

Pulau Redang

Marine Park Management Plan



Conserving Marine Biodiversity Through Enhanced Marine Park Management and Inclusive Sustainable Island Development



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Biodiversity Through
Enhanced Marine
Park Management and
Inclusive Sustainable
Island Development

The views expressed in this publication do not necessarily reflect those of UNDP, GEF or other participating organizations.

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Precint 4
62574 Putrajaya
Tel: 03-88861379
Fax: 03-88880489
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ACKNOWLEDGEMENT

The Department would like to thank the team which comprises of various individuals, groups, and agencies from different background and disciplines for formulating this framework, providing significant amount of information and are involved in the consultation process from which this plan was derived and without which it would never have been realised.

The Department is also extremely grateful to the Ministry of Natural Resources and Environment for its support towards establishing this Management Plan through the 5 years implementation of GOM/UNDP-GEF Marine Park Project: Conserving Marine Biodiversity Through Enhanced Marine Park Management and Inclusive Sustainable Island Development



which was approved in 2007. The Department also wished to thank the Project Management Unit lead by its National Project Director, Mr. Ab. Rahim bin Gor Yaman, assisted by the National Project Manager, Ms. Norizan binti Mazlan and their team for spearheading the initiatives, organising the workshops and the follow up towards the publication of this Plan.

State Governments through the State Economic Planning Units (EPUs) who have been involved since the initiation of this project have helped shape the Management Plan into a comprehensive Plan taking into considerations the States development needs while maintaining the aspiration of the Department to conserve the country's marine biodiversity allowing sustainable utilisation. This is Plan also takes into consideration need of other stakeholders including the local communities for which the Department feel indebted to for their contributions and feedbacks.

The financial support from the the Global Environment Facility (GEF) is especially acknowledged and assistance from United Nations Development Programme (UNDP) Malaysia Office especially to Mr Asfaazam bin Kasbani, Senior Programme Manager and Mr Hari Ramalu Ragavan, Programme Manager for the preparation of this document are appreciated.

The Ministry of Natural Resources and Environment is particularly grateful to all individuals and relevant organisations and stakeholders who had contributed towards the successful publication of this Management Plan. It is a product of many negotiations and consultations with various stakeholders from Federal agencies, state governments and even the local communities of the respective islands in order to ensure that the marine park management effectiveness and marine resources sustainability is achieved.

The Management Plan is intended to become the main reference document on the island's future planning and development. The success of the Management Plan will depend greatly on how efficient these plans are translated and interpreted into actions during its implementation stage. The Ministry also acknowledged that this plan must be a living document which will require future revision and on-going involvement by all stakeholders. This plan of management is and should always be a matter of nation pride and unity of purpose.

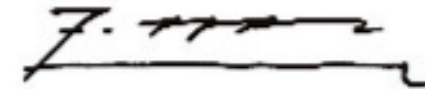
In line with the country's obligation as a member of Convention of Biological Diversity (CBD) in achieving Strategic Plan for Biodiversity 2011-2020 and Aichi Biodiversity Targets, the Management Plan of Pulau Tioman will contribute to realize Target 11 of the Aichi Biodiversity Targets which requires

10% of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed.

Finally, I would like to congratulate to Department of Marine Park Malaysia on the efforts to materialise the Management

Plan of Pulau Tioman within 5 years from 2007 through the GOM/UNDP-GEF Marine Park Project: Conserving Marine Biodiversity Through Enhanced Marine Park Management and Inclusive Sustainable Island Development.

Best regards,



**SECRETARY GENERAL
MINISTRY OF NATURAL RESOURCES AND
ENVIRONMENT
PUTRAJAYA**

foreword

FOREWORD
SECRETARY GENERAL
Ministry of Natural
Resources and
Environment
PUTRAJAYA

Bismillahirrahmanirrahim,

Assalamualaikum W.B.T and Salam 1 Malaysia.

The International Union for Conservation of Nature defines a protected area as: “An area of land and/or sea especially dedicated to the protection of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means” (IUCN 1994).

A Management Plan happens to be one of the “effective means” essential to address the many threats and complexities of protected areas in the 21st century. It sets out the goals and approach, together with a framework for decision making to be implemented in a protected area over a specific period of time. The Plan aims to establish the management objectives to be met and identify the actions to be implemented by highlighting the key features and values of the protected area.

This Plan lays out the foundation and principles of the management objectives, followed by the strategies and actions required by specific parties. It also encompasses monitoring activities to enable DMPM to assess the effectiveness of its management in order to allow for adaptive management. The Plan is a live document, which means it can be subject to amendments to allow for improvements and flexibility in this ever changing environment we live in.

The advent of the management plan has been a result of numerous workshops, meetings and consultations within DMPM and also with other stakeholders over the period of four years from 2009 until 2013. It is one of the outputs of the UNDP-GEF/GoM project entitled, “Conserving Marine Biodiversity Through Enhanced Marine Park Management and Inclusive Sustainable Island Development.” This project targeted three project sites of Pulau Redang, Pulau Tioman and Pulau Sibu-Tinggi but the Department of Marine Park Malaysia has been consistently compiling baseline data and

building its staff capacity to develop management plans for all other marine parks under our purview ever since the inception of this project in 2007.

It is with great hope that this Management Plan will fulfill its objective in establishing a more comprehensive and integrated approach towards not only the conservation of marine biodiversity in the marine parks of Malaysia, but to also address the sustainability issues of the communities and stakeholders that depend economically upon this biodiversity. Therefore this Plan will be made accessible to all stakeholders, whether government agencies in the federal or state level, NGO's, local communities, tour operators and alike in order for every party to understand and realize that each one must play an important role in ensuring this legacy lasts for future generations.

Sincerely,



DR. SUSARNO BIN WAGIMAN

**DIRECTOR-GENERAL
DEPARTMENT OF MARINE PARK MALAYSIA**



foreword

FOREWORD
DIRECTOR-GENERAL
Department Of
Marine Park
MALAYSIA



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ABBREVIATIONS

ALK	Ahli Lembaga Koperasi	KPKK	Kementerian Penerangan Komunikasi dan Kebudayaan (Ministry of Information Communications and Culture)
ANGKASA	Angkatan Koperasi Kebangsaan Malaysia Berhad (Peak Body Co-operative Movement Malaysia)	KPPPRTB	Koperasi Pelancongan Penduduk Pulau Redang Terengganu Berhad
CAC	Community Advisory Committee	LEK	Local Ecological Knowledge
CCC	Community Consultative Committee	LKIM	Lembaga Kemajuan Ikan Malaysia (Fisheries Development Authority of Malaysia)
CCHI	Cabinet Committee on Highlands and Islands	MARA	Majlis Amanah Rakyat (Council of Trust for Indigenous People)
DEIA	Detailed Environmental Impact Assessment	MCS	Monitoring Control Surveillance
DID	Department of Irrigation and Drainage Malaysia	MCS	Monitoring Control Surveillance
DMPM	Department of Marine Park Malaysia	MKM	Maktab Koperasi Malaysia (Co-operative College of Malaysia)
DOE	Department of Environment Malaysia	MMEA	Malaysian Maritime Enforcement Agency
DOF	Department of Fisheries Malaysia	MOF	Ministry of Finance
EDP	Entrepreneurial Development Program	MOT	Ministry of Transport
EIA	Environmental Impact Assessment	MOTOUR	Ministry of Tourism
EMP	Environmental Management Plan	MPA	Marine Protected Area
EPU	Economic Planning Unit	MBKT	Kuala Terengganu Municipal Council
FAD	Fish Aggregating Device	MPMIS	Marine Park Management Information System
GEF	Global Environment Facility	MPMP	Marine Park Management Plan
GOM	Government of Malaysia	NGO	Non-Governmental Organization
GPS	Global Positioning System	NRE	Ministry of Natural Resources and Environment
HSEA	Highly Sensitive Environmental Areas	PAAF	Permit Application Assessment Fee
IUCN	International Union for Conservation of Nature	PADI	Professional Association of Diving Instructors
JKKK	Jawatankuasa Kemajuan dan Keselamatan Kampung (Committee for Village Development and Security)	PERHILITAN	Jabatan Perlindungan Hidupan Liar dan Taman Negara Semenanjung Malaysia (Department of Wildlife and National Parks Peninsular Malaysia)
JKR	Jabatan Kerja Raya (Public Works Department)	PMU	Project Management Unit
JLM	Jabatan Laut Malaysia (Marine Department of Malaysia)	RNA	Research Natural Area
JPBD	Jabatan Perancangan Bandar dan Desa (Town Planning Department)		
JPSM	Jabatan Perhutanan Semenanjung Malaysia (Department of Forestry Peninsular Malaysia)		
JSPN	Jabatan Pengurusan Sisa Pepejal Negara (National Solid Waste Management Department)		
KKLW	Kementerian Kemajuan Luar Bandar dan Wilayah (Ministry of Rural and Regional Development)		



Pulau Redang

Marine Park Management Plan

Introduction

1



1.0 INTRODUCTION

1.1 Background

This document is referred to as the “Pulau Redang Marine Park Management Plan”. The Marine Park Management Plan is one of the outputs from the project entitled “Conserving Marine Biodiversity through Enhanced Marine Park Management and Inclusive Sustainable Island Development”, which was funded by UNDP/GEF and the Government of Malaysia.

The project was managed by a Project Management Unit (PMU) under the joint execution of the Department of Marine Park Malaysia (DMPM), the Ministry of Natural Resources & Environment (NRE) and the UNDP project management team.

The project details are as follows:

- i. Project Title: Conserving Marine Biodiversity through Enhanced Marine Park Management and Inclusive Sustainable Island Development
- ii. Implementing Agency: United Nations Development Programme (UNDP)
- iii. Executing Agency: Department of Marine Park Malaysia (DMPM), Ministry of Natural Resources & Environment (NRE)
- iv. Start Date and Duration: March 2007 to June 2013
- v. The project sites: Three marine park areas of Pulau Redang, Pulau Tioman, and Pulau Sibiu-Tinggi, covering an area of about 79,982.95 hectares (area approximated from a buffer of 2nm from the islands' low tide).

Unit Perundangan Universiti Malaya (UPUM) was appointed as the lead consultant, for the provision of consultation and fulfilment of work scope of the UNDP/DMPM project for a duration of about 4 years and 5 months, from 16th February 2009 until 31st July 2013.

The consultation work produced 7 intended Outcomes with 10 Outputs (GoM, UNDP, GEF, 2007). This Marine Park Management Plan is one of the outputs as specified in the Inception Report.

Specific Management Plan documents for the respective project sites have been produced, namely:

- i. Pulau Redang Marine Park Management Plan,
- ii. Pulau Tioman Marine Park Management Plan, and
- iii. Pulau Tinggi & Sibiu Marine Park Management Plan.

1.2 General Goal, Objective, and Marine Park Conservation Policy

According to the project document the overall goal is:

“To ensure the conservation and sustainable use of marine biodiversity and sustainable island development in Malaysia.”

And the objective is:

“To achieve enhanced marine park management and inclusive sustainable island development.”

The fundamental purpose of the marine park area is for the conservation of marine resources with the objective of protecting the resources from internal and external damages, degradation and extinctions.



The general conservation policy for Marine Park Areas is:

“To conserve, preserve, and protect Malaysia's Marine Park Biodiversity and at the same time to ensure that its resources are utilised in a responsible manner for the continued progress and socio-economic development of islands within Marine Park and the community.”

The policy emphasizes the need to conserve marine resources without compromising their quality in any way. At the same time the policy acknowledges the need for balanced development - protecting and conserving the marine ecosystem while at the same time ensuring the economic development and sustainability of the local community.

Detailed discussion on Marine Park Policies can be found in Section 2.0 of this document.

1.3 Rationale and Justifications

As one of the twelve mega biodiversity countries in the world, Malaysia emphasizes the conservation and sustainable utilization of her rich marine resources. The establishment of Marine Park areas is one important approach taken by the Malaysian government to conserve her marine biodiversity. Currently 42 islands have been gazetted as Marine Park areas.

The principle behind the establishment of Marine Parks is to protect and conserve the fragile marine ecosystem, so that its resources are sustainable for future generations. Marine Parks also play an important role in inculcating public understanding, appreciation and awareness of the importance of marine biodiversity conservation and the need for a responsible use of marine resources (DMPM, 2008).

A Marine Park area is defined as the water body within 2 nautical miles from the island's lowest tide mark. Once gazetted, the area becomes a

“no take zone”. No fishing or extraction of any form of resources is allowed.

Being a “no take zone”, a Marine Park area is often misconceived to be depriving the local communities. A Marine Park area is also a tourist attraction, drawing tourists from all over the world. It has higher economic potential and can be a stimulus to local growth because tourism is a good “economic base” sector, bringing external money into the local economy.

Local economic activities which have been predominantly related to traditional fishing need to be shifted or geared toward the more prosperous and highly prospective tourism related industry.

Therefore, a Marine Park Management Plan is needed to guide toward the better management, protection and sustainability of marine resources while at the same time ensuring a better livelihood and the economic well-being of the local island communities.

1.4 Profile of Pulau Redang

1.4.1 Geographical Setting

Pulau Redang is located in the South China Sea, about 45 kilometres or 24.28 nautical miles to the northeast of Kuala Terengganu. The island can also be reached via Merang jetty, which is about 12 nautical miles (or 22.2 km) southwest of the island.

Pulau Redang is about 2,483.58 hectares (NRE & JPBD, 2006) - the largest of 9 islands within the Pulau Redang archipelago. The archipelago area is approximately within the rectangular coordinates of 5° 43' 28.92N, 102° 59' 04.53"E and 5° 49' 10.49"N, 103° 03' 02.82E. The other 8 islands are:



- i. Pulau Pinang
- ii. Pulau Lima
- iii. Pulau Paku Besar
- iv. Pulau Paku Kecil
- v. Pulau Kerengga Besar
- vi. Pulau Kerengga Kecil
- vii. Pulau Ekor Tebu
- viii. Pulau Ling

Pulau Redang is characterized by rugged and hilly topography with 7 peaks ranging between 150 to 330 metres. Bukit Besar is the highest peak standing at about 359 metres. About 80% of the shores are steep slopes with rocky shores. The remaining 20% are isolated stretches of sandy shores, among the most notable includes Telok Kalong, Pasir Panjang, Telok Dalam, and Kuala Pulau Redang (refer to Figure 1.1).

1.4.2 Hydrographical Details and Sources of Fresh Water

Sungai Pulau Redang is the main river flowing from the interior, through Kampung Baru Pulau Redang to the Kuala Pulau Redang estuary. Other rivers are either short or intermittent streams, flowing directly into Sungai Pulau Redang or to the sea.

Both rivers and underground water are the main source of fresh water in Pulau Redang.

1.4.3 Marine Park Areas

In addition to Pulau Redang, Pulau Pinang, Pulau Lima and Pulau Ekor Tebu are also gazetted as MPAs. The waters surrounding these islands were gazetted as Marine Parks under the Establishment of Marine Parks Malaysia Order 1994 under the Fisheries Act 1985 (Amended 1991).

The Pulau Redang Marine Park waters cover an area of about 12,750 hectares (DMPM, 2009).

The main focus of this Management Plan, however, is confined to the marine waters within the 2 nautical miles (3.704 km) from Pulau Redang, as shown in Figure 1.2.

The waters surrounding Pulau Redang are home to at least 149 species of coral, 209 species of fish, five (5) species of seagrass and 51 species of seaweed (Coral Cay Conservation 2003; Harborne et al. 2000; Japar et al. 2006; MIMA 2006; Muta Harah 2001; Phang et al. 2007; Phang et al. 2008; Ridzwan 1994; Tan & Mohd Nizam 2004; Toda et al. 2007; Zelina et al. 2000).

1.4.4 Administrative Profile

Pulau Redang is under the following administrative area:

State	Terengganu
District	Kuala Terengganu
Mukim	Mukim Batu Rakit
Local Authority	Majlis Perbandaran Kuala Terengganu
Parliament	P.034 Setiu
Dewan Undangan Negeri (State Legislative Assembly)	N.08 Batu Rakit

1.4.5 Local Socio-economic Profile

Pulau Redang is the only inhabited island. The total population of Kampung Baru Pulau Redang, the only settlement area in the island, is 2,013 people with 484 households (Department of



Statistics, 2011). The island population has grown from about 1,200 people in 1996 to about 1,453 in 2000, with an average growth of about 4.78% per annum (NRE & JPBD, 2006). However, the population growth rate seems to have slowed down slightly since 2000, to an average rate of 3.85% per annum.

Although the actual growth is somewhat lower than JPBD's forecast, the population of Pulau Redang will be nearing 3,000 by the year 2015 (NRE & JPBD, 2006).

According to the 2010 Census (Department of Statistics, 2011), the composition of the population is as follows:

- i. 34.0% less than 20 years old;
- ii. 31.2 % between the ages of 20-29 years old;
- iii. 17.6% between the ages of 30-39 years old;
- iv. 8.7% between the ages of 40-49 years old; and
- v. 8.5% 50 years old and above.

A recent socioeconomic survey (Second Socioeconomics Survey-September, 2011 UPUM/UNDP) shows that most of the population have had either a secondary education (49%) or a primary education (37%). Only 9% have had no formal education.

The population is mainly made up of Malays (88%). More than 56% of the non-Malays are foreign workers serving the tourism industry. The main economic activity is tourism with more than 72% of employment coming from this sector. Other activities include trade and fishing. Positions within the Government sector; policemen, school teachers, marine park officers, health officers, are mostly filled by non-locals, mainly from the mainland.

The socioeconomic survey also indicated that about 52% of the population do not have any alternative income generating activities (AIG). Most of the 48% who have AIG are mainly involved in farming, tourism related activities (tourist guides, small business and resort operators) and fishing.

1.4.6 Tourist Arrivals

Data on tourist arrivals to the Islands of Terengganu (Table 1.1) indicates an increasing number of visitors coming every year, among both local and foreign tourists. Between 2000 and 2008, the number of local tourists have grown at a rate of 22% per annum while the number of foreign tourists is also expanding by about 16% per annum, making an average tourist arrival growth rate of about 21% per annum. Although there are no specific statistics on Pulau Redang, a similar trend of a continuing increase in tourist arrivals is expected.

Table 1.1: Tourist Arrivals to the Islands of Terengganu 2000 - June 2009

Tourists	2000	2001	2002	2003	2004	2005	2006	2007	2008	JUNE 2009
Locals	43,390	65,539	56,263	71,654	111,225	98,863	93,546	112,844	129,532	76,780
Foreign	9,244	8,041	8,041	7,563	31,251	24,296	41,552	38,553	22,292	16,189
Total	52,634	73,580	64,304	79,217	142,476	123,159	135,098	151,397	151,824	92,969

Source: Department of Marine Park Malaysia, Kompendium Data dan Maklumat Asas, 2009



PULAU REDANG MARINE PARK Contour Plan

LEGEND

- Mangrove
- Muddy
- Rocky
- Sandy
- River
- Cape
- Bay
- Island
- Marine Park Boundary
- Marine Park Are



IMPORTANT NOTES FOR MAPS USERS
THIS MAP IS INDICATIVE ONLY AND IS NOT INTENDED FOR NAVIGATIONAL PURPOSE OR AS LEGAL BASIS FOR BOUNDARY DEMERCATION.

SAFETY IN THE MARINE PARK
People visit the Marine Park at their own risk. Zoning Plans allow activities to take place, but do not guarantee safety. The Park contains both natural and human hazards. Parks users should consult navigation charts.

WARNING This map must not be used for marine navigation. Comprehensive and up-to-date navigation information should be obtained from published hydrographic charts.



Malaysia Government
The Ministry of Natural Resources & Environment (NRE)



Department of Marine Park Malaysia



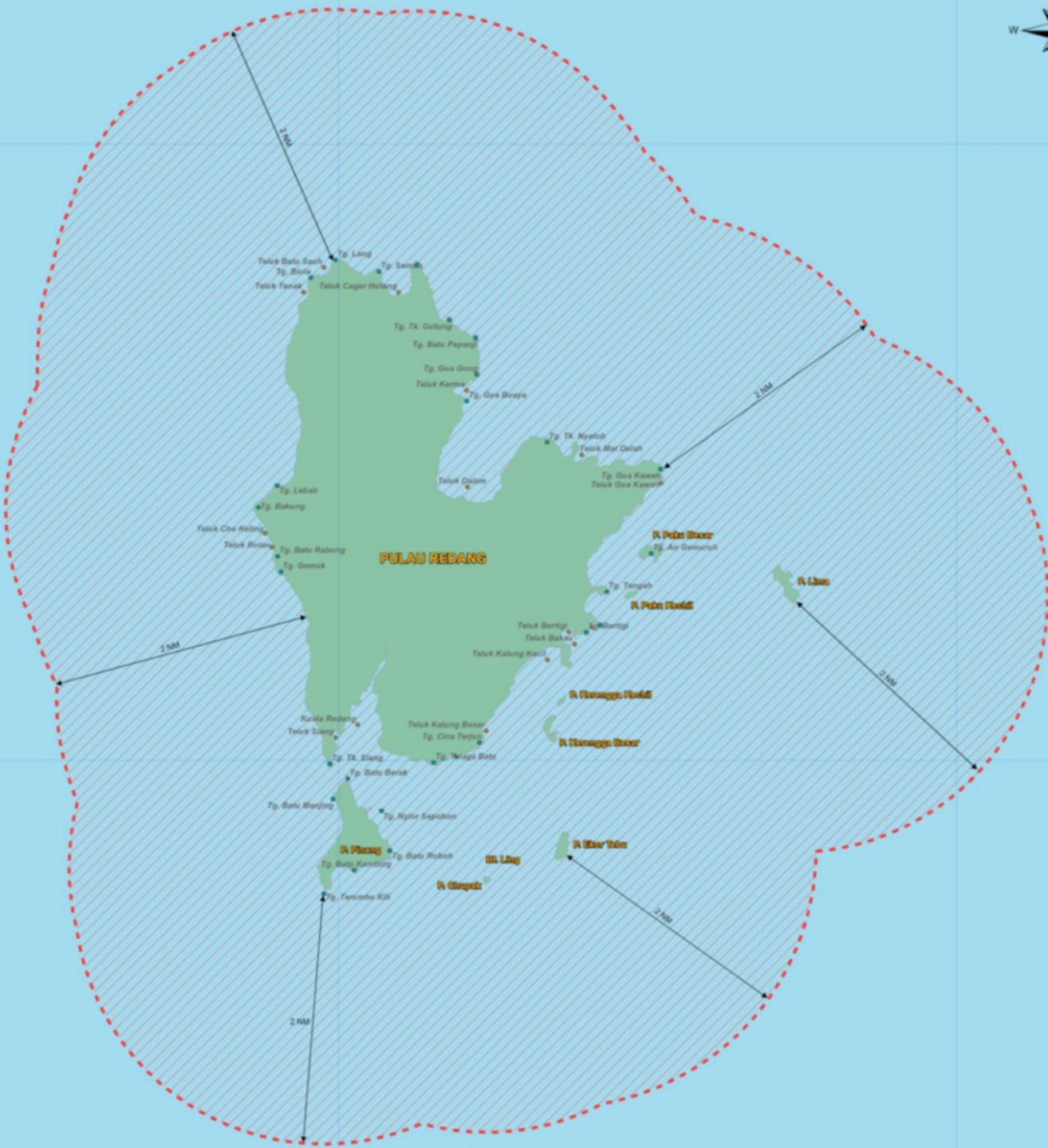


PULAU REDANG MARINE PARK Key Plan

LEGEND

- Cape
- Bay
- Island
- - - Marine Park Boundary
- /// Marine Park Are

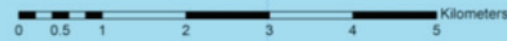
LOCATION MAP



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WARNING This map must not be used for marine navigation. Comprehensive and update navigation information should be obtained from published hydrographic charts.



1.5 Contents of This Document

The Marine Park Management Plan is divided into 5 major sections.

Section 1 : the current section, serves as the introductory section.

Section 2 : 'POLICY AND PRINCIPLES' provides the policy foundation for the Management Plan. A more detailed marine Park Policy document can also be found elsewhere (see below).

Section 3 : 'MANAGEMENT PLAN' is the core of this document. This section elaborates on management strategies as well as management actions that are recommended for the conservation of bio-diversity and sustainability of Pulau Redang development.

Section 4 : 'IMPLEMENTATION AND MONITORING OF MANAGEMENT PLAN' describes management actions for the implementation of the management plan.

Section 5 : 'SUMMARY OF PULAU REDANG MARINE PARK MANAGEMENT PLAN AND ACTION PLAN' provides a simplified, easy reference view of the plan in Tabular format. The table relates management objectives and strategies to the detailed action plan. It also identifies the lead and supporting agencies for each action and recommends dates of implementation.

This Management Plan should also be read together with or in reference to the following documents:

- a) DMPM (2012), Policy
- b) DMPM (2012), Manual/Garis Panduan Operasi Penguatkuasaan Jabatan Taman Laut Malaysia

- c) DMPM (2012), Environmental Best Practices Booklet
- d) DMPM (2012), Cooperative Business Plan for Pulau Redang
- e) DMPM (2012), Information Technology Management Plan for Department of Marine Park Malaysia
- f) DMPM (2012), Marine Park Management Information System (MPMIS) User Manual.



Photo 1.1 : Pulau Redang Marine Park Centre

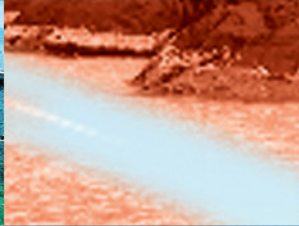


Photo 1.2 : Jetty to Kg Baru Redang

Pulau Redang

Marine Park Management Plan

Policy and Principles 2



2.0 POLICY AND PRINCIPLES

2.1 Marine Park Policy

In the absence of a specific policy on marine park management, a set of policies was developed based on numerous discussions amongst consultants, the Project Review Committee, DMPM, the Terengganu State Steering Committee and respective stakeholders. Reference was made to the development guidelines produced by the Cabinet Committee on Highlands and Islands (CCHI) and the National Policy on Biological Diversity (1998), the National Environment Policy and the National Physical Plan. For physical development, the plan refers to the Terengganu State Structure Plans and the Kuala Terengganu District Local Plans. The objective of the policies and policy statements is to provide the management direction that will guide the development of the Management Plan.

The policies focus on 5 key areas; conservation, management, community consultation, economic activity and tourism. The 2 overriding policies are the conservation policy and the management policy. The conservation policy and policy statements provide managers guidelines on managing marine park resources for conservation purposes. The management policy and policy statements, on the other hand, provide managers with guidelines on an effective and efficient approach to managing marine parks. The other three policies and policy statements address the numerous issues identified as being crucial in managing the respective marine parks. These policy statements are all interrelated to the 2 key policies; the conservation policy and management policy. This section provides the policy statements only. For further reference, readers are advised to read the Booklet on Marine Park Policy.

2.1.1 Conservation Policy

The basis of the conservation undertaking by DMPM is the National Policy on Biological Diversity (1998). This conservation policy provides the guiding principle for the conservation of marine biodiversity within marine park waters.

• The Policy

TO CONSERVE, PRESERVE AND PROTECT MALAYSIA'S MARINE PARK BIODIVERSITY AND TO ENSURE THAT ITS RESOURCES ARE UTILIZED IN A RESPONSIBLE AND SUSTAINABLE MANNER FOR THE CONTINUED PROGRESS AND SOCIO-ECONOMIC DEVELOPMENT OF MARINE PARKS.

