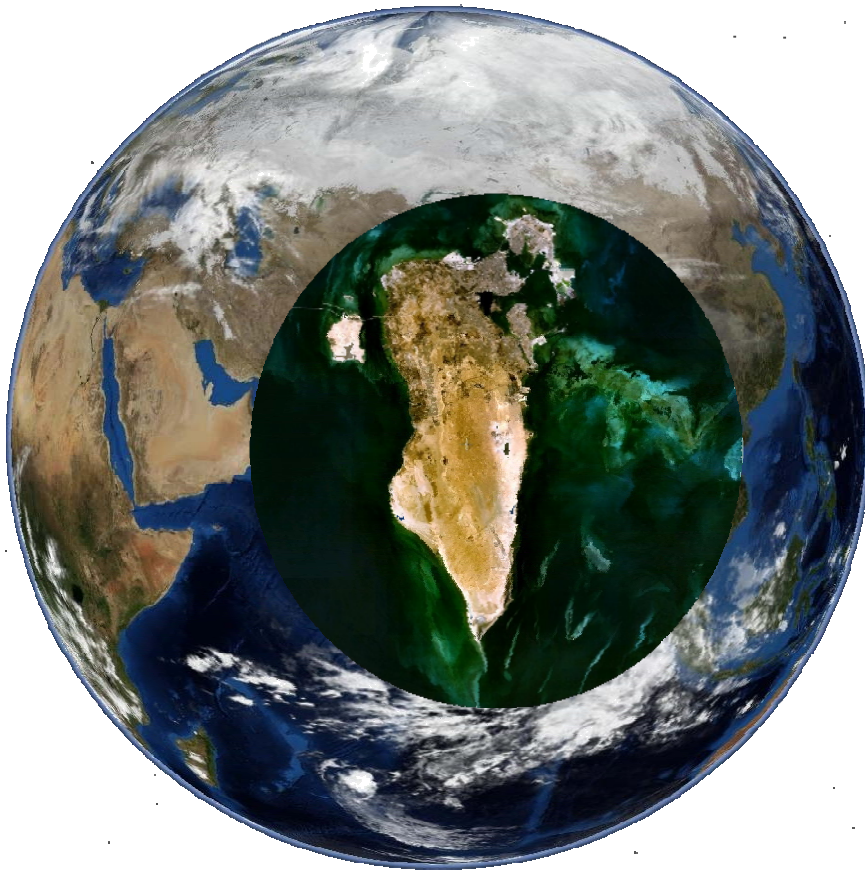




Bahrain National Biodiversity Strategy and Action Plan (BNBSAP)



**v. 4.0
December 2007**

BAHRAIN
NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN
(BNBSAP)

“Behold! In the creation of the heavens and the earth; in the alteration of the Night and the Day; in the sailing of the ships through the Ocean for the profit of mankind; in the rain which He sends down from the skies, and the life which He gives therewith to an earth that is dead; in the beasts of all kinds that He scatters though the earth, in the change of the winds, and the clouds which they trail like their slaves between the sky and the earth; - here indeed are signs for a people who are wise”.

Sura 2 aya 164

Bahrain Constitution¹

Article 9h

“The State shall take the necessary measures for the protection of the environment and the conservation of wildlife”.

Article 11

“All natural wealth and resources are State property. The State shall safeguard them and exploit them properly, while observing the requirements of the security of the State and of the national economy”.

¹ Bahrain Constitution, 2002 (DID0179)

Article 117a

“Any commitment to exploit a natural resource or a public utility shall be only by operation of law and for a limited time. The preliminary procedures shall ensure that the search and exploration work are facilitated and that openness and competition are realized”.

NES Statement²

“There is no progress without development nor is there development in the absence of sustainability and continuity”.

Reference title:

GoB, UNDP (2007). Bahrain National Biodiversity Strategy and Action Plan. V4.0 December. pp. 338. Government of Bahrain/United Nations Development Programme. Woods Hole Group Middle East.

² P. 50 Bahrain National Environment Strategy (DID0231)

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i. ACRONYMS AND ABBREVIATIONS

Table 1: Acronyms/abbreviations

Acronym	Title
AIA	Advanced Informal Agreement
BABCO	Bahrain Petroleum Company
BANAGAS	Bahrain Natural Gas Company
BMIS	Biodiversity Management Information System
BNBSAP	Bahrain National Biodiversity Strategy and Action Plan
CBD	Convention on Biological Diversity
CCC	Convention on Climate Change
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Conservation of Migratory Species (signed at Bonn)
COP	Conference of Parties
DID	Document ID (unique identification number for each document in the Project Management Information System.
DPSIR	Drivers, Pressure, State, Impact, Response
EEA	European Environment Agency
EIA	Environmental Impact Assessment
ENACT	Environmental Action Programme
EPC	Environmental Protection Committee
EPTS	Environmental Protection Technical Secretariat
EVI	Ecological Value Index
GCC	Gulf Cooperation Council
GCRMN	Global Coral Reef Monitoring Network
GDEWP	General Directorate for Environment and Wildlife Protection (Bahrain).
GDP	Gross Domestic Product
GoB	Government of Bahrain
IUCN	International Union for the Conservation of Nature and Natural Resources
MAB	Man and the Biosphere
MARGIS	Marine Geographic Information System

MDG	Millennium Development Goal
MPA	Marine Protected Area
NBSAP	National Biodiversity Strategy and Action Plan
NCSA	National Capacity Self Assessment
NCWP	National Commission for Wildlife Protection
NEMSIS	National Environmental Management Spatial Information System
NES	National Environment Strategy (Bahrain)
OECD	Organisation for Economic Cooperation and Development
PCPMREW	Public Commission for the protection of Marine Resources, Environment and Wildlife (Bahrain).
Ramsar	Place in Iran where the Ramsar Convention was signed.
SEA	Strategic Environmental Assessment
SIDS	Small island Developing States
SLR	Sea level rise
SST	Sea surface temperature
UAE	United Arab Emirates
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational Scientific and Cultural Organisation
UNFCCC	United Nations Framework Convention on Climate Change
UNCCD	United Nations Convention on Combating Desertification
WHC	World Heritage Commission/Committee
WHGME	Woods Hole Group Middle East

ii. ACKNOWLEDGEMENTS

This report was prepared with the assistance of numerous persons, whose contributions have extended over a period of some years. The finalization of the NBSAP was accomplished particularly due to the efforts of the Public Commission for the Protection of Marine Resources, Environment, and Wildlife, as well as the encouragement of the United Nations Development Programme in Bahrain. Numerous individuals contributed their time and effort in completing questionnaires, participating in Workshops, and contributing through detailed interviews.

iii. DOCUMENT REVISIONS

Table 2: Document Revisions

No	Before	After	Date	By
1	DID0299	DID0354 V1.0	281007	Consultant
2	DID0354 V1.0	DID0354 V2.0	171107	Consultant
3	DID0354 V2.0	DID0354 V3.0	101207	Consultant
4	DID354 V3.0	DID354 V4.0	181207	Consultant

iv. EXECUTIVE SUMMARY

iv.i Background

Bahrain ratified the International Convention on Biological Diversity Convention³ (CBD) in 1996 based on Decree (18) 1996. Article 6a of the Convention requires that each of the contracting parties prepares a National Biodiversity Strategy and Action Plan (NBSAP). The implication from Article 6b is that the NBSAP should also help mainstream biological diversity into other sectors.

Article 6a (NBSAP)
<i>“Develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity or adapt for this purpose existing strategies, plans or programmes which shall reflect, inter alia, the measures set out in this Convention relevant to the Contracting Party concerned”;</i>

Article 6b (mainstreaming⁴)
<i>“Integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies”.</i>

The article creates an obligation for national biodiversity planning. A national strategy will reflect how the country intends to fulfil the objectives of the Convention in light of specific national circumstances, and the related action plans will constitute the sequence of steps to be taken to meet these goals⁵.

³Convention on Biological diversity, 1992 (DID0121)

⁴ Mainstreaming means integrating or including actions related to conservation and sustainable use of biodiversity in strategies relating to production sectors, such as agriculture, fisheries, forestry, tourism and mining. (DID0355 p.4).

⁵ Convention on Biodiversity NBSAP introduction (DID0334)

Convention objectives⁶

1 “The objectives of this Convention, to be pursued in accordance with its relevant provisions, are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding”.

Following the ratification of the Biodiversity Convention (CBD) in 1996, Bahrain submitted an enabling project proposal to the UNDP requesting technical and financial assistance to facilitate the preparation of the Bahrain National Biodiversity Strategy and Action Plan (BNBSAP). In particular subsequent implementation of the project was expected to promote the conservation and sustainable use of biodiversity of Bahrain in line with the provisions of articles (6⁷) and (8⁸) of the Convention⁹. However, based on interim eligibility criteria, Bahrain was considered not eligible for financial funding and technical assistance under the CBD.

The critical requirement for delivery of the BNBSAP was indicated in 1999¹⁰ and as a priority in the First National Report to the Biodiversity Convention in 2006¹¹.

A brief Mission took place in December 2006 to initiate a new phase of BNBSAP planning¹². The Mission suggested that the framework of the National Environment Strategy (NES) was sufficient to develop the Action Planning element of the BNBSAP. This was also based on the Biodiversity Sector Report forming an Annex

⁶ Convention on Biological diversity, 1992, Article 1: Objectives (DID0121)

⁷ Convention on Biological diversity, 1992, Article 6: General measures for conservation and sustainable use (develop and national strategies and integrate between sectors) (DID0121).

⁸ Convention on Biological diversity, 1992, Article 8: In-situ conservation (Protected areas etc) (DID0121).

⁹ Bahrain First National Report, 2006, p.9 (DID0230).

¹⁰ Breeding Birds of Hawar, 1999, p. 88 (DID0161)

¹¹ Bahrain First National Report, 2006, p. 10 (DID0230)

¹² Bahrain NBSAP Initial Phase Mission, December 2006 (DID0233)

to the main report. Unfortunately, for the purposes of the BNBSAP, the focus of the main NES Report is not primarily on biological diversity.

It is important to guide the BNBSAP process according to the preamble to the Convention which indicates the importance of a precautionary approach.

Preamble (precautionary approach¹³)
<i>“Noting also that where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat”.</i>

iv.ii Schedule

The BNBSAP process has been driven by a series of three workshops:-

- September 2007

The overall goal to which the BNBSAP goal contributes, the BNBSAP goal together with the 6 broad Measures (Outcomes) to be used to develop specific Programmes were identified and agreed at the first workshop. Comments in this first workshop¹⁴ were considered and responses to comments are presented in Appendix 4 of this BNBSAP report.

¹³ IUCN, Precautionary principle guidelines, 2007 (DID0356)

¹⁴ BNBSAP September Workshop meeting report, 2007 (DID0283)

- **07th November 2007**

An extended list of 9 Measures were identified to meet CBD criteria¹⁵ and targets¹⁶, the requirements of the Bahrain First National Report to the CBD¹⁷ and Bahrain National Environment Strategy relating to biodiversity¹⁸. These 9 measures were identified to and prioritised by attendees at the second BNBSAP workshop in November 2007¹⁹. 21 related programmes were not discussed due to limited time but were listed in the executive summary provided in English and Arabic to participants.

A subsequent meeting on 08th November between the BNBSAP consultants and representatives of the PCPMREW short listed the 21 Programmes to 8 Programmes based, primarily, on the prioritisation of measures²⁰.

The in-situ conservation programmes for Hawar, Mashtan and Ras Sanad were subsequently consolidated under one Programme to provide economies of scale and to avoid duplication of effort so reducing the total number of BNBSAP Programmes to 6.

- **04th December 2007**

Detailed action plans for the 6 Programmes were presented at a third BNBSAP workshop and a workshop report includes the presentations and feedback²¹. Decisions made at a follow-up meeting with the PCPMREW on 05th December 2007 were also documented²².

The 6 Programmes are detailed in Sections 10 through 15 of the BNBSAP below.

¹⁵ Convention on Biological diversity, 1992, (DID0121).

¹⁶ <http://www.cbd.int/2010-target/goals-targets.shtml>

¹⁷ First National Report Annex III pages 53-57 (DID0230)

¹⁸ Improving the status quo of the environment; Taking the precautionary measures to prevent environmental deterioration; Imposing fines on the persons causing the pollution resulting in environmental damages; The principle of partnership (p.16, DID0231)

¹⁹ BNBSAP November Workshop meeting report, 2007 (DID0372)

²⁰ BNBSAP PCPMREW meeting on 08th November 2007 (DID0375)

²¹ BNBSAP December Workshop meeting report, 2007 (DID0380)

²² Memorandum of follow-up meeting with PCPMREW, December 05th 2007 (DID0381)

iv.iii Budget

The proposed budget for each Programme is presented in Bahraini Dinar (BDR) at a nominal exchange rate of \$US3.5 to BDR1. The budget does not cover the provision of substantial infrastructure (new buildings etc).

58% of the budget is expended on the Biodiversity Protected Areas Programme. A significant proportion of this Programme budget relates to staff salaries since there will need to be regular patrolling of the biodiversity protection Areas.

