing Departmant, 2022.

12.1. Bathymetry

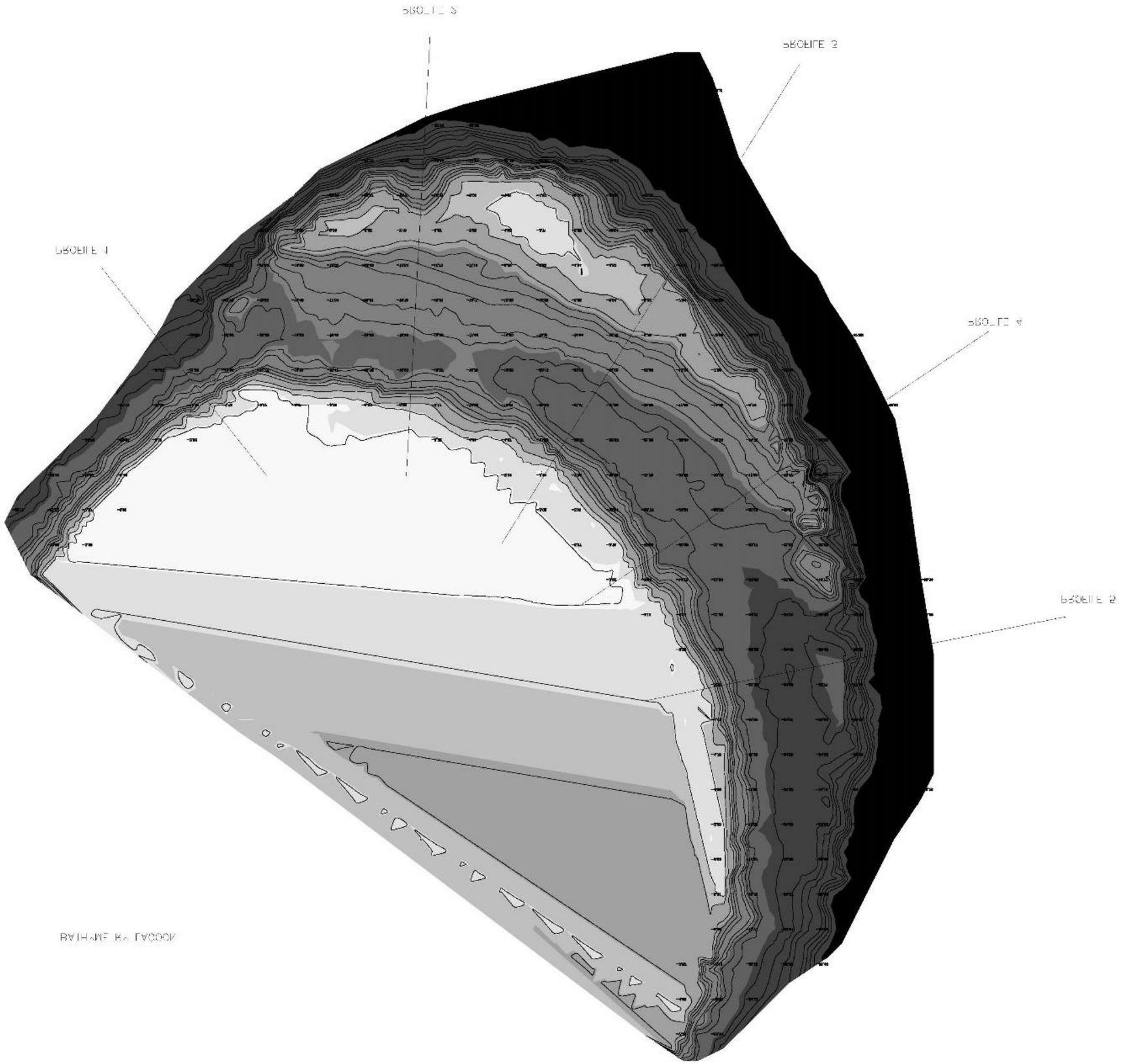
Approximate depth reference

Environment Unit