2.1.2 Management Policy

Managing the marine park areas is currently the embedded role of DMPM. However, it is not the sole responsibility of DMPM to undertake protection measures to conserve marine park biodiversity and to ensure sustainable utilization of marine park resources. Other agencies also have similarly important responsibilities to ensure that marine biodiversity is not endangered by threats such as pollutants from human waste and that it is protected against the ills of development.

• The Policy

1. THE DMPM WILL MANAGE TO CONSERVE, PRESERVE AND PROTECT THE NATURAL RESOURCES, PROCESSES, SYSTEMS AND VALUES OF UNITS OF THE



MARINE PARK SYSTEM IN AN UNIMPAIRED CONDITION TO PERPETUATE THEIR INHERENT INTEGRITY AND TO PROVIDE PRESENT AND FUTURE GENERATIONS WITH THE OPPORTUNITY TO ENJOY THEM.

2. DEVELOPMENT AGENCIES RESPONSIBLE FOR DEVELOPING MARINE PARK AREAS, LAND AND SEA, WILL SUPPORT DMPM IN MANAGING TO CONSERVE, PRESERVE AND PROTECT THE NATURAL RESOURCES OF MARINE PARK AREAS.

2.2 Principles and Values

The following are the underlying principles and values applicable to the process of managing the Pulau Redang Marine Park Areas.

2.2.1 Management Principles

The cardinal principle for managing the marine parks is to provide for the conservation and permanent preservation of the MPA's natural condition and the protection of the MPA's cultural resources and values. Preserving the natural condition means protection from human interference - allowing natural processes to continue. Other management principles for the parks are:

- i. To preserve the MPA's socioeconomic environment and its values; and
- ii. To ensure that use of the MPA's is nature-based and ecologically sustainable.

2.2.2 Management Values

There are a number of stakeholder groups that have an interest in the Marine Park and its management. Besides the residents of Pulau Redang, major stakeholder groups include commercial and

recreational fishers, park visitors, tourists and resort operators. The plan assumes these stakeholder groups value the park and its resources for a variety of reasons. These reasons can be categorized into the following broad areas:

- i. Conservation and scientific;
- ii. Ecological;
- iii. Local social and cultural;
- iv. Economic; and
- v. Tourism and recreational.

2.2.3 Ecological Values

In the context of this management plan, ecological values are the physical, chemical, geological and biological attributes of an area and represent a structurally complex array of relationships between plants and animals interacting in the marine environment. Ecological values include:

- a. species or communities that have special conservation status (e.g. endangered or rare species);
- b. species or communities that are identified as significant within the reserve;
- c. key structural components of the ecosystem (e.g. sea-grass and coral reefs);
- d. species endemic to the reserve;
- e. exploited species and communities (e.g. targeted fish populations); and
- f. key physical and chemical components of the ecosystem (e.g. geomorphology and water quality).

2.2.4 Social and Cultural Values

Social and cultural values are the cultural, aesthetic, recreational and commercial attributes of the area. These attributes relate to how people value and enjoy a range of recreational and commercial opportunities in the marine and estuarine environment. Social values are integrated into management outcomes while seeking to maintain a level of activity which is consistent with the proper conservation and restoration of the natural environment, the protection of endemic flora and fauna and the preservation of features of archaeological, historic or scientific interest.



Pulau Redang

Marine Park Management Plan

The Management Plan 3



3.0 MANAGEMENT PLAN

3.1 Objective and Strategy

3.1.1 Objective

Pulau Redang is experiencing rapid development to its infrastructure from increasing socio-economic activities. Such development, if not effectively managed, will have negative impacts on the marine resources and habitat resulting in deterioration of marine biodiversity. The DMPM was established with the key objective of protecting marine park areas not only to ensure the conservation and preservation of marine resources but also to manage the sustainable use of the natural ecosystems. However, within the Park, other objectives guide operations including managing the area for ecosystem protection and tourism, and managing the area for conservation of specific natural features. This Management Plan shall serve as a guide for Park operations and future activities for Park managers and planners.

The IUCN description of management goals in managing the marine resources of Marine Protected Areas (MPAs) will be used as a guideline for the management of the Pulau Redang Marine Park.

- i. Protect and maintain the biological diversity and other natural values of the area in the long term
- ii. Promote sound management practices for sustainable production purposes
- iii. Protect the natural resource base from being alienated for other land use purposes that would be detrimental to the area's biological diversity

In managing the Pulau Redang MPA, the manager should recognize the value of the marine resources that surround the islands and the challenges of minimizing degradation of the marine ecosystems. In order to effectively ensure long-term protection and maintenance of these valuable resources, as well as the sustainability of the products and services provided by such resources, a Management Plan is necessary. The Management Plan aims to meet the following objectives:

- i. Clearly define management areas to ensure efficient and effective park management.
- ii. Create the necessary infrastructure and support systems that enable the effective management of the area according to the defined zones and activities.
- iii. Promote understanding and increase local knowledge of the value of the marine biodiversity found within the area, and the need to conserve and preserve marine resources and habitat, and highlight the ultimate benefits of protecting them
- iv. Promote alternatives to economic livelihood and wealth generation (as opposed to fishing and any other activity detrimental to the MPA's marine biodiversity) to enable the local community to benefit from preserving and protecting marine resources.

The emphasis on sustainability of marine resources is essential to the people of the island for social, cultural and economic reasons. It is thus intended that the Pulau Redang Marine Park be managed as a multiple use marine park, providing for the protection of the ecology of the marine environment whilst allowing for ecologically sustainable commercial, recreational and customary use of the area. **The principle objective in managing the Marine Park is to**



protect the marine biodiversity whilst allowing continued sustainable use of its resources and enjoyment of its values.

Specifically, the management objectives for the Marine Park include:

- i. Improving knowledge, understanding and management of the marine park.
- ii. Generating awareness of the benefits of conserving, preserving and protecting marine resources and habitats.
- iii. Maintaining biological productivity, species diversity and abundance.
- iv. Providing for sustainable commercial, recreational and tourism use.
- v. Protection of social and cultural values.
- vi. Provision of appropriate, safe and enjoyable visitor experiences.
- vii. Management of marine resources under a consultative framework.
- viii. Improvement of legislation, rules and regulations governing the socioeconomic aspects of the island and its population.
- ix. Enforcement of rules and regulations to eliminate potential threats to marine resources and habitats.

3.1.2 Strategy

Management strategies provide direction on how the management objectives will be achieved. In developing the course of action for the Pulau Redang Marine Park, several different types of strategies will be used.

i. Strategy 1 - Zoning

The Zoning Strategy is designed to reduce threats by managing commercial, recreational, and scientific activities directly by designating specific areas for certain activities and

thus addressing issues such as user conflicts, overuse and exploitation of the marine resources.

ii. Strategy 2 - Restoration

The Restoration Strategy is to protect and manage marine resources and biodiversity to ensure continued viability of resources. The strategy will take the form of special initiatives that emphasize the importance of marine habitats to both terrestrial and marine communities.

iii. Strategy 3 - Regulatory

When appropriate regulations are created and enforced, the regulatory system becomes an effective tool that provides structure and stability to management efforts. The Regulatory Strategy allows the management to plan to accommodate, adapt and concur with the ever-changing regulatory climate. The Regulatory Strategy helps respective managers prepare for and manage the full “lifecycle effects” of regulatory compliance.

iv. Strategy 4 - Compliance and Enforcement

This strategy aims at ensuring compliance to marine park rules and regulations to ensure that both locals and tourists/visitors comply with the do's and don'ts within the marine park area. The focus is not to take legal action but to increase compliance through education. Proposed regular surveillance activities by the department enforcement units will emphasize the need to comply with the marine park culture of conserving and preserving marine biodiversity.

v. Strategy 5 - Monitoring and Research

Monitoring and Research Strategies will help to support all other activities by providing much needed information about the dynamics and status of the marine systems. This will serve as a measure of biophysical, socioeconomic and governance indicators and assist towards the adaptive management of the Marine Park.

vi. Strategy 6 - Educational and Community Participation

Many of the threats facing the managers of the Marine Park can be addressed through education and outreach programmes. The success of the Marine Park's objectives in conservation whilst sustaining the community's social and economic environment relies heavily on community participation and understanding of the ultimate goal, as well as how an individual's actions directly impact on the marine communities. Working with community groups, dive shop operators, boat operators, schools, fishers, tour operators, hoteliers, and government agencies will help in gaining community support, as well as disseminate essential information throughout the community at all levels. With increased information and education, park managers can expect reductions in incidences of garbage dumping, boating damage, dive damage (i.e., fin damage), turtle poaching and illegal fishing activities. More important is the long term effect where this strategy complements the Enforcement Strategy where the local community participates in ensuring compliance to marine park rules and regulations by locals, operators, visitors and tourists.

vii. Strategy 7 - Economic

The Economic Strategy is to enable local communities to generate income and employment opportunities from the

marine resources within the MPA by conserving and preserving these resources. This strategy aims to counter the belief that Marine Park policies, rules and regulations have impacted negatively on the economy of the island community. To counter dissatisfaction over the "no fishing" rule within marine park waters among the fishing community, the benefits of conserving the marine resources will be stressed. This can be achieved through the Community Tourism Approach.

viii. Strategy 8 - Integrated Management Approach

This implies the involvement of other relevant local and federal agencies to enhance management capacity and capability.

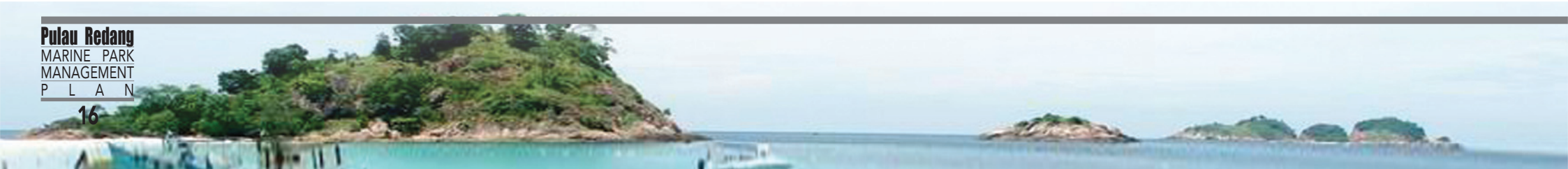
3.2 Zoning Plan

3.2.1 Zoning Plan

The Pulau Redang Marine Park has long been recognized for its natural values and outstanding marine biodiversity and a wide range of habitat types. The marine park also has cultural, social and economic importance to the community.

The Pulau Redang Marine Park is a multiple-use marine park that caters for a wide range of activities. From being a traditional fishing village, Pulau Redang is now a flourishing tourism destination - a popular spot for underwater diving, snorkelling, or just swimming and sunbathing on fine white sandy beaches.

Management of the Pulau Redang Marine Park must reflect a balanced approach to conserving the environment by providing a management framework to ensure sustainable use of resources, and to ensure human economic usage does not cause significant or long-term damage to the ecosystem.



The Marine Parks management plan is an effort to protect marine biodiversity. It aims to conserve marine biodiversity, maintain ecological processes and provide for a range of sustainable uses of the marine environment.

Zoning is one of the management tools used toward the more effective management of the MPA. This section defines and elaborates on the zoning of the Pulau Redang Marine Park.

3.2.1.1 Purpose of Zoning Plan

The Pulau Redang Marine Park Zoning Plan aims to protect the important natural and cultural values of the marine park, while providing for a range of sustainable uses including beach activities, swimming, surfing, scuba diving, water sports, marine biodiversity appreciation, research and other activities.

Zoning is the process of planning to allocate certain kinds of activities to certain areas. Zoning identifies permissible activities which in turn identify conflicting use within an area. Zoning facilitates detailed area management as well as promotes continuous monitoring of use, regulatory enforcement, and checking against the quality of the ecosystem.

A Zoning Plan defines what activities can occur in which location in order to protect the marine environment and to separate potentially conflicting activities. Marine Park zoning is therefore an important management tool in managing marine areas because a healthy and productive reef means substantial economic benefits to local communities and the wider economy.

The Pulau Redang Marine Park Zoning Plan provides the planning base for the protection of Marine Resources and the conservation of their biological diversity. The zoning plan helps managers prepare a feasible management plan to make the Pulau Redang ecosystem more resilient to pressure and to generate a greater abundance of marine life and resources. The objectives of the zoning plan are thus to ensure the conservation of biodiversity, maintenance of ecological processes and sustainable use of resources.

3.2.1.2 Zoning Map

All areas within 2 nautical miles of a Marine Park Island are gazetted as the MPA. This is a "no take" zone. Any form of fishing or extraction of resources is prohibited. No high impact activities such as construction, mining or economic activities are allowed.

3.2.1.3 Base Information for Zoning Plan

Base information was very limited due to incomplete information on types and locations of marine resources, the development of Marine Park Zoning for Pulau Redang has had to rely on the Local Ecological Knowledge (LEK) surveys which have been conducted for the area. LEK is defined as "knowledge held by a specific group of people about their local ecosystems. LEK may be a mix of scientific and practical knowledge; it is site specific, and often involves a belief component (Olsson and Folke 2001). This type of methodology, using local knowledge to enhance ecosystem management, is well established (Berkes et al. 1995, Johannes 1998, Colding and Folke 2001, Drew 2005) and has been successfully implemented in many cases around the world.



Based on the LEK survey, it has been observed that corals and marine habitats are mainly located within 200 metres from the shoreline of the island. In terms of depth, these areas are also much less than 40 metres deep, which is also within recreational diving depth (normally recreational diving would not exceed 130 ft or 41 metres deep). In Pulau Redang, recreational activities are also generally carried out within 200 metres of the shoreline. This area of about 200 metres from the shoreline can be considered as:

- The area where corals and related marine habitats are most abundant
- The main attraction sites for diving, snorkelling, swimming and other tourist activities,
- The interfacing area between the island and the open sea where turtles come to breed on shore, and other species breed in mangrove areas, or the corals
- The most sensitive areas as they are directly influenced by or exposed to land based pollution as well as intrusion by the various human activities (tourism, economics, transportation, etc).

Therefore, zoning of activities will be directed largely at the area within 200 metres (or 0.108 nautical miles) of the shoreline (**Figure 3.1**).

An additional buffer of 100 metres (0.054 nautical miles) is also necessary to separate the “200 metre sensitive area” as specified above from boating and navigational use. This 100 metre buffer is necessary to avoid conflict between tourism activities and the danger of fast moving boats.

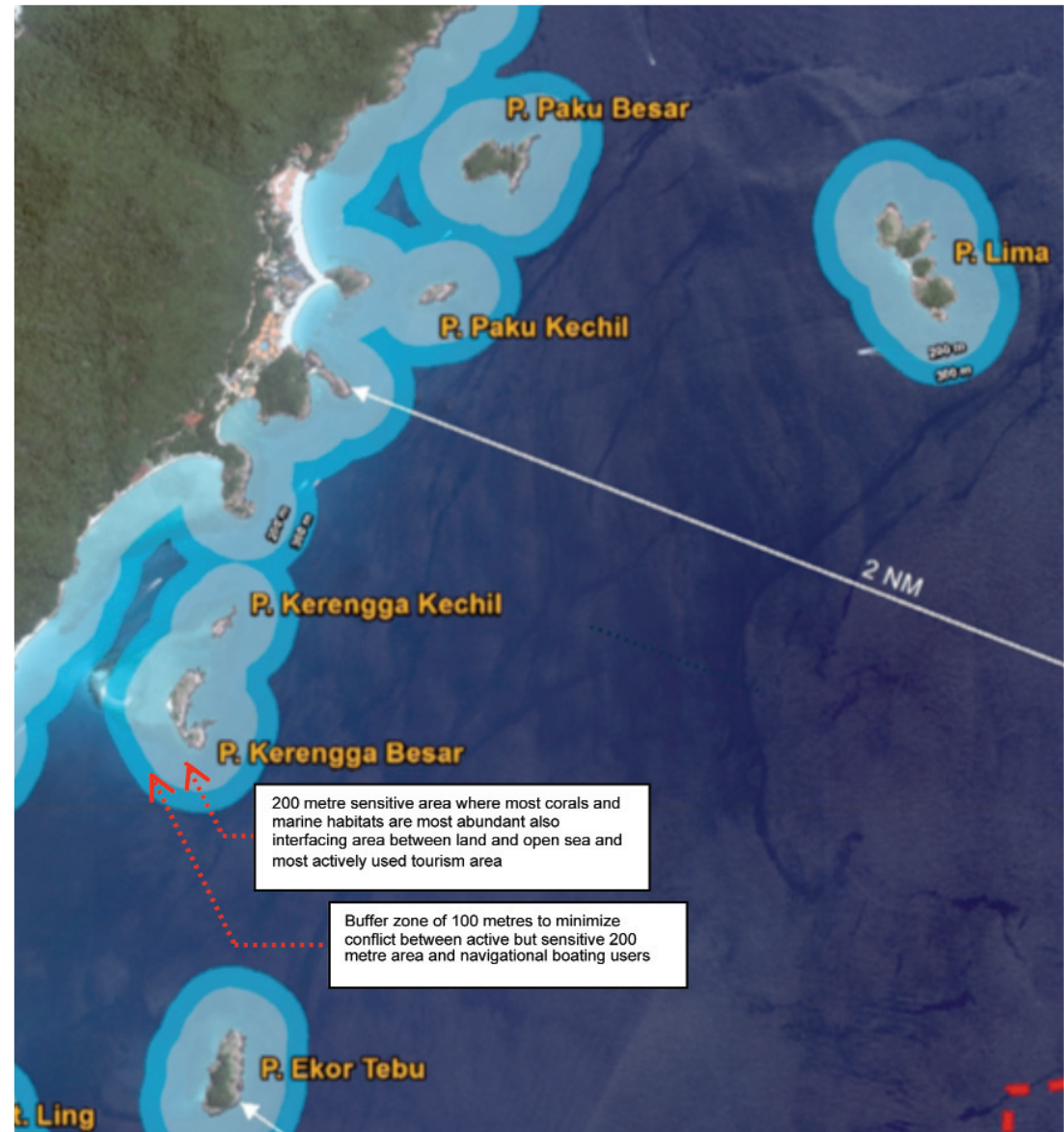


Figure 3.1 : Buffer Zone from Shoreline.

3.2.1.4 Classification of Zones

Specific for Pulau Redang, the zones are classified into four (4) zoning categories, based on intended or designated usage of the area. They are:

- i. General Use
- ii. Habitat Protection and Preservation
- iii. Conservation
- iv. Tourism and Recreation

The Definition and description of each zone can be found in the following sections. **Table 3.1**, meanwhile, provides a brief description and designated use of each zone, zoning area criteria, as well as designated areas within Pulau Redang and the surrounding islands. The zoning map of Pulau Redang is as shown by **Figure 3.2**.

i. General Use Zone

The General Use Zone is essentially the area between the 2 nautical mile boundary up to the 300 metre buffer from the island's shoreline. As mentioned earlier, the areas within 300 metres of the shoreline are considered as sensitive area because much of the corals and habitats are found here. These same areas are also popular areas for marine recreational activities.

Hence, the General Use Zone is the open waters within the 2 nautical mile boundary which are predominantly used for navigation. Certain areas leading to marinas and/or jetties are also classified as General Use Zones.

The General Use Zone is the least restrictive among all the zones but the area is still subjected to the protection of Marine Park regulations. It is a part of the “no take zone” and all non-permissible activities within the marine park area will be strictly enforced.

Generally, this area can also be considered a conservation area and is only open to navigation.

Table 3.1 and **Figure 3.2** itemize and show all the General Use Zones within Pulau Redang and the surrounding Islands.

ii. Habitat Protection and Preservation Zone

The Habitat Protection and Preservation Zone is classified as all those areas identified as requiring special protection. Certain areas have been identified as special habitats, which include turtle landing beaches, mangrove areas and areas leading to the said area, upwelling areas, and other specially identified habitats. Preservation areas may include certain pristine and untouched areas which are known to be of special value.

Protected habitat and preserved areas should be off limits to any human intrusion and/or activities. Any high impact activities within, neighbouring, and/or nearby the Habitat Protection and Preservation Zone must be avoided. Example areas include upwelling areas, mangroves and areas leading to the mangrove area, turtle landing beaches, or other breeding and/or nesting grounds recommended as requiring special protection by marine ecologists or biologists.

Areas leading to these zones or passageways are also classified as Habitat Protection Zones.

Scientific research is allowed with written permission from the DMPM.

Entrance to this zone is permissible only in cases of emergency.



Photo 3.1 : The Habitat Protection and Preservation Zone is aimed toward identifying sensitive areas and the need to protect and preserve these areas for turtle landing and nesting sites, among other activities

iii. Conservation Zone

A Conservation Zone is a protected area with controlled human interaction or use. Low impact non-destructive human activities such as swimming, snorkelling, and kayaking may be permissible but should be strictly regulated, controlled, and at best kept to a minimum.

The conservation area could also refer to “partially closed” areas which have been damaged due to previous use or activities. In such cases, re-designation of an area to “Conservation Zone” is primarily intended for the rehabilitation process.

Scientific research may be permitted with special permission.

iv. Tourism and Recreation

Tourism and Recreation Zones are specially designated areas for tourism/recreational activities such as scuba diving, snorkelling, boating and surfing/windsurfing. Most of these areas have been identified and are currently being used by tour operators.

Regular ecosystem health monitoring of these areas needs to be conducted, and if necessary, usage of areas with signs of degradation needs to be minimized or else the area should be reclassified as a “Conservation Zone”.

The Tourism and Recreation Zone needs special management and strict enforcement which may include the following:



- a. Safety and security
- b. Rules and regulations on non-extractive use of resources
- c. Management regarding the number of tourists at any particular time
- d. Provision and maintenance of facilities which may include boundary markers, buoys, mooring points, safety flags, ship-based waste management, sign boards, and the like.

Scientific research is permissible with a special permit from the DMPM.



Table 3.1 : Marine Park Area Zoning, Pulau Redang

Zone	Designated use of Zone	Zoning Criteria	Designated Area in Pulau Redang	Notes
1. General Use	<p>These areas allow a wide range of activities, least restrictive of all the zones; the zone provides for all reasonable uses, including boating, anchoring, cruise ships and scientific research (with permit). The area is still designated as a "no take zone" where all forms of fishing and/or extraction of natural resources are totally prohibited.</p> <p>Primarily for navigational use and conservation only.</p> <p>Conflicting uses such as recreational swimming, diving, snorkelling, are prohibited.</p>	<p>Areas within 2 nautical miles and 300 metres from the shoreline, unless otherwise stated.</p> <p>Certain passage areas leading to jetties or marinas are also zoned as General Use.</p>	<p>Colour Code: Light Blue. All areas beyond 300 metres from the shoreline up to 2 nautical miles unless otherwise designated or zoned.</p> <p>Most of the surrounding area of Pulau Redang, particularly near the 2 nautical miles border; Areas leading to jetties in Kuala Redang from Tg. Teluk Siang (except in front of the estuary); Areas between Kuala Redang towards Teluk Kalung Besar (including Tg. Telaga Batu, Pasir Pepari, Teluk Pandang and Tg. Cina Terjun; Area of Teluk Bertigi and Teluk Bakau; Teluk Dalam area leading to Berjaya jetty; The northern-tip of Pulau Pinang (near Pusat Taman Laut jetty, Tg. Batu Manjing towards Tg. Batu Berak);</p>	<p>The 2 nautical mile boundary should be marked clearly.</p> <p>The boundary between general use zone and potentially conflicting use zone such as tourism activities which may include snorkelling, diving, and swimming must be marked clearly with boundary markers.</p>
2. Habitat Protection & Preservation	<p>All areas identified as requiring special protection. Protected habitat areas should be off limits to any human intrusion, and any high impact activities must be avoided. Example areas include upwelling areas, mangroves and areas leading to the mangrove area, turtle landing beaches, or other areas recommended to require special protection by marine ecologists/biologists. Permitted scientific research is allowed.</p> <p>Preservation refers to total protection of undisturbed and/or pristine areas. All entry to the area is prohibited, except in an emergency. Scientific research is permitted with special permission.</p>	<ul style="list-style-type: none"> • Turtle landing beach • Baby shark area • Upwelling area • Mangrove forest • River mouth/estuarine area • And areas leading to those areas mentioned above. <p>Areas are in pristine condition; Special or protected marine life habitat could be found there; Areas not suitable for recreational use e.g. strong current, too deep, etc.</p>	<p>Colour Code: Red. Kuala Pulau Redang area (mangrove area; except the estuary); Teluk Mak Cantek to south of Tg. Bertigi (near Teluk Bakau); Pasir Akar to Tg. Batu Manjing area, Tg. Batu Berak to Tg. Batu Roboh (including the areas of Pusat Taman Laut Pulau Redang, Tg. Nyior Sepohon and Pasir Batang Air Raja) in Pulau Pinang; Entire Pulau Chupak and Batu Ling.</p> <p>This area has been marked as Special Protection Zone: From Tg. Bakung to Tg. Batu Tok Kong (including Teluk Cagar Hutang, Tg. Lang, Teluk Batu Sauh, Teluk Tenak, Pasir Mak Kepit, Pasir Bujang, Pasir Mak Simpan and Tg. Lebah);</p> <p>High Coral Resilience Area such as Teluk Cagar Hutang is also included as part of Habitat Protection & Preservation zone (Reef Check Malaysia, December 2012).</p>	<p>Boundary marker to indicate "no entry" should be put in place. Strict enforcement is required.</p> <p>These areas should be closely guarded and protected.</p> <p>No entry zone for whatever reason.</p> <p>No human activities permitted except with special permission.</p>



Zone	Designated use of Zone	Zoning Criteria	Designated Area in Pulau Redang	Notes
<p>3. Conservation/ Protection</p>	<p>Protected areas with controlled human interaction or exploitation. The area could have been damaged due to previous use and re-designated as "conservation zone" for rehabilitation purposes. Scientific research may be permitted with special permission.</p>	<p>Areas intended to be protected for rehabilitation purposes. Controlled use or entry to the area.</p>	<p>Colour Code: Yellow. Areas of Tg. Batu Tok Kong to Teluk Kerma (including Tg. Teluk Gutung, Tg. Gua Gong and Tg. Batu Peparji); Tg. Teluk Nyatoh and Teluk Mat Delah; Tg. Gua Kawah and towards down-south; East Pulau Paku Besar; East of Pulau Paku Kecil towards southern part; Entire Pulau Lima (except the southwest area); East of Pulau Kerengga Kechil; Entire Pulau Kerengga Besar; Area between Teluk Kalung Besar and Pasir Teluk Kalung Kecil; Kuala Pulau Redang estuary; Tg. Teluk Siang to Tg. Bakung, (including Pasir Kecil, Pasir Macam Ayam, Tg. Gemuk, Tg. Batu Rabung, Teluk Rotan and Teluk Che Keling); Southwest of Pulau Pinang (Pasir Akar to the south); Southeast part of Pulau Pinang (Tg. Batu Roboh to the north of Tg. Batu Kambing); North and south of Pulau Ekor Tebu.</p> <p>Teluk Kerma and Tanjung Gutong area have also been identified as High Coral Resilience Area (Reef Check Malaysia, December 2012).</p>	<p>The entry to these areas needs to be controlled and kept to a bare minimum. Tour operators need to be informed. Needs strict enforcement. Requires periodic assessment of the health of the ecosystem of the area to monitor its rehabilitation progress.</p>
<p>4. Tourism/ Recreation</p>	<p>These areas are specially designated for tourism/recreational activities such as Scuba diving, snorkelling, boating and surfing/ windsurfing. Scientific research is permissible with special permit from the Department of Marine Parks Malaysia.</p>	<p>Areas identified as suitable for the intended recreational activities. These zones are normally within 200 metres from the shoreline where corals and marine life are in abundance. Certain areas such as shipwreck sites, artificial reefs, and rock sites may also be zoned as tourism areas.</p>	<p>Colour Code: Green. East and west part of Teluk Dalam shore (excluding areas towards Berjaya jetty); East Teluk Mat Delah towards Tg. Gua Kawah; Pulau Paku Besar (west) towards Pasir Panjang (main island); Pasir Panjang to Tg. Tengah and Tg. Mak Cantik; North Pulau Paku Kechil; Areas of Mak Cantek Coral and Terumbu Che Isa; Teluk Kalung Kecil towards north of Pulau Kerengga Kechil including Pasir Teluk Kalung Kecil (main island); Tg. Terumbu Kili to Tg. Batu Kambing; East and west side of Pulau Ekor Tebu; Area of Karang Chupak (north Pulau Lima).</p> <p>Teluk Mat Delah and Tg Gua Kawah area have also been identified as High Coral Resilience Area (Reef Check Malaysia, December 2012).</p>	<p>All recreational areas must be marked clearly to avoid potential conflict with other users. Routine resource status check-ups must be conducted to detect potential degradation of resources and/or over consumption. Routine enforcement work should be conducted to prevent misuse. Entering boats should be on idling speed.</p>



Tg. Tinggi
Tg. Besar
Tg. Kecil
Tg. Ch. Takong
Tg. Ch. Papang

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Tg. Ch. Gays
Tg. Ch. Nyah
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Pulau Redang

P. Paku Besar

P. Paku Kecil

P. Ekor Tebu

Batu Ling

P. Chupak

Pulau Pinang

Karang Sempak

P. Ulma

P. Ulma

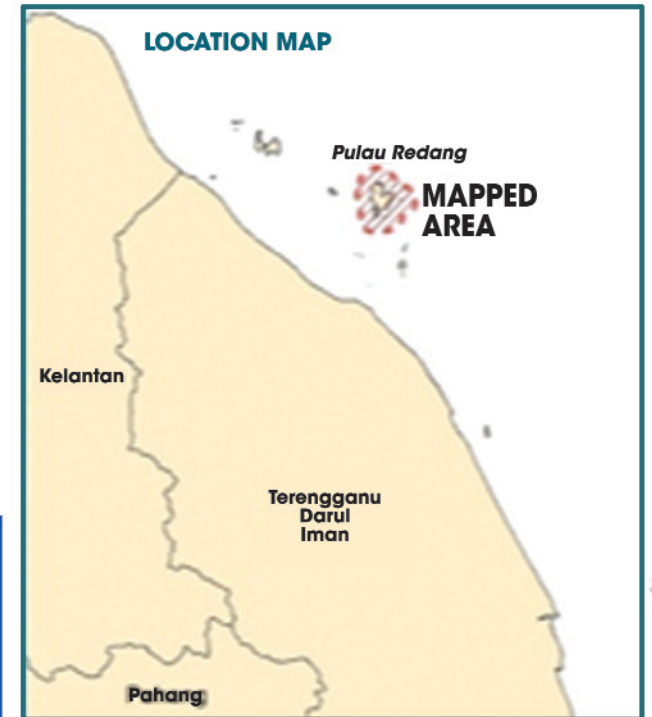
Pulau Redang Marine Park Zoning Plan 2013

LEGEND

--- 2 nautical miles boundary

Classification of Zones

- Conservation
- General Use
- Habitat Protection & Preservation
- Tourism/Recreational
-



Note:
Marine Park boundary is 2 nautical miles from shore (mean sea level).