Section	Programmes	BDR*	%
10	Management Framework for Bahrain Biodiversity Conservation	**261,117	18.8
11	Public Communications for participation in Bahrain biodiversity Conservation	133,458	9.6
12	Strategic Environmental Assessment	50,881	3.7
13	Biodiversity Protected Areas Programme – Hawar, Mashtan and Ras Sanad	808,680	58.1
14	Environmental Trust Fund	91,365	6.6
15	Environmental Compensation Framework	46,951	3.4
Total		1,392,451	100

*BDR = Bahraini Dinar (exchange rate \$US3.5:BDR1); ** Includes 10% overhead for UNDP-CO

The Strategic Environmental Assessment and Environmental Compensation Framework Programmes are proposed to be delivered in three years. In the event that an enabling policy and regulatory framework is delivered during this period there should be follow-up Programmes to build capacity in delivering Strategic Environmental Assessment and the Environmental Compensation Framework.

The other four Programmes are scheduled to be delivered over five years.

1.0 INTRODUCTION

1.01 How this report was prepared

This NBSAP was prepared based on a series of actions, meetings, workshops, studies, and other contributions from the past decade. In particular, the NBSAP relied heavily on the contributions from Bahrain's National Environmental Strategy which was approved by the Government in October 2006. Following this NES, the first National Report on Biodiversity was issued by the Government to the Convention on Biological Diversity, which report served partly as a Stocktaking activity for the present NBSAP.

In 2007, international consultants were hired to assist in the final formulation of the NBSAP. Working closely with Staff from the PCPMREW, a series of three Stocktaking and Stakeholder workshops were held to inform the public, to receive comments at critical stages of the NBSAP preparation, and to assist with prioritization. Reports from these three Workshop (September 2007, November 2007, and December 2007) were issued and distributed to inform the stakeholders of actions and decisions taken at these events. For instance, Appendix 4 contains responses to questions raised during the First Stocktaking Workshop.

Extensive review of the previous work on biodiversity in Bahrain was undertaken by the Consultants. The references (Appendix 01) provide a listing of materials used in preparing this NBSAP. Copies of all references were provided to the PCPMREW at the same time as submittal of the final version of the NBSAP.

In addition to the Workshop component of the NBSAP development, there were numerous interviews and small meetings held to address specific issues relevant to the NBSAP (Appendices 02 and 03 provide outputs from some of these meetings). A questionnaire on biodiversity hotspots was also distributed to more than 30 persons and/or agencies; a summary of the responses to these questionnaires is included in Section 9.04 of this report.

Two drafts of the NBSAP were distributed prior to the issuance of the final NBSAP, and comments were received based on these documents and on Workshop

presentations of the NBSAP materials. Following the third Workshop, comments were accepted on the NBSAP, and this final version of the NBSAP was produced.

1.02 Structure of this report

The Report is divided into 10 Sections and 5 Appendices. Section 1 provides this Introduction.

Section 2 describes what biological diversity (biodiversity) is and the significance of biodiversity and the role of the Bahrain National Biodiversity Strategy and Action Plan in delivering some of the obligations of being a party to the International Convention on Biological Diversity.

Section 3 describes the methods used to deliver the BNBSAP. These include the use of the DPSIR model for environmental management and the logical framework system for programme design and delivery, literature review, consultations, the selection and prioritisation of the proposed BNBSAP Measures and Programmes and a series of three workshops to present and discuss proposals.

Section 4 describes the geography and economy of Bahrain and may be said to reflect the “drivers” element of the DPSIR model.

Section 5 provides a situation and gap analysis of available information on the current state of biodiversity.

Section 6 provides a situation and gap analysis of available information on policies relating to biodiversity.

Section 7 provides a situation and gap analysis of available information on laws and administrative/organisational arrangements that are relevant to biodiversity.

Section 8 provides a review of the actual management “response” to addressing pressures that have adversely impacted the state of biodiversity in Bahrain.

Section 9 describes the selection of the proposed Measures and Programmes and the proposed six-step approach for delivering each Programme.

Sections 10-15 provide the modular log frame (the roadmap and work plan) for delivering the six Programmes that have been prioritised for delivery under this first phase of the NBSAP. In essence, each of these chapters is a costed proposal for carrying out that particular programme.

Appendix 1 provides the references that are cited. Each reference has a unique document ID (DID) number that is held within the database supporting the development of the BNBSAP. **Appendices 2 and 3** provide information from interviews. **Appendix 4** provides a response to comments made in the first BNBSAP workshop in September. **Appendix 5** provides a compliance matrix showing how each of the proposed Programmes complies with relevant Programme selection criteria.

2.0 BACKGROUND

2.01 What is biological diversity?

Biological diversity is defined in the Convention as:-

Biological diversity ²³
<p><i>"Biological diversity" means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.</i></p>

2.02 Significance of biological diversity

The Convention on Biological Diversity²⁴ indicates that the significance of biological diversity lies in its intrinsic value and in the ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic goods and services that it provides. Biological diversity drives and sustains evolution. It maintains the life sustaining systems of the biosphere absorbing carbon dioxide, producing oxygen and fixing nitrogen.

Biological diversity supports the close and traditional dependence of many indigenous and local communities embodying traditional lifestyles on biological resources, and provides opportunity for the equitable sharing of benefits arising from the use of traditional knowledge, innovations and practices relevant to the conservation of biological diversity and the sustainable use of its components.

Biological diversity is of critical importance for meeting the food, health and other needs of the growing world population, for which purpose access to and sharing of both genetic resources and technologies are essential.

²³ Convention on biological diversity Article 2 (DID0121)

²⁴ Convention on biological diversity Preamble (DI0121)

Ultimately, the conservation and sustainable use of biological diversity will strengthen friendly relations among States and contribute to peace for humankind.

2.03 Biodiversity and sustainable development

The three objectives of the Convention for Biodiversity Conservation are commonly presented as conservation of biological diversity, sustainable use of its components, and equal sharing of its benefits. How to assure that Biodiversity activities can simultaneously deliver conservation, sustainable use, and equal sharing of benefits derived from utilization of biological resources, provides a challenge for every activity under the Convention, and similarly arises as a challenge for the Bahrain NBSAP.

Sustainable development can be defined as economic development that takes place while assuring the natural resources and environmental quality are available to future generations without restriction, while maintaining societal well-being. This statement reflects that sustainable development is commonly presented as having three pillars: economic development, environmental development, and social development. Millennium development goals and the CBD have moved towards a further concept of sustainable societies, broadening the issue of sustainability even more.

Biodiversity is clearly a mainstay of the environmental aspects of sustainability. What is biodiversity? The CBD defines it as follows: *'Biological diversity - or biodiversity - is the term given to the variety of life on earth and the natural patterns it forms. This diversity is often understood in terms of the wide variety of plants, animals and micro-organisms.'* Biodiversity dimensions include genetic aspects, species aspects, and ecosystem aspects. As an example of current concern, present rates of loss of species in the world (one dimension of biodiversity) at a rate of some 100 to 1000 times historical precedent give rise to debates over the future of biological diversity, and man's contributions to its decline.

As economic development grows, humans become more dependent on natural resources, not less so as is sometimes otherwise claimed. Ecosystem services provided by a healthy biodiversity are key to development: such services contribute to a healthy climate, they contribute to food and medicine, they contribute to recreation and good health, and they provide fresh, drinkable water. Thus, focus

needs to be maintained on conservation of biodiversity in order to further human development.

The present NBSAP recognizes the principles raised above. It was developed in the context of economic development, and takes full cognizance of social issues within the Kingdom of Bahrain. The focus of the present NBSAP is primarily, however, on conservation issues, since these are at most risk at present. Issues related to sustainable use and equal benefit sharing will hopefully arise as foci of future actions under the NBSAP in later years.

2.04 The CBD: the NBSAP role and process

Bahrain ratified the International Convention on Biological Diversity²⁵ (CBD) in 1996 based on Decree (18) 1996.

Article 6a of the Convention requires that each of the contracting parties prepares a National Biodiversity Strategy and Action Plan (NBSAP). The implication from Article 6b is that the NBSAP should also help mainstream biological diversity into other sectors.

Article 6a (NBSAP)
<i>“Develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity or adapt for this purpose existing strategies, plans or programmes which shall reflect, inter alia, the measures set out in this Convention relevant to the Contracting Party concerned”;</i>
Article 6b (mainstreaming²⁶)
<i>“Integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies”.</i>

²⁵ Convention on Biological diversity, 1992 (DID0121)

²⁶ Mainstreaming means integrating or including actions related to conservation and sustainable use of biodiversity in strategies relating to production sectors, such as agriculture, fisheries, forestry, tourism and mining. (DID0355 p.4).

The article creates an obligation for national biodiversity planning. A national strategy will reflect how the country intends to fulfil the objectives of the Convention in light of specific national circumstances, and the related action plans will constitute the sequence of steps to be taken to meet these goals²⁷.

Convention objectives²⁸
<i>1 “The objectives of this Convention, to be pursued in accordance with its relevant provisions, are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding”.</i>

Following the ratification of the International Convention on Biological Diversity (CBD) in 1996, Bahrain submitted an enabling project proposal to the UNDP requesting technical and financial assistance to facilitate the preparation of the Bahrain National Biodiversity Strategy and Action Plan (BNBSAP). In particular subsequent implementation of the project was expected to promote the conservation and sustainable use of biodiversity of Bahrain in line with the provisions of articles (6²⁹) and (8³⁰) of the Convention³¹. However, based on interim eligibility criteria, Bahrain was considered not eligible for financial funding and technical assistance under the CBD.

The critical requirement for delivery of a Bahrain NBSAP was indicated in 1999³² and as a priority in the First National Report to the Biodiversity Convention in 2006³³.

²⁷ CBD Introduction to NBSAP, 2007 (DID0334)

²⁸ Convention on Biological diversity, 1992, Article 1: Objectives (DID0121)

²⁹ Convention on Biological diversity, 1992, Article 6: General measures for conservation and sustainable use (develop and national strategies and integrate between sectors) (DID0121).

³⁰ Convention on Biological diversity, 1992, Article 8: In-situ conservation (Protected areas etc) (DID0121).

³¹ Bahrain First National Report, 2006, p.9 (DID0230).

³² Breeding birds of Hawar, 1999, p. 88 (DID0161)

³³ Bahrain First National Report, 2006, p.10 (DID0230)

A brief Mission took place in December 2006 to initiate a new phase of BNBSAP planning³⁴. The Mission suggested that the framework of the National Environment Strategy (NES) was sufficient to develop the Action Planning element of the BNBSAP. This was also based on the Biodiversity Sector Report forming an Annex to the main report. Unfortunately for the purposes of the BNBSAP, the focus of the main NES Report is not primarily on biological diversity.

The proposed Measures and Programmes have been identified to meet criteria described in Sections 3.08 and 3.09 below.

It is important to guide the BNBSAP process according to the Preamble to the Convention which indicates the importance of a precautionary approach.

Preamble (precautionary approach³⁵)
<i>“Noting also that where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat”.</i>

³⁴ BNBSAP December 2006 mission report (DID0233)

³⁵ IUCN, 2007 (DID0356)

3.0 METHODOLOGY

3.01 DPSIR model

The DPSIR model was developed by the Organization for Economic Cooperation and Development (OECD) and is the operational model for the European Environmental Agency (EEA)³⁶. In this model Drivers (social, environmental and economic root causes) create pressures which impact on (change) the natural state of the environment. The response part of the DPSIR model reflects management action which alters the drivers and/or reduces the pressures so that the impact on the natural state is less. The approach in the BNBSAP is to use this model. Hopefully with targeted research and development the model can be better populated with data and so become more useful.

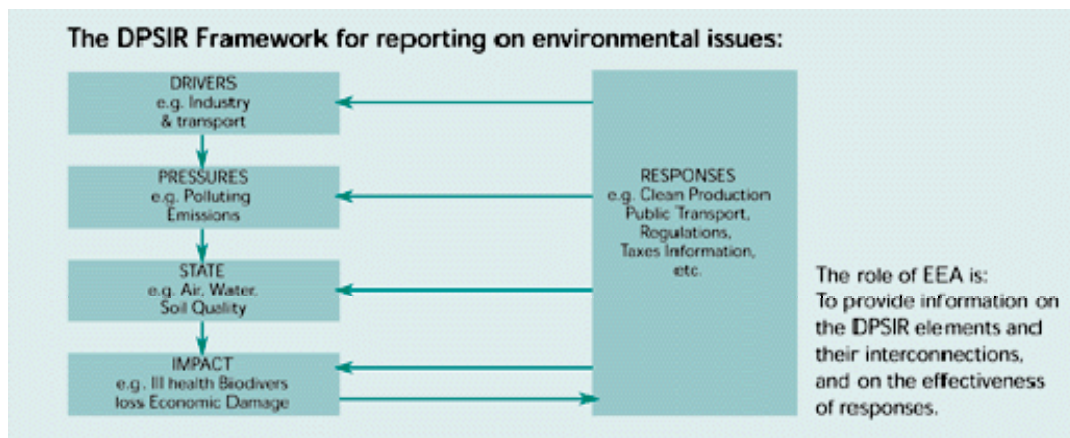


Figure 1: DPSIR framework

3.02 BNBSAP workshops

The BNBSAP process has been driven by a series of three workshops in September, November and December. These workshops are detailed in Section 9.01 below.