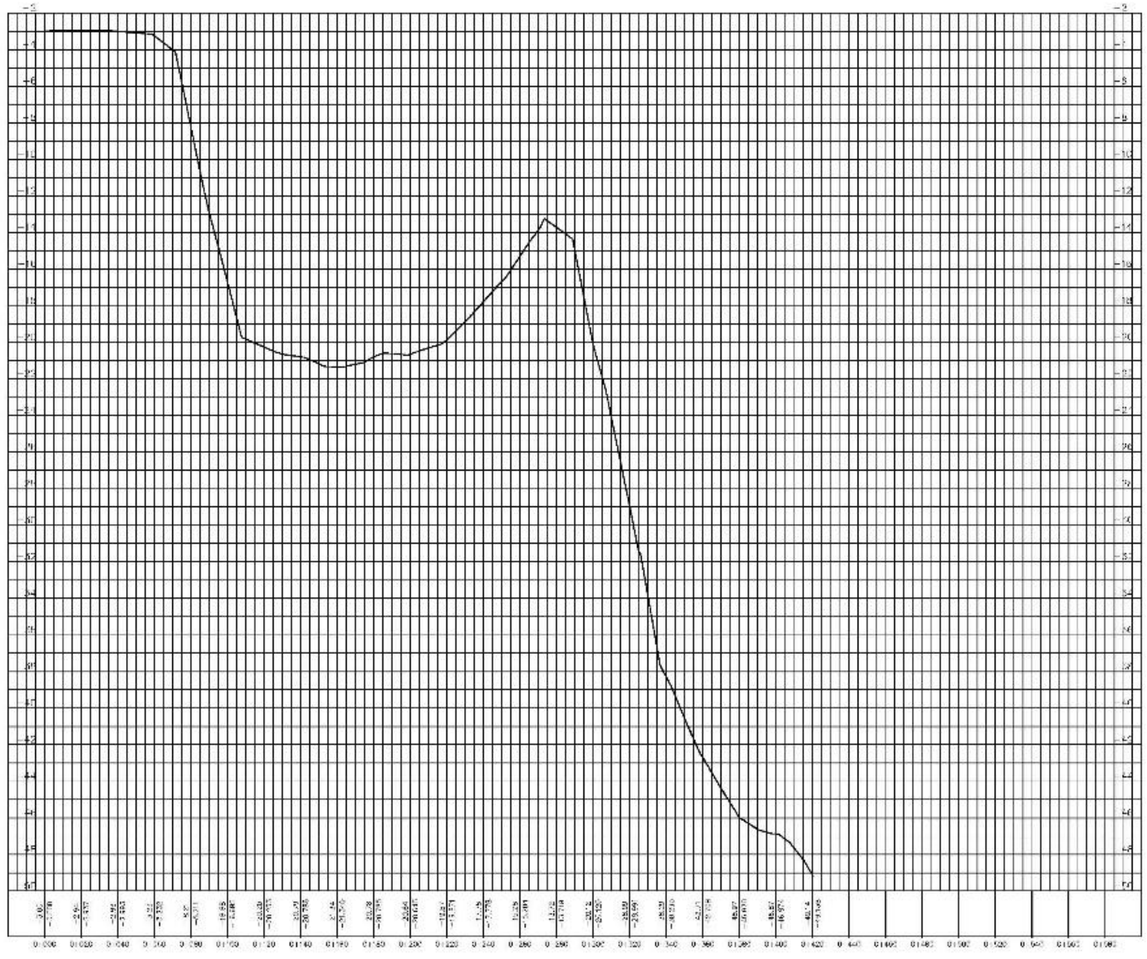


HOUSING DEVELOPMENT CORPORATION

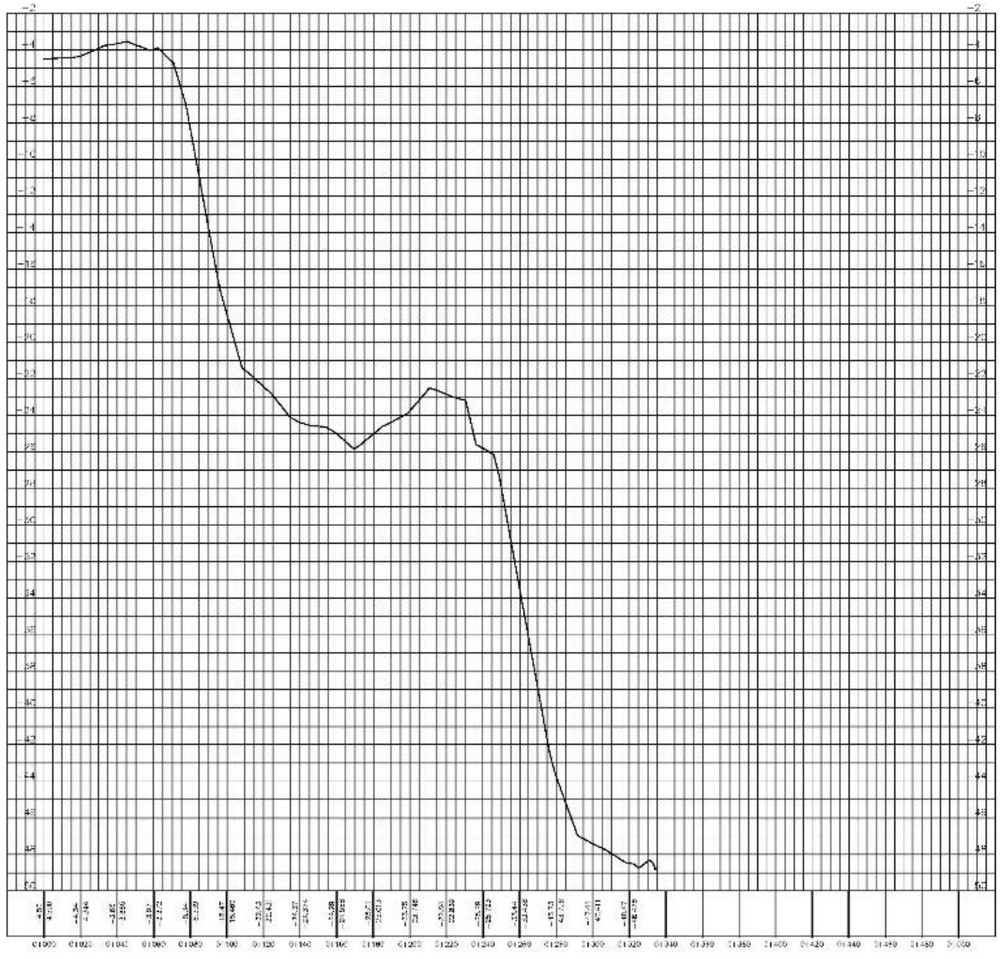
Photo, HDC, Urban planing Departmant, 2022.