ACTIVITIES GUIDE

(see relevant Zoning Plans and Regulations for details)

Activities	General Use	Conservation	Habitat Protection & Preservation	Tourism/Recreational
Boating (Recreational)	/	x	x	/
Cruise Ship	/	x	x	x
Diving/Snorkling	x	x	x	/
Surfing/Windsurfing	x	x	x	/
Scientific Research	P	P	P	P
Sailing	/	x	x	x

/ denotes permissible activity
x denotes prohibited activity
P denotes activities requiring a permit

PLEASE NOTE : All types of fishing are not permitted in the marine park area namely bait fishing, line fishing, spear fishing, mesh fishing, trawling and netting.

ACCESS TO ALL ZONES IS PERMITTED DURING EMERGENCY CASES ONLY.

Department of Marine Park Malaysia (DMPM) Zoning Classification

General Use Zone

These areas allow a wide range of activities, least restrictive of all the zones; it provides for all reasonable uses, including boating, anchoring, cruise ship and scientific research (with permit). The area is still designated as a "not take zone" where all forms of fishing and/or extraction of natural resources are totally prohibited. Primarily for navigational use and conservation only. Conflicting uses such as recreational swimming, diving, snorkeling, are prohibited.

Conservation/Protection Zone

Protected areas with controlled human interaction or exploitation. The area could have been damaged due to previous use and re-designated as "conservation zone" for rehabilitation process. Scientific research may be permitted with special permission.

Habitat Protection & Preservation Zone

All areas identified as requiring special protection. Protected habitat areas should be off limit to any human intrusion and any high impact activities must be avoided. Example areas include upwelling area, mangrove and areas leading to the mangrove area, turtle landing beaches, or other areas recommended to require special protection by marine ecologists/biologists. Scientific research is allowed with special permission. Preservation refers to total protection or undisturbed and/or pristine areas. All entry to the areas is prohibited, except in an emergency case. Scientific research is permitted with special permission.

Tourism/Recreational Zone

These areas are specially designated for tourism/recreational activities such as scuba diving, snorkeling, small boating and surfing/windsurfing. Scientific research is permissible with special permit from the Department of Marine Parks Malaysia.

IMPORTANT NOTES FOR MAPS USERS

THIS MAP IS INDICATIVE ONLY AND IS NOT INTENDED FOR NAVIGATIONAL PURPOSE OR AS LEGAL BASIS FOR BOUNDARY DEMARCATION.

SAFETY IN THE MARINE PARK

People visit the Marine Park at their own risk. Zoning Plans allow activities to take place, but do not guarantee safety. The Park contains both natural and human hazards. Parks users should consult navigation charts.

WARNING

This map must not be used for marine navigation. Comprehensive and update navigation information should be obtained from published hydrographic charts.



Malaysia Government

The Ministry of Natural Resources & Environment (NRE)



Department of Marine Park Malaysia

Figure 3.2 : Zoning Map of Pulau Redang

3.2.2 Management Action

3.2.2.1 Markings of Zoning Boundary

Unlike zoning of land uses, marine area features are less distinct. There are no clear physical features to serve as a zoning boundary. Installation and maintenance of the following boundary markers are required:

- i. 2 nautical miles refers to 4 boundary markers at west/south/east/north of admiralty chart
- ii. Boundary marker for diving sites
- iii. Boundary marker for snorkelling sites
- iv. Boundary marker for swimming beaches
- v. Boundary marker for “Passageways” leading to marinas, jetties.

Installation of all boundary markers could be very expensive and difficult to maintain. Creative use of sign boards or colour coded posts on the shores could produce good zoning boundary markers.

3.2.2.2 Protection buffer

Two types of protection buffer are recommended to minimize external impacts on the protected area. These are:

- i. 300 metre buffer zone seaward from the shoreline
- ii. 50 metre buffer inland from the beachfront

The 300 metre buffer seaward from the shoreline refers to environmentally sensitive areas in which most of the zones are located. These are the prime attraction areas for tourists and these are also where most corals and sensitive habitats are located.

In order to minimize the impact of land based activities impact on the marine environment, it is highly recommended that any development must be at least 50 metres away from the beach front and must not be near or bordering a Preservation Zone. All forms of development work must be made in reference to and in compliance with all the regulations and guidelines by the various government agencies, which may include Department of Irrigation and Drainage (DID), Department of Environment (DOE), Jabatan Perancangan Bandar dan Desa (JPBD), DMPM, Jabatan Laut Malaysia (JLM), and both the relevant State and Local Authorities.

3.2.2.3 Areas with High Risk of Intrusion

Certain areas which have been identified as being prone to intrusions such as illegal trawling must be protected. Installation of suitable artificial reefs or anti poaching devices and regular enforcement are necessary.

Specially protected areas such as turtle landing beaches are also susceptible to intrusion and may require regular and strict enforcement.

3.2.2.4 Scuba Diving and Snorkelling

Scuba diving sites and snorkelling areas need to be clearly marked. Boundary markers, mooring points, and other necessary safety markers need to be installed. Regular inspection and maintenance of facilities should be conducted.

Only licensed and certified operators and divers are allowed to operate and dive. The DMPM together with the tour/dive operators need to determine the total number of



tourists allowed at any particular site at any given time. Scheduling of activities or rotation of tour groups may be necessary to impose better control. This is to avoid overcrowding and over-consumption of resources.

Regular ecosystem health checks need to be conducted by the DMPM and other authorized organizations. Reports of the eco-system status and/or re-classified zones need to be made available to the public.

3.2.2.5 Swimming and Recreation Areas

Swimming and recreational beaches have been identified (refer to Zoning Map, Figure 3.2). For these areas, it is advised that:

- i. All swimming beaches must have a beach guard, to be employed by the hotel operators and/or with close cooperation between DMPM and community-based watchers.



- ii. Safety flags must be installed to alert beach users and maintained at all times
- iii. Boundary markers must be installed and maintained to keep all boats, jet skis and other motorized equipment away from the area
- iv. Signboards detailing the “dos and don'ts” must be put in visible places
- v. Regular enforcement is necessary

3.2.2.6 Habitat Protection

The Habitat Protection Zone is off-limits to any human activities. Only persons and/or activities authorized by the DMPM are allowed in the area.

Warning signboards must be put in place and the must be strict enforcement.

3.2.2.7 Water Sports

Light non-motorized water sports such as kayaking, wind surfing may be permissible within the General Use Zone.

Special permission from the DMPM is required.

3.2.2.8 Sport Fishing

Any type of fishing, taking, and extraction of resources (live or dead) are prohibited within the MPA.

All sport fishing activities must be carried out outside the 2 nautical mile boundary.

3.2.2.9 Other activities

Any other activities require notification of, and permission and/or authorization from the DMPM. Any form of



construction must be carried out according to the provisions of the Fisheries Act 1985 and other relevant requirements and regulations imposed by DMPM.



Photo 3.2 : A Healthy and protected ecosystem attracts not only diverse marine life but also tourists

3.3 Marine Park Resources Management

Marine research and monitoring is an important part of effective resource management and conservation that serves three primary purposes.

- i. It allows park managers to determine if specific human activities are having or have had an effect on marine resources within the Park.
- ii. Monitoring allows park managers to decide if their management actions (e.g. Research Natural Areas or RNA implementation, restrictions of specific types of activity) have had the intended effect and allow for adaptive management of the MPA.
- iii. Monitoring enables park managers to understand the overall status of the ecosystem, determine natural reference levels of variability, and detect unanticipated and subtle long-term changes caused by diffuse anthropogenic activity.

3.3.1 Goal

Protecting the unique and spectacular marine resources for the enjoyment of future generations

3.3.2 Purpose

The aim of the marine resources management plan is to provide a framework for a single, integrated process that provides for MPA needs in an organized manner. This management plan includes measures necessary to document the long-term restoration and conservation of the Pulau Redang Marine Park. The plan includes the basis for tracking ecosystem responses to the actions within



the management plan, and will further help identify opportunities for improvements as needed. The objectives are;

- i. To protect, to conserve and to preserve marine biodiversity and ecosystems.
- ii. To ensure the marine park resources remain a diverse, resilient and productive ecological system while allowing people access to these resources.

3.3.3 Approach 1 - Enrichment, Conservation and Rehabilitation

- i. The Marine Resources Inventory of marine organisms and other marine habitats for the Pulau Redang Marine Park.
- ii. Health indicator parameters.
- iii. Baseline information on specific commercial fish species caught. This baseline information should be obtained from fish landing areas. Species chosen should reflect species that grow within coral reefs or mangroves (within MPAs) e.g. groupers, sea bass (siakap) etc. Their sizes and numbers must be recorded. An increase in fish size shows a positive effect of the MPA. This will measure the spill over effect from the MPA to the surrounding waters outside of the MPA.
- iv. Live coral cover, mangrove cover, etc. Basically BIOPHYSICAL INDICATORS (all points from 1-4 and 6 are biophysical indicators)
- v. Sanctuary Zone - this is to protect endangered species, threatened and special habitats
- vi. Water Quality monitoring - to monitor and maintain the water quality to guarantee appropriate biological conditions in the MPA to minimize the impact of the alteration of oceanography parameters against disturbing changes to the ecosystem.
- vii. Workshops
- viii. Continuous research

3.3.4 Management Action 1

Action 1	<p>Undertake comprehensive marine resource inventory</p> <p>This study provides the framework for marine resources within Pulau Redang marine park waters. To better understand how to manage the resources, a comprehensive inventory of these resources is required.</p> <ul style="list-style-type: none"> i. DMPM to prepare a proposal to undertake a comprehensive inventory of marine resources (but not only for Pulau Redang) for budget purposes. ii. DMPM to engage experts to prepare a standard operating procedure applicable when undertaking a marine resources inventory. iii. DMPM to engage professionals to undertake the inventory exercises - the database should be identified to genus and species level.
Action 2	<p>Coral Conservation and Rehabilitation Workshop</p> <p>Currently, there is no necessity to undertake a coral rehabilitation exercise, unless the proposed inventory exercise as in Action 1 discovers the need for one. The Coral Conservation and Rehabilitation Workshop is a programme thus designed to teach marine park officers (especially officers on site), community volunteers and locals (residents and business and tourism operators) about coral rehabilitation. At the same time they will be given the responsibility to help promote coral (and marine biodiversity) conservation and preservation.</p> <ul style="list-style-type: none"> i. This workshop will be managed and conducted by DMPM



Action 3	<p>Monitoring Water Quality</p> <p>DMPM will collaborate with relevant agencies to conduct periodic water quality monitoring exercises and regular water sampling at strategic development zones. The purpose is to ensure water quality does not inflict a negative impact on marine biodiversity. The water quality results will be used to inform the relevant government agencies to take necessary measures to mitigate any possible untoward incidents.</p> <ul style="list-style-type: none"> i. Periodic water quality audit and performance monitoring. ii. Water quality sampling and analysis - every four months and whenever there is any incident that may lead to changes in water quality.
Action 4	<p>Define and demarcate Research Natural Area (RNA)</p> <p>The use of Research Natural Areas (RNAs) has recently gained scientific and public support as a means to mitigate the deleterious effects of fishing efforts and provide sanctuaries for the recovery and sustainability of fish stocks, the restoration of natural habitat quality, and the conservation of marine biodiversity (Culhane, 2002). It is proposed that DMPM defines and demarcates the area within Pulau Redang Marine Park waters and conducts regular research programmes on its marine resources.</p>

3.3.5 Approach 2 - Protection and Management of Tourism

- i. Artificial reefs outside the marine park boundary: this will not only provide an alternative for fishermen and fishing for own use by the locals but also promote supervised fishing activities for tourism and enhance fish stocks.

- ii. Limiting scuba diving, snorkelling, and swimming to deeper, localized areas in the vicinity of mooring buoys in the marine park waters: the intent is to reduce the real extent of damage to coral reefs from these activities.
- iii. Monitoring on private boat use in marine park waters: this will reduce the threat of major damage to benthic habitats from groundings and propellers.
- iv. Elimination of anchoring within the specified zone will remove the threat of damage to benthic habitats from these activities.
- v. Promoting the use of guided tours e.g. snorkel guides, licensed boat operators.
- vi. Control of any further construction of facilities and shifting of visitor loads to commercial services: this will provide increased protection of the essential habitats of the park, further decreasing long term adverse impacts.
- vii. Regular surveillance and monitoring (refer also to section 3.11)
- viii. Provision of alternative diving sites in order to reduce diving pressure at natural reefs.

3.3.6 Management Action 2

Action 1	<p>Enforcement of no fishing rules and regulations</p> <p>Marine Park Enforcement collaboration with other maritime enforcement agencies is to ensure consistent enforcement of no fishing rules and regulations within Pulau Redang Marine Park waters.</p> <ul style="list-style-type: none"> i. Regular surveillance - DMPM to provide more and better equipped marine boats and other surveillance devices/equipment. ii. DMPM Terengganu to appoint trained voluntary community rangers to assist surveillance activities
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<p>Action 2</p>	<p>Artificial Reef Programme for the Local Community (beyond 2 nautical miles)</p> <p>Under the One Village One Tukun Strategy, DMPM with the collaboration of the Community Consultative Committee (CCC) will undertake to provide each village with one artificial reef. Also refer to section 2.5.</p> <ul style="list-style-type: none"> i. DMPM to identify strategic locations for the artificial reefs. ii. DMPM to assist the CCC to seek sponsors for the programme. iii. Other relevant agencies i.e.: Malaysian Maritime Enforcement Agency (MMEA), Marine Police, Department of Fisheries (DOF), JLM to assist this programme.
<p>Action 3</p>	<p>Identify and Define Areas suitable for scuba diving, snorkelling and swimming.</p> <p>Currently, there already exists well known spots for scuba diving, snorkelling and swimming. For better management, surveillance and monitoring, these spots must be identified and defined, consistent with the zoning plan.</p> <ul style="list-style-type: none"> i. DMPM, in collaboration with dive instructors and operators, to identify carrying capacity and define the various spots for scuba diving, snorkelling and swimming ii. To provide diving sites iii. To promote tour guides preferably local guides iv. These areas will be mapped accordingly and made accessible to all resort and dive operators. DMPM will declare such areas/spots as allowable areas for such activities. v. DMPM will inform all resort and dive operators that they are encouraged to refer their customers/ tourists to these areas only for scuba diving, snorkelling and swimming.

<p>Action 4</p>	<p>Controlling the number of divers and/or snorkellers at any given time.</p> <p>Scheduling of tours is necessary in certain areas which are rich in marine resources and corals (e.g. Teluk Dalam). This is to avoid excessive numbers of divers at any given time which may damage corals and other habitats.</p> <ul style="list-style-type: none"> i. DMPM and tour operators will jointly decide on the diving carrying capacity in term of the maximum number of tourists/ divers per tour according to site. Limiting factors such as the number of restrooms available should be considered or the comfortable radius between snorkeller. ii. DMPM and dive operators to decide on a practical method of reporting and control so as to manage scheduling of dive time windows.
<p>Action 5</p>	<p>Restrict, control and manage use of private boats/yachts</p> <ul style="list-style-type: none"> i. All private boats/yachts servicing marine park waters within Pulau Redang must notify DMPM and be licensed with relevant documentation.
<p>Action 6</p>	<p>Restrict, limit and control access and anchoring to terrestrial habitats and restricted use zones.</p> <ul style="list-style-type: none"> i. DMPM to consult with stakeholders: dive operators, resort operators and tourist promoters, on plan to manage access and anchoring at specific areas, especially restricted zones, special use areas, artificial reefs and popular spots, trip frequency, anchoring, duration of stay and types of boat/vessels. ii. Based on the outcome of the above consultation, DMPM to establish management and administrative guidelines in relation to access of restricted use zones.



<p>Action 7</p>	<p>Guided Tours</p> <ul style="list-style-type: none"> i. Tourism operators must provide or arrange to provide qualified tour guides for their customers for all activities within the marout the whole island but especially within the 200 metres of the beach and sea front. ii. DMPM to encourage all organized sea bound tours to refer to and record their tours with DMPM. The department is to consult with operators on the administrative procedures.
<p>Action 8</p>	<p>Restriction on new construction</p> <ul style="list-style-type: none"> i. DMPM Terengganu to be incorporated as a member of the planning committee for the Pulau Redang Structure and Area Plan (Pulau Redang Development Authority) or Majlis Bandaraya Kuala Terengganu, MBKT). ii. No physical structure will be allowed in Pulau Redang marine park waters without the approval of DMPM. The Terengganu State Planning committee must seek the advice of DMPM before approving any projects involving physical structure on land throughout the whole island but especially within the 200 metres of the beach and sea front.



Photo 3.3 : Sunset view from Berjaya Redang

3.4 Environment & Pollution

Environmental consideration is an important component in any Management Plan, as it covers how to manage and preserve the natural resources from damage and provide a sustainable method of controlling and minimizing negative impacts due to anthropogenic activities on the environment. Pulau Redang is one of the most populous marine park islands in Malaysia and is an extremely popular tourist destination. This



marine park area will thus most likely suffer the adverse impacts of pollution from various sources; both land based and water based.

3.4.1 Managing solid waste from residential Properties, resorts and chalets

i. Purpose

To provide a suitable and user friendly non-polluting method for solid waste collection, transfer and disposal on the island and to implement sustainable methods in waste disposal to eliminate the leachate problem.

ii. Approach

There is no proper waste collection and disposal system although small scale solid waste collection dumpsters have been provided. The need for proper management of solid waste is important as Pulau Redang is widely known as a major tourist destination.

The Management of solid waste collection and disposal on the island is not effective, especially in the housing and village area. Solid waste is thrown into drains and rivers causing a bad odour, river pollution and a reduction in aesthetic value.

The main issue is that the method of solid waste collection and solid waste transfer are not suitable. The waste collected generates leachate which can degrade the river and marine water quality, which in turn adversely impacts marine life. Leachate also creates odour problems.

Therefore, a waste collection centre with an efficient waste collecting system is needed in Pulau Redang. Apart from that, a waste transfer centre for transferring solid waste from

marine vehicles to the waste collection centre is also needed.

iii. Management Action

Action 1:	To identify the need for a waste collection and transfer centre.
Action 2:	Jabatan Pengurusan Sisa Pepejal Negara (JPSPN) and the Ministry of Natural Resources and Environment (NRE) to identify a suitable approach for small volume solid waste treatment that is safe, cost-efficient and manageable.

3.4.2 Managing sewage & sullage from residential Properties, resorts and chalets

i. Purpose

The purpose of this recommendation is to minimize the potential impact of poorly treated sewage discharges from residential properties, resorts, chalets and any other dwellings in Marine Park waters and to minimize the potential impact of untreated sullage discharges from restaurants, kitchens and residences in Marine Park waters.

ii. Approach

Sewage treatment systems in these islands are technically not adequate. Some chalets and houses were built and designed without proper sewage treatment systems. Old type septic tank systems were implemented without proper scheduled maintenance. Untreated or poorly treated sewage that is directly discharged into the river will degrade the water quality of the river, estuaries and the sea. Another contributor to river pollution is improper management of sullage from bathrooms and kitchens.



The main issue in the Marine Park Island Management Plan from the environmental perspective is that partially treated or untreated sewage is directly discharged from residential properties/resorts/chalets into the drainage system and untreated sullage is also discharged directly from kitchens/bathrooms into drainage/streams.

An efficient wastewater treatment plant is required to treat sewage and sullage to the standard enforced by the DOE. For Pulau Redang, the effluent standard enforced is Standard A. Apart from that, a wastewater management system is also needed to prevent sewage and sullage by-passing into drainage/rivers/streams. As indicated in the earlier subsection, wastewater transfer centres will also be needed for transferring wastewater from marine vehicles to the wastewater treatment plant.

There should be a regular river and marine water quality monitoring programme to enable the department to monitor and mitigate the source of pollution and to reduce its risk of occurrence. This monitoring programme will also ensure that the data is updated and can be accessed by the public.

iii. Management Action

Action 1:	To identify the need for a wastewater transfer centre and treatment plant and to monitor and mitigate pollution to the environment.
Action 2:	To identify suitable sewage and sullage treatment processes or facilities for Pulau Redang.

3.4.3 Managing environmental impact from development along beach corridor

i. Purpose

To control and manage any construction activities along the beach front and to provide a transparent, consistent and contemporary approach for environmental impact management along the Marine Park beach corridor.



Photo 3.4 : Unregulated and uncontrolled island development will eventually affect the marine ecosystem.



ii. Approach

Most of the hotels, resorts and chalets were built along the beach corridor. Construction along the beach without proper mitigating measures can cause beach erosion and sedimentation. Sedimentation can cut off sunlight to coral reefs, which is vital for their health and growth.

The relevant authority must mitigate this negative impact to prevent environmental damage. Thus, there is a need for a Management System which monitors and assesses development along the beach corridor in the Marine Park.

iii. Management Action

Action 1:	To identify and introduce a management system to manage the environmental impact due to development along the beach corridor.
Action 2:	To introduce stringent development control guidelines for all development in marine park islands with special and immediate focus on Pulau Redang.

3.4.4 Managing solid waste and wastewater from marine vehicles



Photo 3.5 : Example of types of vessel operating in marine park waters

i. Purpose

The main purpose of this management plan is to minimize the potential impact of solid waste and wastewater from marine vehicles in Marine Park waters.

ii. Approach

Not every marine vehicle which enters Pulau Redang waters is equipped with a waste container and wastewater tank. Typically, solid waste and wastewater generated from marine



vehicles is disposed and discharged directly into the sea as there are no strict regulations. The impact of one boat is minimal. For Pulau Redang, where there are many boats in the water, the impact can be significant.

Marine vehicles that are equipped with collection tanks still do not have the facility to transfer the wastewater and solid waste from the vessel to land. Thus there is a need for facilities to collect and discharge wastewater and/or solid waste for all marine vehicles which intend to enter and operate within Marine Park waters.

A proper and efficient solid waste and wastewater transfer station is proposed in the Marine Park Island to transfer solid waste and wastewater from marine vehicles to a collection point. The location of the collection point must be convenient for the waste to be transferred by the crew of the marine vehicle and convenient also for the waste contractor to collect the waste and send it to the mainland for proper treatment and/or disposal.

iii. Management Action

Action 1:	Preparation and development of collection centres for marine vehicles to discharge or transfer solid waste and wastewater.
Action 2:	Local authority to appoint waste contractor to dispose of the waste.
Action 3:	To ensure that all commercial passenger boats or marine vehicles are equipped with solid waste and wastewater facilities before issuing licenses or permits to the operators.

3.4.5 Managing highly sensitive environmental areas (HSEA)

i. Purpose

To identify highly sensitive environmental areas (HSEA) for Pulau Redang and plan mitigation measures on how to reduce the negative impact of the activities of local people and tourists.

ii. Approach

A HSEA is an area where intrusion and pollution will have the worst impact especially on the environment and biodiversity of a MPA. No proper zoning has been gazetted for the Marine Park waters or Marine Park Islands. No clear boundary has been marked or mapped for the Pulau Redang Marine Park. There are also no regulations imposed prohibiting certain activities which threaten the HSEA.

An inventory of the resources in the Marine Park is needed to generate a HSEA map of all areas within Marine Park waters. The findings should include mitigation measures to reduce any adverse impacts from the surroundings that could affect the HSEA.





Photo 3.6 : Highly sensitive environmental area

iii. Management Action

Action 1:	DMPM to identify the HSEAs and map it in the Pulau Redang management system to facilitate monitoring and enforcement activities.
Action 2:	DMPM to survey, identify and locate all marine resources within Pulau Redang marine park waters, and to record and map them in the MPMIS.