3.03 Review of existing information

The process was underpinned by a review of existing information primarily provided by the First National Report and the English version of the National Environment Strategy. A full list of references examined is presented as Appendix 01.

³⁶ European Environment Agency DPSIR (Drivers, Pressure, State, Impact, Response) model, 2007 (DID0025)

3.04 Climate change enabling project

In view of the potential significance of climate change on biodiversity, both within Bahrain³⁷ and globally, the BNBSAP process should closely liaise with the Climate Change enabling project. A preliminary meeting took place on 06th September with Dr Sabah Saleh Aljenaid at the request of this enabling Project. In addition, meetings were held at various times with the other PCPMREW staff involved with the Climate Change enabling project.

3.05 Hotspots questionnaire

A survey questionnaire was prepared^{38,39} in English (and Arabic) and distributed to 39 possible respondents in September 2007 requesting comment on possible biodiversity “hot issues” and “hot-spots”⁴⁰. 11 of the 12 returns from the survey were evaluated and presented to attendees at the November BNBSAP workshop⁴¹. See Section 9.04 for a discussion of these returns.

3.06 Interviews

A number of face-to-face interviews were undertaken. These have been both structured and open-ended. The former are presented in Appendix 2 and the latter in Appendix 3.

3.07 Logical Framework approach

The logical framework approach is widely used as a design and delivery tool⁴² for Projects and is also applicable to delivering the Measures and Programmes forming the BNBSAP. The logical framework comprises a hierarchy of objectives in which the delivery of a lower objective, for example a completed activity in a project, is designed to contribute towards delivery of a higher one, for example the objective of the whole project. The standard vertical structure is illustrated in Table 3 below.

³⁷ Bahrain Initial Communication to the Framework Convention on Climate Change, 2005 (DID0347)

³⁸ A standard questionnaire prepared by the Biodiversity Convention was completed for the Bahrain National Report (actually required for the fourth report³⁸) but it is completed by Government rather than Civil Society.

³⁹ Bahrain does not currently have a National Capacity Self Assessment (NCSA) process (<http://ncsa.undp.or>)

⁴⁰ BNBSAP hotspots questionnaire (DID0176); BNBSAP hotspots questionnaire sample (DID0228).

⁴¹ BNBSAP November Workshop Hotspots questionnaire PowerPoint, 2007 (DID0373).

⁴² Introduction to LFA, 2000 (DID0011)

The hierarchy of objectives is designed from top to bottom to and delivers according to a (vertical) logical sequence from bottom to top.

The vertical logic in this framework can be considered as nested rather like the layers of a Russian doll. Each layer in the framework looks pretty much the same but you can't get to the current layer without removing the previous one. Removing the next layer becomes the objective as soon as the current layer has been removed. This is a difficult concept to grasp and may explain why different practitioners use different terms for the layers. In fact the terms are applied in an entirely contextual manner – the same term being applied to the same structure but in different Russian dolls. A city master planner may have an objective for what s/he is doing.... creating a city master plan but the person designing the sewage system has a different objective. - designing the sewage system. Both are at very different levels of delivery but both are objectives.

The vertical logic is developed in such a way as to address any key risks and assumptions that may hinder progress in delivery. If key risks and assumptions cannot be addressed in the vertical logic then it may not be possible to deliver the Measure or Programme. Once the vertical logic is developed then the delivery needs to be monitored. Delivery is monitored using indicators of delivery. These indicators can be specified for all levels of the vertical logic but the priority is towards monitoring of Outcome indicators (also known as impact or result indicators) since they really show whether there Measure or Programme is actually delivering. For example, using the horse-to-water analogy below it is better to spend time and resources on monitoring whether the horse is drinking rather on whether a workshop has taken place to discuss how horses drink.

Table 3: Logical framework hierarchy

VERTICAL LOGIC	DELIVERY STATEMENT	Objectively verifiable indicator	Means of verification	Risks and assumptions
GOAL	The overall result to which the project will contribute, along with various other, projects.			
↑				
OBJECTIVE	Responds to the question “Why do the projects?” The achievement of the objective is the project impact. Benefit for beneficiaries derived from outcomes. There should be only <u>one project objective</u> . The analogy would be that once the horse had drunk another projects would deliver the food etc.	Horse hydrated	Blood condition	
↑				
OUTCOME	Several outcomes may deliver a specified objective – an outcome is reflected by a change in situation other than an output which is a product that may or may not be used. The analogy for this would be the horse drinking.	Horse drinking	Weight change	
↑				
OUTPUT	Several outputs deliver a specified outcome - the direct results of project Inputs, achieved through the completion of project activities. The analogy for this would be the horse arriving at the	Horse at water	Observation report	

	water.			
↑				
ACTIVITY	Several activities deliver a specified output - what needs to be done to achieve the outputs of a project, making use of human, technical and financial inputs. The analogy for this would be leading the horse to water.	Movement of horse/rope in relation to water	Aerial photographs over time	No clouds
↑				
MEANS	Several means deliver a specified activity - means are the human, material and service resources (inputs) needed to carry out planned activities and management support activities. The analogy for this would be the person to lead the horse and the leading rope.	Horse and rope	Horse and rope	
↑				
COSTS	A number of costs deliver a specified means – costs are the financial resources needed to carry out the activities identified to pursue a project’s objectives (staff, equipment etc). The analogy for this would be the cost of the leaders’ wages and the leading rope.	Accounts	Receipts	

3.08 Measures

The BNBSAP is presented as a set of Measures and Programmes with one or more Programmes contributing to delivery of a particular Measure and one or more Measures contributing to delivery of the BNBSAP. The terminology of measures and programmes is not a common one, but is consistent with CBD terminology.

3.08.01 Selection of Measures

The proposed Measures were initially identified based on review of the literature and interviews. They were then checked to determine whether they met one, or more, of the following criteria⁴³:-

- 1: the Objectives (Article 1 of the Convention on Biological Diversity);
- 2: other relevant Convention articles, particularly articles 6 and 8 (referred to in the First National Report⁴⁴) and precautionary considerations;
- 3: delivery of relevant Convention 2010 targets⁴⁵
- 4: the principles of the Bahrain National Environmental Strategy⁴⁶;
- 5: information from the first National Report to the Convention and the annex to that document relating to future vision⁴⁷ which is understood to be taken from the Biodiversity Sector Report of the National Environmental Strategy;
- 6: other cited information.

A matrix in Appendix 5 shows compliance with these criteria.

⁴³ See also CBD COP guidance, July 2007 (DID0332).

⁴⁴ Bahrain First National Report, 2006 (Section 4.3a, p.9, DID0230)

⁴⁵ <http://www.cbd.int/2010-target/goals-targets.shtml>

⁴⁶ Improving the status quo of the environment; Taking the precautionary measures to prevent environmental deterioration; Imposing fines on the persons causing the pollution resulting in environmental damages; The principle of partnership (p.16, DID0231)

⁴⁷ First National Report Annex III pages 53-57 (DID0230)

3.08.02 Prioritisation of Measures

The Measures were prioritised in the second BNBSAP workshop on 07th November 2007. The nine Measures were presented in English and Arabic to the attendees at the workshop. After clarifications each of the Measures was voted on in turn. Each attendee was given a maximum of three votes to be allocated as s/he thought fit for one to three measures. The results were recorded on a flip chart and are presented in Section 09 below.

3.09 Programmes

3.09.01 Selection of Programmes

The proposed Programmes were initially identified based on review of the literature and interviews and the experience of the BNBSAP Consultants.

3.09.02 Prioritisation of Programmes

Unfortunately, due to time constraints, it was not possible to do a similar participatory prioritisation exercise for the proposed Programmes. Such prioritisation would have had to take place during the December workshop in which case the December 2007 delivery target for the NBSAP would have been missed. The Consultants, therefore, met together with representatives from PCPMREW on 08th November to make a shortlist of key Programmes⁴⁸. This shortlist was later discussed with UNDP personnel.

The criteria for short listing were:-

- **Workshop prioritisation**: the prioritisation afforded to the parent Measure by the workshop the previous day
- **Practicality**: what can be most realistically delivered?
- **Relevance**: the priority for Articles 6 and 8 in the Convention
- **Impact**: Likely impact in terms of reversing the rate of loss of biodiversity.

⁴⁸ BNBSAP PCPMREW meeting on 08th November 2007 (DID0375)

All the proposed Programmes are presented in this document and may be developed should there be sufficient interest and resources become available.

4.0 GEOGRAPHY AND ECONOMY

4.01 Introduction

“Bahrain is an archipelago of islands totalling 40 islands scattered over a marine area of approximately 8,269 square kilometres. The combined land area of the islands amounts to 728 square kilometres. The lands of these islands are low where the highest elevation does not exceed 134m above sea level at the summit of Jabal Dukhan. Bahrain enjoys warm and moderate climate during the period from October through April. However, the weather is characterized by extreme heat during the summer where the mercury may go as high as or even higher than 40 degrees centigrade in the months of July and August. The relative humidity may climb as high as 90 percent at times. However, during the months of January and February, the temperature drops to a minimum of 11 degrees centigrade. Rains, which are minimal and irregular, fall during the winter at an average of 80 mm per year (the rate of total annual for rains during the period from 1971 to 2001). Most of Bahrain’s land consists of loose sand with little water retention property and minimal contents of organic matters. The soil is predominantly sandy and clay sandy soil in the upper strata. Arable land is confined to the coastal strip to the north of the island of Bahrain and the northern area of the eastern and western land strips. The rest of the land of Bahrain consists of bare rocks basically composed of lime rocks covered with layers of sand in various thicknesses”⁴⁹.

Figure 2 shows the general geography of Bahrain, including the location of Hawar Islands to the south towards Qatar.

Figure 3 is a satellite view of the island, showing the intensive development in the northern portion of the island and minimal development to the south.

4.02 Economy of Bahrain

Bearing in mind that climate change is a significant driver beyond the immediate control of any one country, the economy of Bahrain can be seen as the driver of much of the development that is putting pressure on and negatively impacting the

⁴⁹ National Environmental Strategy, 2006, p. 13 (DID0231)

state of biodiversity. It follows that economic considerations need to be mainstreamed when it comes to managing biodiversity.



Figure 2: General location map of Bahrain

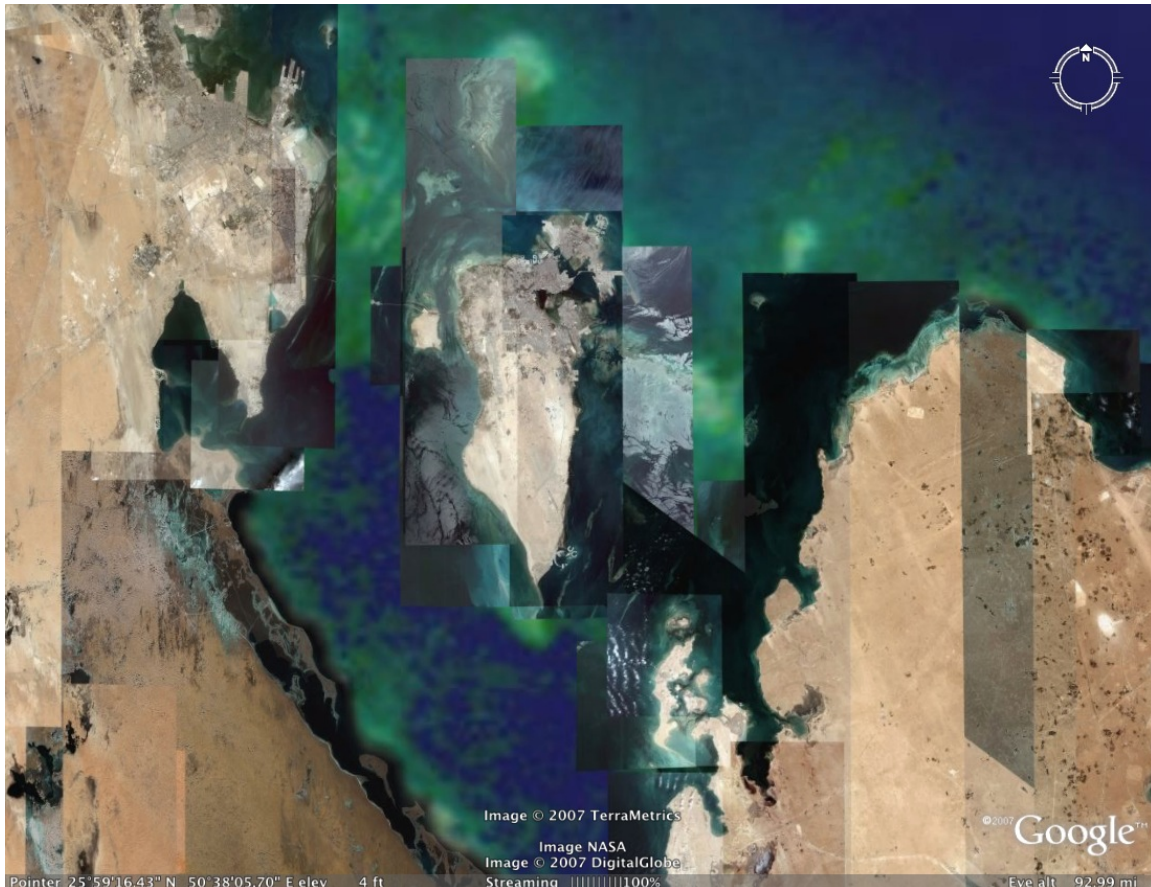


Figure 3: An aerial view of Bahrain (but without Hawar Islands) depicts the northern-most developed segment, and vast uninhabited areas of the southern two-thirds of the island. A new offshore land reclamation project can be seen to the south-southeast extremity of the island.