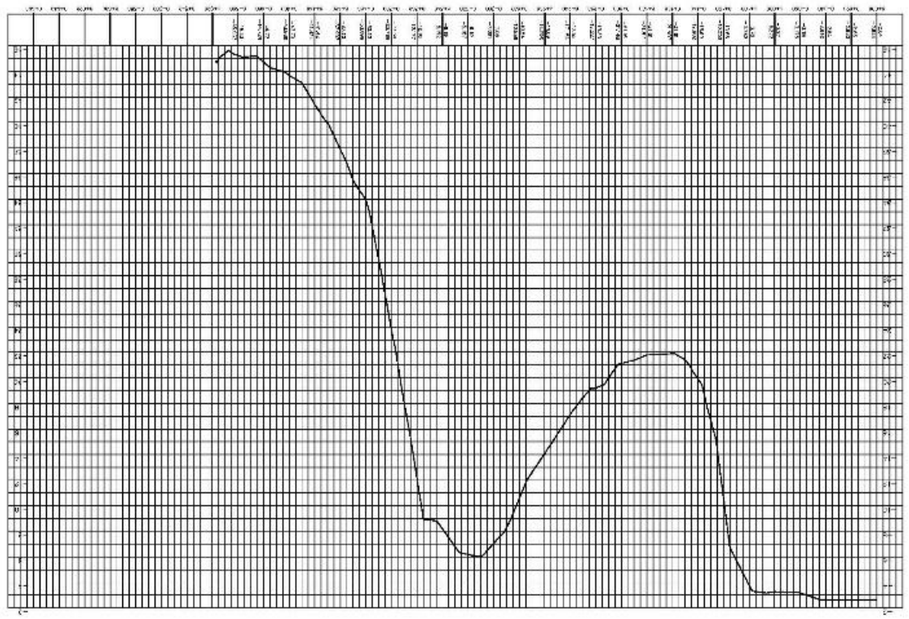


PROFILE 4 PROFILE

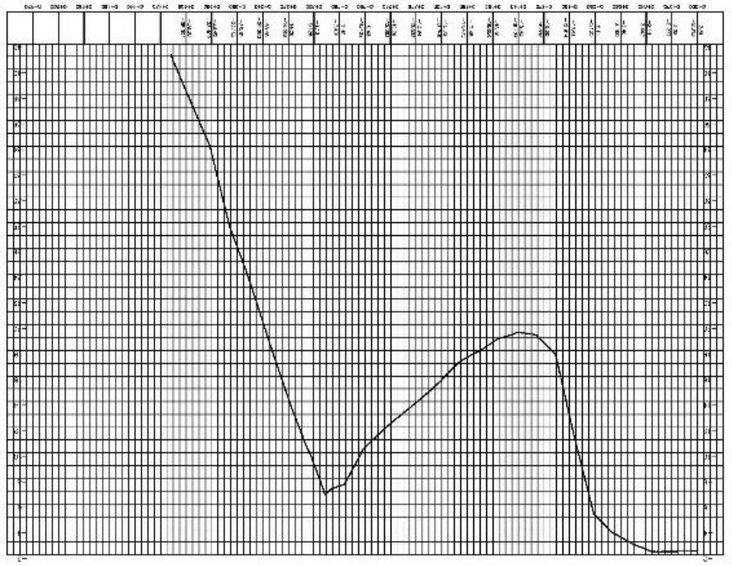


PROFILE 5 PROFILE

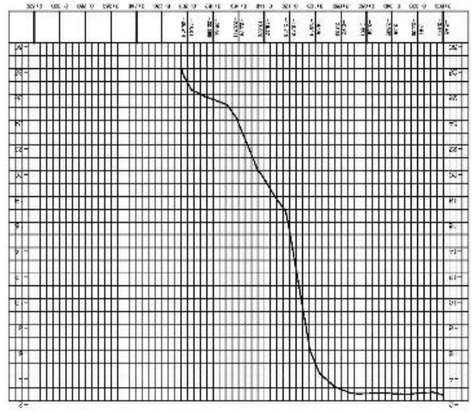




PROFILE 3 PROFILE



PROFILE 2 PROFILE



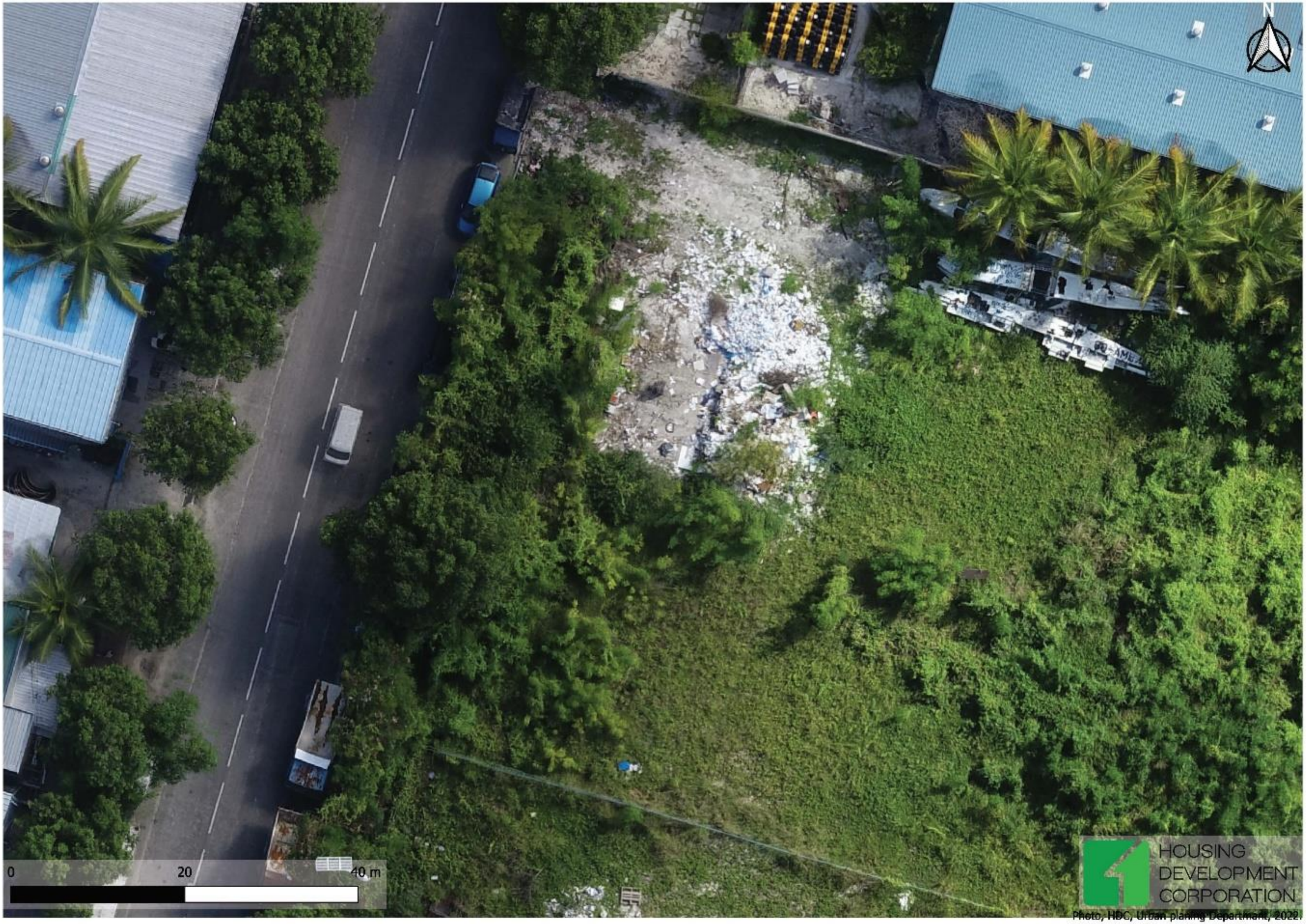
PROFILE 1 PROFILE

12.1. Existing environment maps

Survey sites

Environment Unit

Photo, HDC, Urban planing Departmant, 2022.



Photo, HDC, Urban planning Department, 2022.

HOUSING DEVELOPMENT CORPORATION

Photo, HDC, Urban planing Department, 2022.

12.1. MWSC water sample

Male' Water & Sewerage Company Pvt Ltd
Water Quality Assurance Laboratory
Quality Assurance Building, 1st Floor, Male' Hingun, Vilimale', Male' City, Maldives
Tel: +9603323209, Fax: +9603324306, Email: wqa@mwsc.com.mv

LB-TEST-090

WATER QUALITY TEST REPORT
Report No: 500191639

Customer Information:
Housing Development Corporation Ltd

HDC Building, 3rd Floor
Male 20120

Report date: **08/06/2022**
Test Requisition Form No: **900194613**
Sample(s) Recieved Date: **06/06/2022**
Date of Analysis: **06/06/2022 - 07/06/2022**

Sample Description ~	N04 13.084 & 073 32.241 (WSI)	**TEST METHOD**	**UNIT**
Sample Type ~	Sea Water		
Sample No	83229652		
Sampled Date ~	02/06/2022 04:00		
PARAMETER	**ANALYSIS RESULT**		
Physical Appearance	Clear with particles		
Conductivity *	50500	Method 2510 B. (adapted from Standard methods for the examination of water and waste water, 23rd edition)	µS/cm
pH *	8.1	Method 4500-H+ B. (adapted from Standard methods for the examination of water and waste water, 23rd edition)	-
Salinity	32.98	Method 2520 B. (adapted from Standard methods for the examination of water and waste water, 23rd edition)	‰
Temperature	20.8	Electrometry	°C
Total Dissolved Solids	25200	Electrometry	mg/L
Total Suspended Solids	<5 (LoQ 5 mg/L)	HACH Method 8006	mg/L
Turbidity *	0.132	HACH Nephelometric Method (adapted from HACH 2100N Turbidimeter User Manual)	NTU