3.5 Artificial Reefs Within and Outside Marine Park Waters

An artificial reef is a man-made underwater structure, typically built to attract and induce new habitats for marine life in areas with a generally featureless bottom. Two categories of artificial reef can be considered, based on the location of installation - within and outside of the 2 nautical miles of the MPAs.

3.5.1 Artificial Reefs within MPAs

The purpose of installing artificial reefs within two (2) nautical miles of the MPAs includes:

- i. To foster growth of the ecosystem,
- ii. To serve as a breeding ground for marine life and
- iii. To enhance coral growth.

The artificial reefs within the MPAs are not for

consumption or fishing as these areas are part of the “no take zone”. Instead, the reefs are primarily to produce and enhance marine life habitats for the purpose of tourism. This should be part of the effort to create more attractive dive sites within the MPAs.

3.5.1.1 Approach

All installations of artificial reefs within the two nautical miles should be managed, monitored and maintained by the DMPM office. Aspects related to funding, design, materials and installation of structures should be under the purview of DMPM.

3.5.1.2 Management Actions

The following management actions are strongly recommended:

Action 1:	Record the locations of all artificial reefs installed within the two (2) nautical miles of MPAs.
Action 2:	Review and assess performance of each site as an attractor of and/or breeding ground for various marine life.
Action 3:	To be managed monitored, maintained and safeguarded by DMPM
Action 4:	Use of artificial reefs within MPAs to be confined to tourism activities only.

The inventory of all artificial reefs within the 2 nautical miles must be verified and stored in the MPMIS database. Periodical review of the reefs' performance needs to be conducted, at least once in every two years interval. Strict enforcement of the “no take zone” policy must be enforced and use of these artificial reefs should be limited to non- extractive tourism activities only.

3.5.2 Installation of Artificial Reefs outside MPAs

Installation of artificial reefs beyond the 2 nautical miles is highly recommended as alternative fishing sites for the locals. In addition to fostering marine habitats and alternative sites for local fishermen, the artificial reefs can also serve as a deterrent to illegal trawling activities, which are common in the areas bordering and outside of the MPAs.

A “One Tukun One Community” concept is proposed. Although these areas are beyond the two nautical miles, DMPM's role as lead proponent as well as adviser is highly sought. Other relevant agencies which could render their support include the DOF, JLM, and Lembaga Kemajuan Ikan Malaysia (LKIM).

Under the “One Tukun One Community” concept, each community in a Marine Park Island should be given the opportunity to adopt and manage a certain specified or designated artificial reef. The designated reef should only be used by the adoptee community, for fishing, tourism or any other economic generating activities.

The Pulau Redang community will be encouraged to install and develop their own “tukun”, or to seek support from DMPM, DOF, LKIM or other relevant agencies for such an installation.



3.5.2.1 Management Actions

The following management actions are strongly recommended:

Action 1:	Create an inventory and record the locations of all artificial reefs installed beyond two (2) nautical miles of MPAs.
Action 2:	Conduct periodical assessment of the reefs performance as an attractors of and/or breeding grounds of various types of marine life.
Action 3:	To be monitored and safeguarded by the adoptee (local island villagers and/or the CCC), with the support of DMPM and JLM.
Action 4:	Use of artificial reefs beyond MPAs should be managed by the adoptee community for local consumption and/or tourism only - DMPM to provide a technical and advisory role in the management and use of the reefs.



Photo 3.7 : Regular and periodical assessment of the marine life and coral quality should be conducted to detect signs of stress.

3.6 Tourism

Pulau Redang MPA offers opportunities for tourists and visitors to appreciate the physical, natural and cultural values of the Marine Park Island. The main tourism activities within the marine park waters are swimming, scuba diving, snorkelling and recreational fishing (outside the Pulau Redang MPA). The management goals for tourism are:

- i. To ensure that tourist operations and activities do not negatively impact the ecological or cultural values of the Marine Park,
- ii. To provide for the operation of low impact tourism activities which add

- iii. To encourage locals to take up tourism related activities as an alternative source of livelihood.

3.6.1 Tourism Impact on Marine Biodiversity

i. Purpose

The purpose is to ensure the conservation and protection of marine biodiversity in Pulau Redang through the rational, efficient and sustainable utilization of resources.



ii. Strategy

Guidelines on best practices will be encouraged among resort and dive shop operators to raise their awareness of environmentally friendly practices so that the marine biodiversity is conserved. These guidelines will ensure that resort and dive shop operators adhere to green practices and that their clients are briefed on marine park regulations and are properly supervised during tours or dives.

3.6.1.1 Limit on Visitation to Habitat Protection Zone and Marine Sanctuary

The number of visitors to dive sites will be controlled through mutual agreement among dive shop operators and DMPM. Dive shop operators will also be encouraged to develop a visitation schedule so that no particular dive site will be overly stressed due to too many divers at any particular time.

i. Management Action

Action 1:	Acknowledge all areas zoned as tourism zones, conservation zones and habitat protection and preservation zones.
Action 2:	Jointly decide on the carrying capacity of each tourism site.
Action 3:	Constantly review and detect for signs of stress at each tourism site, and evaluate ecosystem health status.

3.6.1.2 Visitation - Control and Supervision: Tourist operators to register all tourists before taking them to the respective spot/dive area and to report the numbers to DMPM daily.

All divers must have the required diving qualifications. For divers who have been inactive for some time, a refresher course is necessary. All divers on the trips have to be registered with the dive shop for safety reasons. Divers must be accompanied by a dive master. In future, all dive trips must be accompanied by a qualified and registered dive guide once the dive guide programme is launched by MOTOUR. In HSEAs, only advanced divers will be allowed to dive to avoid unnecessary damage to coral reefs by novice divers.

In the case of snorkellers, they must be registered guests of resorts or have registered with a tour company. Each snorkelling group must be accompanied by at least one experienced boatman. In the future, it will be mandatory for all snorkel groups to be accompanied by a marine park/local nature guide (i.e. when sufficient numbers have been trained).

ii. Management Action

Action 1:	Encourage more local youths to be trained as dive masters and local nature guides through programmes jointly organized with relevant dive associations/centres.
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3.6.1.3 Recommendation for special activity charge to enter Dive Zones.

Diving activities are only allowed in dive zones. It is proposed that, in future, all divers pay a dive charge for each dive site visited as recommended by DMPM. The implementation of fee collection will be enforced when DMPM has put into place the legal and operational arrangements. The fee will be used by DMPM for park management purposes.

i. Management Action

Action 1:	Obtain legal standing for collection of specific activity charges.
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3.6.1.4 Green Tourism/Eco rating

Resorts in Pulau Redang will be encouraged to obtain eco-certification. This will be done by increasing the awareness of resort operators of the benefits of environmental best practices to their business. Besides that, eco-certification can increase their competitiveness against non-certified resorts as well as reduce their operating costs. Presently only the Green Hotel award is available in the country. None of the existing resorts in Pulau Redang is a Green Hotel resort.

i. Management Action

Action 1:	Develop an eco-certification scheme as proposed and establish guidelines and certification curriculum and process for eco-certification.
Action 2:	Encourage resort operators to seek eco-certification. This will include: <ul style="list-style-type: none"> i. Working together with the local authority to encourage resort operators to obtain certificate of fitness for their premises. ii. Conducting regular courses or training on environmental best practices. iii. Encouraging resort operators to implement best practices.

3.6.1.5 Tourism's impact on environment

Due to the impact on the environment from the construction of tourism infrastructure as well as tourist activities, environmental awareness has to be increased among the stakeholders. This will entail regular programmes such as workshops and awareness campaigns on best practices, which may include 'no-contact' and 'no-collection' practices, disallowing the use of boat anchors and the use of mooring buoys and prohibition of discharges from boats. Tourist activities that are damaging to the environment will not be allowed while dive and snorkel sites will be clearly demarcated.



i. Management Action

Action 1:	Evaluate all possible development impacts and refer to DMPM before approving any project involving structures in Pulau Redang.
Action 2:	DMPM should be included as a Council member when deliberating approvals of all structural and development projects within and/or near to the MPA.
Action 3:	All physical and/or structural projects within and/or near to the MPA must have an approved Detailed Environmental Impact Assessment (DEIA).

3.6.1.6 Tourist Activities

All forms of tourist activities must be eco-friendly and restricted to demarcated zones. The use of water scooters, paragliding etc. which will pollute the waters or damage fringing corals will not be allowed. Recreational boats must follow a designated route to and from the beaches when picking up or disembarking tourists on trips.

For diving and snorkelling activities, clearly demarcated zones will be enforced where boats will not be allowed to enter or anchor. For both forms of activities, a set of guidelines will be enforced. In the case of snorkellers, this will include the mandatory use of life vests.



Photo 3.8 : There is a need to control the number of tourists congregating on any particular site to avoid congestion.

i. Management Action

Action 1:	Conduct seminars and forums with the respective stakeholders and benefactors to discuss and explain rules and regulations pertaining to the use and management of tourism sites.
Action 2:	Enforcement officers to conduct random checks in popular snorkelling and diving areas to ensure compliance to the specified rules and regulations pertaining to the use and management of tourism sites, and the MPA in general.



3.6.1.7 Awareness and Advocacy Programmes for Tourists

Many tourists to the Pulau Redang MPA are unaware of some of the do's and don'ts in the marine park. Moreover, the wordings on some of the signs have faded. The signs do not attract attention as they are too few in number. To increase the awareness of tourists, the following measures should be implemented:-

- a. Briefings by dive shops, tour operators and resorts on best practices (do's and don'ts in the MPA) before every excursion.
- b. Placement of materials (CDs, brochures etc.) related to environmental conservation in resorts, on the ferry and on flights going into Pulau Redang.
- c. Adequate signage at embarkation points detailing marine park regulations.
- d. Regular clean up campaigns involving tourists, islanders and operators to instil environmental awareness.

i. Management Action

Action 1:	Promote Pulau Redang as a marine park destination with a clear message pertaining to the use and management regulations of MPAs, not just as a mass tourist destination.
Action 2:	Educate tourists, tour agents and operators on their roles and responsibilities in conserving the environment of the Pulau Redang MPA. The importance of the marine park should be stressed in brochures and other promotional materials.

3.6.2 Tourism as a Source of Livelihood

i. Purpose

The purpose of this plan is to provide guidelines to develop tourism in a sustainable manner so as not to jeopardize the very resources that sustain the industry and to ensure the continued economic livelihood of the local population. At the same time, the skills of the local population will be enhanced so that they will be more marketable and economically active in the tourism industry.

ii. Strategy

The strategy employed would be to enhance awareness of environmental issues and best practices. Rules and regulations related to marine tourism, such as tourist zones and types of activities allowed, will be enforced. At the same time, the skills of the local population will be enhanced through training programmes.

3.6.2.1 Individual Development Plan - Locals as Dive Instructors and Dive Masters

i. Objective

The objective of this plan is to provide opportunities for the locals to be trained as dive masters and eventually dive instructors, thus providing a source of income from tourism.

ii. Approach

Suitable candidates will be selected from local residents, particularly boatmen and those already



employed in the various resorts. Regular training sessions will be conducted by DMPM with the cooperation of dive shop operators on the islands. Training will be conducted when enough candidates are available.

iii. Training Programme

The training programme will follow the same model as that conducted by the Profesional Association of Diving Instructors (PADI) or other certified diving organizations. Best practices during dives and aspects related to environmental conservation will be stressed.

Successful trainees can proceed to be registered as certified diving guides under the MOTOUR program when it is implemented.

iv. Financing

Preferably, part of the financing will be borne by the participants. However, in view of the high costs involved, part of the fees can be waived if necessary or some form of loan can be provided to selected participants. This programme can also be financed through sponsorship. Alternatively, the programme initiator can take advantage of financial support from the Technical Training Fund or Majlis Amanah Rakyat (MARA). Another possible option is to apply for funds from the Terengganu State Government for such training.

v. Management Action

Action 1:	Develop local youths as dive instructors and dive masters. Liaise with diver training organization (e.g. PADI, etc.) to arrange for suitable training programmes for interested local youths (and other islands within the MPA). The department must also request for funds to be allocated to run this programme.
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3.6.2.2 Individual Development Plan - Locals as Snorkelling Guides

i. Objective

The objective is to maximize local participation in the tourism industry as a primary income generator.

ii. Approach

DMPM will interview and select prospective applicants from the marine park islands who possess the required qualifications. Successful applicants will undergo training under a team of selected experts.

Successful trainees will be required to apply for registration with the Ministry of Tourism by paying a processing fee and annual registration. These localized nature guides are only allowed to provide guiding services within the particular location stated.

iii. Training Plan

The training programme will be an adaptation of the Localized Nature Guide Course Level II and will last two weeks. DMPM will conduct the training with the assistance of Reef Check Malaysia or any other appointed organization. Aspects to be included in the training are basic guiding skills, soft skills, communication skills, language skills, knowledge on local marine life and best practices for snorkellers. Practical field sessions, written examinations and field presentations will form part of the training programme.

iv. Financing

Preferably, participants will pay part of the cost of the training programme. Payment will be made by DMPM to Reef Check or other organizations running the guide training programme.

v. Management Action

Action 1:	To be Managed in collaboration with other agencies such as the Wildlife Department and the Ministry of Tourism. The department must also request funds to be allocated to run this programme.
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3.6.2.3 Homestay Programme

i. Objective

The objective is to increase the income potential of

the locals in Pulau Redang, either as operators or employees.

ii. Approach

Prospective entrepreneurs/participants will be identified and provided with guidance on how to apply for a business operating license and to seek registration with the Ministry of Tourism. To be effective, the number of homes will be controlled in view of the stringent requirements of the MOTOUR and the limited financial and managerial capacity of the locals. Prospective operators will have to attend a home stay course conducted by the Ministry of Tourism while the renovated homes must be approved by the Ministry of Tourism, Health Department, State Homestay Association and Jawatankuasa Kemajuan dan Keselamatan Kampung (JKKK).

a. Homestay Programme Plan

Under the program, visitors to the island will be accommodated in renovated rooms within a village house. Where possible, visitors are encouraged to participate in the daily economic, social and cultural activities of the villagers, such as consuming local food/delicacies prepared by the host. Approved homestay will display the official emblem of the Malaysia Homestays Programme as well as a letter of approval from the MOTOUR.



b. Financing

Applicants can seek financial support from private and public sources. Participants can apply for funding from the Industrial Development Unit within the MOTOUR to renovate their premises to the standard required by the MOTOUR.

iii. Management Action

Action 1:	To encourage more entrepreneurs and house-owners to participate in the homestay programme. All agencies should collaborate to ensure participants fulfil or meet the specified standards set by MOTOUR.
Action 2:	The Pulau Redang Community Consultative Committee (CCC) shall play a leading role to encourage local house-owners to participate in the homestay programme, and invite MOTOUR and other agencies to facilitate and/or to ensure successful implementation of this programme.

3.6.2.4 Generate awareness on business and economic opportunities

Tourism has direct/indirect linkages with other economic sectors and thus can stimulate new business opportunities or expand existing ones. These include services related to shopping, food, transportation and entertainment. Such opportunities will be identified and developed by the island cooperative.

i. Objective

The objective is to provide assistance in the conceptualization of business and economic opportunities or potential from the tourism industry.

ii. Approach

Pulau Redang CCC and Koperasi Pelancongan Penduduk Pulau Redang Terengganu Berhad (KPP-PRTB) will act as resource agencies that will assist members identify and realize businesses with economic potential.

iii. Management Action

Action 1:	Organize business development discussions and/or invite relevant experts to help identify business opportunities in the tourism industry.
Action 2:	Identify interested local participants and coordinate business development programmes and liaise with relevant agencies to provide training, technical support and funding.

3.7 Local Economy for Survival and Livelihood

Some of the villagers of Pulau Redang depend on the sea for their living. It is therefore important to retain the function of the sea for this purpose. As a tourist destination, there are also other opportunities for the locals to capitalize on. Some see the opportunity but are not able to take what is offered while others may not see them at all. In order to effectively involve the locals in managing their economic survival and livelihood,

there is a need to provide capacity building programmes for them to develop their knowledge and skills. Community-based tourism is a new concept for most local community members, who would become the main stakeholders for the protected area in which they live. Capacity building in this strategic policy option is the improvement of education and skills for community and the stakeholders in the fields of planning, developing, and organizing the tourism business within the protected area. Local communities know about local natural resources, but they lack knowledge about the tourism business. Improvement in knowledge as well as the skills of local community members is highly desired in order to improve management capabilities in protected areas and in the service of community based tourism programmes. Providing appropriate capacity building programmes can effectively increase local community members' participation in planning, designing and managing this type of community based implementation. It can also be effective in raising member awareness as to how important and effective a community based tourism business in a protected area can be.

3.7.1 Purpose

The main purpose of this economic management plan is to provide a management framework and business development guidelines for economic activities that are environmentally acceptable as an alternative means of livelihood for the community of Pulau Redang. The objectives are:

- i. To encourage the local community to venture into environmentally acceptable economic activities.
- ii. To propose a Koperasi that will strengthen community participation in economic activities within the island environment.
- iii. To enhance the socio-economic benefits of the protected areas to the local community.

3.7.2 Strategy

Taking into consideration the needs and resources of the local community, this management plan adopts the following strategies

- i. Community participation in economic activities through the Koperasi;
- ii. Carrying out of business activities as proposed in the business plan;
- iii. Conducting capacity building programmes for local communities.
- iv. Artificial Reefs (outside the MPA).

3.7.3 Establishment and Management of Koperasi Pelancongan Penduduk Pulau Redang Terengganu Berhad (KPPPRTB)



Photo 3.9 : Management Meeting of KPPPRTB

3.7.3.1 Objective

The main objective of KPPPRTB is to generate income for the locals through tourism related activities.

Specifically, KPPPRTB will stimulate the economy of the locals through tourism activities or through the business activities of the local community as stated in the business plan. KPPPRTB will also promote and market the products of the locals to local and foreign tourists.

3.7.3.2 Approach

KPPPRTB will be the economic engine for the local communities to generate their own continuous income and undertake sustainable economic activities. The koperasi will generate revenue to assist the local business community to explore and expand their business operations.

3.7.3.3 Management Action

Action 1:	Establishment of the Koperasi - KPPPRTB was registered in May 2011. Nine (9), Ahli Lembaga Koperasi (ALK) were elected to manage the Koperasi until 2012.
Action 2:	Business Plan - The ALK are responsible to develop a business plan for the Koperasi. For the initial development, they are being assisted by the consultants appointed by DMPM/UNDP. The Koperasi will undertake businesses that have been determined and planned under the business plan.
Action 3:	Membership drive - The ALK is given the task to register at least 50 paying members from Kampung Baru in Pulau Redang.
Action 4:	Finance - The ALK has opened a bank account with one of the local banks. GOM-UNDP/DMPM will disburse a total of RM 30,000 to the Koperasi account as a development grant or seed fund.

3.7.4 Entrepreneurial Development Programme (EDP)

Entrepreneurial development is a process in which persons are injected with the motivational drive for achievement and insight in order to tackle uncertain and risky situations especially in business undertakings. The process of entrepreneurial development focuses on training, education, reorientation and the creation of a conducive and healthy environment for the growth of enterprises. The EDP is an effective human resource development tool. It is designed to help a person in strengthening and fulfilling his or her entrepreneurial motivation by acquiring skills and capabilities necessary for playing his or her entrepreneurial role effectively.

3.7.4.1 Objectives

The main objective of the programme is to develop understanding among the local community and the target group in Pulau Redang about opportunities and to establish new entrepreneurs amongst them. The objectives are:

- i. To expand the entrepreneurial base by assisting new start-up entrepreneurs.
- ii. To enable aspiring entrepreneurs to move forward in their businesses
- iii. To provide opportunities for the younger generation to participate in existing businesses where the owners or operators are due for retirement.
- iv. To help young people to become more entrepreneurial and to consider entrepreneurship as a career path.

3.7.4.2 Approach

The DMPM in collaboration with the CCC will invite the training providers to conduct as many EDP programmes as possible.

- i. The Programme - The EDP programme will be in line with national programmes for the promotion and development of businesses.

The programmes aim to:

- Promote the development of small and medium enterprises that would encourage self - employment among potential entrepreneurs.
- Provide, in the rural areas, special programmes

designed to stimulate new ventures and encourage expansion of the existing activities of small and medium industries.

- Generate employment and self-employment opportunities in the processing of indigenous raw materials for local consumption and export.
- Develop entrepreneurial opportunities for potential entrepreneurs and upgrade managerial skills for existing entrepreneurs.

ii. Management Action

Action 1:	The Pulau Redang (CCC) and the Department of Marine Park Malaysia will identify and determine the necessary programmes and training providers. The available training providers are MARA, Maktab Koperasi Malaysia (MKM), Suruhanjaya Koperasi Malaysia (SKM) and Angkatan Koperasi Kebangsaan Malaysia Berhad (ANGKASA).. KPP-PRTB will identify its members' needs and arrange to send them for training with MKM, SKM and ANGKASA.
Action 2:	The DMPM and CCC will liaise with the respective agencies and invite them to undertake such training in Pulau Redang. KPPPRTB will liaise with MKM, SKM and ANGKASA to train the members of the Koperasi.
Action 3:	DMPM to allocate funds to finance some of the initial training programmes where CCC is the organizer. Funding for future training needs to be sourced.





Photo 3.10 : Training programmes for the local community

3.7.5 Small-scale Industry

There are two small-scale food based activities that are financially viable for Pulau Redang; Bread/bun/cake making and keropok. Two key issues are technical knowhow and finance. On a small-scale, the market is a non-issue.

3.7.5.1 Objective

To develop local entrepreneurs by exploiting the local based tourism driven market by enhancing technical knowhow and the ability to source for financial support.

3.7.5.2 Approach

KPPPRTB is assigned to undertake the necessary steps in identifying the entrepreneurs, business structures,

market and distribution. Under the Koperasi, managing the business becomes simple; manufacturer, distribution and clients can be placed under one roof.

3.7.5.3 Management Action

Action 1:	Two small-scale food based activities (bakery and keropok) have been identified as start-up projects. KPPPRTB to prepare the manufacturing and business plan for the respective activities, and to identify and select the entrepreneurs to undertake the projects. Since the entrepreneurs are cooperative members, KPPPRTB will send them to MKM for the necessary training. KPPPRTB will also become the supplier of raw materials to Koperasi members and operators.
Action 2:	Selected entrepreneurs to identify preferred or suitable sites to operate activities, rent appropriate premises and scout for necessary machinery and equipment. KPPPRTB will assist the entrepreneurs in obtaining loans from SKM or MARA or other agencies to finance the purchase of the machinery and equipment.
Action 3:	SKM/MARA or assisting agencies to monitor the progress of these entrepreneurs and where necessary provide consultancy and support services until the entrepreneurs are able to manage the businesses on their own.
Action 4:	All Government agencies, local community and resort operators should support and promote these activities.

3.7.6 “Satu Kampung Satu Tukun” (one artificial reef per village)

Artificial reefs refers to any structure that people build or put in place on the seafloor, in the water column or floating on the sea surface for the purpose of either creating a new attraction for divers or concentrating or attracting plants and animals for the purpose of fishing. Creating artificial reefs, or “tukun”, for the benefit of the local community on Pulau Redang is one of the economic activities that is likely to assist their livelihood.

3.7.6.1 Objective

To provide alternative fishing sites specifically for the local community's consumption and use.

3.7.6.2 Approach

The approach is to create an artificial reef for each community in Pulau Redang - to offer fish for all purposes while the community has to manage and look after the “tukun”. The community may charge visitors a reasonable rate for fishing, for fish to consume and to manage visitation. They are also responsible for taking allowable action against trespassers and intruders.

3.7.6.3 Management Action

Action 1:	The CCC will identify suitable locations outside of the two (2) nautical mile marine park waters and not near prohibited or restricted zones, for adoption and use by the locals.
Action 2:	The CCC must discuss with DMPM on the suitability of the locations before proceeding with the project to create artificial reefs.
Action 3:	The CCC must obtain the approval of DMPM and/or the DOF before proceeding with the project to create artificial reefs at the specified locations.

3.8 Local Community Consultation and Advocacy

Community Consultation is a central principle in sound planning and decision making. It allows government agencies, especially local government, to make informed decisions about issues that affect the community. Lessons learnt from successful decision-making imply that, in order to stand a good chance of success, decision-making processes have to include local community and stakeholders' participation. Community and stakeholders' participation in decision-making permits easier implementation of initiatives. It allows the mobilization of local resources, whereby divergent interests are reconciled and consensus agreement among all communities and stakeholders is obtained to tackle priority issues. Based on the above discussion, it is clear that the inclusion of the local community and stakeholders in the decision making process is a key element of good governance.

3.8.1 Purpose

To ensure the effective participation and cooperation of the local community in the decision making process on matters related to specific island development and its impact on the community.



3.8.2 Strategy

The strategy of Participation and consultation with the local community varies depending on the goal and anticipated outcome. The following are practical methods that can be used as part of the consultation process involving the Pulau Redang local communities.

- i. Focus group discussions
- ii. Consultative committees
- iii. Community meetings
- iv. Workshops
- v. Public inquiries or hearings
- vi. Advisory committees
- vii. Public forums
- viii. Seminars
- ix. Interviews
- x. Polling and
- xi. Surveys.

Community Consultative Committees (CCC) are usually formed to assist the agency in providing baseline information and to assist the agency in executing consultation with the community.

3.8.3 Community Consultative Committee (CCC), Pulau Redang

The CCC is a consultative forum for the community to raise issues related to the community as a result of development projects. The CCC is represented by the local community; residents and entrepreneurs express general community interests and facilitate cooperation with the respective agencies, including DMPM, in managing marine protected areas. Through the CCC, the community may contribute their resources and ideas to ensure fair decisions are made by the relevant government agencies.

3.8.3.1 Objective

The CCC provides a framework for the community to monitor the development of the island and also address issues on health, safety, social, economic and environmental matter. The objectives are:

- i. To provide a forum whereby local residents can express their views, give feedback, respond, comment on and critique issues related to community needs, livelihood and socio-economic status arising from new or proposed projects, programmes, rules and regulations.
- ii. To provide a forum where government agencies and other interested parties and stakeholders can effectively communicate with the local residents on issues related to their livelihood and socio-economic status.

3.8.3.2 Approach

Establishment of a working committee, whose members comprise elected local residents, that will represent the respective local community in forums, discussions and meetings with public and private agencies and individuals on matters related to their community.



3.8.3.3 Management Action

Action 1:	Establish the Redang Island Community Consultative Committee - Redang CCC was established and formalized in April 2011.
Action 2:	The CCC secretary is required to call regular committee meetings, at least once in four months, to discuss plans and implementation of programmes. The DMPM Terengganu State Director is the department's official representative attending this meeting.
Action 3:	The DMPM will accommodate or facilitate the CCC by providing sufficient office space for the Redang CCC. The department will also provide a meeting room for the CCC meeting.
Action 4:	CCC Committee members are responsible for carrying out decisions made during the CCC committee meetings.
Action 5:	CCC will plan the relevant programmes and activities which include community socialization programmes, island cleaning and beautification programmes, installation and management of artificial house reefs, other specified events or programmes.
Action 6:	Whenever the need arises, CCC will arrange for local participation programmes between the local community and the intended agencies.
Action 7:	CCC shall collect local data and information and store these data in the MPMIS. In the long run, the CCC will become the main information service centre that collects details about the island such as its population, structures, businesses and resources.