4.02.01 Market-based economy

Bahrain's economy is reported to be a market-based economy⁵⁰. The diversification of the economy is the main objective of the economic policy. Oil, which was the mainstay of the economy of the early stages of development, contributed around 18% of the real GDP in 2000. Manufacturing provided 12%, trade 13% and financial corporation (services) 19%.

The Bahrain Millennium Development Report in 2003⁵¹ indicated that two-thirds of Gross domestic product (GDP) came from the tertiary sector, whilst oil contributed 24.3 per cent of GDP in 2002 and accounted for two-thirds of the government's revenue in 2001. Meanwhile, to offset declining oil revenues, Bahrain has developed

⁵⁰ Bahrain SIDS assessment, 2003, p. 5 (DID0343)

⁵¹ Bahrain MDG Report 2003, p. 1 (DID0178)

the largest offshore banking centre in the region, and is striving to encourage tourism as a source of income.

Figure 4 shows the modern city of Manama, the capital of Bahrain, and the heavy urbanization of this north part of the island. Figure 5 shows some recent development of the island, depicting land reclamation via dredging and disposal, affecting nearshore habitat.



Figure 4: The developed coast of Manama on the north side of Bahrain.

4.02.02 Oil and gas sector

Although Bahrain has had an oil-based economy since 1935, by 1993 proven reserves were estimated at 200 million barrels, and the government anticipated that all oil would be depleted by 2005. Nevertheless, the country's economists expected oil to remain important long beyond that date because of the large refinery Bapco has operated at Sitrah since 1937. In 1990 Banagas estimated total natural gas reserves at 209 trillion cubic meters; daily production averaged about 20 million cubic meters⁵².

⁵² <http://www.country-studies.com/persian-gulf-states/bahrain---petroleum-industry.html>

Most recent available estimates of oil reserves indicate 124,000,000 barrels⁵³ with natural gas reserves at 46,000,000,000 cubic feet⁵⁴.

Oil refining is critically dependent on a bilateral agreement with Saudi Arabia.



Figure 5: New development along the NW sector of Manama, showing the extensive filling operations taking place to reclaim land for Gulf-front development.

4.02.03 Tourism sector

The NES reports⁵⁵ that the number of tourists snowballed from 64,648 tourists in the year 1985 to some 3.64 million tourist in the year 2002 (or six folds the number of the population), thereby hiking the tourism revenues in that year to 800 million dollars. Tourism has contributed 16,000 direct employment opportunities in addition to more than 32,000 indirect jobs (70% expatriate).

⁵³ http://www.nationmaster.com/graph/ene_oil_res-energy-oil-reserves

⁵⁴ http://www.nationmaster.com/graph/ene_nat_gas_res-energy-natural-gas-reserves

⁵⁵ National Environmental Strategy, 2006, p.43 (DID0231)

Figure 6 is a photograph of an excavation in Saar, Bahrain, of the Dilmun culture that reflects the importance of Bahrain in regional history and trade economy. Figure 7 depicts Fort Arad, a late 18th century Fort reputedly built by the Omanis.



Figure 6: Excavation of an old settlement of Dilmun in Saar, Bahrain.



Figure 7: Fort Arad, a tourist destination on Bahrain.

4.02.04 Agriculture and Fisheries

Statistics on agriculture and fisheries are not particularly substantive. More substantive information may exist but it was not available at the time of writing this document.

Agriculture: Although its contribution to the national economic accounts is less than one percent, the agricultural sector plays an important role in the livelihood of Bahraini society. The agriculture sector relies on heavy irrigation and currently provides job opportunities to more than 3,400 people and contributes to national food security goals⁵⁶.

Conversely the NES⁵⁷ reports that the sector was in deficit to the amount of 148.5 million Bahraini Dinars in the year 2003, where the agricultural imports accounted for 15% of the total value of non-oil imports into the Kingdom of Bahrain. Bahrain's annual imports of vegetables and fruits range between 86 percent and 90 percent, respectively, of total consumption. It represents a small share of national GDP with only 2% of the labour force engaged in agricultural activities. The contribution of this sector (including fisheries and poultry) was about 0.9% in 1999 and did not exceed 1% until 1995.

However, a sector deficit, particularly in agriculture is not unusual for a service-based economy and a small island one at that.

Agriculture Arable and permanent crop areas totalled about 8,200ha in 2000, or about 12% of the total land area of the country (Al-Madani, 2000). Most of the agricultural zones are located along the western coast of Bahrain island. Major commercial crops include date palms, assorted vegetables, and fodder crops⁵⁸. The 2000 Bahrain National Report to the United Nations Convention on Combating Desertification (UNCCD) provides information on agriculture⁵⁹.

⁵⁶ Bahrain initial communications to the CCC, 2005, p.19 (DID0347)

⁵⁷ National Environmental Strategy, 2006, p.33 (DID0231)

⁵⁸ Bahrain initial communication to CCC, 2005, p.9 (DID0347)

⁵⁹ Bahrain national report to UNCCD, 2000 (DID0361)

Fisheries: Fisheries forms a relatively small part of gross national product in 2005 it reportedly employed about 6,000 people⁶⁰. The NES reports that there were around 6,600 registered fishermen and that a cause for concern is that the income of fishermen is falling. The 2006 Fisheries resources report⁶¹ indicates a fairly constant rate of full-time Bahraini fishermen in employment with 1822 employed in 1983 and 1714 in 2004. However, the number of foreign fishermen has increased from 14 in 1983 to 2993 in 2004.

The NES also reports that there is virtual self sufficiency in production of fish which amounts to 98 percent of annual consumption⁶². The total annual seafood consumption is estimated at 16.7 kg/person⁶³. This compares with a maximum of 19.6kg/person in 1993, a minimum of 12.2kg in 1997 and 1998 and 16.2kg in 2004⁶⁴.

The annual catch of fish registered the highest rate in the year 1996, amounting to 12,900 metric tons, valued at some 10.7 million Bahraini Dinars. The catch diminished over the subsequent periods through the year 2002 where the local fish catch retreated to 69% in that year⁶⁵. Just under 12,000 tonnes are reported for 2005⁶⁶.

The data tabled in the 2006 Bahrain Fisheries Resources report⁶⁷ suggests that artisanal fish landings are on increasing upwards trend since 1990 with 14,489 metric tonnes (mt) reported for 2004 compared with imports of 5,384mt. However, catch per unit effort may be falling. The maximum recorded consumption was 19.6kg/person in 1993 and 12.2kg in 1997 and 1998⁶⁸.

⁶⁰ Bahrain initial communication to CCC, 2005, p.20 (DID0347)

⁶¹ Bahrain Fisheries Resources 2004, table 2.3 p. 60 (DID0366)

⁶² National Environmental Strategy, 2006, p.38 (DID0231)

⁶³ Bahrain SIDS assessment, 2003, p. 13 (DID0343)

⁶⁴ Bahrain Fisheries Resources 2004, table 6.2 p. 90 (DID0366)

⁶⁵ National Environmental Strategy, 2006, p.38 (DID0231)

⁶⁶ http://www.fao.org/fi/website/FIRetrieveAction.do?xml=FI-CP_BH.xml&dom=countrysector&xp_nav=3

⁶⁷ Bahrain Fisheries Resources 2004, Table 6.1 p. 91 (DID0366)

⁶⁸ Bahrain Fisheries Resources 2004, table 2.3 p. 60 (DID0366)

5.0 BIODIVERSITY STATUS

5.01 Ecosystem approach

At the highest level there are two major ecosystems operating within Bahrain, namely the terrestrial and the marine. Whilst the former may have less significance, in terms of biodiversity, it has greater significance in terms of immediate human impact. The two systems come together in the inter-tidal zone. Terrestrial sub-ecosystems include wadis, springs/freshwater wetlands, vegetated desert and agricultural lands including date palm groves. Marine sub-ecosystems include the open sea, sea grass, coral reef and substrates dominated by other organisms. The inter-tidal includes hard and soft substrates dominated by various organisms included, in restricted areas, the mangrove plant *Avicennia marina*.

The biodiversity and productivity of the terrestrial ecosystem is determined by availability of suitable land, freshwater and pollution. The biodiversity and productivity of the marine ecosystem are determined by water temperature, salinity, oxygen content, exchange with other water bodies, the availability of certain nutrients, the availability of suitable substrate and pollution. The importance of ecosystem linkages in, for example, sustaining fisheries is critical. Fisheries that depend on substrates (coral reef fisheries and shrimp fishes) have somewhat different linkages than fisheries that live in the open sea and migrate (tuna).

However, to a great extent all the above determinants are interlinked and most can be viewed to be on a deteriorating trend.

Bahrain Millennium Development Report 2003⁶⁹

“The Kingdom has limited natural resources that are increasingly strained by high population growth, urbanization, and industrialization. Presently, two-thirds of consumed water is desalinated, while air and sea pollution, landfill of coastal areas, over-fishing, and the absence of effective waste management are negative factors affecting the island’s inhabitants.”

⁶⁹ Bahrain MDG Report 2003, p.1 (DID0178)

The risks from climate change need to be added to this list of threats.

5.02 Terrestrial ecosystems, habitats and species

5.02.01 Introduction

The status of terrestrial ecosystems and their species are so dependent on changing agricultural land practices and the availability of freshwater that these pressures are detailed first.

The issue of climate change is described in the context of particular ecosystems, habitats and species. However, it is also likely to have general terrestrial impacts. The Bahrain initial communications to the Convention on Climate Change indicate⁷⁰:

“The total land area that would be inundated under the various climate change scenarios is substantial. As shown in Figure 3.1, even the low sea level rise scenario results in an inundation of about 5% (36km²) of the total land area of the total land area of Bahrain by 2100. This level increases to about 10% of the total land area (69km²) for the scenario where sea level rises 1 meter above the current levels.

Inundation will unevenly affect Bahrain’s vulnerable infrastructure. For the main islands of Bahrain, Muharraq, Sitrah, Jiddah, and Um Na’asan - where the majority of socioeconomic activities are concentrated - inundation would adversely affect cities, roads, agricultural areas, as well as beaches and salt marshes. Of a total inundated area of about 57km², about a quarter of the total (14km²) would occur in the productive zones taken up by cities, roads, and agricultural lands.

The extent of inundation on the Hawar Islands, given their status as wetlands of international importance, is particularly noteworthy. The islands in this chain are even more low lying than the main islands. Jazirat Hawar, the largest in the island chain, has a maximum elevation of 12.5 meters, and a mean elevation of 0.5 meters above sea level. Were sea levels to rise by one meter, about 22% (11km²) of the combined land area of these pristine islands would be inundated. Figure 3.2 illustrates the spatial extent of this inundation. It is important to note that these

⁷⁰ Bahrain initial communication to CCC, 2005, p.17-18 (DID0347)

inundated areas significantly overlap the sensitive bird breeding and nesting sites (refer to Box 1.1 in Chapter 1)."

Figure 8 illustrates the desert ecosystem, where large tracts of arid lands are broken by occasional trees and greenery.



Figure 8: The Tree of Life: a lone mesquite tree in the desert ecosystem of central Bahrain.

5.02.02 Agricultural land

There is no evidence for a substantial reduction in cultivable and cultivated land in Bahrain between 1990 and 1996⁷¹. The situation may have changed since 1996.

Even assuming that the amount of land is the same, the prognosis for agriculture is not good.

Firstly the sector uses far too much water for its contribution to the economy. Even in 1999 the agricultural sector accounted for about 57% of total available water in

⁷¹ Bahrain initial communication to CCC, 2005, p.9 table 1.1 (DID0347)

Bahrain⁷². Secondly there is now a substantial deficit in the commercial agricultural balance⁷³. Finally there is the projected negative impact from climate change.

“The loss of agricultural land due to a 1m rise in sea level is likely to be around 5km², or about 11% of the total arable land in the country. Other impacts from the inundation of agricultural lands include damage to drainage systems, an increase in water logging problems, and higher groundwater tables. These impacts are likely to contribute to adverse impacts on crop production levels, particularly date palms which are highly susceptible to groundwater salinity levels⁷⁴”.

On the positive side there is considerable greening particularly in urban areas and if the species used and planting are appropriate this could provide some refuge for natural wildlife.

5.02.03 Freshwater

The Government report to the United Nations Convention to Combat Desertification (UNCCD) provides a good summary of the water resources situation in Bahrain as of 2000⁷⁵.

The Bahrain SIDS report, 2003 indicates⁷⁶ that:-

“The unsustainable use of groundwater (125% over use) resulted in the drop of groundwater level, deterioration of groundwater quality, drying up springs, salinization and deterioration of agricultural lands, and increasing dependency on desalinated water”.