Keys: µS/cm : Micro Seimen per Centimeter, **‰** : Parts Per Thousand, **°C** : Degree Celcius, **mg/L** : Milligram Per Liter, **NTU** : Nephelometric Turbidity Unit

Checked by

Aminath Sofa
Laboratory Executive

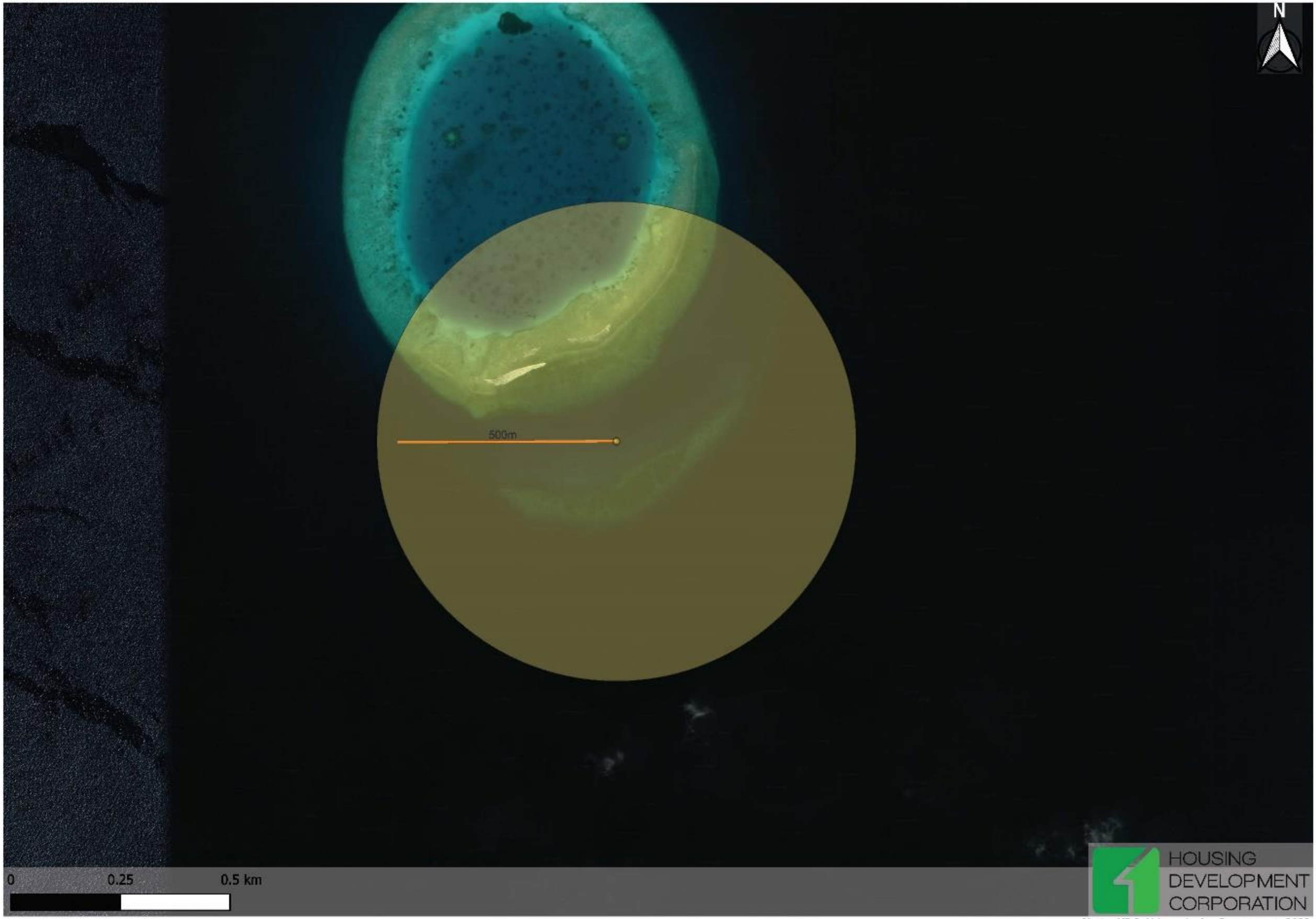
Approved by

Mohamed Eyman
Assistant General Manager, Quality

Notes:
Sampling Authority: Sampling was not done by MWSC Laboratory.
This report shall not be reproduced except in full, without written approval of MWSC.
This test report is ONLY FOR THE SAMPLES TESTED.
~ Information provided by the customer. This information may affect the validity of the test results.
*Parameters accredited by EIAC under ISO/IEC 17025:2017

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

12.1. Impact Map



HOUSING DEVELOPMENT CORPORATION

Photo, HDC, Urban planing Department, 2022.

12.2 Monitoring checklist

The monitoring checklist should be attached to the monitoring report in addition to the other components in the monitoring report.

Procedure

Fill in the date and the staff ID

Observe each component separately and mark according to the observation of the observer. The observer should prompt a question and clarify if compliance is unsatisfactory

Mtigation	Fully compliant Fully Supervised	Partially compliant Fully Supervised	Not compliant Fully Supervised	Fully compliant Partially Supervised	Partially Compliant Partially Supervised	Not compliant Not Supervised	Fully compliant Not supervised	Partially compliant Not Supervised	Not Compliant Not Supervised
Provide safety boots and chin guards to staff									
provide safety googles and gloves									
assign working staff N25 masks that can mitigate the impact of the dust.									
ensure that the supervisors use a checklist to ensure that									

Mtigation	Fully compliant / Fully Supervised	Partially compliant / Fully Supervised	Not compliant / Fully Supervised	Fully compliant / Partially Supervised	Partially Compliant / Partially Supervised	Not compliant / Not Supervised	Fully compliant / Not supervised	Partially compliant / Not Supervised	Not Compliant / Not Supervised
all structural points are observed									
Keep first aid crew ready									
double check the inflation device before placement of device.									
inform staff of the proper safety measures									
All staff must be made aware of the plan of work									
Inform staff of the Construction Site Health and Safety Regulation (2019/R-156), ensure that									

Mtigation	Fully compliant Fully Supervised	Partially compliant Fully Supervised	Not compliant Fully Supervised	Fully compliant Partially Supervised	Partially Compliant Partially Supervised	Not compliant Not Supervised	Fully compliant Not supervised	Partially compliant Not Supervised	Not Compliant Not Supervised
all staff abide by it									
inform the staff of the flammable nature of the material									
Inform the dives and staff of the potential hazard of their work									
inform the staff of the likelihood of projectiles during submerging.									
inform the staff of the deliberate action and ensure that all necessary staff are accounted for before touchdown of the plane.									