3.8.4 Encouragement of advocacy decision making and active local community participation

From the administrative viewpoint, institutionalizing community and stakeholders' participation can build public support and cooperation for involvement in local activities. It can educate the public about activities proposed within their community and their impact on their social, cultural and economic structures. It can also facilitate useful information exchange regarding local conditions. From the citizen's viewpoint, participation enables individuals and groups to influence agency decisions in a representational manner. The residents of Pulau Redang are quite receptive to local participation and consultation, and over the period of three years, their response has improved (Refer to Second Socio-economic Survey Pulau Redang, 2011. (Q12- Appendix 3.02(1a); Table 2 and 3)).

3.8.4.1 Objective

The objective of this management plan is to provide guiding principles on how DMPM and other implementing agencies can engage and optimize local community involvement in the decision making process in proposed projects, programmes, works and services that have an impact on the local community.

3.8.4.2 Approach

Participatory methods should be chosen based on the objectives of the decision making process. The range of methods that can be used include:



- i. Public meetings, seminars and forums
- ii. Consultation, opinion polls, referendums, focus group discussions and surveys
- iii. Consensus, conferences and task-forces and public meetings.

For Pulau Redang, the two most effective methods are public meetings and focus group discussions. The approach is to engage or appoint a consultant to the CCC to organize and lead the meetings or group discussions.

3.8.4.3 Management Action

Action 1:	CCC, with the support and guidance of DMPM, should conduct awareness programmes to educate the community on the need for active community participation and its role in the advocacy decision making process. The CCC should lead and/or represent the view of the community.
Action 2:	Local participation is most effective when there is some financial and technical support as well as strong encouragement from government agencies. DMPM, Unit Perancang Ekonomi Negeri (UPEN), MBKT, Kementerian Kemajuan Luar Bandar dan Wilayah (KKLW) or relevant agencies should consider making some budget allocation to help support CCC's activities.

3.8.5 Establishment of local community platform to serve as “eyes and ears” of DMPM - to help in surveillance and enforcement of Marine Park Rules and Regulations

Enforcement of rules and regulations has always been an issue in Malaysia's marine park areas. The main problem is the shortage of manpower; this is not only faced by DMPM but also other implementing and enforcement agencies. It is even more crucial and critical due to the insufficient number of service boats available to monitor the waters.

3.8.5.1 Objective

The purpose of this management plan is to explore an alternative avenue to ensure maximum surveillance over unlawful activities in marine park waters. The objective is for DMPM to engage the assistance and/or support of the local community in the surveillance of enforcement of marine park rules and regulations.

3.8.5.2 Approach

Local participation in the surveillance and enforcement of marine park area rules and regulations is through the Reef Watchers Programmes.

3.8.5.3 Objectives and Function of Reef Watchers

i. Objectives:

The main objectives of the Reef Watchers are:

- a. To gather intelligence on activities occurring in marine park areas that are adversely affecting the health of the coral reefs;



- b. To encourage members of the community to be involved in the conservation of the reefs and accept the stewardship role of protecting the park's natural resources;
- c. To be the “eyes and ears” for DMPM enforcement of the MPA rules and regulations.

ii. Function

The main function of the Reef Watchers is to observe, record and report activities in the Marine Park area e.g. fishing, diving, coral taking and collection and other illegal activities during surveillance. However no enforcement powers are given.

3.8.5.4 Management Action

Action 1:	In Pulau Redang, Reef Watchers has already been established and formalized. Members are local volunteers. This voluntary body is now working closely with the management of the DMPM, Terengganu office.
Action 2:	Selection of Reef Watchers - The following are the prerequisites of a reef watcher: <ul style="list-style-type: none"> i. Reef Watchers shall be selected from the local community and be respected community-minded individuals with a high level of awareness and concern for the protection of their marine ecosystems. Reef Watchers should have good communication skills; ii. Reef Watchers should have the ability to file surveillance reports, in accordance with the format prepared by DMPM.
Action 3:	Institutional Structure - The Reef Watchers would be directly under the command and control of the Surveillance & Enforcement unit of DMPM.
Action 4:	Training - Reef Watchers (RWs) shall be trained by the national or state or S & E unit with the assistance of consultants in various aspects of observation, recording and reporting. They will also be trained on how to provide information to S & E unit on illegal activities in the Marine parks. RWs will also be trained in public speaking, public relations, radio communication, maintenance and operation of equipment.
Action 5:	DMPM - to develop and introduce a standard format for community reporting purposes. DMPM also to train the reef watchers on the reporting procedure and process.
Action 6:	Register - All reef watchers who have completed the relevant training will be registered before they can undertake surveillance exercises. The license shall be issued by the S & E Unit of the DMPM.
Action 7:	Incentives - DMPM shall consider and propose some incentives and/or rewards as compensation for Reef Watchers.
Action 8:	Equipment - DMPM is to plan and request the budget for acquiring the necessary supporting equipment for Reef Watchers. The necessary equipment for S&E operations includes boats with an outboard engine of 10 - 15 hp, VHF radio/walkie-talkies, binoculars, cameras, global position systems (GPS), life jackets, rain coats/windbreakers, torch lights and batteries, scout knives and caps.



3.8.6 Public display of Marine Park Management Plan in DMPM's Pulau Redang Marine Park Centre

The Marine Park Management Plan is the primary document that outlines what actions, services and works are to be undertaken to achieve a sustainable future for Malaysia's marine parks and how these actions, services and works will be implemented. The document provides details on proposed programmes, projects, works and services to be undertaken by the respective agencies that will affect not only the physical development but most importantly the social, cultural and economic livelihood of the community.

Public opinion, ideas and comments are the ingredients of this marine park management plan. Extensive consultation will be carried out involving local communities and business operators, local residents, operators originating from other parts of Malaysia and foreigners. The plan has been developed, based partly on feedback, input and comments from the communities.

3.8.6.1 Objective

The purpose of putting the management plan up for public review is to inform the respective communities of programmes, projects, works and services that have been planned to conserve marine biodiversity within their marine park areas. The objectives are:

- i. To enable the public to view and comment on the proposed programmes, projects, works and services

This will provide an avenue for the respective agencies to review and reconstruct the proposed programmes, projects, works and services to meet community expectations, where appropriate, while

continuing to retain the need to conserve marine biodiversity.

3.8.6.2 Approach

To meet the above objectives the following approaches are going to be applied:

- i. Display the Marine Park Management Plan at public areas accessible by the residents and the business community, including other stakeholders, over a period of one month for comments, objections and counter proposals; and
- ii. At the same time conducting of public seminars and forums to allow the public access to further explanation and direct expression of opinions.

3.8.6.3 Management Action

Action 1:	Discussion with CCC - DMPM should present the draft management plan to the committee members of the CCC. DMPM must address the relevant issues highlighted and the comments made by the CCC before the management plan is issued to the public for comment and review.
Action 1:	Public Display and Public Forum - The management plan is accessible to the public and will be put on display at the Marine Park Centre. DMPM will conduct public forums to explain to and receive direct feedback from the public. The department will identify the appropriate location to display the management plan.



3.9 Scientific Research

Pulau Redang is one of the marine park islands in Malaysia popular among researchers; local and foreign. One of the urgent issues related to research activities taking place in marine park waters is uncontrolled activities which result in damage and destruction of marine resources and habitats, especially corals.

3.9.1 Purpose and Objectives

The purpose of encouraging scientific research is to build a systematic knowledge database of marine park resources, to understand the impact of global climate change on marine biodiversity, and to apply the findings of scientific research in protecting and conserving the environment within marine park areas. The aim of the research management plan is to enable DMPM to identify and prioritize research needs to protect and preserve marine biodiversity and its values.

The main objective of managing research activities is to ensure all research is undertaken with environmental best practices in mind to avoid or reduce incidences of marine resources being destroyed or abused unnecessarily. The objectives are:

- i. To manage, coordinate and monitor research activities within marine park areas.
- ii. To prepare and provide guidelines on research activities
- iii. To identify and prioritize research needs to protect and preserve marine biodiversity.
- iv. To record, compile and store all research activities and findings.

3.9.2 Strategy

The research management strategy is to make it compulsory for all researchers to apply for research permits before undertaking research activities within Marine Park Areas and to submit their research findings to the approving authority, DMPM.

3.9.3 Coordination and monitoring through research permits

- i. All research activities within the marine park require DMPM permission before commencement
- ii. The applicant must submit a research proposal that includes mitigation measures for the adverse impacts of the research activities on marine biodiversity for the entire duration of the research and for all phases of the research
- iii. Successful applicants must then apply for a permit from DMPM before they can proceed with the research
- iv. DMPM to issue research permits to successful applicants
- v. Research activity can only start once the proposed research is given a permit by DMPM
- vi. Permit Duration: 3 years duration with an option for extension



3.9.3.1 Management Action

Action 1:	All research work within MPAs requires a permit. DMPM Research and Resources Inventory Division to develop research application procedures and a research control and surveillance mechanism.
Action 2:	DMPM Enforcement and Licensing Division to develop a practical system to receive, process and approve permit applications by researchers. The division is also to develop control and surveillance procedures and a system to monitor research activities.
Action 3:	DMPM to establish a research approval panel to evaluate and approve applications to undertake research activities within the MPA. The department may incorporate external professionals as panel expert.

3.9.4 Research Proposal

The proposal must (amongst other criteria subject to DMPM) include:

- i. The purpose and need to conduct the specific research in the specified marine park area.
- ii. Measures to mitigate probable negative impact on marine life and the environment.
- iii. How the research can contribute to the enhancement of marine life and the public good.
- iv. Assessment on impact of research activities on marine biodiversity and the environment

3.9.4.1 Objective

To record, compile and store all research activities and findings.

3.9.4.2 Management Action

Action 1:	All research permit applications must be accompanied by a research proposal.
Action 2:	DMPM Research and Resources Inventory Division to develop guidelines and checklist for research proposal to be submitted with application.
Action 3:	Prepare research application guidelines (and/or manual) including application charges or fees imposed.

3.9.5 Research Zone

DMPM, as the approving authority must;

- i. Manage research activities through zoning. Thus DMPM must establish a research zone within the specified MPA.
- ii. Identify the type and level of research activities permissible within the zone.

3.9.5.1 Management Action

Action 1:	All research applications must specify the exact work location, which is subject to approval, enforcement and monitoring by DMPM.
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3.9.6 Product and Output

DMPM will monitor the activities of the researcher. If he or she fails to comply with the guidelines or to undertake mitigation measures for the negative impact on marine biodiversity, DMPM will exercise the right to issue a stop work order.

3.9.6.1 Management Action

Action 1:	All research products, findings, reports, data and other output must be shared and submitted to DMPM, which in turn must compile and collate all output in a systematic database.
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3.10 Awareness and Education

Education and awareness programmes, for local and visitors alike, are deemed a very important and necessary part of the management plan for the parks. One of the strategies to achieve management goals and their strategic objectives is through education. Public education is provided through the production and distribution of printed material, face-to-face contact, public events, educational displays, media and public forums. In order for these materials to be effective, the development of a formal Education and Outreach Plan is necessary. Such development should begin immediately and should be continued until the local communities and the public at large are familiar with the do's and don'ts while being on Pulau Redang. Over the three years the study team was with the villagers of Pulau Redang, a significant change was observed in local community perceptions toward Marine Park rules and regulations and the DMPM perspective of developing their island and community.

i. Purpose

The plan aims at enhancing public and user awareness of marine park values. The main purpose is to improve public awareness, understanding and appreciation of the marine and coastal environments of the Marine Park within Pulau Redang and of the potential impacts of human activities on these environments. Through public education, the plan aims to reduce the negative impacts of human activities on the values of the Marine Park and engender community stewardship of the marine environment.

ii. Approach

The awareness generation plan is managed through the educational approach via multiple modes; direct impact promotions, social media and indirect impact. The subjects are tourists and visitors to Pulau Redang and other marine parks and the general public. Whether they are potential visitors to Pulau Redang or not, the approach still targets them as the audience.

3.10.1 Setting up of Pulau Redang Marine Park Discovery Centre

i. Objective

The objective is to promote conservation by increasing awareness and understanding of the marine and coastal environment.

ii. Strategy

Pulau Redang Marine Park Discovery Centre will assist people of all ages to discover the wonders of the marine environment within Pulau Redang marine park waters. The centre's role is to organize and manage programmes that will



inspire and enable people to explore and understand the sea and the coast first hand.

iii. The Programmes

Among other events, the centre will organize and manage the following;

- a. Marine outreach programme - visits to primary and secondary schools and institutions of higher learning to introduce and educate our students about quality marine education; not only about what the Pulau Redang Marine Park has to offer but also about the need to observe and comply with marine park rules and regulations. This understanding will enable them to understand the need to conserve and preserve
- b. Community Education and Awareness Programme - This programme is intended to educate the locals on the need to conserve and preserve marine habitats and their biodiversity. It aims to build local awareness of the advantages of conserving Pulau Redang marine resources.
- c. Promotion on Quality Marine Environment - This programme aims at creating awareness among visitors and tourists to Pulau Redang on the need to conserve Pulau Redang marine habitats and biodiversity in order to ensure a quality marine environment for them to enjoy.

The centre will also provide the following services and facilities;

- a. Interpretation Centre representing Pulau Redang's biodiversity including a habitat specific aquarium, interactive touch tank and marine classroom.
- b. Marine Science Laboratory - this lab will be sponsored

- by a reputable corporation.
- c. Guided field and indoor activities providing hands-on experience.
- d. Special programmes for children in the primary school, secondary and tertiary students.
- e. School holiday and specific interest group programmes
- f. Other activities tailored to the needs of the participants or organizers

The centre will also operate a special gift shop that not only stocks recreational and educational gifts and souvenirs but also a range of educational publications and marine text books

iv. Management Action

Action 1:	A Pulau Redang Marine Park Discovery Centre is proposed, to be managed and operated by the Pulau Redang CCC or KPPPRTB. This programme has the capacity to generate income for the operator. In addition to entrance fees, income can also be generated from souvenirs and gifts as well as through sponsors and advertisements.
Action 2:	Acquire a sufficient start-up fund to cover initial expenses.

3.10.2 Public Outreach and Education

Public outreach and education campaigns are intended to generate awareness among the target group about the marine environment. An appropriate approach to education for environmental awareness is through teaching visitors, students, developers, residents and providers of tourist services how to enjoy their recreational activities in an environmentally friendly



way. Some of the activities are mentioned in 3.10.1. The following are other appropriate activities for reaching and educating the public.



Photo 3.11 : Map view of Pulau Redang

3.10.2.1 Billboards/Signage

Some of the billboards and signage in Pulau Redang are overdue for replacement. New billboards and signage are proposed. Besides updating information, billboards and signage located at strategic locations will provide visitors and tourists with basic information on the island and the do's and don'ts while visiting.

i. Management Action

Action 1: Provide clear and visible billboards and signage to mark entry points to marine park areas as well as “do and don'ts” signage throughout the marine park island, to be located at all jetties, public beaches and resort areas.

3.10.2.2 Brochures and Pamphlets

The DMPM and Pulau Redang Development Authority will take the initiative to print information and educational materials on Pulau Redang Marine Park to be distributed to all visitors and tourists. Besides placing the brochures and pamphlets at the entrance gate; i.e. all jetties to Pulau Redang and Pulau Redang airport, the brochures and pamphlets will also be distributed at other local airports, and by tour and travel agents and tourism promoters. The hotels and resorts will also print their own brochures and pamphlets with similar information and educational materials on Pulau Redang Marine Park.



i. Management Action

Action 1:	Attractive but informative brochures and pamphlets to be distributed in all strategic or accessible locations (e.g. hotel rooms, ferries and flights, travel agents, online websites, marine park fee collection counters and other locations attended by potential visitors).
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3.10.2.3 Marine Resources and Educational CD

The DMPM Terengganu State office is to develop an educational and informative CD on Pulau Redang Marine Parks. The CD is to be distributed to boat operators, resorts and hotels, tour and travel agents. DMPM will seek the cooperation of all receivers to play the CD as regularly as possible. Passenger boat operators plying Pulau Redang and the mainland will play the CD on board and Subang Airport will play the CD a couple of times before the departure of flights to Pulau Redang. The DMPM Terengganu State office may also invite sponsors to advertise in the CD.

i. Management Action

Action 1:	Educational, informative and interactive CD to be distributed to schools, libraries, ferry operators, for in-flight entertainment and to other suitable locations where this media can be made use of.
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3.10.2.4 Public Outreach Programme - Direct Approach

The following are among the programmes to be conducted by DMPM between 2012 and 2015.

- i. Public Event - DMPM will jointly organize cleaning and beautification programmes with MBKT on an annual basis. The other public sector agencies will also participate in this program. Pulau Redang CCC will lead local communities in term of Pulau Redang participation. The first event will be scheduled in 2013. Public and private corporation participation is encouraged, especially as sponsors.
- ii. Educational and Awareness Forum - In 2013, DMPM will organize an educational and awareness forum involving representatives from all resorts and hotels, regular tour and travel agents to Pulau Redang and committee members of the Pulau Redang CCC and KPPRTB. The key goal of this forum is to generate awareness among participants on the need to ensure visitors and tourists understand the need to conserve and preserve the marine habitat and biodiversity and the role they can play to assist DMPM manage the conservation exercise. This forum will be an annual event.

i. Management Action

Action 1:	Organize and manage the cleaning and beautification event in Pulau Redang.
Action 2:	Organize educational and awareness forum.



3.10.2.5 Social Media - Internet Promotions

This is the most recent and most effective mode of educating public on awareness. It refers to the use of web-based and mobile technologies to turn communication into an interactive dialogue. Social media take on many different forms, including magazines, internet forums, web blogs, social blogs, micro blogging, wikis, podcasts, photographs or pictures, videos, ratings and social bookmarking. Current popular social media in Malaysia are facebook, twitter and blogs.

i. Management Action

Action 1:	Use of social media as a medium for promoting marine parks and inculcating awareness of the need to conserve and preserve marine biodiversity.
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3.10.2.6 TV and Radio Programmes

Television and radio programmes can be effective mediums of communication. TV and Radio programmes reach almost every home in Malaysia, and via satellite - they could very well reach a worldwide audience.

While programme development can be expensive, government based TV stations could help reduce the air time costs.

The development of documentary programmes for national interests such as Marine Parks could also be extended to private producers. Invitations to scientific

research or scientific documentary producers such as National Geographic could also broaden the target audience.

There are three approaches to educating awareness through television and radio; advertisements, forums and dramas.

i. Management Action

Action 1:	Greater use of documentary, short docudrama, series, cartoons, forums and advertisements to promote marine parks and to inculcate awareness of the need to conserve and preserve marine biodiversity. These media products can also be displayed in cinemas, on outdoor electronic boards, and the like.
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3.11 Enforcement

3.11.1 Goal

The goal is to enhance the capabilities and effectiveness of the surveillance and enforcement activities in marine park waters and the enhancement, management and protection of marine park resources.

3.11.2 Objective

- i. To provide a standard mechanism for ensuring the delivery of monitoring, control and surveillance (MCS) operational directives for national and field officers.
- ii. To ensure complete training and standard operational procedures for implementation of the National Action Plan for



the Management of Coral Reefs in Malaysia (DMPM, 2008) in accordance with the laws.

3.11.3 Purpose

To understand legislation principles of arrest, investigation and prosecution for effective activities

3.11.4 Operational Manual and Guidelines

The Operational Manual and Guidelines includes detailed descriptions of Standard Operation Procedures (SOP), equipment requirements, detailed guidelines and standards for patrolling, reporting, recording, monitoring and evaluation, staffing and training.

The manual was developed with full consideration of field conditions to ensure the flexibility and efficiency of surveillance and enforcement operations. The manual was tested and accepted in a special workshop attended by Heads of DMPM Divisions, prosecutors, senior enforcement officials from DMPM and other related agencies.

3.11.5 Framework

The manual is based on the following specific subjects:

- i. Standard operations and administration
- ii. Practical Training (Sea Exercise)
- iii. Legal references

This Operational Manual and Guidelines needs to be reviewed on an annual basis.

3.11.6 Enforcing No Fishing Rules and Regulations

In practice, the effectiveness of an MCS system in ensuring compliance with the law will depend very heavily on whether or not it provides appropriate mechanisms to facilitate this task. The Fisheries Acts 1985 clearly define the provision of no fishing in marine parks. The provisions are supported by the terms and conditions of other fishing gear regulations. This is to ensure enforcement officers can exercise all of the powers available in strengthening existing sanctions and extending the range of compliance mechanisms. The scope of the relevant provision in the acts and rules and regulations is sufficiently wide to regulate the no fishing activity in Marine Park Waters.

i. Management Action

Action 1:	The DMPM Enforcement and Licensing Division to organize regular training to update enforcement officers on rules and regulations, enforcement techniques and safety.
Action 2:	The State Director needs to review compliance on the SOP by enforcement officers especially when there are obviously many offenders of the no fishing rules and regulations.

3.11.7 Enforcing User Charge Fee (Collection and violation)

One of the sources for obtaining money to fund marine park activities is to collect money from the general public as payment for services provided by DMPM. The Ministry of Finance (MOF) issued a fee regulation pertaining to how much fee can be collected per visitor. As it is now, the fee for an adult is RM5.00 and a child RM2.00 to enter the marine park area. The fees collected will be treated by government revenue.



At present, the collection of fees is confined to airports and jetties only. Collection is not carried out at other designated places due to the non-existence of security and collecting offices, these places are considered free for visitation to the marine park area (by visitors and tour agents). Establishing more collecting points efficiently and providing more effective ways to overcome the problem is needed.

i. Management Action

Action 1:	DMPM needs to review related proposals/studies on the user charge fee commissioned by the Economic Planning Unit (EPU) and MOTOUR.
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3.11.8 Manpower and Equipment

In order to be able to carry out enforcement works, there must be enough patrol boats, facilities, and manpower. To date DMPM has an enforcement strength as shown in the table below (DMPM, 2010)

Table 3.2: DMPM enforcement strength

Site	Manpower	Patrol Craft	Bases
Terengganu - Pulau Redang	24 persons	4 Units	1 mainland- KT 1 Pulau Redang
Pahang -Tioman	22 persons	5 Units	1 Mainland - Tg Gemuk 1 Pulau Tioman
Johor - Sibul/Tinggi 1 Pulau Tinggi	23 persons	4 Units	1 Mainland - Mersing

To improve long term marine park management and development an additional sixty enforcement personnel are needed as follows:

Table 3.3: Recommended additional enforcement personnel

Site	Manpower
Terengganu - Pulau Redang	20 persons
Pahang -Tioman	20 persons
Johor - Sibul/Tinggi	20 persons

3.11.9 Enforcement Training

The enforcement training plan developed as part of this project has dealt with immediate requirements for training to facilitate implementation. It remains to modify and continue training as appropriate, as part of the routine. Development and implementation of the Monitoring, Control and Surveillance and Enforcement system generally requires training in these areas:

- a. Training in legal aspects
- b. Training in application of SOP
- c. Integrated sea operation training (practical)

i. Management Action

Action 1:	The MCS enforcement operation manual has been developed and published. DMPM will be using this as a tool for the management of training programmes to develop the skills as well as knowledge of enforcement officers.
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Photo 3.12 : Capacity building in enforcement management

3.11.10 Enforcement of Safety Equipment Requirements

For the safety of the enforcement personnel and vessels, and to comply with the rules of life saving appliances under the Merchant of Shipping Ordinance, vessels shall carry life jackets, life buoys, line throwing and appliances according to the classes in which the vessel are arranged. Equipment such as life jackets to be used by enforcement personnel are spelt out in the standard operation procedure for boarding and inspection. The rules for life saving appliances shall be deemed to be in force in the prevention of collisions. It is the duty of the owner or the master to carry lifesaving appliances in accordance with the rules for securing safety of the officers and crew.

i. Management Action

Action 1:	The State Director to conduct regular check up on all vessels for compliance to the rules of life saving appliances under the Merchant of Shipping Ordinance and to take appropriate measures whenever necessary.
Action 2:	The State Director to ensure all enforcement officers are aware of, comply with, and understand all rules and regulations related to safety and compliance with the standard practices and SOP.

3.11.11 Role of Voluntary Bodies and Volunteers in Enforcement of Marine Park Laws, Rules and Regulations

The Monitoring Control Surveillance (MCS) systems need to be developed with regards to growing trends in the devolution of government authority and community participation in management.



i. Management Action

Action 1:	The DMPM to introduce education and public awareness components to promote voluntary compliance. The Pulau Redang CCC to be given the task to implement this.
Action 2:	Reef Watchers Programme: DMPM State office to institute reef watchers programmes that follow the same general principles as the observer programme to observe, record and report, but to take no direct enforcement action. Individuals participating in watch programmes should not have enforcement authority. Personnel would be utilized in an observation, 'no force' role to provide information to the community and authorized law enforcement personnel who will take appropriate follow-up enforcement action. DMPM to look into the possibility of protection of individuals assigned to the Reef Watchers programme being included in the legislation.



Photo 3.13 : Community participation - Reef Watchers as the "eyes and ears" of DMPM

3.12 Structures

Man-made structures cause both detrimental and beneficial impacts on the environment. Detrimental effects may occur during construction, operation and decommissioning. These may include physical, chemical and biological impacts such as alteration of water circulation and sediment movement patterns, habitat loss, increased turbidity and siltation, shading, eutrophication, release of toxic substances and changes to natural species composition. Beneficial effects include the provision of habitat for fish, invertebrates and plants. Human benefits include opportunities for tourism activities and public safety. Social and cultural impacts may include alienation of other users from a site or loss of aesthetic value. Of importance is the detrimental effect/impact of such structures on marine life.

Structures can include marinas, groynes, jetties, underwater observatories, boat ramps, pipes, artificial reefs, kelong, stinger nets, pontoons, navigation aids, aquaculture facilities, moorings and Fish Aggregating Devices (FADs). In future it may include helipads and runways. In Pulau Redang Marine Park waters, the structures of concern are jetties, pontoons and boat ramps. The issue of recreational artificial reef has been addressed in the earlier section since it is to be located outside marine park waters.

Structures in marine park waters provide opportunities for tourism but may have the potential of direct and indirect environmental damage as mentioned earlier. Of greater concern are structures that damage corals during construction and operation, including maintenance.

Some structures in marine park waters, such as jetties, are necessary though others, like kelong, are not. There is a need to control such structures and demolish others.

3.12.1 Purpose

The purpose of this plan is to provide a transparent, consistent and contemporary approach to the management of the environmental impact of structures in Marine Park Areas. The aim is to undertake the proper establishment, control, care and development of structures within marine park areas to ensure a sustainable marine park environment.

3.12.2 Strategy

The strategy is to manage, control and monitor structures through the issuance of permits.

3.12.3 Management Action

DMPM will audit existing structures within the Marine Park areas to ensure compliance with the guidelines. All new structures within the Marine Park areas must be approved by DMPM.