The Bahrain initial communications to the Convention on Climate Change, 2005 indicates⁷⁷ that:-

“With the increases in population and economic growth of recent decades, Bahrain has substantially increased its demand for fresh water. About 75% of freshwater

⁷² Bahrain initial communication to CCC, 2005, p.9 (DID0347)

⁷³ National Environmental Strategy, 2006, p. 33 (DID0231)

⁷⁴ Bahrain initial communications to the CCC, 2005, p.19 (DID0347)

⁷⁵ Bahrain national report to UNCCD, 2000 (DID0361)

⁷⁶ Bahrain initial communication to CCC, 2005, p.20 (DID0347)

⁷⁷ Bahrain initial communication to CCC, 2005, p.20 (DID0347)

demand is met by groundwater withdrawals⁷⁸, resulting in a severe decline of the groundwater table through saltwater intrusion. At present, over half the volume of the original groundwater reservoir has been lost to salinization, sharply reducing its availability for municipal and agricultural purposes.

A rise in sea level will further aggravate a serious problem. One possible impact of sea level rise would be a regression in the position of the freshwater/saline waterfront leading to further saltwater intrusion and deterioration of the aquifer. Moreover, SLR (sea level rise) would lead to a new line of contact further inland between salt marsh areas and groundwater which would likely lead to more seepage of salt water into the groundwater reservoir. There are also indirect impacts from climate change in general as higher temperatures might lead to higher levels of water consumption in agricultural activities and households, further depleting scarce freshwater supplies”.

5.02.04 Natural terrestrial habitats and Species

Information on natural terrestrial habitats and species is presented in the First National Report⁷⁹. However, there is no comprehensive inventory and/or list. The information that exists is not readily available and does not appear to be collected in a co-ordinated or concerted manner. The following provides such information as may be available and that is relevant to the identification of BNBSAP Projects.

- Freshwater springs/wetlands

A substantive MSc thesis was prepared on freshwater springs in 1997⁸⁰. It was indicated even at that time that most of the natural on-shore springs in Bahrain had experienced sharp quantitative and qualitative deterioration causing most of them to cease flow and become dry. It was proposed that some of the important natural springs be converted into tourist attraction areas but that rehabilitation of the natural springs in Bahrain should depend on artificial solutions rather than on natural ones.

⁷⁸ This contrasts with a figure of 82% for the Bahrain SIDS assessment dated 2003 (82% of water demand is met by groundwater abstraction, while desalinated water contributes to 13% and tertiary treated sewage effluents and agricultural drainage water are accounted for 4% and 1%, respectively. (p. 22-23, DID0343))

⁷⁹ Status of species Table 4.2 pages 5-6, ecosystem trends Table 4.3 pages 8-9 (DID0230)

⁸⁰ History and present conditions of natural springs in the State of Bahrain, 1997 (DID0370).

This latter recommendation was endorsed by an interview with Prof. Dr. Waleed Khalil Al-Zubari⁸¹ in November 2007.

It is reported⁸² that information about freshwater springs may be available through Bahrain Petroleum Company (BAPCO). It is indicated that there are no more freshwater springs operational in Bahrain^{83,84}.

However, it is suggested that it is necessary to confirm the situation on precautionary grounds and because freshwater springs (were) such an important part of the natural and cultural heritage of Bahrain.

Figure 9 shows a freshwater spring in Bahrain, one of only a few left of what were once major economic, cultural and biodiversity hot spots on the island.



Figure 9: One of few remaining freshwater springs in Bahrain. Freshwater springs provided the freshwater that contributed to the importance of Bahrain in regional trade and economy.

⁸¹ Appendix 3.03 of this BNBSAP

⁸² See Appendix 2.01 concerning information systems

⁸³ Sadly, however, the freshwater springs have vanished due to over-exploitation of underground water (NES, DID0230, p. 3).

⁸⁴ Caspian terrapin *Clemmys (Mauremys) caspica* and, to a lesser extent, the marsh frog *Rana ridibunda* are threatened following the disappearance of freshwater springs. (Bahrain First National Report, DID230, p.20)

- **Date Palm Groves**

The first national report specifies:-

“The northern and western coastal areas have been heavily cultivated with date palms and alfalfa plantations for thousands of years forming a biologically important habitat. Indeed, date palm farms are the most diverse terrestrial habitat in the country supporting a wide range of introduced and native species, including vascular plants and algae, insects, brackish water fish, amphibians as well as resident and migratory birds. These farms were once watered by numerous freshwater springs, which, in turn, represented the most biologically diverse inland water ecosystem. Sadly, however, the freshwater springs have vanished due to over-exploitation of underground water⁸⁵”.

The total area of date palm farms has declined due to the accelerated urbanization in the northern part of the country. Palms, which were once almost flooded by freshwater, now require surface irrigation and in some areas there are desiccated. Without doubt, the status of the biologically rich freshwater springs is critical. They have vanished because of the over-abstraction of underground waters⁸⁶.

Figure 10 shows the abundance of dates that provided local sustenance and trade materials for millennia on Bahrain.

More information on date palms is given below.

- **Wadis**

As far as is known there has been no inventory of the Wadi landscape type in Bahrain. Mention is made of the need to protect representative Wadi habitats⁸⁷. Despite the general comment that desert area is under little immediate threat in Bahrain⁸⁸ the opportunity to act now should be provided.

⁸⁵ Bahrain First National Report, 2006, p.3 (DID0230).

⁸⁶ Bahrain First National Report, 2006, p.4 (DID0230).

⁸⁷ Al Areen Desert Spa & Resort. Generic Environmental Mitigation and Enhancement Package (DID0165, Appendix B, p. 2)

⁸⁸ It seems unlikely that the desert environment will be at immediate risk in the near future (DID0230 p. 7).



Ripening dates

Figure 10: Dates on a palm tree in Bahrain.

- **Mammals⁸⁹**

The Arabian Oryx (Figure 11) is not native to Bahrain. It has been bred in captivity at Al-Areen and introduced on Hawar Islands intentionally to support the relevant regional efforts aiming to conserve this species.

Gazelles (Figure 12) have been under pressure but still roam wild. Breeding populations are successfully maintained at Al-Areen and re-introduction programs have promoted the recovery of their populations in the southern Bahrain and on several offshore islands.

Camels are introduced whereas rats and mice are invasive species.

⁸⁹ Bahrain First National Report, 2006, Species at risk, p.6, Table 4.2 (DID0230)



Figure 11: The Arabian Oryx.



Figure 12: Gazelle on Hawar Islands.

- **Birds**⁹⁰

The First National Report provides the following summary on birds. It is likely that several species of birds, particularly migratory species, are at risk from projected climate change effects on the nature and length of the different seasons and on food supplies.

“Most migratory bird species breeding in Bahrain are stable in numbers or affected by other factors along migratory routes. Breeding colonies of seabirds on Hawar Islands (e.g. osprey, sooty falcon, Socotra cormorant, western reef heron, white checked tern, lesser crested tern and Caspian tern) are under full protection. Wintering and passing seabird species are likely to be declining due to the loss of inter-tidal habitats, in particular mudflats. Several invasive species (e.g. Mina, Indian house crow) have successfully colonized inhabited areas. White-cheeked bulbul is threatened by illegal hunting; strict regulations on the commercial handling of chicks and adults have been enforced and captive breeding programs have been established at Al-Areen.”

The “Hawar Islands” web site provides substantial additional information on the status of bird populations⁹¹. An interview with Dr. Brendan Kavanagh on 05th September 2007⁹² provides some additional background information on particular bird species.

- **Reptiles**⁹³

Reptiles are likely to be at risk from climate change because temperature, in some species has an effect on sex determination during incubation.

The spiny tailed lizard is threatened by camping activities; breeding populations are maintained at Al-Areen.

⁹⁰ Bahrain First National Report, 2006, Species at risk, p.6, Table 4.2 (DID0230)

⁹¹ http://hawar-islands.com/hawar_islands.html

⁹² Appendix 3.02 of this BNBSAP report

⁹³ Bahrain First National Report, 2006, Species at risk, p.6, Table 4.2 (DID0230)

Caspian terrapin seems highly probably to be threatened following the destruction of its major habitat (freshwater springs); captive breeding programs have been successfully developed by Al-Areen.

- **Amphibians⁹⁴**

The Marsh frog is highly likely to be endangered due to the loss of freshwater springs; captive breeding program has been undertaken by Al-Areen.

- **Date Palms**

It is indicated above that the total area of date palms has declined and that they are an important biodiversity habitat⁹⁵.

It is reported that there is no net loss of Palm trees in Bahrain because palms located in planned residential or commercial areas are relocated⁹⁶. Conversely it is reported that *“Bahrain had in the recent past years a million palm trees whereas currently palm trees do not exceed 400,000. This decline is attributed to salinization problem, over consumption of water, and conversion of agricultural lands into commercial and residential uses.^{97”}*

- **Medicinal Plants**

The First National Report specifies⁹⁸:-

“Traditional herbal remedies have been undertaken for hundreds of years in Bahrain.

Interestingly, folk medicine is still attractive for some locals albeit the sweeping trend of modern medicine and forms an exceptional part of the national heritage. At least 20 different indigenous plant species have been recorded to have potential medicinal uses. To treat numerous afflictions, fresh plant parts (e.g. leaves and seeds) or even the whole plant may be directly used, or dried, and subsequently boiled and extracted prior to consumption. It seems highly probable that the usage of wild

⁹⁴ Bahrain First National Report, 2006, Species at risk, p. 6, Table 4.2 (DID0230)

⁹⁵ One of the remaining Grey Hypocolius (*Hypocolius ampelinus*) roosts occurs in palm regrowth (Kavanagh, pers.comm)..

⁹⁶ Bahrain initial communication to CCC, 2005, p.14 (DID0347)

⁹⁷ Bahrain SIDS assessment, 2003, P. 23 (DID0343)

⁹⁸ Bahrain First National Report, 2006, p.12 (DID0230).

plants for medicinal purposes is sustainable and imposes on adverse impacts on biodiversity of Bahrain.”

In addition sustainable conservation and restoration of vegetated areas to support the sustainable use of medicinal plants is identified in the Future Vision in the Biodiversity Sector report of the draft National Environmental Strategy⁹⁹.

There may be additional information and recommendations arising out of the response to the “hotspots” questionnaire.

5.03 Marine and coastal ecosystems, habitats and species

5.03.01 Introduction

The status of marine ecosystems and their species are dependent on dredging and reclamation, wastewater discharges/pollution and fishing. These pressures are detailed first. The issue of climate change is particularly cross-cutting and is, therefore, described in the context of particular ecosystems, habitats and species.

Information is available about the status of key marine habitats and species in Bahrain¹⁰⁰. However, there is no comprehensive inventory and/or list. MARGIS (MARine Geographic Information System) provides some information on the Marine Environment of Bahrain (Figure 13).

⁹⁹ Bahrain First National Report, 2006, Annex III, p. 54 (DID0230).

¹⁰⁰ Bahrain First National Report, 2006, Status of species, Table 4.2 p. 5-6, Ecosystem trends Table 4.3 p. 8-9 (DID0230)

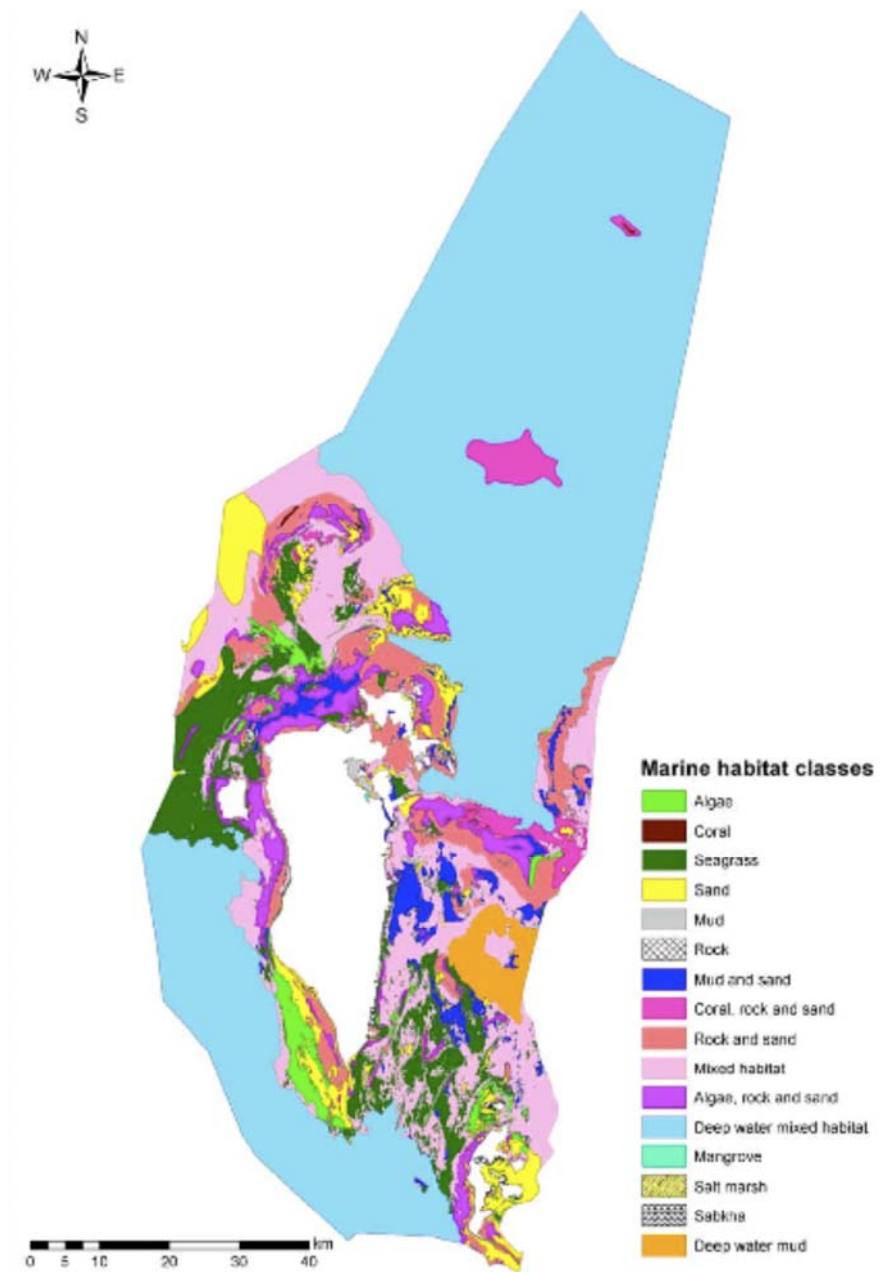


Figure 13: The MARGIS provides a classification of marine habitat classes off Bahrain.