Mtigation	Fully compliant Fully Supervised	Partially compliant Fully Supervised	Not compliant Fully Supervised	Fully compliant Partially Supervised	Partially Compliant Partially Supervised	Not compliant Not Supervised	Fully compliant Not supervised	Partially compliant Not Supervised	Not Compliant Not Supervised
repeat all briefs at every dive and ensure that all staff are aware of the potential hazards at every dive.									
Inform the staff that on site, if any local who wishes to clarify the purpose of the construction / operation and inform them									
preparation of a focal point for negative press management									
inform the locals of the use of the move.									

Mtigation	Fully compliant Fully Supervised	Partially compliant Fully Supervised	Not compliant Fully Supervised	Fully compliant Partially Supervised	Partially Compliant Partially Supervised	Not compliant Not Supervised	Fully compliant Not supervised	Partially compliant Not Supervised	Not Compliant Not Supervised
Ensure that the staff are informed that no significant, protected and endangered plant will be cut during the process.									
Ensure that the generated waste is dealt with accordingly: use oil traps, ensure that the water is not drained to the ground, use mesh filters to recover metal debris and discard them in separate containers, etc. follow relevant regulations									

Mtigation	Fully compliant Fully Supervised	Partially compliant Fully Supervised	Not compliant Fully Supervised	Fully compliant Partially Supervised	Partially Compliant Partially Supervised	Not compliant Not Supervised	Fully compliant Not supervised	Partially compliant Not Supervised	Not Compliant Not Supervised
Ensure porosity of the hull to make sure that the input nutrient and output nutrient is matched so that the water does not stagnate and promote NA									
The metal dust generated during metal works needs to be vacuumed, contained and disposed accordingly.									
ensure that the main structural strength is not									

Mtigation	Fully compliant Fully Supervised	Partially compliant Fully Supervised	Not compliant Fully Supervised	Fully compliant Partially Supervised	Partially Compliant Partially Supervised	Not compliant Not Supervised	Fully compliant Not supervised	Partially compliant Not Supervised	Not Compliant Not Supervised
compromised.									
ensure use of mitigation measures to prevent particulate matter dispersal during cement work.									
ensure that application is carried out in a closed area and make sure to collect and dispose any polymer components accordingly.									
Ensure the spud location is clear of significant coral before placement.									

Mtigation	Fully compliant / Fully Supervised	Partially compliant / Fully Supervised	Not compliant / Fully Supervised	Fully compliant / Partially Supervised	Partially Compliant / Partially Supervised	Not compliant / Not Supervised	Fully compliant / Not supervised	Partially compliant / Not Supervised	Not Compliant / Not Supervised
ensure all expenses are accounted for									
maintain power tools									
ensure the cables are strong and can withstand the tension									
ensure that the barge can carry the maximum load that is proposed.									
ensure that the spud is dropped deliberately, in a controlled manner.									
Ensure that the dive site is used by									

Mtigation	Fully compliant Fully Supervised	Partially compliant Fully Supervised	Not compliant Fully Supervised	Fully compliant Partially Supervised	Partially Compliant Partially Supervised	Not compliant Not Supervised	Fully compliant Not supervised	Partially compliant Not Supervised	Not Compliant Not Supervised
professionals									
Ensure the management actions are informed to the users upon initiation and publish the management actions									
terms of agreement must be defined between the parties involved and stakeholders									
Management actions must be defined and agreed upon									
repeat all briefs at every dive and ensure that all staff									

Mtigation	Fully compliant Fully Supervised	Partially compliant Fully Supervised	Not compliant Fully Supervised	Fully compliant Partially Supervised	Partially Compliant Partially Supervised	Not compliant Not Supervised	Fully compliant Not supervised	Partially compliant Not Supervised	Not Compliant Not Supervised
are aware of the potential hazards at every dive									
The operators must be informed of the need of the mooring capacity and capability at the mooring float									
inform operators of the importance of controlled and limited interaction with the biota.									
ensure that the management actions are explained in understandable forms (boards and text) on site.									

Mtigation	Fully compliant Fully Supervised	Partially compliant Fully Supervised	Not compliant Fully Supervised	Fully compliant Partially Supervised	Partially Compliant Partially Supervised	Not compliant Not Supervised	Fully compliant Not supervised	Partially compliant Not Supervised	Not Compliant Not Supervised
Try to manage the use of the site through a booking system									
ensure that the terms of environment monitoring and management are understood by the stakeholders.									
inform using notices on floaties and other structures the importance of not anchoring on site									
Monitor the specified environmental parameters.									

Mtigation	Fully compliant / Fully Supervised	Partially compliant / Fully Supervised	Not compliant / Fully Supervised	Fully compliant / Partially Supervised	Partially Compliant / Partially Supervised	Not compliant / Not Supervised	Fully compliant / Not supervised	Partially compliant / Not Supervised	Not Compliant / Not Supervised
• Benthic monitoring locations									
○ Significant benthic sites within the site									
○ 2 monitoring locations									
• Structural monitoring									
○ 2 significant features									
• Water sampling									

12.1. CV set

12.1.1. Hassaan Abdul Muhisn

1. **Name:** Hassaan Abdul Muhisn
2. **Date of Birth:** 22nd April 1989
3. **Nationality:** Maldivian
4. **Contact:** 7901665
5. **Education:**

2016 – 2018	M.Se In Environmental Science Chiang Mai University, Chiang Mai, Thailand.
2012 – 2012	University of Mysore B.Ed University of Mysore St.Joseph's College Of Education, Mysore, India
2008 - 2011	BSc (BTCZ) Programme in Bio-technology, Chemistry and Zoology University of Mysore St. Philomena's College, Mysore, India
2006 - 2008	Centre for Higher Secondary Education Male', Maldives Edexcel GCE A/L (Biology, Chemistry, Physics), HSC (Dhivehi, Islam)
2003 - 2005	Majeediyya School Male', Maldives Cambridge IGCSE (English, Maths), Cambridge GCE O/L (Physics, Biology, Chemistry, Computer Studies), SSC (Dhivehi, Islam)
1996 - 2002	Kalaafaanu School Male', Maldives Primary Schooling

6. **Languages**

Dhivehi

1. speaking, good
2. reading, good
3. writing, good

English

1. speaking, good
2. reading, good
3. writing, good

7. **Experience/ Employment Record**

Date of employment	*Employer*	*Details*
Since April 2022	Housing Development Corporation Urban planning department, GIS and Survey, Environment Unit	***Position**: Environment Analyst HDC* ***Primary role:*** *Providing solution to HDC*
July 2020 to April 202	*Majeediyya School, Maldives*	***Position**: Teacher, Key stage 3* ***Primary role:*** *Teaching* *a) Key stage 3 (Grade 7)*
March 2018 to May 2020	*INSA.PVT.LTD*	***Positions held:** Environmental researcher, analyst., licenced consultant 2018*
Aug 2015 to Aug 2016	*MMPRC*	***Positions held:** Assistant Director* ***Primary role:*** *1. Connecting desk between MMPRC and MOT.*
Feb 2013 to Aug 2015	*Majeediyya School, Maldives*	***Positions held:** Teacher* ***Primary role:*** *1. Teaching* *a) Grade 9 and 10 (CIE)* *b) Grade 11 (IGCSE)* ***Sub tasks assigned:*** *2. Internal verifier* *a)B-tech sports* *b)B-tech arts* *3. Lead invigilator* *a) IGCSE exams*
Aug 2011, To Dec 2011	*Seamarc.pvt.ltd*	***Positions held:** Environment Analyst* ***Summary of Projects Undertaken:*** *1. Setting out, Landaa Giraivaru* *a) Sea wall near the main pool* ***Role:** Setting out survey*