3.12.3.1 Permits

- i. All proposals for any form of construction or structure within or near to the marine park waters require special permits.
- ii. Proposals for structures (and locations) will be assessed in accordance with the environmental guidelines for coasts and islands as set by DID or JKR. Only approved structures are allowed to be erected or constructed

3.12.3.2 Design

- i. Structures must be practical, and designed and sited so as to avoid impacts on sensitive environments.
- ii. All construction must follow the guidelines and controls as specified by JPS, DOE, JKR, JPBD and the Cabinet Committee on Highlands and Islands (CCHI). A certain minimum distance or buffer between structures and sensitive environments is required.
- iii. A risk based design is advocated. This means that the design of the structure should be appropriate to the risk associated with failure
- iv. All materials used in the construction, operation and maintenance of the structure should be the most environmentally friendly available. Toxic compounds such as anti-fouling paints containing tributyltin must not be used
- v. Environmental Impact Management Plans and appropriate on-site clean-up equipment will be required for structures where fuel or any other hazardous substances are stored
- vi. Applications for approval of structures must be submitted with the DEIA report

3.12.3.3 Unpermitted Structures

- i. Owners of unpermitted structures must ensure that the structures are permitted

by obtaining permission from DMPM. They will have to apply for approval for the structures, otherwise the structures must be removed.

- ii. DMPM and MBKT will remove or demolish all unpermitted structures if owners fail to apply for permission or obtain approval for them before the end of 2013.
- iii. DMPM will identify and determine the owners of structure and charge them for the cost of removing or demolishing the structure.

Action 1:	Charge - It is recommended DMPM impose a non-refundable permit processing fee and annual permit renewal fee, amount to be determined and approved by DMPM and relevant authorities.
Action 2:	Approval Panel - DMPM will form an assessment panel to evaluate applications for structures. The members of the panel shall also include representatives from the DOE and JKR.
Action 3:	Application Guidelines - DMPM is to prepare the application guidelines (and forms) and procedures to be followed by applicants.



Pulau Redang

Marine Park Management Plan

Implementation and Monitoring of Management Plan

4



4.0 IMPLEMENTATION AND MONITORING OF MANAGEMENT PLAN

4.1 Key Role of Department of Marine Park Malaysia (DMPM) in implementing the Management Plan

The DMPM is the lead agency in the management of the Marine Park Management Plan (MPMP). While enforcing the respective rules and regulations under the Fisheries Act 1985, DMPM will also take the lead to assist the local community, according to its capacity, in enhancing economic livelihood. The department's key roles are;

- i. Protect aquatic flora and fauna;
- ii. Protect, preserve and manage the natural breeding grounds and habitats of aquatic life;
- iii. Preserve and enhance the pristine state and productivity of such areas;
- iv. Promote scientific study and research;
- v. Regulate recreational and other activities to avoid irreversible damage to the environment;
- vi. Zoning - classify the Marine Park or part thereof according to management/activity zones.
- vii. Mitigate any natural or manmade damages

4.1.1 Objective

The objective of this section is to provide implementation guidelines for DMPM to implement the MPMP for the respective islands.

4.1.2 Managing and Implementation of Zoning Plan

The Zoning Plan (as described and elaborated in Section 3.1) serves as an area management tool. It is not a legal document nor will it be gazetted.

Pulau Redang is relatively small as compared to other MPAs around the world (e.g. the Great Barrier Reef of Australia, the Chagos Marine Protected Area of British Indian Ocean Territory, or the Galapagos Marine Reserve of Ecuador to name a few). Thus the delineated zones within Pulau Redang are more site specific. The delineated zones can be considered according to micro level area management. Since the zoned areas or pocket of zones are

small, there is a higher likelihood of intrusions. This would require detailed and more rigorous management actions.

The zoning plan requires the following management actions:

Action 1:	Public display of the Zoning Plan as a means of public participation
Action 2:	Installation and maintenance of clear boundary markers at all areas zoned under Tourism, Conservation, and Preservation.
Action 3:	Installation and maintenance of a suitable mooring point or points within the Tourism Zone to be designated as dive sites and/or snorkelling sites.
Action 4:	Installation and maintenance of suitable signage related to the Marine Park Areas and the related zones.



The zoning plan must be appreciated and accepted by the locals and other stakeholders. Public presentation and announcement of the “zoning plan as a management tool” needs to be conducted by DMPM.

4.1.3 Managing Visitation

The DMPM is responsible to manage visitation to marine water tourist spots. By defining the visitation carrying capacity of each spots, DMPM must ensure that at any particular time the numbers of visitors does not exceed the optimum capacity for the area. DMPM must also determine the maximum number of tourists/visitors a guide can take to a destination to ensure better supervision and safety (especially to marine resources and their biodiversity)

4.1.3.1 Approach

- i. Agents and guides are required to report their visitation schedule and the number of tourists/visitors to DMPM before proceeding to the proposed spot.
- ii. DMPM must conduct regular checks on the said site to ensure compliance.

4.1.4 Enforcement of Marine Park Rules and Regulations

Enforcement is the basic function of DMPM. In terms of the implementation of the Marine Park Management Plan (MPMP), the following are the key roles of the department.

- i. Enforcing all laws and rules pertaining to the Marine Park.
- ii. Carrying out investigation activities before each operation is carried out.
- iii. Supervising and monitoring the implementation and enforcement of rules and procedures.

- iv. Monitoring boat trips and patrolling activities in all Marine Parks.

4.1.4.1 Approach

- i. Regular and periodic patrols of popular tourism destinations, and
- ii. Establishment of volunteer bodies to assist DMPM in surveillance activity.
- iii. Increased presence of DMPM staff on the ground.

4.1.5 Collection of Conservation Fee and Charge Fee

DMPM is responsible to collect Conservation Fees and User Charge Fees.

4.1.5.1 Approach

- i. Collection of Conservation Fees at point of disembarkation - i.e. at ferry terminal or airport
- ii. Collection of User Charge Fees (i.e. dive fees) - through dive agents

Immediate Action - Define Conservation Fee: DMPM is to define the legal aspects of the Conservation Fee to Marine Park.

4.1.6 Issuance of Permits by Research Division

A permit is required for any research projects and activities within Marine Park waters. Thus, DMPM is responsible to issue permit to research projects that have been approved.



4.1.6.1 Approach

- i. To study proposal papers from research institutions, private bodies, universities, NGOs and other parties who are interested to carry out studies in the Marine Park.
- ii. To approve or reject the proposed research projects.
- iii. To impose reasonable conditions on the party that carries out the research activity.
- iv. To issue permits to research projects that have been approved.
- v. To collect and manage deposits and fees imposed for the permit.
- vi. To supervise, record and monitor research project progress to ensure that it follows the legitimate procedure stated in the issued permit

DMPM is also responsible to revoke any permit issued.

4.1.7 Registration

Records of all operators and tourist guides who undertake activities within Marine Park waters must be registered with DMPM; including boat operators, ferry services operators and water-based activity agents (diving and snorkelling).

4.1.7.1 Approach

- i. To keep records of all operators that operate within Marine Park waters
- ii. To ensure that only registered operators operate within the Marine Park

4.1.8 Facilitating Economic Activities and Social Programmes

As the key manager of the Marine Park, DMPM will facilitate initiatives to improve the island community economy and social well-being.

4.1.8.1 Approach

- i. DMPM to be included as a member of the planning committee on State Structure Plans, Local District Plans and Special Area Plans where Marine Parks are involved;
- ii. DMPM to lead and supervise the respective communities on the 1 Village 1Tukun Programme;
- iii. DMPM to hold regular dialogues and discussions with the CCC on matters related to community social development programmes and economic well-being;
- iv. DMPM to advise tour operators on matters related to trips and visitations to popular island spots;
- v. Assist local community on economic activity related programs to improve their livelihood and wealth; boat services and guide, dive instructor training and licensing, cooperative training (MKM and SKM) and special programs for home-stay activities; and
- vi. Engagement of consultants or volunteers to assist DMPM on the above activities.

4.1.9 The Main Function of DMPM - Protect, Preserve, Rehabilitate and Conserve Marine Biodiversity

This is the most important role of the DMPM. The department will ensure the respective programmes and efforts described in the management plan are carried out diligently.



4.1.9.1 Approach

- i. Zoning
- ii. Biological, physical and chemical monitoring
- iii. Conservation or Rehabilitation programmes (e.g. Coral restoration)
- iv. Permanent transect establishment
- v. Field Data
- vi. Cooperation with Research Organisations
- vii. Scientific and technology oriented observation of monitoring programmes.

4.1.10 Monitoring and Assessing Performance

As the manager and lead agency in implementing the MPMP, DMPM will also be tasked to monitor the development of all programmes and recommendations of the MPMP.

4.1.10.1 Approach

- i. Updating the MPMIS
- ii. Continuous and regular surveillance activities
- iii. Regular dialogue and discussion with CCC and the local community
- iv. Inter-agency dialogue and meetings (especially involving DMPM, MMEA, DOF and MBKT)
- v. Periodic Review of Performance Assessment and Indicators;

4.1.11 Managing Marine Park Trust Funds

Fees and charges collected from various sources will be kept in a trust fund as required by the law and regulations. DMPM will be the caretaker and manager of the fund. The fund shall be utilized for the following purposes;

4.1.11.1 Approach

- i. Rehabilitation of marine resources
- ii. Social programmes for the local island community
- iii. Improvement of economic and social well-being of the local island community
- iv. Research that may improve marine habitats
- v. Marine Park promotions and awareness programmes
- vi. Scholarships and education assistance
- vii. Monitoring of marine park status/ conditions
- viii. Emergency or urgent mitigating remedial work
- ix. Improvement of visitor facilities (e.g. public toilet)

4.2 Financing Conservation of Marine Biodiversity

4.2.1 Purpose

This section provides alternative approaches to financing activities and programmes to conserve marine biodiversity within the Marine Park. Proceeds from fees will be credited into the Marine Park Reserve Trust Fund established under Section



10, Financial Procedure Act 1959 and will be used for the implementation of management, conservation, protection, enforcement, research, monitoring and education programmes within the Marine Park areas.

4.2.2 Strategy

There are a number of approaches to collecting funds to finance activities and programmes related to the conservation of marine biodiversity. The strategy, thus, is to capitalize on these options and maximize the collection of funds through various means.

4.2.3 Approach

Apart from Government grants and development funds, among the practical methods to collect funds related to the Marine Park area are;

- i. Conservation Fees
- ii. User Charge Fees
- iii. Licenses and Permits
- iv. Sponsors/Donors

4.2.3.1 Conservation Fee

The conservation fee is a charge imposed upon all visitors to Marine Parks in Malaysia where proceeds from the collection will be used towards the management and maintenance of the Marine Parks and also the facilities provided for the convenience of visitors. The fee shall be paid to DMPM through Department appointed operators, namely all approved transport operators. Visitors are advised to collect and keep their tickets throughout the validity period as proof of payment.

i. Management Action

Action 1:	Conservation Charge - all visitors shall pay a fee, known as the Conservation Fee, for entering Marine Park Areas in the state of Terengganu, including Pulau Redang. The entrance fees are:						
	<table border="1"> <thead> <tr> <th>Subject</th> <th>Fee (Ringgit Malaysia)</th> </tr> </thead> <tbody> <tr> <td>Adult</td> <td>RM15.00</td> </tr> <tr> <td>Children aged between 6 - 12 years, any person aged 56 and above, and any disabled person</td> <td>RM7.00</td> </tr> </tbody> </table>	Subject	Fee (Ringgit Malaysia)	Adult	RM15.00	Children aged between 6 - 12 years, any person aged 56 and above, and any disabled person	RM7.00
	Subject	Fee (Ringgit Malaysia)					
Adult	RM15.00						
Children aged between 6 - 12 years, any person aged 56 and above, and any disabled person	RM7.00						
Action 2:	DMPM is to consider the above charge/fee and take the necessary administrative action to legalize the charge/fee and its collection.						
Action 3:	<p>Validity Period - This fee has a maximum validity period of five days. Meaning those who wish to stay for more than 5 days must pay a conservation fee of double the above amount if the length of stay is up to two weeks and RM 50 and RM 20 respectively for a period of more than two weeks up to one month. For every subsequent month, the conservation fee is RM60 and RM30 respectively.</p> <p>Again, DMPM is to consider the above validity period and take the necessary administrative action.</p>						
Action 4:	<p>Collection of Conservation Fee - The process is as follows;</p> <ol style="list-style-type: none"> 1. Visitors who travel via private boat and ferry to Pulau Redang via Kuala Terengganu shall pay the conservation fee at the fee collection centre at the jetty. 2. Visitors who travel to Pulau Redang from other exit points shall pay the conservation fee at the collection centre at the entry point to the islands. The KPPRTB shall be the operator of the collection centre. Visitors who arrive by plane will pay the fee at the collection counter at the Pulau Redang Airport. 						



4.2.3.2 Conservation Fee on Motorized Water Transport (MWT)

DMPM is to charge all motorized water transport/ vehicles plying the Pulau Redang Marine Park waters conservation fees. The fees are as follows;

- a. All operators of water transport shall pay a conservation fee of RM150 per month for every type of water transport operating within Pulau Redang Marine Park waters.
- b. All stopover and anchoring marine vehicles within Pulau Redang Marine Park waters shall pay a conservation fee of RM50 per entry and this is valid for only 48 hours.

i. Management Action - Collection of Conservation Fees from MWT

Action 1:	The collection agent for the MWT Conservation Fee is KPPRRTB. All operators of water transport who have paid the MWT conservation fee are allowed to provide transportation services to all destinations within Pulau Redang Marine Park areas. MWT operators are encouraged to pay the conservation fee for a duration of 6 or 12 months at a time although they are allowed to pay monthly.
Action 2:	As the collection agent, KPPRRTB is to keep all records of collections and make payment to DMPM on the same working day.
Action 3:	DMPM to decide on the fee for services provided by the cooperative

ii. Management Action - Issuance of Receipts and Certificates

Action :	The collection agents and KPPRRTB will issue receipts for all payments received from visitors and operators. Based on copies of the receipts submitted by the collecting agents, a certificate will be issued by DMPM to the operators of all MWT who have paid their fees. All MWT must display this certificate at all times.
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4.2.3.2 User charge fee

The user charge fee is the charge imposed upon all visitors to Marine Parks in Malaysia to allow them access to limited Marine Park resources. It is the fee charged to visitors for the following activities;

- i. Diving activities and visitations to selected conservation zones within Marine Park areas; habitat protection zones and marine sanctuaries;
- ii. Snorkelling activities within Marine Parks waters; and
- iii. Underwater Photography in all conservation zones within Marine Park waters.

Proceeds from the collection will be used towards the management and maintenance of the Marine Park and the facilities provided for the convenience of visitors. The fee shall be paid to the DMPM through the services conducted by the operators.



i. Management Action

Action 1:	The Charge Fee - Each person shall pay a fee of RM15 per trip per zone. The charge fee paid is valid for only one trip. DMPM is to verify this charge fee.
Action 2:	Collection of Charge Fee - The guides (who shall be licensed by DMPM to operate within the Marine Park Islands) shall be collection agents for DMPM. The guides shall submit the collection to DMPM either before or after the trip and especially before they leave the islands.
Action 3:	<p>Control - The following are some of the measures to control visitations</p> <ul style="list-style-type: none"> i. All guides, including dive instructors, who lead the visitations or expeditions or dives, are required to report to DMPM before they lead their teams to the respective locations. They are to provide a list of participants and must include their names, ages, addresses and contact telephone numbers of their next of kin. ii. They must obtain permission from DMPM before they can proceed to the destination. iii. Only licensed tour guides and dive instructors registered with DMPM are allowed to lead the visitations and activities
Action 3:	<p>Monitoring - The following are the monitoring measures for visitations</p> <ul style="list-style-type: none"> 1. DMPM will station at least one officer in Pulau Redang to record and monitor all related activities. 2. DMPM will undertake constant surveillance and monitoring of all related activities to ensure the security and safety of the visitation. 3. Where necessary, DMPM shall provide precautionary measures and supervision.

ii. Management Action - Issuance of Receipt

DMPM shall only issue receipts to tour guides/agents and dive instructors who have collected the fee from the users. The issuing officer must ensure that the amount received tallies with the number of users as in the list provided by the guides/agents and instructors.

Action :	Managing the Collected fee - All fees collected shall be deposited into a special reserve fund account to be established by DMPM.
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iii. Management Action - Use of Fund

Use of funds collected from this source shall only be reserved for activities related to the conservation, rehabilitation and preservation of marine resources.

Action :	DMPM to take necessary administrative measures to ensure the fund is used according to this proposition, i.e. for related activities within Pulau Redang Marine Park waters.
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4.2.3.4 Licenses & Permits

The purpose of licensing and permits is to protect, conserve and improve the natural resources within the Marine Park waters. The use of licenses and permits helps DMPM ensure the conservation of the park's marine biodiversity. Permits allow:

- a. Reduction of impacts on high-use and sensitive areas.
- b. Separation of activities that have potential for conflict.
- c. Encouragement of responsible behaviour amongst users



- d. Collection of data for the planning of Marine Parks
- e. Monitoring of activities that may cause damage to the Marine Parks.

i. Management Action - Licensing of Dive Operators

The following are the key guidelines for licensing of dive operators;

- a. Qualification
All dive operators must obtain a dive operator license from DMPM before they are allowed to operate within the Marine Park Area. Only qualified dive instructors and dive masters who are registered with accredited diving associations are qualified to apply for and obtain a Dive Operator License.
- b. Area of Coverage/Operation
Licensed dive operators may operate in all Marine Park areas within Malaysia.
- c. License Fee
The license fee is RM 250 a year.
- d. Observation and practice of Rules and Regulations
Licensed dive operators must observe the rules and regulations stipulated in the license documents attached to the certificate. They must also observe the business and professional ethics of their profession. They are responsible for obtaining permission from DMPM before they bring their clients to the respective areas, for recording and submitting the list of all clients/participants to DMPM. They are also responsible for collecting the respective user charge fees from their clients/participants and for submitting

the fees collected to DMPM before they submit a new application for permission to bring new clients/participants.

- e. The Marine Park Dive Operator License is not a substitute for the business license required by local authorities and the registrar of businesses or companies.

Dive operators are required to apply for and obtain appropriate licenses if they are to operate related businesses since the Marine Park Dive Operator License is not a substitute for the business license required by local authorities and registrar of businesses or companies.

- f. Collection of License Fee
The dive operator must pay the licensing fee at the DMPM state office where he/she submits his/her application before the license/certificate is issued.
- g. Display of License
The dive operator must display the license at his/her operation centre at all times.
- h. Managing the Collected Fee
All fees collected shall be deposited into a special reserve fund account to be established by DMPM.
- i. Use of Fund
Use of funds collected from this source shall only be reserved for activities related to the conservation, rehabilitation and preservation of marine resources.

Action 1:	DMPM to establish the procedure and process for licensing dive operators in all Marine Parks. Besides locals, Pulau Redang also receives dive operators, masters and instructors from the mainland.
Action 2:	DMPM to verify the proposed licensing fee and administrative procedure and process related to the fee. DMPM to also determine the method to control and monitor dive operator activities.
Action 3:	The DMPM Terengganu State office to determine surveillance activities for diving activities within the Pulau Redang Marine Park.

ii. Management Action - Licensing of Boats and Vessels

All motorized boats, regardless of length and construction materials, must be licensed to operate and serve in Marine Park waters. Non-motorized boats are not required to be licensed. The license to operate in the Pulau Redang Marine Park shall be issued by the DMPM Terengganu State office. Vessels registered in another state are not allowed to operate in Pulau Redang.

- a. Application for license
Applications for licenses to operate in the Pulau Redang Marine Park Area are to be sent to the DMPM Terengganu State office. Applicants must submit the appropriate application form, support documents and processing fee for review, consideration and approval.
- b. Approval
Approval of a license shall be based on the need for such a service. The DMPM Terengganu

State office has the right to approve or reject the application.

- c. Issuance of License
The license to operate in Pulau Redang Marine Park waters will be issued by the DMPM Terengganu State office.
- d. Processing Fee and License Fee
 - The processing fee payable on submission of application is RM 50. This fee is not refundable regardless of the outcome of the application.
 - Approved applications require the payment of a License Fee of RM 300 before the license is issued by the DMPM Terengganu state office.
- e. Validity
All licenses issued shall be valid for one year.
- f. Collection of License Fee
License fees shall be payable to the DMPM Terengganu State office.
- g. Managing the Collected Fee
All fees collected shall be deposited into a special reserve fund account to be established by DMPM.
- h. Use of Fund
Use of funds collected from this source shall only be reserved for activities related to the conservation, rehabilitation and preservation of marine resources.



ii. Management Action - Permits

Permits are issued by DMPM for various types of use of the Marine Park; some are for controlled activities within the Marine Park. The controlled activities that require permits include:

- a. Diving
- b. Cruising
- c. Water sports/events (non-motorized)
- d. Structures
- e. Research activities
- f. Underwater filming and photography

Action 1:	Application for Permit An application must be submitted to the DMPM Terengganu State office in order for a permit to be granted to undertake any controlled activity within the Pulau Redang Marine Park. Applicants must submit the appropriate application form, supporting documents and processing fee for review, consideration and approval. The application should provide sufficient information. The DMPM headquarters is to issue the appropriate application forms.
Action 2:	DEIA - In the event the proposal is considered to have a significant environmental impact referral to the DOE may be required. Where necessary and if advised by the DOE, the applicant must provide a DEIA report together with the application. In such cases, applications without DOE approval shall be rejected.
Action 3:	Public Notification and Discussion With the CCC - If the proposed activity/event/ programme/project/structure is considered to restrict reasonable use by the public of a part of the Marine Park, the state DMPM can require a public notification of the proposal and invite public comments. These comments will then be considered in assessing the application. Alternatively, the applicant may be required to gather preliminary feedback through discussion with the island's CCC.

Action 4:	Approval and Issuance of Permit - The DMPM Terengganu State office may recommend and approve application for activities not related to the construction of structures. The state office may recommend approval of applications for structures but the DMPM head office shall be the authority to approve all applications on structures.
Action 5:	Committee for Approval of Permit for Structures - DMPM headquarters may form a committee to assess all applications for permanent structures in Marine Park waters before approving the application. Among the key members of the committee, to be chaired by the DMPM Director General, are representatives from; <ol style="list-style-type: none"> i. Kuala Terengganu District Office/District Council ii. DOE iii. Terengganu State Economic Planning Unit (UPEN) iv. MBKT <p>The committee will also consider the following factors upon approving applications for permits.</p> <ol style="list-style-type: none"> i. Suspension and revocation of permits ii. Change and Variation to Permit iii. Penalty
Action 6:	Administrative Fee Payable - DMPM to verify the following charges and administrative procedures related to these charges. <ol style="list-style-type: none"> i. Application Fee - An applicant for a Marine Parks Permit is required to make a payment of RM 50 as Permit Application Assessment Fee (PAAF). This fee is non-refundable. ii. Fee for Permit for event/programme/ activity and validity - Except for permanent structures, a one off fee of RM 500 is required for every event/programme/activity approved. The applicant or organizer of such an event/program/activity must pay the fee before a permit is issued and must have the permit before any related activity can proceed. Each permit is valid over the period of the event/ programme/activity applied for and approved.

	<ul style="list-style-type: none"> iii. Fee for Permit for Structure and Validity - Annual Fee for a permit for a permanent structure is RM 1,000. The permit is valid according to the fee paid by the successful applicant. The minimum duration is one year whilst the maximum duration is 3 years. DMPM shall facilitate the inspection of the structure to determine the safety and validity of the permanent structure every three years, apart from regular visitations and inspections.
Action 7:	<p>Deed of Agreement - All permit holders for permanent structures are required to enter into a Deed of Agreement. This deed binds the permit holder to the following obligations:</p> <ul style="list-style-type: none"> i. Indemnifying the DMPM. ii. Maintaining adequate insurance. iii. Proper maintenance of the structure iv. Ensuring safe use of the structure at all times. v. Ensuring removal of structures and clean-up of the site of operations if directed. vi. The payment of a bond for structures other than vessel moorings.

iv. Management Action - Managing the fund

All fees collected shall be deposited into a special reserve fund account to be established by DMPM.

v. Management Action - Use of fund

The fees collected from this activity shall be used to upgrade the living conditions of the island, for island beautification programmes and for enhancing the livelihood



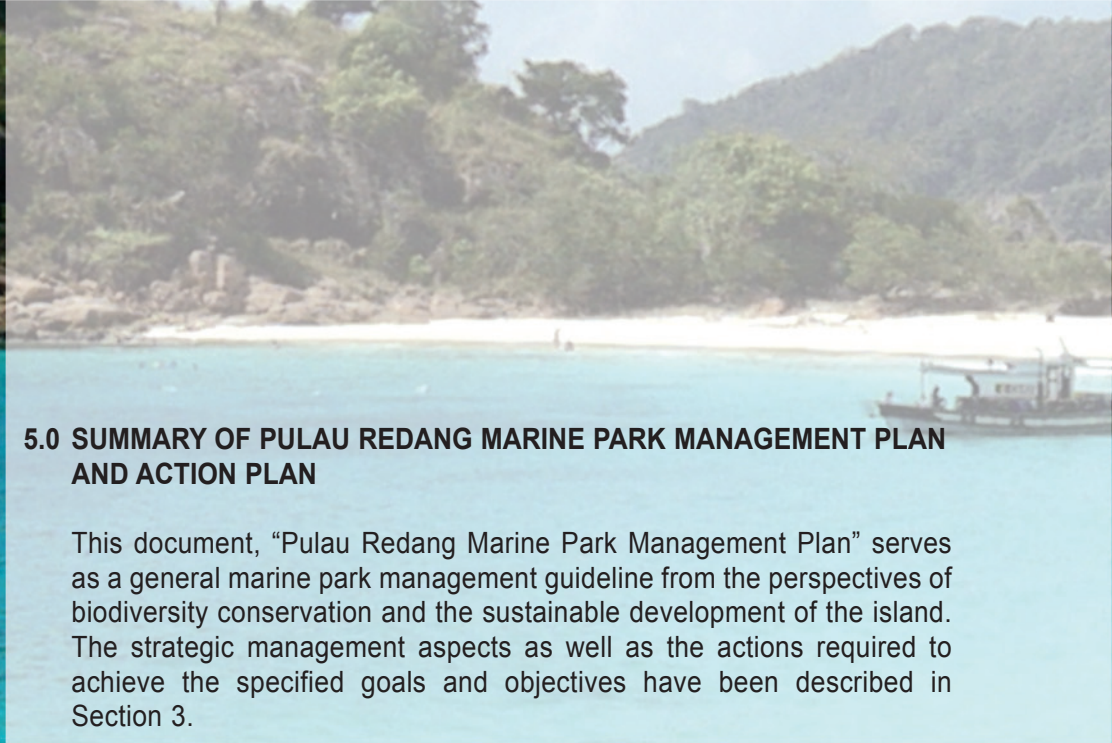
Pulau Redang

Marine Park Management Plan

Summary of Pulau Redang Marine Park Management Plan and Action Plan

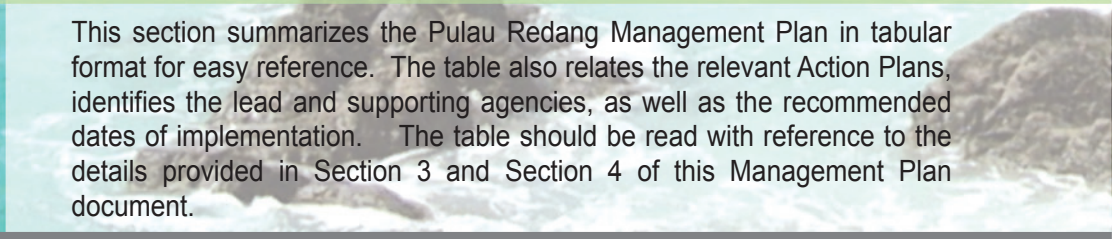
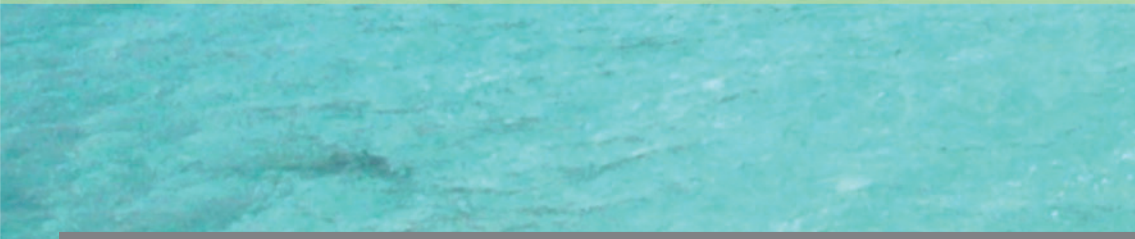
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5.0 SUMMARY OF PULAU REDANG MARINE PARK MANAGEMENT PLAN AND ACTION PLAN

This document, “Pulau Redang Marine Park Management Plan” serves as a general marine park management guideline from the perspectives of biodiversity conservation and the sustainable development of the island. The strategic management aspects as well as the actions required to achieve the specified goals and objectives have been described in Section 3.