The following is taken from the interview with Dr Adel Khalifa Al Zayani provided as Appendix 3.1.

“MARGIS1/MARGIS2 is a MARine Geographic Information System with information on the environment^{101,102}. It is based on information from 900 stations. The information from several layers used to provide an

¹⁰¹ MARGIS II, Final Report, 2006 (DID0286)

¹⁰² Dr Shepherd tried to access MARGIS through the PCPMREW website on 09th September 2007 but was unable to do so.

Ecological Value Index (EVI) based on the Clients requirements and based on the layers in the information system. The EVI is determined by applying the following criteria:

- (1) Habitats: criteria used are: Rarity, Biodiversity, Vulnerability, and Recoverability as attributes*
- (2) Birds: Using historical data (no survey)*
- (3) Dugong:¹⁰³*
- (4) Turtle: Nesting data are not included because there are no nesting data and it is understood that turtle do not nest in Bahraini waters.*
- (5) Fishing grounds: (productivity and Diversity)*

There is also a Marine Atlas in the process using this information and available from Geomatec and information available from the Authors in different field of the marine environment. It contains an overview section, sections on marine habitats (inter-tidal and sub tidal), section about Hawar Islands, section about fisheries recourses, section about the key species in the marine and the evaluation of the marine environment with record from the past, present and the forecast of the future. Finally, the proposed management of the marine environment.”

In addition it is understood that the agency in charge of Fisheries monitors mangrove and coral reef. This information was not available at the time of preparation of this report NBSAP.

5.03.02 Reclamation/dredging

Reclamation and dredging primarily impact on the marine environment though solid waste disposal impacts the terrestrial environment.

The Bahrain SIDS report in 2003 states¹⁰⁴:

¹⁰³ There has been a recent aerial survey by James Cook University (Helen Marsh) of turtles, dugong and dolphins and a report is available.

¹⁰⁴ Bahrain SIDS Assessment, 2003, p. 15 (DID0343)

Land reclamation on the northern and eastern coasts have increased the area by 11km² in less than 10 years, often covering valuable coastal resources, but not yet directly impacting coral reefs. However, there are proposals to reclaim part of major coral reef areas at Fasht Al Adhom. There are government regulations concerning land reclamation, but there is little enforcement and compliance with these regulations and many projects are completed without government approval.

Dredging is used to maintain navigation channels and collect sand for reclamation and construction. About 10 suction dredgers routinely operate in Bahrain waters, including specialized cutter and suction dredgers. During dredging operations, large amounts of silt flow directly onto corals from Muharraq dredging area, with about 182,000m² reef areas lost between 1985 and 1992.”

The total land area of Bahrain has been steadily increasing since the 1970's through land reclamation and dredging activities. Many sites along the northern and northeastern coastal areas were dredged and reclaimed for industrial, recreational and residential purposes. As a result, the country's total land area has increased from about 662km² in 1975 to about 710km² in 2000¹⁰⁵. Figures 3 and 5 are two examples of the land reclamation taking place on the island.

There are concerns that dredging and reclamation have had an impact on marine productivity. However, there is limited evidence to suggest this although the Bahrain SIDS report in 2003 states that *“during dredging operations, large amounts of silt flow directly onto corals from Muharraq dredging area, with about 182,000m² reef areas lost between 1985 and 1992¹⁰⁶.”*

5.03.03 Wastewater discharge/pollution

There are substantial wastewater discharges particularly in Tubli Bay and contamination of groundwater from septic tanks. However, it is difficult, other than locally to see any significant impact.

¹⁰⁵ Bahrain initial communication to CCC, 2005, p.1 (DID0347)

¹⁰⁶ Bahrain SIDS Assessment, 2003, p. 15 (DID0343)

5.03.04 Fishing

Fishing is addressed by species type below. Relevant information concerning status and ecosystem linkages may be available but was not accessible at the time of writing of this report. It is likely that climate change will have significant adverse effects in terms of destruction of important feeding, spawning and nursery habitat. Climate change may also have adverse impacts on pelagic phases of life cycles.

5.03.05 Natural marine and coastal habitats and Species

Information on natural marine and coastal habitats and species is presented in the First National Report¹⁰⁷. However, there is no comprehensive inventory and/or list. The information that exists is not readily available and does not appear to be collected in a co-ordinated or concerted manner. The following provides such information as may be available and that is relevant to the identification of BNBSAP Projects.

- Coral reefs

Coral and coral reefs (Figure 14) are particularly vulnerable to an increase in water temperature due to climate change since they are already at the upper limit of their thermal tolerance during the summer. However, coral species from Bahrain may already be adapted to thermal upper limits that will become more prevalent in other parts of the world and may have value in a global gene bank for facilitating coral reef adaptation to climate change.

In 1998, a bleaching event resulted in massive coral mortality (> 90%) at most reefs of Bahrain. At present, live corals form merely scattered patches at several reefs situated in deep waters¹⁰⁸. There is information for Bahrain from the Global Coral Reef Monitoring Network reported in 2004 though this may be based on 1998 information¹⁰⁹. There are monitoring reports for Fasht al Adhorn for July 2000 and for Khawr Fasht at 2 sites for 1998 on the Reef Check Site. It is understood that Fisheries is doing some monitoring of coral reefs and that there may be recent information collected under MARGIS2. However, this information is not available at the time of writing of this report.

¹⁰⁷ Bahrain First National Report, 2006, Status of species Table 4.2 p. 5-6, ecosystem trends Table 4.3 p. 8-9 (DID0230)

¹⁰⁸ Bahrain First National Report, 2006, P. 4 (DID0230).

¹⁰⁹ http://www.reefbase.org/global_database/default.aspx?section=r2



Figure 14: An assemblage of mixed live corals in Fasht Bulthamh area; the most productive and diversified coral reef area in Bahrain, and home to diverse array of fish and pearl oysters) (From MARGIS)

The 2004 status of coral reefs of the world report states:-

“The Gulf region was amongst the worst affected by coral bleaching events in 1996, 1998 and 2002, which reduced live coral cover in many shallow areas to less than 1%. There has been very little recovery, except in a few areas close to deeper water and away from additional human impacts. Coastal engineering, land reclamation and dredging are causing significant environmental damage along the mainland coast, particularly in UAE and Bahrain, while offshore islands are protected either actively (as MPAs) or passively (as military or industrial zones). Any future coral reef conservation effort must be concentrated on these islands in order to be effective¹¹⁰”.

In 2004: Coral bleaching events in 1996 and 1998 had a profound effect on these reefs. The entire shallow water stag horn zones were killed in many areas. In 2004, many of these areas have been reduced to rubble, with no sign of recovery, and the mobile rubble may be impeding new recruitment. Some sites do show some recovery, especially in deeper water where there is significant recruitment of faviid species that were previously relatively minor components of the reefs. Consequently there appears to be a shift in the species that are dominating the Gulf reefs. Levels of estimated reef destruction range widely within the region, from a low of 1% in

¹¹⁰ Status of coral reefs of the World, 2004, p. 151 (DID0096)

Oman to a high of 97% in Bahrain. There is rising awareness of coral reef conservation issues, but the region lags well behind much of the rest of the world.

Predictions for 2014: The shallow Acropora reefs are unlikely to recover because forecasts for sea surface temperatures (SST) indicate that future temperatures will be unfavorable for coral growth. Deeper reefs will increase their coral cover, probably with a shift in the dominant species. As has happened in the past, continuing landfill arising from development will add stresses to near shore reefs, causing further degradation¹¹¹.

- Mangrove stands

There are 5 small stands of *Avicennia marina* mangrove in Bahrain and all are found within the Ras Sanad area of Tubli Bay (Figure 15). It is likely that mangrove was more extensive in the past but has been lost to landfill and other coastal activities.

Ras Sanad was visited on 05th September 2007 by the BNBSAP Team. Whilst the mangroves appeared healthy there was little evidence of management. A second stand, also under PCPMREW deed, is likely to be more secure because there is no access, except by sea, due to encroaching buildings preventing landward access. In both cases continuing infill of channels feeding the stands, let alone unmanaged access, could restrict water flow to the stands so putting the stands under pressure.

It is understood that Fisheries is doing some monitoring of mangrove. However, this information was not available at the time of writing of this report.

¹¹¹ Status of coral reefs of the World, 2004, p. 156 and 168 (DID0096)



Figure 15: Mangrove trees in Ras Sanad/Tubli bay, one of the very few remaining sites in Bahrain, where this critical habitat can still be seen (photo from MARGIS).

- Sea grass beds

MARGIS contains information on sea grass (Figures 16 and 17). There are extensive areas of sea grass though the area is reportedly reducing because of extensive coastal reclamation. Sea grass areas are likely to be regionally important as feeding grounds for several species¹¹² including the sea cow *Dugong dugon* and the green turtle *Chelonia mydas* and the commercially important rabbitfish *Siganus canaliculatus*, as well as providing nursery areas for the commercial prawn *Penaeus semisulcatus*, and a refuge for a high density of the spats of the pearl oyster *Pinctada radiata*.

- Tidal Flats

There is evidence of a substantial loss of tidal flat around the coast of Bahrain including in the Tubli Bay Ramsar area¹¹³. These tidal flats are important feeding areas for resident and migratory species of birds.

¹¹² Bahrain First National Report, 2006, p.3,4 (DID0230)

¹¹³ 24 sq km in 1956 to a mere 12 sq km by 2000, (DID0178, p.16)



Figure 16: Seagrass beds in Bahrain (from MARGIS).



Figure 17: Seagrass beds in Bahrain (from MARGIS).

- **Marine Mammals**

The First National Report¹¹⁴ indicates that dugongs (Figure 18) and dolphins, whilst globally endangered, are under full protection¹¹⁵, and it seems unlikely that they are endangered at national level. However, Dugong in Bahrain has regional significance¹¹⁶.

The interview with Dr Adel Khalifa Al Zayani¹¹⁷ suggests that the sea cow *Dugong dugon* should be a priority for conservation.

¹¹⁴ Bahrain First National Report, 2006, p.6 table 4.2 (DID0230)

¹¹⁵ Ministerial Order (3) 2003 with respect to the Prohibition of Hunting all Species of Sea-Cows, Marine Turtles and Dolphins. (DID0248)

¹¹⁶ Dugong Status Report and Action Plans for Countries and Territories (DID0163)

¹¹⁷ Appendix 3.1 of this report

A comprehensive survey of marine mammals, including the Dugong is reported in 2006¹¹⁸. Various recommendations in this report are listed in Section 8.07.08.



Figure 18: Dugong and calf in Bahraini waters.

- **Marine turtles**

It is understood that no marine turtles nest on Bahraini shores¹¹⁹ but that the waters provide important feeding grounds particularly for the green turtle (Figure 19). It should be noted that even though turtles do not nest on Bahraini shores nesting may well be affected by projected climate change since temperature can have an effect on sex determination during incubation and rising sea-levels could adversely affect the availability of suitable nesting beaches.

It has been estimated that around 1300 marine turtles were trapped in shrimp trawl nets during the 1997-8 shrimping season¹²⁰.

It is reported that a turtle exclusive device has been developed through technical co-operation with the relevant authorities in Saudi Arabia¹²¹.

¹¹⁸ Bahrain Dugong and marine megafauna survey 2006 (DID0287)

¹¹⁹ Appendix 3.1 of this report

¹²⁰ Bahrain First National Report, 2006, p. 25 (DID0230).

¹²¹ Bahrain First National Report, 2006, p. 34 (DID0230).



Figure 19: Breeding turtles.

- Marine Fish

It is reported¹²² that populations of commercial species, particularly groupers and rabbit fish, are in slow decline; captive breeding and reintroduction programs for key species are undertaken on a regular basis.

There is a comprehensive report on Bahrain Fisheries dated 2006. It is evident¹²³ that the fishery is primarily substrate dependent (benthic) although several of the fish groups are planktivores (feed in the water column). No tuna or related pelagic (open water) migratory species other possibly than mackerel are listed. However, a substantial proportion (25%) of the fish catch is not categorised (other fishes).