	2. Setting out , Cheval Blanc Randheli *a) the water villas* *b) reclaimed islands* *c) arrival jetties* ***Role:*** *Setting out survey*
	3. Cheval Blanc Randheli *a) the coral propagation component* ***Role****: Setting out survey*
Dec 2005 - March 2006 Sunset restaurant Paradise Island	1.***Positions held:*** Billing clerk
Resort, Maldives	*Sunset Restaurant* *Paradise Island Resort,* Maldives

8. Qualifications, and trainings

17 September 2011	PADI Open water Sea explores dive school Bodufungandu magu *Male', Maldives*
6 March 2014	In service training Professional development Curriculum Application and Change
1 – 3 April 2014	Invigilator's Training Department of Public Examinations *Male', Maldives*
12 February 2015	In service training Professional development Specific learning difficulties and Mentoring *Male', Maldives*
31 March 2015	BTEC Internal Verification and Standardisations
23 April 2015	In service training Professional development Multiple Intelligence & Activity based learning. *Male', Maldives*
26 May 2015	PADI Speciality Diver Dive against Debris *Villa College Maldives* *Bodutakurufaanu magu* *Male', Maldives*
26 May 2015	PADI Reef Check Eco Diver Villa College Maldives Bodutakurufaanu magu Male', Maldives
27 March 2019	Environment consultant licence (permanent) EIA P02/2020, Category A Environmental Protection Agency

9. Publications

H.Abdul Mushin, I. Patawang, C. Phalaraksh, (2018) Chromosomal Aberrations Observed in two Fejervarya spp. living in Artisanal Mining Farms in Pichit Province, Thailand. Proceeding of ISER-107th International Conference on Environment and Natural Science (ICENS). February 10th 2018, Phuket, Thailand (Awaiting publication in JMES, Journal of Materials and Environmental Science (ISSN: 2028-2508))

11 Publications Worked

Completed	**Bio-diversity Survey** Conserving Kelaa's Kandoofa – a Biodiversity Mapping and Food Security Approach, for Ha Kelaa under the Global Environment Facility Small Grants Program OP6.

EIA		Supervisor	Proponent/ Contractor / main contact
Oct 2021 (author) Under review at EPA	Environment Impact Assessment (EIA) for water supply development project at R.Rasmaadhoo, Maldives	**	**Proponent** Ministry of National Planning, Housing and Infrastructure (MNPHI). Mohamed Moosa Didi 7778246 **Client** MICRON PVT LTD | C-0268/2005 Ali Najeeb 7774005
9th September 2019- 24th Oct 2021 (author) Completed	Environment Impact Assessment (EIA) for water supply development project at TH Burunee, Maldives	**	**Proponent** Ministry of National Planning, Housing and Infrastructure (MNPHI). Mohamed Moosa Didi 7778246

			Client MICRON PVT LTD | C-0268/2005 Ali Najeeb 7774005
25th Aug – 25th Oct 2021 (author) Completed	Environment Impact Assessment (EIA) for water supply development project at F. Feeali, Maldives	**	**Proponent** Ministry of National Planning, Housing and Infrastructure (MNPHI). Mohamed Moosa Didi 7778246
			Client MICRON PVT LTD | C-0268/2005 Ali Najeeb 7774005
May 2021 (author) *Completed*	Proposed development of 12 story building at M.Pisthaage, 20012ø, Male'	**	Infinity Builders (SP-0814/2016)
May 2021 (author) *Completed*	EIA for the proposed development of access platforms, outdoor rendezvous area and community replantation of mangroves in the wetland at Kelaa, Haa Alif Atoll, Maldives	**	Kelaa Youth Forum (KYF) Proponent for Component A
			Island Development and Environment Awareness Society (IDEAS) Proponent for Component B
October 2020 *(Co- authored) completed*	Environmental Impact Assessment: for the Proposed shore protection, shoreline restoration, channel dredging and development of floating pontoon platform cages in the lagoon at N Karinmaa Vattaru, Maldives.	Mahfooz Abdull Wahhab (EIA P22/2016) 9994467 mahfoozabdullwahhab@gmail.com	Blackgold Investments Pvt Limited.
April 2020 *(Co- authored) completed*	Environmental Impact Assessment for a tourist resort and factory island development at Gulf lagoon, (4°16'40.06"N, 73°2l '7.27"E), Kaaf Atoll, Maldives.	Mohamed Zuhair (EIA P01/2015) 7776800 moh.zuhair@gmail.com	Gulf Craft Maldives Pvt Ltd Aiminath Thauma (aiminath.thauma@gulfcraft.com)
			Conbizz.Pvt Ltd Ali Akram (alimarka@gmail.com)
March 2020 *Co- authored) completed*	Environmental Impact Assessment: Proposed Harbour re-development at Bilehfahi, Shaviyani Atoll	Mahfooz Abdull Wahhab (EIA P22/2016) 9994467 mahfoozabdullwahhab@gmail.com	Maldives Transport and contracting Agency (MTCC) Mamdhooh Ali 7853929
			Ministry of Planning and Infrastructure (MNPI) Shimya Moosa (7784150)
March 2020 *Co- authored) completed*	Environmental Impact Assessment: for the Proposed Harbour expansion Projects at Hulhumeedhoo and Hulhudhoo, Seenu Atoll	Mahfooz Abdull Wahhab (EIA P22/2016) 9994467 mahfoozabdullwahhab@gmail.com	Maldives Transport and contracting Agency (MTCC) Mamdhooh Ali 7853929
			Ministry of Planning and Infrastructure (MNPI) Shimya Moosa (7784150)
February 2020 *(Co- authored) completed*	EIA for the development of a senior football ground, and a picnic area at Mulah, M. Atoll, Maldives.	Mahfooz Abdull Wahhab (EIA P22/2016) 9994467 mahfoozabdullwahhab@gmail.com	SASe Pvt Ltd Saudulla Ahmed 7771682
November 2019 *(Co- authored) completed*	Environmental impact assessment for the proposed harbour re-development and swimming area development project at Maamendhoo, Gaaf Atoll, Maldives	Mahfooz Abdull Wahhab (EIA P22/2016) 9994467 mahfoozabdullwahhab@gmail.com	SASe Pvt Ltd Saudulla Ahmed 7771682
October 2019 *(Co- authored) completed*	The second addendum to Environmental Impact Assessment: Proposed Harbour Re-development Project at Kelaa, Haa Alif Atoll,	Mahfooz Abdull Wahhab (EIA P22/2016) 9994467 mahfoozabdullwahhab@gmail.com	Maldives Transport and contracting Agency (MTCC) Mamdhooh Ali 7853929
			Ministry of Planning and Infrastructure (MNPI) Shimya Moosa (7784150)
August 2019, *(Co- authored) completed*	Environmental impact assessment for the proposed harbour re-development project at Noomara, Shaviyani Atoll, Maldives	Mahfooz Abdull Wahhab (EIA P22/2016) 9994467 mahfoozabdullwahhab@gmail.com	SASe Pvt Ltd Saudulla Ahmed 7771682
			Ministry of Planning and Infrastructure (MNPI) Shimya Moosa