This section summarizes the Pulau Redang Management Plan in tabular format for easy reference. The table also relates the relevant Action Plans, identifies the lead and supporting agencies, as well as the recommended dates of implementation. The table should be read with reference to the details provided in Section 3 and Section 4 of this Management Plan document.



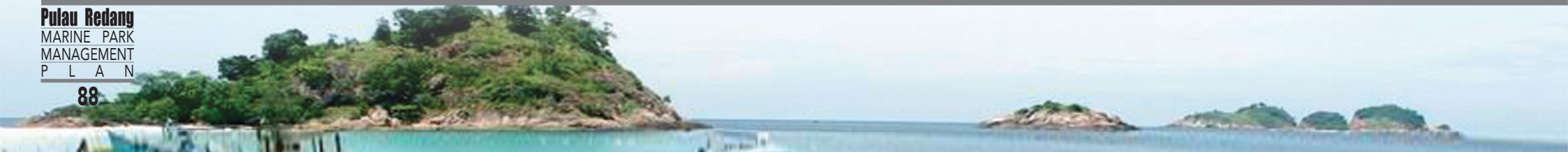
SUMMARY TABLE FOR MANAGEMENT PLAN

GOAL	OBJECTIVE	STRATEGY	
ZONING PLAN			
<p>Marine park zoning plan as a management tool toward a more effective management of the marine park areas</p>	<p>1. To identify best and sustainable use of an area or region based on ecological quality, marine resources within and impact of activities from the surrounding area.</p>	ST1	<p>Develop and implement Marine Park Zoning Plan throughout the entire MPAs.</p>
	<p>2. To designate and allocate permissible activities within suitable area.</p>		
	<p>3. To introduce control measures and regulatory guidelines for the management of interactions between human activities and the need for resource conservation and preservation.</p>	ST2	<p>Periodical review of zoned area and zoning plan.</p>
MARINE PARK RESOURCES MANAGEMENT			
<p>Protecting the unique and spectacular marine resources for the enjoyment of future generations</p>	<p>4. To protect, to conserve, and to preserve marine biodiversity and ecosystems.</p> <p>5. To ensure the marine park resources remain a diverse, resilient and productive ecological system while allowing people access to these resources.</p>	ST1	<p>Enrichment, Conservation and Rehabilitation</p>
		ST2	<p>Protection and Management of Tourism</p>



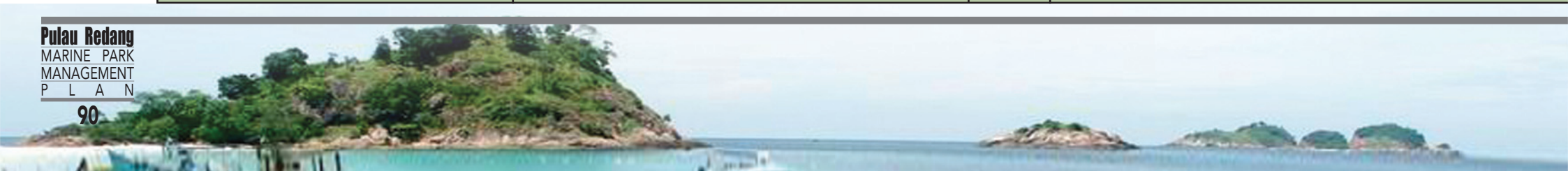
	ACTION	IMPLEMENTATION PERIOD	AGENCY		INDICATOR	
			LEAD	SUPPORTING		
	AC1	Development of zone classifications.	2011	DMPM	-	
	AC2	Designated use of zone and identify location.	2011	DMPM	Stakeholders	
	AC3	Markings of zoning boundary.	2012 onwards	DMPM	Jab. Laut	
	AC1	Monitor and evaluate ecological or marine resources quality within high human interaction locations.	At least once a year	DMPM	DOE	Refer to Indicator Report- Environment and Marine Biology
	AC2	Review zoning plan.	Once in every 5 years	DMPM	Stakeholders	-
	AC1	Undertake comprehensive marine resource inventory.	Continuous	DMPM	NGO and Other Research Agencies	Refer to Indicator Report - Environment and Marine Biology
	AC2	Protection and preservation of Turtle Sanctuaries.	Continuous	DMPM	In collaboration with relevant NGOs	
	AC3	Coral Conservation and Rehabilitation Workshop.	As need arise	DMPM	NGOs and community volunteers	
	AC4	Monitoring Water Quality.	Auditing - Annually Regular monitoring - Quarterly Also on incident base monitoring	DMPM	DOE, also in collaboration with public universities, DOF and relevant NGOs	Refer to Indicator Report - Environment and Marine Biology
	AC5	Define and demarcate Research Natural Area (RNA).	As need arise	DMPM	-	-
	AC1	Enforcement of no fishing rules and regulations.	Continuous	DMPM	APMM, Reef watcher and community based voluntary rangers	-
	AC2	Artificial Reef Programme for the Local Community (beyond 2 nautical miles)	2012 onwards	DMPM	Local Authority, DOF and other government agencies, CCC and NGOs	One artificial reef per village
	AC3	Identify and Define Areas suitable for scuba diving, snorkelling and swimming.	2011 onwards	DMPM	Tour and dive operators, NGOs and Universities	-
	AC4	Controlling the number of divers and/or snorkellers at any given time.	2012 onwards	DMPM	Tour and dive operators	
	AC5	Restrict, control and manage use of private boat.	2012 onwards	DMPM	Marine Dept, Reef watcher and community based voluntary rangers	
	AC6	Restrict, limit and control access and anchoring to terrestrial habitats and restricted use zones.	2012 onwards	DMPM	Tour and dive operators, Reef Watchers and community based voluntary rangers	
	AC7	Guided Tours.	2012 onwards	DMPM	Local Authority, MOTOUR, Tour and dive operators, and resort operators	
	AC8	Restriction on new constructions.	Continuous	Local Authority	DMPM, JPBD, DID, DOE, UPEN & other relevant government agencies	

GOAL	OBJECTIVE	STRATEGY	
ENVIRONMENT & POLLUTION			
Toward better environmental management and pollution control for the protection and preservation of Marine Park ecosystems	6. To provide a suitable and user friendly non-polluting method for solid waste collection, transfer and disposal on the island to solve leachate issues and to implement sustainable methods in waste disposal to eliminate the leachate problem.	ST1	Managing solid waste from residential properties, resorts and chalets
	7. To minimize the potential impact of poorly treated sewage discharges from residential properties, resorts, chalets and any other dwellings in Marine Park waters and to minimize the potential impact of untreated sullage discharges from restaurants, kitchens and residences in Marine Park waters.	ST2	Managing sewage and sullage from properties, resorts and chalets
	8. To control and manage any construction activities along beach front to provide a transparent, consistent and contemporary approach for environmental impact management along the Marine Park beach corridor.	ST3	Managing environmental impact from development along beach corridor
	9. To minimize the potential impact of solid waste and wastewater from marine vehicles in Marine Park waters.	ST4	Managing solid waste and wastewater from marine vehicle.
	10. To identify Highly Sensitive Environmental Areas (HSEA) for Pulau Redang and plan mitigation measures on how to reduce the negative impact of the activities of local people and tourists.	ST5	Managing Highly Sensitive Environmental Areas (HSEA)
	11. Oil Spill	ST6	Managing Oil Spill
ARTIFICIAL REEFS WITHIN AND OUTSIDE OF MARINE PARK WATERS			
To promote and enhance marine habitats and growth of corals by installing artificial reefs within and outside of the specified	12. Within two (2) nautical miles of MPAs - to foster growth of the ecosystem, to serve as a breeding ground for marine life and to enhance coral growth.	ST1	Introduce artificial reefs favourable for breeding ground of marine life.
	13. Beyond two (2) nautical miles of MPAs - to foster growth of the ecosystem, to serve as a breeding ground for marine park life and to serve as alternative fishing grounds for local islanders' consumption.	ST2	"One Community One Tukun"



	ACTION	IMPLEMENTATION PERIOD	AGENCY		INDICATOR	
			LEAD	SUPPORTING		
	AC1	To identify the need for a waste collection and transfer centre.	2012 onwards	Local Authority	DMPM	
	AC2	To identify a suitable approach for small volume solid waste treatment that is safe and cost efficient and manageable.	2012 onwards	Local Authority	DMPM, DOE, NRE	
	AC1	To identify the need for a wastewater transfer centre and treatment plant and to monitor and mitigate pollution to the environment.	2012 onwards	Local Authority	DOE, DMPM	Refer to Indicator Report - Environment
	AC2	To identify suitable sewage and sullage treatment processes or facilities for Pulau Redang.	2012 onwards	Local Authority, JPPP	DOE, DMPM, DID	
	AC1	To identify and introduce a management system to manage the environmental impact due to development along the beach corridor.	2012 onwards	DID	DOE, Local Authority, DMPM	
	AC2	To introduce stringent development control guidelines for all development in marine park islands with special and immediate focus on Pulau Redang.	2012 onwards	Local Authority, JPBD	DOE, DMPM, MOTOUR, DID, NRE, UPEN	
	AC1	Preparation and development of collection centres for marine vehicles to discharge or transfer solid waste and wastewater. Local authority to appoint waste contractor to dispose of the waste.	2012 onwards	Local Authority	DMPM, Jab. Laut, DOE, DOF	
	AC2	To ensure that all commercial passenger boats or marine vehicles are equipped with solid waste and wastewater facilities before issuing licenses or permits to the operators.	2012 onwards	Jab. Laut	DMPM, APMM	
	AC1	To identify the Highly Sensitive Environmental Area (HSEA) and map it in the Pulau Redang management system to facilitate monitoring and enforcement activities.	2012 onwards	DMPM, NRE	Marine Dept, DOE, JPBD, DID	
	AC2	To survey, identify and create an inventory of marine resources within Pulau Redang marine park waters and to records to be updated and mapped in the MPMIS.	2011 onwards	DMPM	NGOs, Research Institutions	
	AC1	Refer to National Oil Spill Emergency Plan by DOE	Continue	DOE	DMPM, Marine Dept, DOF, APMM	
	AC1	Record the locations of all artificial reefs installed within the two (2) nautical miles of the MPAs.	2012 onwards	DMPM	DOF, Jab Hidrografi TLDM	
	AC2	Review and assess for performance of each site as an attractor of and/or breeding ground to various marine life.	2012 onwards	DMPM	NGOs ,DMPM, Universities	
	AC3	To be monitored and safeguarded by DMPM.	2012 onwards	DMPM	-	
	AC4	Use of artificial reefs within MPAs should be confined to tourism activities only.	2012 onwards	DMPM	NGOs ,DMPM, Universities	
	AC1	Record the locations of all artificial reefs installed beyond the two (2) nautical miles of MPAs.	2012 onwards	DOF, DMPM	Jab. Laut, NGOs	
	AC2	Review and assess for performance of each site as an attractor of and/or breeding ground for various marine life.	2012 onwards	NGOs	Reseach Institution, NGOs ,DMPM, Universities	
	AC3	To be monitored and safeguarded by the adoptee (local island villagers and/or the CCC), with the support of DMPM and Jabatan Laut, LKIM, DOF and NGO.	2012 onwards	CCC	DMPM, Jabatan Laut, LKIM, DOF, and NGOs	
	AC4	Use of artificial reefs betond MPAs should be managed by the adoptee community and be for local consumption and/or tourism only.	2012 onwards	CCC	-	

GOAL	OBJECTIVE	STRATEGY	
TOURISM			
To ensure that tourist operations and activities do not negatively impact the ecological or cultural values of the marine park,	14. The purpose is to ensure the conservation and protection of marine biodiversity in Pulau Redang through the rational, efficient and sustainable utilization of resources.	ST1	Limit on Visitations to Habitat Protection Zone and Marine Sanctuary.
To provide for the operation of low impact tourism activities which add to the recreational and educational experience of marine park users,		ST2	Visitation - Control and Supervision: Tourist operators to register all tourists before taking them to the respective spot/dive area and reporting the numbers to DMPM daily.
To encourage locals to take up tourism related activities as an alternative source of livelihood.		ST3	Recommend a special activity charge to enter Dive Zones.
		ST4	Green Tourism/Eco Rating
		ST5	Tourism's Impact on Environment
		ST6	Tourist Activities
		ST7	Awareness and advocacy programs for tourists
	15. The objective of this plan is to provide opportunities for the locals to be trained as dive masters and eventually dive instructors, thus providing a source of income from tourism.	ST8	Tourism as Source of Livelihood
	16. To maximize local participation in tourism industry as primary income generator.	ST9	Individual Development Plan - Local islanders as Snorkelling Guides and Marine Park Tour Guides



	ACTION	IMPLEMENTATION PERIOD	AGENCY		INDICATOR	
			LEAD	SUPPORTING		
	AC1	Acknowledge all areas zoned as tourism zones, conservation zones and habitat protection and preservation zones.	2012	DMPM	Resort operators, tour and dive operators, CCC	
	AC2	Jointly decide on the carrying capacity of each tourism site.	2012 onwards	DMPM	Resort operators, tour and dive operators, CCC	
	AC3	Constantly review and detect for signs of stress of each tourism site, and evaluate ecosystem health status.	2012 onwards	DMPM	Tour and dive operators, NGOs, Research Institutions	Refer to Indicator Report - Environment
	AC1	Encourage more local youths to be trained as dive masters and local nature guides through programmes jointly organized with relevant dive associations/centres.	2012 onwards	DMPM	MOTOUR, Tour and dive operators, NGOs, CCC	
	AC1	Obtain legal standing for collection of specific activity charges.	2012-2013	DMPM	NRE, MOTOUR	
	AC1	Develop eco-certification scheme as proposed and establish guidelines and certification curriculum and processes for eco-certification.	2012 onwards	MOTOUR, NRE	Jab Perhutanan, DMPM, PERHILITAN	
	AC2	Encourage resort operators to seek eco-certification. This will include: <ul style="list-style-type: none"> Working together with the local authority to encourage resort operators to obtain certificate of fitness for their premises. Conducting regular courses or training on environmental best practices. Encouraging resort operators to implement best practices. 	2012 onwards	Local Authority	MOTOUR, DMPM, NRE	Number of eco-certified resorts
	AC1	Evaluate all possible development impacts and refer to DMPM before approving any project involving structures in Pulau Redang.	2012 onwards	Local Authority, DOE, DID, DMPM	CCC, UPEN and all relevant agencies	
	AC2	DMPM should be included as a Council member when deliberating approvals for all structural and development projects within and/or near to MPA.	2012 onwards	State Planning Committee, UPEN	DMPM, JPBD, Local Authority	
	AC3	All physical and/or structural projects within and/or near to the MPA must have approved Detailed Environmental Impact Assessment (DEIA).	2011 onwards	State Planning Committee, UPEN, DOE, DMPM	JPBD, JKKTTP	
	AC1	Conduct seminars and forums with the respective stakeholders and benefactors to discuss and explain rules and regulations pertaining to use and management of tourism sites.	At least once a year	DMPM	Resort operators, tour and dive operators, Reef Watcher, CCC	
	AC2	Enforcement officers to conduct random checks in popular snorkelling and diving areas to ensure compliance to the specified rules and regulations pertaining to use and management of tourism sites, and MPA in general.	Continuous	DMPM	Reef Watchers, CCC	
	AC1	Promote Pulau Redang as a marine park destination with a clear message pertaining to use and management regulations of MPAs, not just as a mass tourist destination.	2012 onwards	DMPM	Mass media, KPKK, MOTOUR, Tourism Malaysia, UPEN, Airlines and Ferry Operators	
	AC2	Educate tourists, tour agents and operators on their roles and responsibilities in conserving the environment of Pulau Redang MPA. The importance of the marine park should be stressed in brochures and other promotional materials.	Continuous	MOTOUR, Tourism Malaysia	DMPM	
	AC1	Develop local youths as dive instructors and dive masters. Liaise with diver training organization (e.g. PADI, etc.) to arrange for suitable training programmes for interested local youths (and other islands within MPA). The department must also request funds to be allocated to run this programme.	2012 onwards	DMPM, UPEN	MOTOUR, Diver Training Organization	
	AC1	Managed in collaboration with other agencies such as the Wildlife Department and the Ministry of Tourism. The department must also request funds to be allocated to run this programme.	2012 onwards	MOTOUR	KKLW, DMPM, PERHILITAN, Jabatan Perhutanan	

GOAL	OBJECTIVE	STRATEGY	
TOURISM			
		ST10	Homestay Programme
	17. To provide assistance in conceptualization of business and economic opportunities or potentials from tourism industry.	ST11	Generate awareness on business and economic opportunities
LOCAL ECONOMY FOR SURVIVAL AND LIVELIHOOD			
To develop an alternative economic livelihood for local marine park islanders based on the environmentally sustainable use of marine resources and tourism related industries.	18. To encourage the local community to venture into environmentally acceptable economic activities.	ST1	Establishment and Management of Koperasi Pelancongan Penduduk Pulau Redang Terengganu Berhad (KPPPRTB)
	19. To propose a Koperasi that will strengthen the community's participation in the economic activities within the island environment.		
	20. To enhance the socio-economic benefits of the protected areas to the local communities.		
	21. To expand the entrepreneurial base by assisting new start-up entrepreneurs. 22. To enable aspiring entrepreneurs to move forward in their businesses. 23. To provide opportunities for the younger generation to participate in existing businesses where the owners or operators are due for retirement. 24. To help young people become more entrepreneurial and to consider entrepreneurship as a career path.	ST2	Entrepreneurial Development Programme (EDP)
	25. To develop local entrepreneurs by exploiting the local based tourism driven market by enhancing technical knowhow and ability to source for financial support.	ST3	Small-scale Industry

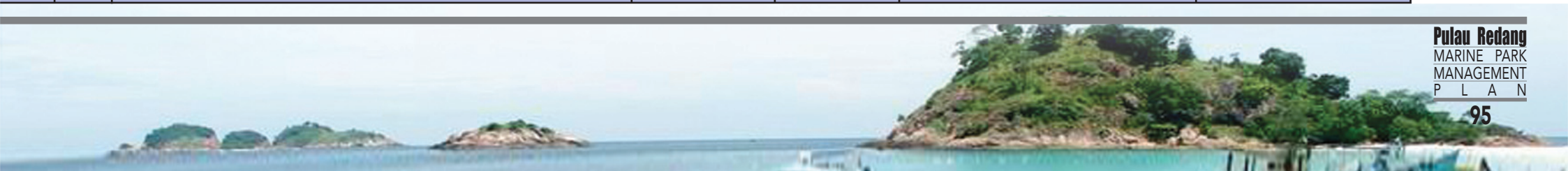


	ACTION	IMPLEMENTATION PERIOD	AGENCY		INDICATOR	
			LEAD	SUPPORTING		
	AC1	Encourage more entrepreneurs and house-owners to participate in the homestay programme. All agencies should collaborate to ensure participants fulfil or meet the specified standards set by MOTOUR.	2012 onwards	MOTOUR	UPEN, Local Authority, DMPM, KKLW, MARA, CCC	
	AC2	The Pulau Redang Community Consultative Committee shall play a leading role to encourage local house-owners to participate in the homestay programme, and invite MOTOUR and other agencies to facilitate to ensure successful implementation of this programme.	2012 onwards	CCC	Local Community, UPEN, Local Authority, DMPM, KKLW, MARA, CCC	
	AC1	Organize business development discussions and/or invite relevant experts to help identify business opportunities in the tourism industry.	2010 onwards	KPPPRTB, CCC	DMPM, UPEN, KKLW, KPDNKK, MARA	Refer to Indicator Report- Local Economy for Survival and Livelihood
	AC2	Identify interested local participants and coordinate business development programmes and liaise with relevant agencies to provide training, technical support and funding.	2010 onwards	KPPPRTB, CCC	Local Community, DMPM, UPEN, KKLW, KPDNKK, MARA	Refer to Indicator Report- Local Economy for Survival and Livelihood
	AC1	Establishment of the Koperasi - KPPPRTB was registered in May 2011. Nine (9), Ahli Lembaga Koperasi (ALK) were elected to manage the Koperasi until 2012.	2011	KPPPRTB, SKM	DMPM, CCC, Local Community	
	AC2	Business Plan - The ALK are responsible to develop a business plan for the Koperasi. For initial development, they are being assisted by consultants appointed by DMPM/UNDP. The Koperasi will undertake businesses that have been determined and planned in the business plan.	2011	ALK, SKM	DMPM, CCC	
	AC3	Membership drive - The ALK is given the task of registering at least 50 paying members from Kampung Baru in Pulau Redang.	2011 onwards	ALK	Local Community, DMPM	
	AC4	Finance - The ALK has opened a bank account with one of the local banks. GOM-UNDP/DMPM will disburse a total of RM30,000 to the Koperasi account as a development grant or seed fund.	2012	ALK	DMPM	
	AC1	The Pulau Redang Community Consultative Committee (CCC) and the DMPM will identify and determine the necessary programmes and training providers. The available training providers are MARA, Maktab Koperasi Malaysia (MKM), Suruhanjaya Koperasi Malaysia (SKM) and ANGKASA. KPPPRTB will identify its members' needs and arrange to send them for training with MKM, and ANGKASA.	2012 onwards	CCC, KPPPRTB	DMPM, Relevant training agencies (e.g. MARA, SKM, MKM)	Refer to Indicator Report - Local Economy For Survival And Livelihood
	AC2	The DMPM and the CCC will liaise with the respective agencies and invite them to undertake such training in Pulau Redang. KPPPRTB will liaise with MKM, SKM and ANGKASA to train the members of the Koperasi.	2012 onwards	CCC, KPPPRTB	DMPM, Relevant training agencies (e.g. MARA, SKM, MKM)	Refer to Indicator Report - Local Economy For Survival And Livelihood
	AC3	DMPM to allocate funds to finance some of the initial training programmes where CCC is the organizer. Funding for future training needs to be sourced.	2012 onwards	CCC, KPPPRTB	DMPM, Relevant training & funding agencies (e.g. MARA, SKM, MKM)	Refer to Indicator Report - Local Economy For Survival And Livelihood
	AC1	Two small-scale food based activities (bakery and keropok) have been identified as start-up projects. KPPPRTB to prepare the manufacturing and business plans for the respective activities, and to identify and select the entrepreneurs to undertake the projects. Since the entrepreneurs are cooperative members, KPPPRTB will send them to Maktab Koperasi Malaysia for the necessary training. KPPPRTB will also become the supplier of raw materials to Koperasi members and operators.	2011 onwards	KPPPRTB	Relevant training & funding agencies (e.g. MARA, SKM, MKM), DMPM	
	AC2	Selected entrepreneurs to identify preferred or suitable sites to operate activities, rent appropriate premises and scout for necessary machinery and equipment. KPPPRTB will assist the entrepreneurs in obtaining loans from Suruhanjaya Koperasi Malaysia (SKM) or MARA or other agencies to finance the purchase of the machinery and equipment.	2011 onwards	KPPPRTB	Relevant training & funding agencies (e.g. MARA, SKM, MKM), DMPM	

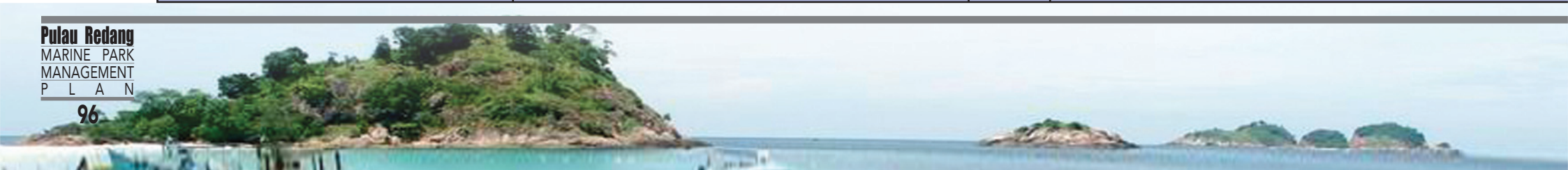
GOAL	OBJECTIVE	STRATEGY	
TOURISM			
	26. To provide the alternative fishing sites specific for the local community's consumption and use.		
		ST4	"Satu Kampung Satu Tukun" (one artificial reef per village)
COMMUNITY AND STAKEHOLDERS LIAISON CONSULTATION AND LOCAL PARTICIPATION			
To develop an alternative economic livelihood for local marine park islanders based on the environmentally sustainable use of marine resources and tourism related industries.	27. To provide a forum whereby local residents can express their views, feedback, response, comments and critiques on issues related to community needs, livelihood and socioeconomic status arising from new or proposed projects, programmes, rules and regulations.	ST1	Community Consultative Committee (CCC), Pulau Redang
	28. To provide a forum where government agencies and other interested parties and stakeholders can effectively communicate with the local residents on issues related to their livelihood and socioeconomic status.		
		ST2	Encourage advocacy decision making and active local community participation