This report indicates that artisanal fish landings have shown an increasing trend since 1990 with 14,489 metric tonnes (mt) reported for 2004 compared with imports of 5,384mt.

Catch per unit effort for grouper are provided but are not consolidated¹²⁴. There is some evidence of a decline in catch per unit effort.

¹²² Bahrain First National Report, 2006, p. 6 (DID0230)

¹²³ Bahrain Fisheries Resources 2004, table 1.2 page 47 (DID0366)

¹²⁴ Bahrain Fisheries Resources 2004, tables 3.7-3.10 pages 68-69 (DID0366)

- **Shrimp**

“All fisheries in Bahrain are artesian in nature and no large-scale industrial fisheries are being undertaken after the band of industrial shrimp trawling in 1998..... The shrimp fishery has traditionally been one of the most important fisheries in Bahrain although catches have considerably declined over the last decade. Over 90% of the shrimp catch is of Penaeus semisulcatus despite 6 other shrimp species are also caught.... to ensure the sustainability of shrimp stock, shrimping is banned annually during the recruitment period.

„125

It is reported that co-operation with neighboring countries has, also, successfully established a regional seasonal shrimp closure season in attempt to maintain the regional shrimp stock ¹²⁶.

There is little evidence in the 2006 Fisheries report ¹²⁷ of a decline in shrimp catch and per unit effort between 1990 and 2005 though the figures are somewhat complicated by the fact that shrimp trawling by industrial steel hulled vessels ended in 1998.

- **Pearl Oyster**

No information is provided on the status of the pearl oyster in the First National Report¹²⁸. However, it is assumed that MARGIS has some information in its fishing grounds dataset. Pearl diving is a long-standing cultural tradition within Bahrain (Figure 20).

Zayani in his PhD dated 2003 recommends Shtaya as the fifth of 5 areas recommended to form a network of Marine Protected areas. This area was proposed as an MPA because it matches the objective of conserving historic and cultural areas (pearl oyster banks)¹²⁹.

¹²⁵ Bahrain First National Report, 2006, p.12 (DID0230)

¹²⁶ Bahrain First National Report, 2006, p.34 (DID0230)

¹²⁷ Bahrain Fisheries Resources 2004, Table 3.3 p. 66 (DID0366)

¹²⁸ Bahrain First National Report, 2006, (DID0230)

¹²⁹ Al-Zayani, A.A, PhD Thesis, 2003. See Chapter 9 (DID0288)



Figure 20: Pearl diving off a dhow in Bahrain.

5.04 Economy-ecosystem linkages

There is no strong evidence that National planning takes economy-ecosystem linkages into account. The EIA process does do so but tends to favor fiscal economic benefits over those from the provision of natural biodiversity-based ecosystem goods and services. The ecosystem and biodiversity mainstreaming approaches recommended by the Convention aim to deliver understanding and use of these linkages in sector and cross-sector economic development planning and implementation.

Having said this, excepting significant precautionary concerns, Bahrain is a services economy that is not underpinned, in the short-to-medium term, by natural biodiversity. Biodiversity has significant social and cultural importance and is a potential asset that, if lost, will not be there to benefit future generations. However, ultimately investment in biodiversity management has to be on a point of principle.

6.0 BIODIVERSITY POLICY

There is much confusion about the term “Policy”. In fact a “Policy” can be a political statement of intent made by the Legislature (Parliament) for consideration by the electorate (voters). It can also be a legally adopted statement of intent. Policies, even policies that have been incorporated under the law, do not always have regulatory instruments and so have little power. Some policies have the force of moral authority and do not need to be re-enforced using statutory instruments. However, these are rare.

Both the Bahrain National Charter of 2000¹³⁰ and the Bahrain Constitution of 2002¹³¹ make reference to wildlife and natural resources and the NES was approved by The Council of Ministers by Edict no. 2 of 1902 at the session held on 8th October 2006.

It will be seen below that there is a reasonably comprehensive legal regulatory framework although a number of the regulations could be clearer. The problem is with delivery.

First National report¹³²
<i>“The main challenge facing Bahrain in this regard is to strictly enforce the national legislations and to allocate the necessary resources for the implementation of the regional and international multi- lateral agreements”.</i>

This Section describes relevant existing policies. Section 7 reviews the legal and administrative framework whilst Section 9 reviews the management response using this framework.

All these descriptions are limited by the information and time made available for this study.

¹³⁰ Bahrain National Charter, 2002. Fifth principle related to environment and wildlife and sixth related to public property and natural resources (DID0189).

¹³¹ Bahrain Constitution Articles 9h, 11 and 117a (DID0179)

¹³² Bahrain First National Report, 2006, p. 16 (DID0230)

6.01 Economic Policy

Economic policy is presented first because it is a key driver of development and if inappropriate can create pressures that may have an adverse impact on biodiversity.

The Ministry of Finance and National Economy vision for the coming decade reportedly involves building and expanding a knowledge-based economy, with six clusters of activities being selected to lead the drive. These clusters are information technology-based services, financial services, business services, healthcare, education and training and tourism, while developing downstream industries to accelerate economic growth¹³³. There is no mention in the above reference that biodiversity specifically and environment, generally, are mainstreamed into economic policy.

A National Economic Policy is presently in preparation but was not available at the time of writing of this document.

6.02 Agenda 21/Sustainable Development/NES

According to the Bahrain SIDS Assessment in 2003,¹³⁴ a central committee for preparing a national plan to execute Agenda 21 had been formed from representatives of all Ministries, non-Government organizations, and academia. The main objectives of the committee were specified, namely:

1. Formulate and integrate vision regarding the work plan for Agenda 21 and the mechanisms of its implementation.
2. Suggest appropriate approach and capacity needed for assessment and preparation of Agenda 21 report.
3. Identify priorities.
4. Give an opinion on other advisory issues.

¹³³ Bahrain SIDS assessment, 2003, p.5 (DID0343)

¹³⁴ Bahrain SIDS assessment, 2003, p.9 (DID0343)

The committee identified five national priority issues. Accordingly five sub-committees were formulated to deal with the identified issues. These issues were:

- a) Management of water resources.
- b) Conservation of marine environment.
- c) Protection of the atmosphere.
- d) Management of wastes and chemicals.
- e) Changing consumption patterns.

No National Sustainable Development Strategy is reported on the UN Agenda 21 Site as of 2005 but it is indicated that the NES provides the equivalent¹³⁵.

The National Environmental Strategy (NES) was developed to meet the following Principles¹³⁶.

- Improving the status quo of the environment;
- Taking the precautionary measures to prevent environmental deterioration;
- Imposing fines on the persons causing the pollution resulting in environmental damages;
- The principle of partnership.

Biodiversity is not a significant element of the NES. However, the Biodiversity Sector report supporting the NES contains a list of 23 future perspectives (also included as an Annex of the First National report).

The NES was approved by The Council of Ministers by Edict no. 2 of 1902 at the session held on 8th October 2006.

6.03 Agricultural and Fisheries Policy

Reference is made to Agricultural policy in the NES¹³⁷. However, information on agricultural policy and any agricultural sector development plans were not available at the time of writing of this document.

¹³⁵ <http://www.un.org/esa/agenda21/natlinfo/countr/bahrain/nsds.pdf>

¹³⁶ Bahrain National Environmental Strategy, p. 16 (DID0231)

¹³⁷ Bahrain National Environmental Strategy, 2006, p. 33 (DID0231)

Information on fisheries policy and any fisheries sector development plans were not available at the time of writing of this document. No reference is made to any specific fisheries policy in the NES. However, the strategic vision for the Marine and Coastal Environment does imply that development of the Fisheries Sector should be viewed as an integral part of a coastal zone management planning process¹³⁸.

6.04 Education Policy

Bahrain SIDS Assessment in 2003¹³⁹ identifies education policy. Three pillars are presented. The first pillar emphasizes the values of education based on traditional heritage and Islamic culture. The second is promoting science education through accessing the most advanced scientific and technological knowledge and linking education to labour market. The third is taking innovative measures in curriculum development and moving towards continuous education. The SIDS assessment goes on to state that *“Although the phrase of sustainable development is not worded in these principles nevertheless, the concept of sustainability is embedded in these pillars”*.

6.05 National Youth Policy

The NES¹⁴⁰ refers to an independent chapter for the environment as part of the national strategy for youth in order to promote the concept of youth participation in the environmental awareness drive. The Policy¹⁴¹, developed with assistance from UNDP, includes two strategic objectives. The first relates to environmental awareness and the second relates to participation and advocacy.

6.06 Water Policy

The Bahrain SIDS assessment¹⁴² indicates that water has a high priority as a national issue in Bahrain due to the limited fresh water resources and escalating water demand. The assessment indicates that a committee for protection of freshwater resources was formed with four main tasks as follows:

(1) defining and evaluating freshwater resources;

¹³⁸ Bahrain National Environmental Strategy, 2006, p. 40 (DID0231)

¹³⁹ Bahrain SIDS assessment, 2003, p.27 (DID0343)

¹⁴⁰ Bahrain National Environmental Strategy, 2006, p. 14 (DID0231)

¹⁴¹ Bahrain National Youth Policy, 2006 (DID0346).

¹⁴² Bahrain SIDS assessment , 2003, p. 23 (DID0343)

- (2) protecting freshwater quality, ecosystems and preventing groundwater pollution;
- (3) integrating development and management of water resources; and
- (4) studying climate change effects on water resources.

The NES proposes revival of some natural springs and their pristine surrounding environment; this will call for bringing to an end the depletion and attrition of underground water for restoration of their water table levels, as well as protecting the areas in the environs of these springs against urban invasion and their utilization in environmental tourism¹⁴³.

6.07 Dredging and reclamation Policy

There is no clear policy regarding dredging and reclamation other than that it should be subject to an Environmental Impact Assessment. However, there is little evidence that the “no-works” options or the “alternative sites” options are given serious consideration in EIA relating to coastal and offshore developments.

¹⁴³ Bahrain National environment Strategy, 2006, p. 31 (DID0231)

7.0 LEGAL AND ADMINISTRATIVE STATUS

7.01 Bahrain Constitution

The new Bahraini Constitution came into force in 2002. Key articles relating to environment¹⁴⁴ are listed in Table 4 below.

Table 4: Constitutional obligations

Article 9h
<i>“The State shall take the necessary measures for the protection of the environment and the conservation of wildlife”.</i>
Article 11
<i>“All natural wealth and resources are State property. The State shall safeguard them and exploit them properly, while observing the requirements of the security of the State and of the national economy”.</i>
Article 117a
<i>“Any commitment to exploit a natural resource or a public utility shall be only by operation of law and for a limited time. The preliminary procedures shall ensure that the search and exploration work are facilitated and that openness and competition are realized”.</i>

7.02 Convention on biodiversity

The Convention on Biological Diversity (CBD), negotiated under the mandate of the United Nations Environment Programme (UNEP) was opened for signature on 5 June 1992 at the Earth Summit conducted in Rio de Janeiro, Brazil. The Convention entered into force on 29 December 1993¹⁴⁵. The Kingdom of Bahrain signed the CBD on 6th September 1992 and formally ratified it on 8th August 1996¹⁴⁶.

¹⁴⁴ Bahrain Constitution, 2002 (DID0179)

¹⁴⁵ Convention on Biological Diversity (DID0121)

¹⁴⁶ Bahrain ratification of Convention on Biological Diversity DID0251

7.03 Other International Conventions

Annex II, Bahrain First National Report¹⁴⁷ lists International Conventions to which Bahrain is signatory. The Convention on Biodiversity which specifies an NBSAP as a reporting requirement is referred to above. Some additional key Conventions of relevance to the BNBSAP are presented below¹⁴⁸. The most significant of these, in terms of threat to biodiversity, is presented first:-

7.03.01 Framework Convention on Climate Change¹⁴⁹ and Kyoto Protocol

United Nation Framework Convention on Climate Change (UNFCCC) was ratified by Bahrain 28th December 1994. Recently, a number of nations, including Bahrain, have approved an addition to the treaty: the Kyoto Protocol which has more powerful (and legally binding) measures. The Kyoto Protocol entered into force on 16 February 2005. Bahrain acceded to the Kyoto Protocol on 31/01/06 and it entered into force on 01/05/06.

Framework Convention on Climate Change¹⁵⁰ and Kyoto Protocol. The Bahrain First National Report¹⁵¹ indicates that Bahrain has implemented a climate change enabling project with the financial support of GEF and technical support from UNDP. In addition a first communication report on climate has been produced¹⁵².

7.03.02 The Ramsar Convention

Bahrain ratified the Ramsar convention on 26 February 1997 by Amiri decree No. 3 (1997)¹⁵³ nominating two sites for inclusion on the Ramsar site list - Tubli bay and the Hawar Islands. These Sites were subsequently included in the Ramsar List^{154,155} and are discussed further below.