			(7784150)
July 2019, *(Co- authored) completed*	Environmental impact assessment for the Proposed Access Channel in the Agricultural Island of Fenfuraaveli. Meemu Atoll, Maldives	Mahfooz Abdull Wahhab (EIA P22/2016) 9994467 mahfoozabdullwahhab@gmail.com	Bion PVT LTD Mohamed Aslam 9997112
April 2018, *(assisted in) completed*	Environmental impact assessment for second addendum to: Hulhule-Hulhumale connecting link road development project,North Male', atoll, Maldives	Mahfooz Abdull Wahhab (EIA P22/2016) 9994467 mahfoozabdullwahhab@gmail.com	Housing Development Cooperation (HDC)

Monitoring		**Proponent**
April 2018	Environmental monitoring report - Emboodhoo lagoon Development, south male' atoll report 6	SASe Pvt Ltd Saudulla,Ahmed,7771682
June 2018	Environmental monitoring report - Emboodhoo lagoon Development, south male' atoll report 7	SASe Pvt Ltd Saudulla,Ahmed,7771682
July 2018	Environmental monitoring report - Emboodhoo lagoon Development, south male' atoll report 8	SASe Pvt Ltd Saudulla,Ahmed,7771682
August 2018	Environmental monitoring report - Emboodhoo lagoon Development, south male' atoll report 9	SASe Pvt Ltd Saudulla,Ahmed,7771682
September 2018	Environmental monitoring report - Emboodhoo lagoon Development, south male' atoll report 10	SASe Pvt Ltd Saudulla,Ahmed,7771682
Monitoring Period: 27st September 2018 to 20th October 2018	Environmental monitoring report Emboodhoo lagoon Development, south male' atoll, Report 1	SASe Pvt Ltd Saudulla,Ahmed,7771682
Monitoring Period: 20th October 2018 to 22nd November 2018	Environmental monitoring report Emboodhoo lagoon Development, south male' atoll, Report No: 02	SASe Pvt Ltd Saudulla,Ahmed,7771682
Monitoring Period: 22nd November 2018 to 10th December 2018	Environmental monitoring report Emboodhoo lagoon Development, south male' atoll, Report 3	SASe Pvt Ltd Saudulla,Ahmed,7771682
Monitoring Period: 15th December 2018 to 15th January 2019	Environmental monitoring report Emboodhoo lagoon Development, south male' atoll Report 4	SASe Pvt Ltd Saudulla,Ahmed,7771682
Monitoring Period: 15thJanuary 2019 – 02ndFebruary 2019	Environmental monitoring report Emboodhoo lagoon Development, south male' atoll Report 5	SASe Pvt Ltd Saudulla,Ahmed,7771682
Monitoring Period: 02ndFebruary 2019 – 12thFebruary 2019	Environmental monitoring report Emboodhoo lagoon Development, south male' atoll Report 6	SASe Pvt Ltd Saudulla,Ahmed,7771682
Monitoring Period: 12th February 2019 to 3rd March 2019	Environmental monitoring report Emboodhoo lagoon Development, south male' atoll Report 7	SASe Pvt Ltd Saudulla,Ahmed,7771682
Monitoring Period: 3rd March 2019 to 20th March 2019	Environmental monitoring report Emboodhoo lagoon Development, south male' atoll Report 8	SASe Pvt Ltd Saudulla,Ahmed,7771682
Monitoring Period: 20th March 2019 to 20th April 2019	Environmental monitoring report Emboodhoo lagoon Development, south male' atoll Report 9	SASe Pvt Ltd Saudulla,Ahmed,7771682
Monitoring Period: 20th March 2019 to 20th April 2019	Environmental monitoring report Emboodhoo lagoon Development, south male' atoll Report 10	SASe Pvt Ltd Saudulla,Ahmed,7771682
Monitoring Period: 20th May 2019 to 20th June 2019	Environmental monitoring report Emboodhoo lagoon Development, south male' atoll Report 11	SASe Pvt Ltd Saudulla,Ahmed,7771682
4th March 2019	Blue beach construction monitoring work report 1	SASe Pvt Ltd Saudulla,Ahmed,7771682
20th March 2019	Blue beach construction monitoring work report 2	SASe Pvt Ltd Saudulla,Ahmed,7771682
20th April 2019	Blue beach construction monitoring work report 3	SASe Pvt Ltd Saudulla,Ahmed,7771682
20th May 2019	Blue beach construction monitoring work report 4	SASe Pvt Ltd Saudulla,Ahmed,7771682
20th June 2019	Blue beach construction monitoring work report 5	SASe Pvt Ltd Saudulla,Ahmed,7771682
25th July 2019	Blue beach construction monitoring work report 6	SASe Pvt Ltd Saudulla,Ahmed,7771682
7 March 2020	Baglioni environment monitoring report 1	Ali Mubeen 779079
1 April 2020	Kahssan Faru Construction Monitoring report 1	SASe Pvt Ltd Saudulla,Ahmed,7771682 **Client** *INSA.PVT.LTD* *Dr Mohamed Shareef, mo.shareef@insa-consultancy.biz*
22 October 2020	Kahssan Faru Construction Monitoring report 2	SASe Pvt Ltd Saudulla,Ahmed,7771682 **Client** *INSA.PVT.LTD* *Dr Mohamed Shareef, mo.shareef@insa-consultancy.biz*
7 September 2021	Kahssan Faru Construction Monitoring report 3	SASe Pvt Ltd Saudulla,Ahmed,7771682

Client
INSA.PVT.LTD
Dr Mohamed Shareef, mo.shareef@insa-consultancy.biz

10. **Academic referees**

Referee	Contact	Address
Dr Chitchol Phalaraksh PhD Environmental Toxicology	0817160209	Chiang Mai University | CMU · Department of Biology Chiang Mai Thailand.
Prof. Marcel.C. Enos	08212511992	St Joseph College of Education Jayalakshmipuram Mysore Karnataka India
Dr. Ruth Shantha Kumari T. M.Sc, Ph.D, M.Sc in Counselling & Psychotheraphy	9449086598 821- 4240930 stphiloszoo@gmail.com	St Philomena's Degree College, Bannimantap, Mysuru 570 015 Phone 0821-4240900 / 4240912 / 4240918 Fax 0821-4240950