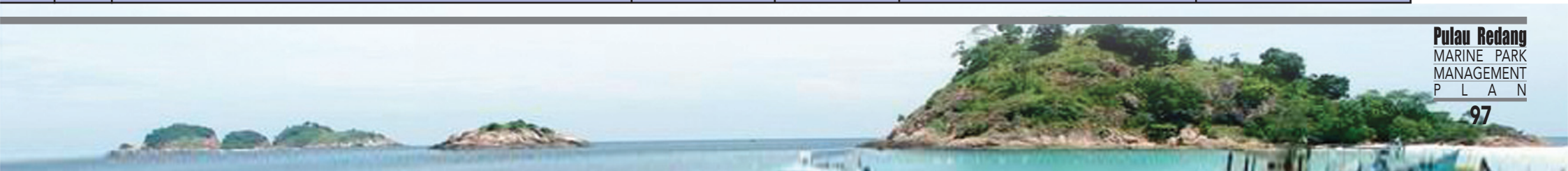
	ACTION	IMPLEMENTATION PERIOD	AGENCY		INDICATOR
			LEAD	SUPPORTING	
AC4	All Government agencies, the local community and resort operators should support and promote these activities.	2011 onwards	KPPRPTB	Local Community, business operators and government agencies	
AC1	The CCC will identify suitable locations outside of the two (2) nautical mile marine park waters and not near prohibited or restricted zones, for adoption and use by the locals.	2012 onwards	CCC, DMPM	DOF, Local Authority	
AC2	The CCC must discuss with DMPM on the suitability of the locations before proceeding with the project to create artificial reefs.	2012 onwards	CCC, DMPM	DOF, Local Authority	
AC3	The CCC must obtain the approval of DMPM and/or the Department of Fisheries before proceeding with the project to create artificial reefs at the specified locations.	2012 onwards	CCC, DMPM	DOF, Local Authority	
AC1	Establish Redang Island Community Consultative Committee - Redang CCC was established and formalized in April 2011.	2011 onwards	DMPM	Local Community	
AC2	CCC secretary is required to call regular committee meetings, at least once in four months, to discuss plans and implementation of programmes. The DMPM Terengganu State Director is the department's official representative attending this meeting.	2011 onwards	CCC, DMPM State Office	DMPM, Local community	
AC3	DMPM will accommodate or facilitate the CCC by providing sufficient office space to the Redang CCC. The department will also provide a meeting room for the CCC meeting.	2011 onwards	DMPM State Office	DMPM, CCC	
AC4	CCC Committee members are responsible for carrying out decisions made during the CCC committee meetings.	2011 onwards	CCC		
AC5	CCC will plan the relevant programmes and activities which include - community socialization programmes, island cleaning and beautification programmes, Installation and management of artificial house reefs, other specified events or programmes.	2011 onwards	CCC		
AC6	Whenever the need arises, CCC will arrange for a local participation programme between the local community and the intended agencies.	2011 onwards	CCC		
AC7	CCC shall collect local data and information and store these data in a Marine Park Management Information System (MPMIS). In the long run, the CCC will become the main information service centre that collects details about the island such as its population, structures, businesses and resources.	2011 onwards	CCC		
AC1	CCC, with the support and guidance of DMPM, should conduct awareness programmes to educate the community and explain the need for active community participation and their role in the advocacy decision making process. The CCC should lead and/or represent the view of the community.	2011 onwards	CCC		
AC2	Local participation is most effective when there is some financial and technical support as well as strong encouragement from government agencies. DMPM, UPEN, MBKT, KKLW or relevant agencies should consider some budget allocation to help support CCC's activities.	2011 onwards	CCC	DMPM, UPEN, MBKT, KKLW, or even through corporate CSR programmes	



GOAL	OBJECTIVE	STRATEGY	
COMMUNITY AND STAKEHOLDERS LIAISON CONSULTATION AND LOCAL PARTICIPATION			
<p>To develop an alternative economic livelihood for local marine park islanders based on the environmentally sustainable use of marine resources and tourism related industries.</p>	<p>29. To engage the assistance and/or support of the local community in public surveillance for enforcement of marine park rules and regulations.</p>	ST3	<p>Establish a local community platform to serve as “eyes and ears” of DMPM - to help in surveillance and enforcement of Marine Park Rules and Regulations</p>
	<p>30. To enable the public to view and comment on the proposed programmes, projects, works and services planned</p>	ST4	<p>Public display of the Marine Park Management Plan in the DMPM's Pulau Redang Marine Park Centre.</p>



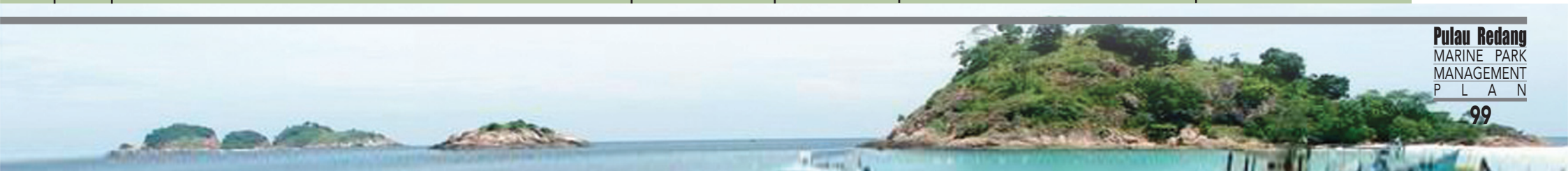
	ACTION	IMPLEMENTATION PERIOD	AGENCY		INDICATOR
			LEAD	SUPPORTING	
AC1	In Pulau Redang, Reef Watchers has been established and formalized. Members are local volunteers. This voluntary body is now working closely with the management of the DMPM, Terengganu office.	2011 onwards	CCC	CCC, Local community	
AC2	Selection of Reef Watchers - The following are prerequisites of a reef watcher: i. Reef Watchers shall be selected from the local community and respected community-minded individuals with a high level of awareness and concern for the protection of their marine ecosystems. Reef Watchers should have good communication skills;	2011 onwards	DMPM	CCC, Local community	
	ii. Reef Watchers should have the ability to file surveillance reports, in accordance with the format prepared by DMPM.				
AC3	Institutional Structure - The reef watchers would be directly under the command and control of the Surveillance & Enforcement unit of DMPM.	2011 onwards	DMPM Enforcement Division	CCC, Local community	
AC4	Training - Reef Watchers (RWs) shall be trained by the national or state or S & E unit and with the assistance of consultants on various aspects of observation, recording and reporting and also how to provide information to the S & E unit on illegal activities in the Marine parks. RWs will also be trained in public speaking, public relations, radio communication, maintenance and operation of equipment.	2011 onwards	DMPM Enforcement Division	CCC, Local community	
AC5	DMPM - to develop and introduce a standard format for community reporting purposes. DMPM also to train the reef watchers on reporting procedures and process.	2011 onwards	DMPM Enforcement Division	Reef Watchers	
AC6	Register- All Reef Watchers who have completed the relevant training will be registered before they can undertake surveillance exercises. The license shall be issued by the S&E Unit of the DMPM.				
AC7	Incentives - DMPM shall consider and propose for some incentives and or rewards as compensation for Reef Watchers.	2011 onwards	DMPM	Reef Watchers	
AC8	Equipment - DMPM is to plan and request a budget to meet the necessary supporting equipment for Reef Watchers. Among the necessary equipment for the S&E operations are boats with an outboard engine of 10 - 15 hp, VHF radio / walkie-talkies, binoculars, cameras, global position systems (GPS), life jackets, rain coats / windbreakers, torch lights and batteries, scout knife, caps and others.	2011 onwards	DMPM	Reef Watchers	
AC1	Discussion with CCC - DMPM should present the draft management plan with the committee members of the CCC. DMPM must address the relevant issues highlighted and the comments made by the CCC before the management plan is issued to the public for comment and review.	2011 onwards	DMPM	CCC	
AC2	Public Display and Public Forum -The management plan is accessible to the public and will be put on display at the Marine Park Centre. DMPM will conduct public forums to explain and receive direct feedback from the public. The department will identify the appropriate location to display the management plan.	2011 onwards	DMPM	CCC	



GOAL	OBJECTIVE	STRATEGY	
SCIENTIFIC RESEARCH			
<p>To build a systematic knowledge of marine park resources through coordinated and integrated scientific research, to contribute to an understanding of marine biodiversity and the impact from global climate change, and to protect and conserve the environment within Marine Park Areas.</p>	31. To manage, coordinate and monitor research activities within marine park areas.	ST1	Coordination and monitoring through research permits.
	32. To prepare and provide guidelines on research activities.		
	33. To identify and prioritize research needs in protecting and preserving marine biodiversity.		
	34. To record, compile and store all research activities and findings.	ST1	Research Proposal
		ST2	Research Zone
ST3		Product and Output	
AWARENESS AND EDUCATION			
<p>Enhancing public and user awareness of Marine Park values.</p> <p><i>Clear message pertaining to use and management regulations of MPAs, not just as a mass tourist destination.</i></p>	35. To promote conservation by increasing awareness and understanding of the marine and coastal environment.	ST1	Setup Pulau Redang Marine Park Discovery Centre
		ST2	Public Outreach and Education; Billboards or Signage
		ST3	Brochures and Pamphlets
		ST4	Marine Resources and Educational CD



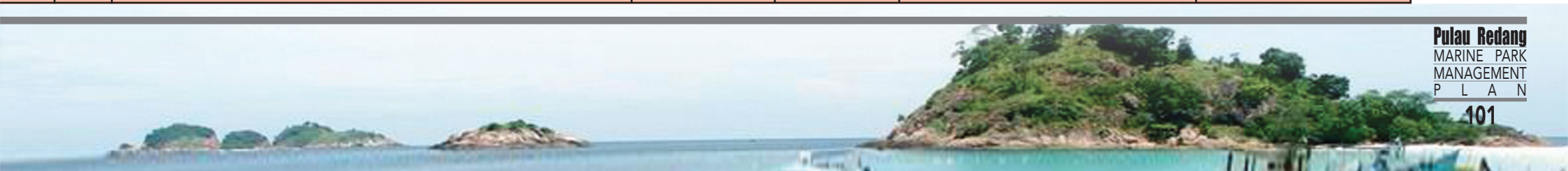
	ACTION	IMPLEMENTATION PERIOD	AGENCY		INDICATOR	
			LEAD	SUPPORTING		
	AC1	All research work within MPAs requires a permit. DMPM Research and Resources Inventory Division to develop research application procedures and research control and surveillance mechanism.	Continuous	DMPM	Research Institutions, NGOs	-
	AC2	DMPM Enforcement and Licensing Division to develop a practical system to receive process and approve permit applications by researchers. The division is also to develop control and surveillance procedures and a system to monitor research activities.	Continuous	DMPM	-	-
	AC3	DMPM to establish a research approval panel to evaluate and approve application to undertake research activities within Marine Park Areas. The department may incorporate external professionals as panel expert.	Continuous	DMPM	Research Institutions, NGOs	-
	AC1	All research permit applications must be accompanied by a research proposal. DMPM Research and Resources Inventory Division to develop guidelines and checklist on research proposal to be submitted with application.	Continuous	DMPM	-	-
	AC2	Prepare research application guidelines (and/or manual) including application charges or fees imposed.	Continuous	DMPM	-	-
	AC1	All research applications must specify the exact work location, which is subject to the approval, enforcement and monitoring of DMPM.	Continuous	DMPM	-	-
	AC1	All research products, findings, reports, data and other output must be shared and submitted to DMPM, which in turn must be compiled and collate it in a systematic database.	Continuous	DMPM	-	-
	AC1	Proposed to be managed and operated by the Pulau Redang CCC or KPPRTB. This programme has the capacity to generate income for the operator. In addition to entrance fees, income can also be generated from souvenirs and gifts as well as sponsors and advertisements.	2012 onwards	DMPM, CCC, KPPRTB	Local Authority	
	AC2	Acquire sufficient start-up fund to cover initial expenses.	2012 onwards	DMPM, CCC, KPPRTB	Local Authority, Relevant funding agencies (e.g. MARA, SKM, MKM,)	
	AC1	Need clear and visible billboards and signage to mark entry point to marine park areas as well as "do and don'ts" signage throughout the marine park island, to be located at all jetties, public beaches and resort areas.	2012 onwards	DMPM	Local Authority	
	AC1	Attractive but informative brochures and pamphlets need to be distributed in all strategic or accessible locations (e.g. hotel rooms, ferries and flights, travel agents, online website, marine park fee collection counter and other locations attended by potential visitors).	2012 onwards	DMPM	MOTOUR, Tourism Malaysia, Ferry and Airlines Operators and Resort Operators	
	AC1	Educational, informative and interactive CD to be distributed to schools, libraries, ferry operators, as in-flight entertainment and at other suitable locations where this media can be used.	2012 onwards	DMPM	MOTOUR, Tourism Malaysia, KPKK, Ferry and Airlines Operators and Resort Operators	



GOAL	OBJECTIVE	STRATEGY	
AWARENESS AND EDUCATION			
<p>Enhancing public and user awareness of Marine Park values.</p> <p><i>Clear message pertaining to use and management regulations of MPAs, not just as a mass tourist destination.</i></p>		ST5	Public Outreach Programme - Direct Approach
		ST6	Social Media - Internet Promotions
		ST7	TV and Radio Programme
ENFORCEMENT			
<p>To enhance the capabilities and effectiveness of the surveillance and enforcement activities in the Marine Park Waters and the enhancement, management and protection of marine park resources.</p>	<p>36. To provide a standard mechanism for ensuring the delivery of Monitoring, Control and Surveillance (MCS) operational directives for national and field officers.</p>	ST1	Enforcing No Fishing Rules and Regulations
	<p>37. To ensure complete training and standard operational procedures for implementation of Coral Reef Management Plan (reference) in accordance with the laws.</p>	ST2	Enforcing User Charge Fee (Collection and violation)
		ST3	Manpower and Equipment
		ST4	Enforcement Training
		ST5	Enforcement Safety Equipment Requirements



	ACTION	IMPLEMENTATION PERIOD	AGENCY		INDICATOR	
			LEAD	SUPPORTING		
	AC1	Organize and manage a cleaning and beautification event in Pulau Redang.	Periodical	DMPM	Local Authority, NGOs	
	AC2	Organize educational and awareness forum.	Annually	DMPM	Local Authority, NGOs	
	AC1	Use of social media as a medium for promoting marine parks and inculcates awareness of the need to conserve and preserve marine biodiversity.	Continuous	DMPM	-	
		Greater use of documentaries, short docudrama, series, cartoons, forums and advertisements to promote marine parks and to inculcate awareness of the need to conserve and preserve marine biodiversity. These media products can also be displayed in cinemas, on outdoor electronic boards, and the like.	Continuous	DMPM	Local Authority, NGOs	
	AC1	The DMPM Enforcement and Licensing Division to organize regular training to update enforcement officers on rules and regulations, enforcement techniques and safety.	Continuous	DMPM	-	Refer to Indicator Report - Enforcement and Guidelines - see also Enforcement Manual
	AC2	The State Director needs to review the compliance with the Standard Operating Procedures by enforcement officers especially when there are obviously many offenders under the no fishing rules and regulation.	Continuous	DMPM, DMPM State Office	Jab. Laut, Polis Marin, APMM	Refer to Indicator Report - Enforcement and Guidelines - see also Enforcement Manual
	AC1	DMPM needs to review related proposals/studies on the user charge fee commissioned by the Economic Planning Unit and Ministry of Tourism.	2011	DMPM	-	Refer to Indicator Report - Enforcement and Guidelines
	AC1	Terengganu - Redang : 20 persons		DMPM		
	AC2	Pahang - Tioman : 20 persons				
	AC3	Johor - Sibul / Tinggi : 20 persons				
	AC1	The MCS enforcement operation manual has been developed and published. DMPM will be using this as the tool for the management of training programmes to develop the skills as well as knowledge of enforcement officer.	2011	DMPM	APMM, Police Marine, Marine Dept	Refer to Indicator Report - Enforcement and Guidelines - see also Enforcement Manual
	AC1	The State Director to conduct regular checkups on all vessels for compliance to the rules of life saving appliances under the Merchant of Shipping Ordinance and to take appropriate measures whenever necessary.	Continuous	DMPM	APMM, Police Marine, Marine Dept	Enforcement Manual
	AC2	The State Director to ensure all enforcement officers are aware of, comply with and understand all rules and regulations related to safety and compliance the standard practices and SOP.	Continuous	DMPM	-	Enforcement Manual



GOAL	OBJECTIVE	STRATEGY	
ENFORCEMENT			
		ST6	Role of Voluntary Bodies and Volunteers in Enforcement of Marine Park Laws, Rules and Regulations
STRUCTURE			
Management control of structural construction on the coastal and/or within the water-body of Marine Park Waters	38. To ensure all permissible structural constructions are non-destructive and non-detrimental to the marine ecosystem and its environment	ST1	Permits
		ST2	Design
		ST3	Unpermitted Structures



	ACTION	IMPLEMENTATION PERIOD	AGENCY		INDICATOR	
			LEAD	SUPPORTING		
	AC1	DMPM to introduce education and public awareness components to promote voluntary compliance. The Pulau Redang CCC to be given the task of implementing this.	2010	CCC, DMPM	DMPM State Office, RWs	-
	AC2	Reef Watchers Programme: DMPM State office to institute reef watchers programmes that follow the same general principles as the observer programme to observe, record and report, but to take no direct enforcement action. Individuals participating in watch programmes should not have enforcement authority. Personnel would be utilized in an observation, 'no force' role to provide information to the community and to authorize law enforcement personnel for them to take appropriate follow-up enforcement action. DMPM to look into the possibility of protection of individuals assigned to the reef watchers programme to be included in the legislation.	2010	CCC, DMPM State Office	DMPM, Local Authority	-
	AC1	All proposals for any form of construction or structure within or near to marine park waters require special permits.	2012	DMPM State Office	DMPM, DID, DOE, UPEN, MBKT, JKR	
	AC2	Proposal for structures (and locations) will be assessed in accordance with the environmental guidelines as set by JPS or JKR for coasts and islands. Only approved structures are allowed to be erected or constructed.	2012	DMPM State Office	DMPM, DID, DOE, UPEN, MBKT, JKR	
	AC1	Structures must be practical, and designed and sited so as to avoid impacts on sensitive environments.	2012	DMPM State Office	DMPM, DID, DOE, UPEN, MBKT, JKR, JPBD	
	AC2	All construction must follow the guidelines and controls as specified by JPS, DOE, JKR, JPBD and Jawatankuasa Kabinet mengenai Penyelarasan Pembangunan Tanah Tinggi dan Pulau-Pulau (JKKTTP). A Certain minimum distance or buffer between structures and sensitive environments is required.	2012	DMPM State Office	DMPM, DID, DOE, UPEN, MBKT, JKR, JPBD	
	AC3	A risk based design is advocated. This means that the design of the structure should be appropriate to the risk associated with failure.	2012	DMPM State Office	DMPM, DID, DOE, UPEN, MBKT, JKR, JPBD, Engineering Consultants	
	AC4	All materials used in the construction, operation and maintenance of the structure should be the most environmentally friendly substances available. Toxic compounds, such as anti-fouling paints containing tributyltin, must not be used.	2012	DMPM State Office	DMPM, DID, DOE, UPEN, MBKT, JKR, JPBD, Engineering Consultants	
	AC5	Environmental Impact Management Plans and appropriate on-site clean-up equipment will be required for structures where fuel or any other hazardous substances are stored.	2012	DMPM State Office	DMPM, DID, DOE, UPEN, MBKT, JKR, JPBD, Engineering Consultants	
	AC6	Application for approval for structures must be submitted with the DEIA report.	2012	DMPM State Office	DMPM, DID, DOE, UPEN, MBKT, JKR, JPBD, Engineering Consultants	
	AC1	Charge -it is recommended DMPM impose a non-refundable permit processing fee and annual permit renewal fee, the amount to be determined and approved by DMPM and relevant authorities.	2012 onwards	DMPM	DMPM State Office	
	AC2	Approval Panel - DMPM will form an assessment panel to evaluate the application for structures. The members of the panel shall also include representatives from the Department of Environment and the Public Works Department.	2012	DMPM State Office	DMPM, DID, DOE, UPEN, MBKT, JKR, JPBD, Engineering Consultants	
	AC3	Application Guidelines - DMPM is to prepare the application guidelines (and forms) and procedures to be followed by the applicants.	2012	DMPM State Office	DMPM, DID, DOE, UPEN, MBKT, JKR, JPBD, Engineering Consultants	

6.0 GLOSSARY

Terms	Definition
Aquaculture	Commonly termed 'fish farming' but broadly the commercial growing, holding or breeding of marine (mariculture) or freshwater animals and aquatic plants.
Archipelago	A group, cluster, or chains of islands closely clustered or grouped in a body of water. Usually, this body of water is the ocean, but it can also be a lake or river.
Artificial reefs	Human-made underwater structure(s), typically built to promote marine life in areas with a generally featureless bottom, control erosion, block ship passage, or improve surfing. Artificial reefs can also be structured to deter trawling activities.
Bathymetry	The measurement of the ocean depths to determine the sea floor topography.
Best practice	A technique or methodology that, through experience and research, has been proven to reliably lead to a superior result.
Biodiversity	Short for biological diversity. Refers to the wealth of ecosystems in the biosphere, of species within ecosystems, and of genetic information within populations.
Community Consultative Committee (CCC)	CCC is a consultative body for the island population in all business discussions and negotiations with departments/ agencies for projects, programmes and works to be implemented and its impact on the socio-economics and culture of the island population.

Terms	Definition
Community Advisory Committee (CAC)	Advisory committee to the Community Consultative Committee (CCC), part of Consultative Management practice, which may consists of representatives from Department of Marine Park Malaysia (DMPM), local authority, and NGOs.
Conservation	The management of human use of the biosphere so that it may yield the greatest sustainable benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations.
Conservation zone	Conservation zone is protected areas with controlled human interaction or use. Low impact non-destructive human activities such as swimming, snorkelling, and kayaking may be permissible but should be strictly regulated, controlled, and at best done in minimum level.
Conserve	To keep in a safe, unimpaired state (especially natural resources)
Coral	Hard, stony skeleton secreted by certain marine polyps, often deposited in vast quantity to form extensive reef systems.
Coral bleaching	The loss of zooxanthellae through either expulsion or loss of algal pigmentation. Corals may expel their zooxanthallae when under stress, which leads to a lighter or completely white appearance, hence the term "bleached".
Coral reefs	Reefs composed mainly of coral and other organic matter of which parts have solidified into limestone.



Terms	Definition
Detailed Environmental Impact Assessment (DEIA)	A procedure undertaken for those projects with major/significant impacts to the environment. Refer also to Environment Impact Assessment (EIA).
Ecology	The relationship of living things to one another and their environment, or the study of such relationships.
Ecosystem	The interacting system of a biological community and its nonliving environmental surroundings.
Ecotourism	Travel undertaken to witness the unique natural or ecological quality of particular sites or regions, including the provision of services to facilitate such travel.
Endangered Species	Taxa in danger of extinction and whose survival is unlikely if causal factors continue operating. Included are taxa whose numbers have been drastically reduced to a critical level or whose habitats have been so drastically impaired that they are deemed to be in immediate danger of extinction. Also included are those that possibly are already extinct, in so far as they definitely have not been seen in the wild in the past 50 years.
Environment	The sum of all external conditions affecting the life, development, and survival of an organism.
Environmental Impact Assessment (EIA)	EIA is a study to identify, predict, evaluate and communicate information about the impacts on the environment of a proposed project and to detail out the mitigating measures prior to project approval and implementation.
Environmental Plan Management (EMP)	The synthesis of all proposed mitigative and monitoring actions, set to a timeline with specific responsibility assigned and follow-up actions defined.

Terms	Definition
General Use Zone	The open waters within the 2 nautical mile boundary which are predominantly used for navigation. Certain area leading to marina and/or jetties are also classified as General Use Zone.
Geographical Information System (GIS)	Information system that can input, process, analyse and visualize geographically referenced data in order to support decision-making processes.
Habitat	Place where an organism or population (human, animal, plant, micro-organism) lives.
Habitat Protection	Environmental protection activity comprising the conservation of threatened species of fauna and flora and the protection of ecosystems/habitats that are essential to the well-being of significant species of fauna and flora.
Habitat Protection and Preservation Zone	Areas identified as requiring special protection. Certain areas have been identified as special habitats which include turtle landing beaches, mangrove areas and areas leading to the said area, upwelling areas, and other specially identified habitats. Preservation areas may include certain pristine and untouched areas which are known to be of special value.
Highly Sensitive Environmental Areas (HSEA)	Highly Sensitive Environmental Areas (HSEA) refers to areas which are highly sensitive to any development activities and need to be conserve for their natural heritage values, protected for their ecological diversities, and minimizing any form of risks due to changes of land use and/or intrusions.
Local Ecological Knowledge (LEK)	Knowledge held by a specific group of people about their local ecosystems. LEK may be a mix of scientific and practical knowledge, it is site specific, and often involves a belief component.



Terms	Definition
Marine	Pertaining to the sea, from the open oceans to high water mark and into estuaries.
Marine Park Area (MPA)	All areas within the 2 nautical miles or other specified distance of gazetted island. All areas are no-take zone.
Marine Park Management Information System (MPMIS)	An Integrated Information Management System to consolidate various information and management to support Marine Biodiversity management and monitoring, complete with marine resource inventory as well as management aspects of those factors directly or indirectly impacting marine park areas.
Monitoring	Continuous or frequent standardized measurement and observation of the environment (air, water, land/soil, biota), often used for early detections of potential problem, warning, and control.
Monitoring station	Facility to measure emissions or ambient concentrations of pollutants.
Natural resources	Natural assets (raw materials) occurring in nature that can be used for economic production or consumption.
National parks	Large natural areas not materially altered by human activity where extractive resource uses are not allowed and whose purpose is to protect nature and scenic areas of national and international significance for scientific, educational and recreational use.
Nautical mile	The nautical mile (symbol M, NM or nmi) is a unit of length that is about one minute of arc of latitude measured along any meridian, or about one minute of arc of longitude at the equator. By international agreement it is 1,852 metres (approximately 6,076 feet).

Terms	Definition
	The international nautical mile was defined by the First International Extraordinary Hydrographic Conference, Monaco (1929) as exactly 1852 metres.[1] This is the only definition in widespread current use, and is the one accepted by the International Hydrographic Organization and by the International Bureau of Weights and Measures (BIPM).
No-take zone	An area set aside by the government where no extractive activity is allowed. Extractive activity is any action that removes, or extracts, any resource. Extractive activities include fishing, hunting, logging, mining, and drilling. Shell collecting and archaeological digging are also extractive.
Recreational Fishing	Fishing for pleasure, to catch a feed of fish.
Reef	A reef is a ridge of material at or near the surface of the ocean. Reefs can occur naturally. Natural reefs are made of rocks or the skeletons of small animals called corals. Reefs can also be artificial-created by human beings.
Research Natural Area (RNA)	Research Natural Areas (RNAs) are part of a nationwide network of ecological areas set aside for both research and education.
Sewage	Wastewater, including human waste from domestic, commercial, and industrial sources carried by sewers.
Sewerage	Piping structure, usually underground conduit, for carrying sewage or rainwater.
Sullage	Waste from household sinks, showers, and baths - but not from toilets.



Terms	Definition
Sustainable development	Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
Tide	The rhythmic rise and fall of the sea level caused by the gravitational pull of the moon and sun and by the centrifugal force caused by the rotations of the earth, moon and sun.
Topography	Physical feature of a surface area, including its relief or relative elevations, and the position of human-made and natural features.
Tourism and Recreational Zone	Tourism and recreational zones are specially designated area for tourism/recreational activities such as scuba diving, snorkelling, boating and surfing/windsurfing. Most of these areas have been identified and are currently being used by tour operators.

Terms	Definition
Trawling	A method of fishing in which large nets are towed behind one or more boats.
Wastewater	Spent or used water from individual homes, communities, farms, or industries that contains dissolved or suspended matter.
Water Quality Index	Weighted average of selected ambient concentrations of pollutants usually linked to water quality classes.
Zoning	Process in physical planning, or the results thereof, in which specific functions or uses are assigned to certain areas.



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