11. **Work references**

Referee	Post during interaction	Contact
Dr. Mohamed Shareef	Managing Director, INSA Pvt Ltd	7775640, mo.shareef@gmail.com
Haris Mohamed	Managing Director, MMPRC	7761516
Mohamed Hamzeel	Chief Operations Officer, MMPRC	7903010
Aminath Sheeza	Assistant Principal, Majeediyya School	7784658
Aiminath Shahadha	Assistant Principal, Majeediyya School	ashaha1@hotmail.com
Anthirious Georgemary	Biology HOD, Majeediyya School	9144842, anthrrious@hotmail.com
Thomas Le Berre	Managing Director, Seamarc Pvt Ltd	960 7787642, thomas@seamarc.com

12.1.1. Shauzab Adam

SHAUZAB ADAM

A: Flat 115-2-04, Hulhumale'
P: +960 9868698
E: shauzab.adam@gmail.com

OBJECTIVE

To be a racy employee in a professional and challenging organization that fully utilizes my skill and attitude towards the mutual development of the organization.

EDUCATION

OLevels | **Ghaazee School, Hulhumale'**

- **Mathematics - A**
- **English - A**
- **Dhivehi - B**
- **Islam - A**
- **Commerce - A***
- **Accounts - A***
- **Economics - A***
- **Travel & Tourism - B**

ACCA Diploma in Accounts & Finance | **MAPS College, Male'**

- **Passed & Awarded**

CIM LEVEL 6 DIPLOMA IN PROFESSIONAL MARKETING | **CIM UK**

- **Merit**

EXPERIENCE

Customer Care Representative | **Ooredoo Maldives**

9th February 2014 - 25th June 2014

- Manage large amounts of incoming calls
- Handle customer complaints, provide appropriate solutions and alternatives within the time limits; follow up to ensure resolution
- Keep records of customer interactions, process customer accounts and file documents
- Build sustainable relationships and trust with customer accounts through open and interactive communication

Accounts Executive | V Travels & Tours

1st May 2017 - 31nd July 2017

- To maintain daily book keeping and records
- To provide full assistance to Chief Accountant
- To handle everyday petty cash and records
- To maintain payables and receivables of the Company
- To push for payments from clients
- Preparing & posting financial documents such as invoices, bills

Assistant Accountant | **V Travels & Tours**

1st August 2017 - 31 May 2018

- Preparing financial documents such as invoices, bills, and accounts payable and receivable
- Managing payroll
- Completing financial reports like P&L on a regular basis and providing information to the management team
- Assisting with budgets and payment planning
- Completing bank reconciliations
- Entering financial information into appropriate software programs
- Verifying bank deposits/withdraws
- Recording all expenditures and ensuring they are within the set budget
- Reporting on debtors and creditors

Manager in Operations & Marketing | V Travels & Tours

1st June 2018 - July 31st 2018

- Managing day-to-day operations of the Guest house and Café of the company
- Maintaining updated records of daily, weekly and monthly revenues and expenses of Guest house and Café
- Coordinate with vendors and order supplies, as needed.
- Add new menu items based on seasonality and customers' preferences

- Nurture friendly relationships with customers to increase loyalty and boost our reputation
- Maintains quality service by establishing and enforcing standards; training representatives.
- Organizing strategic marketing events to boost the sales of the company
- Organizing promotional & social events.
- Keeping management informed by preparing reports
- Contributes to team effort by accomplishing related results as needed
- To organize meetings to discuss and bringing new ideas and innovative marketing techniques
- To be keen in social media to promote the guest house and café

Operations Manager | Brew & Feast Pvt Ltd

1st August 2018 - 21st December 2019

- To maintain day-to-day operations of Gloria Jeans Coffees, and other franchises
- To maintain expenses below budget through accurate planning and waste reduction
- To motivate staffs to execute an exceptional level of service leading to a direct increase in loyal and repeated customers
- To supervise the repair & maintenance works of all the outlets
- To analyze food selection and pricing of the food items
- To guide the team in planning, organizing, and implementing of new outlets/franchise
- Nurture friendly relationships with customers to increase loyalty and boost our reputation
- Maintains quality service by establishing and enforcing standards; training representatives.
- Organizing strategic marketing events to boost the sales of the company and restaurants
- Organizing promotional & social events
- Contributes to team effort by accomplishing related results as needed

Sales Officer | Housing Development Corporation

26th October 2020 - 22nd May 2022

Corporate Social Responsibility Officer | Housing Development Corporation

23rd May 2022 - Present

SKILLS

Leadership

Having had the opportunity to grow in V Travels and Brew & Feast, I have experience in all the Accounting, Marketing and Operation's department of the companies and to lead the newly employed coworkers to train and guide them throughout.

Teamwork

Having had the opportunity to work in the various departments and sectors, I have been able to work with different set of people, which helped me built my team skills, especially in various social and marketing events throughout the last two years.

Computer

Ms Office, QuickBooks, Adobe (Photoshop & Lightroom)

Problem Solving

I have had the experience to follow through the various customer and client complaints of all the companies I worked with. As such it is a part of everyday, to go through problem solving scenarios, which helped me, built my strong personality.

Customer Service

Satisfied customer is the key to any successful business, as such through the arts of working in the Industry of Food & Beverages/Tourism and having the opportunity to deal with Customers and Clients of different requirements & regions have owed me to build the customer service-oriented person I am today.

REFERENCES

Ahmed Shahudh - Director - V Travels **+960 7911336**

Saneeh Anwar - Director - Brew & Feast Pvt Ltd **+960 7798866**

Mohamed Muamman - Director - Brew & Feast Pvt Ltd **+960 7903323**

12.1. Submission to relevant authorities

ENVIRONMENTAL MANAGEMENT PLAN For the proposed development of a wreck dive site at Kubuladi thila; Fiyavi Dive Point project. Prepared for Housing Development Corporation

Hassaan Abdul Muhsin <Hassaan.Abdul@hdc.com.mv>
Tue 8/30/2022 9:40 AM
To: info@kaaf.gov.mv <info@kaaf.gov.mv>;secretariat@malecity.gov.mv <secretariat@malecity.gov.mv>

2 attachments (13 MB)
Darft 30082020 MP, HDC, Wreak Dive site.pdf; Screening DS -Underwater Terminal- HDC (1).pdf;

To the concerned staff,

Please find attached:

1. the un approved draft MP, and
2. screening DS

to abide by the EIA regulation.

Thankyou

HOUSING DEVELOPMENT CORPORATION
MASTER DEVELOPER · PLANNER · BUILDER

HULHUMALÉ
A CITY IN ISLES OF MALDIVES

HASSAAN ABDUL MUHSIN

ENVIRONMENT ANALYST, (EIA P02/2020)
URBAN DESIGN & PLANNING, Environment Unit

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