¹⁴⁷ Bahrain First National Report, 2006, Table II.2, p. 50-51 (DID0230)

¹⁴⁸ Bahrain First National Report, 2006, recommends that Bahrain consider ratifying International Conventions such as the CMS/Bonn Convention on Migratory Species of Wild Animals and the CITES Convention on International Trade in Wild Animals and Plants as well as Cartagena Protocol on Biosafety Annex III, p.55 (DID0230)

¹⁴⁹ <http://unfccc.int/2860.php>

¹⁵⁰ <http://unfccc.int/2860.php>

¹⁵¹ Bahrain First National Report, 2006, (DID0230)

¹⁵² Bahrain initial communication to the CCC, 2005 (DID0347)

¹⁵³ Bahrain Decree 3 of 1997 concerning accession to the Ramsar Convention (DID0237)

¹⁵⁴ Ramsar (1998). Tubli Bay Information sheet. Pp. 5. <http://www.wetlands.org/rsis/> (DID0181)

¹⁵⁵ Ramsar (1998). Hawar Islands Information sheet. Part 1 Pp. 3. Part 2 Pp. 2 <http://www.wetlands.org/rsis/> (DID0180)

7.03.03 The World Heritage Convention

The Convention concerning the Protection of the World Cultural and Natural Heritage (WHC) was adopted by the United Nations Scientific and Cultural Organisation (UNESCO) in 1972. Bahrain ratified the Convention on 28th May 1991¹⁵⁶.

One Property is inscribed on the World Heritage list, namely the Cultural site of Qal'at al-Bahrain, the ancient harbour and capital of Dilmun¹⁵⁷.

Four properties were submitted for consideration in 2001 namely:-

- Hamad Town Tumuli Moundfield
- Barbar Temple
- Saar Heritage Park
- Hawar Islands Reserve

The Hawar Islands application is the only submitted property in Bahrain relating to natural heritage and is currently deferred. Its status is described in Section 8 below.

7.03.04 The CITES Convention

Convention on International Trade in Endangered Species of Wild Fauna and Flora known as the CITES convention¹⁵⁸ aims to ensure that international trade in specimens of wild animals and plants does not threaten their survival. Bahrain has yet to sign the CITES convention.

7.03.05 The Bonn Convention

The Convention on the Conservation of Migratory Species of Wild Animals (also known as CMS or Bonn Convention) aims to conserve terrestrial, marine and avian migratory species throughout their range. It is an intergovernmental treaty, concluded under the aegis of the United Nations Environment Programme (UNEP), concerned with the conservation of wildlife and habitats on a global scale¹⁵⁹.

As of 01st October 2007 Bahrain had not signed the Bonn Convention¹⁶⁰.

¹⁵⁶ <http://whc.unesco.org/en/statesparties/>

¹⁵⁷ <http://whc.unesco.org/en/list/1192>

¹⁵⁸ <http://www.cites.org/>

¹⁵⁹ <http://www.cms.int/>

¹⁶⁰ http://www.cms.int/about/Partylist_eng.pdf

7.03.06 The Cartagena Protocol on Biosafety¹⁶¹

On 29 January 2000, the Conference of the Parties to the Convention on Biological Diversity adopted a supplementary agreement to the Convention known as the Cartagena Protocol on Biosafety. The protocol seeks to protect biological diversity from the potential risks posed by living modified organisms resulting from modern biotechnology. It establishes an advanced informed agreement (AIA) procedure for ensuring that countries are provided with the information necessary to make informed decisions before agreeing to the import of such organisms into their territory. The Protocol contains reference to a precautionary approach and reaffirms the precaution language in Principle 15 of the Rio Declaration on Environment and Development. The Protocol also establishes a Biosafety Clearing-House to facilitate the exchange of information on living modified organisms and to assist countries in the implementation of the Protocol.

Bahrain has not signed up to the Protocol.

7.03.07 UN Desertification Convention.

The United Nations Convention to combat desertification was adopted in Paris on 17 June 1994 and opened for signature there on 14-15 October 1994. It entered into force on 26 December 1996, 90 days after the fiftieth ratification was received. Over 179 countries were Parties as at March 2002¹⁶².

Bahrain acceded to the Convention in Decree 9 of 1997¹⁶³.

7.03.08 UNESCO Man and the Biosphere

Mention is made of the Bahrain application for Hawar under the UNESCO Man and the Biosphere Programme (MAB). Unfortunately no information was forthcoming from a web search since Bahrain is not listed in the Country list at the MAB website¹⁶⁴.

7.03.09 GCC Wildlife Convention

Convention on the Conservation of Wildlife and Natural Habitats in the Gulf Co-Operation Council States was ratified in 2002 under legislative decree No. 9 of 2002

¹⁶¹ Cartagena Protocol on Biosafety

¹⁶² United Nations Convention on desertification, 1994 (DID0360)

¹⁶³ Bahrain Decree 9 of 1997 regarding desertification (DID0351)

¹⁶⁴ <http://www.unesco.org/mabdb/br/brdir/directory/database.asp>

and under national legislation in 2002¹⁶⁵. This Convention may provide a framework for encouraging international co-operation on biodiversity issues.

7.04 National Laws

National laws are listed in Annex II, Bahrain First National Report¹⁶⁶ of particular interest to the BNBSAP are:-

Ministerial Order (1) 1995 with respect to the banning of Infilling and Urbanization in Tubli Bay. Bans the reclamation and urbanization developments in Tubli Bay¹⁶⁷.
Decree (2) 1995 with respect to the Protection of Wildlife, and its amendments¹⁶⁸.
Outlines the overall framework of the national policy for the conservation of wildlife forcing legislative regulations and identifying the responsibilities of the competent authority¹⁶⁹.

Prime Minister Order (16) 1996 with respect to the Declaration of Hawar Islands and its Territorial Waters as a Protected Area¹⁷⁰. Declares Hawar Islands and its territorial waters as a protected area, in accordance to Decree (2) 1995 with respect to the Protection of Wildlife.

Decree (21) 1996 with respect to the Environment, and its amendments. Establishes the overall framework of the environmental policy in Bahrain setting legislative regulations and identifying the responsibilities of the competent authority¹⁷¹.

Ministerial Order (1) 1998 with respect to the Environmental Evaluation of Projects. Outlines the scope and mechanism of the Environmental Impact Assessment (EIA) and lists the categories of developments that should be compulsorily subject to EIA¹⁷².

¹⁶⁵ Bahrain decree 9 of 2002 concerning ratification of the GCC wildlife convention (DID0252)

¹⁶⁶ Bahrain First National Report, 2006, Table II.1, p. 48-49 (DID0230).

¹⁶⁷ Ministerial order 1 of 1995 concerning Tubli bay (DID0250)

¹⁶⁸ For example Wildlife decree 12/2000 (DID0282)

¹⁶⁹ Bahrain decree 2 of 1995 concerning wildlife protection (DID0249)

¹⁷⁰ Bahrain Prime Ministerial Order 16 of 1995 concerning Hawar Islands protected area (DID0238)

¹⁷¹ Amiri Law 21 of 1996 concerning environmental protection (DID0267)

¹⁷² Bahrain Ministerial Order 1 of 1998 concerning EIA (DID0268)

Ministerial Order (10) 1999 with respect to the Environmental Standards (Air and Water), and its amendments. Lists the national environmental standards for the quality of ambient in addition to air emissions and industrial effluent¹⁷³.

Ministerial Order (4) 2000 with respect to the Permission of Dredging/Infilling of Marine Sand. Details the mechanism and identifies the requirements of marine dredging/infilling applications¹⁷⁴.

Decree (20) 2002 with respect to the Regulation of Fishing and Exploitation of Marine Resources. Outlines the overall legislative framework regulating the exploitation of fisheries and other marine resources and identifies the responsibilities of the competent authority¹⁷⁵.

Ministerial Order (1) 2002 with respect to the Declaration of Mashtan Island as a Protected Area. Declares Mashtan Island as a Protected Area in accordance to Decree (2) 1995 with respect to the Protection of Wildlife¹⁷⁶.

Ministerial Order (4) 2003 with respect to the Declaration of Dowhat Araad as a Marine Natural Protected Area. Declares Dowhat Araad as a Marine Protected Area¹⁷⁷.

Ministerial Order (3) 2003 with respect to the Prohibition of Hunting all Species of Sea-Cows, Marine Turtles and Dolphins. Protects all species of sea-cows, turtles and dolphins in the territorial waters of Bahrain from fishing activities¹⁷⁸.

Reference to any additional laws not cited in this list are included, where relevant, in the text.

7.05 Administrative status

¹⁷³ Bahrain Ministerial Order 10 of 1999 concerning EIA (DID0269)

¹⁷⁴ The same Ministerial order was repeated twice.... One for dredging and one for infilling so it has been consolidated as dredging/infilling pending further clarification (DID0270).

¹⁷⁵ Bahrain Decree 20 of 2002 with respect to fishing (DID0271)

¹⁷⁶ Bahrain Ministerial order 1 of 2002 concerning Mashtan Protected Area (DID0244)

¹⁷⁷ Bahrain Ministerial order 4 of 2003 concerning Dahwat Araad Protected Area (DID0247)

¹⁷⁸ Bahrain Ministerial order 43 of 2003 concerning hunting prohibition of sea cows, turtles and dolphins (DID0248)

7.05.01 PCPMREW

Amiri Decree No. 7 in August 1980 formed the Environmental Protection Committee (EPC) and the Environmental Protection Technical Secretariat (EPTS). The EPC was attached to the office of H.H. The Prime Minister through the office of H.E. The Minister of Health. The Minister of Health was Chairman of EPC. Amiri Decree -law No.21 in 1996¹⁷⁹) enacted the establishment of a National Commission for Wildlife Protection, an agency under the Ministry of Housing, Municipalities and Environment. The NCWP reportedly consisted of two Directorates; Directorate of Assessment and Planning¹⁸⁰.

The Public Commission for the Protection of Marine Resources, Environment and Wildlife (Bahrain) has the current mandate to drive more effective biodiversity management within Bahrain. Its principle powers are specified in Amiri law 21 of 1996¹⁸¹, its organisation is specified in decree 41 of 2002¹⁸² and its establishment in decree 50 of 2002. The NES¹⁸³ identifies a significant number of constraints faced by the General Directorate for Protection of Environment & Wildlife in delivering its mandate.

In these respects PCPMREW might benefit from an **independent** organisation and administrative review.

7.05.02 Other Agencies

An organisation and administrative review of relevant Government Administration would need to be substantive to provide value to development of the BNBSAP. A substantive review is not possible within the existing scope of work. It could well be a component of the SEA measure and programme proposed under the BNBSAP.

¹⁷⁹ Amiri Law 21 of 1996 concerning environmental protection (DID0267)

¹⁸⁰ Bahrain SIDS assessment, 2003, p. 10 (DID0343)

¹⁸¹ Amiri Law 21_1996 (DID0267)

¹⁸² The First National Report, 2006, p.15 provides an organizational chart of PCPMREW (DID0230)

¹⁸³ National Environmental Strategy, 2006, p. 21-22 (DID0231)

8.0 BIODIVERSITY MANAGEMENT RESPONSE

8.01 Policy delivery

8.01.01 Economic

It is not known whether the proposed Bahrain economic development plan has a Millennium Development Goal component. In any event Bahrain is reported to be on track to deliver most of the Millennium Development Goals.¹⁸⁴

8.01.02 Agenda 21/Sustainable development/NES

As indicated above, Agenda 21 and the Sustainable development processes appear to have been subsumed to the NES. The NES was approved in October 2006¹⁸⁵. It is unclear whether there has been movement on any of the strategic visions presented in the NES. However, development and delivery of the BNBSAP are some of the future perspectives presented as an Annex to the Biodiversity Sector report for the NES and this document aims to progress the BNBSAP.

8.01.03 Agriculture and fisheries

The NES presents strategic vision elements for both Agriculture and Fisheries. It is unclear as to the delivery status of these visions.

It is evident that agriculture is in a declining state and continues to over-exploit groundwater resources.

Fish catches appear to be relatively stable although the basis for the figures is not known. However, it is reported that fishing incomes are falling.

There are a significant number of fisheries regulations¹⁸⁶ including control of fishing 1981, protect dugong 1986, gill nets and shrimp nets 1986, trawling >20m 1986, prohibit drift nets 1986. It is unclear the extent to which these regulations are effective.

On the positive side prior to 1998, there were about 300 artisanal shrimp trawlers and 6 larger fish trawlers, which often poached in shallow waters around the coral

¹⁸⁴ Bahrain MDG Report 2003 (DID0178)

¹⁸⁵ Council of Ministers by Edict no. 2 of 1902 at the session held on 8th October 2006 (DID0231)

¹⁸⁶ Bahrain SIDS assessment, 2003 (DID0343)

reefs. The reappearance of small soft corals and crinoids on Bahrain reefs is linked to the 1998 closure of the industrial fishery¹⁸⁷.

8.01.04 Education

No information is available on the current status of delivery of educational policy in respect of environment in general and biodiversity in particular.

8.01.05 National Youth

No information is available on the current status of delivery of youth policy in respect of environment in general and biodiversity in particular.

8.01.06 Water resources

It would appear that desalination, water transport and water treatment policies are being delivered. However, groundwater abstraction and agricultural irrigation process are not moving towards sustainability. This is despite efforts to control groundwater extraction^{188,189}.

The NES is particularly scathing about regulatory efforts and states that there has been a *“failure to incorporate in decree No. 21 for the year 1996 on the environment any express clause on the conservation and protection of underground water against pollution as well absence of any provision on the utilization of reclaimed and treated water¹⁹⁰”*.

8.01.07 Dredging and reclamation

The Bahrain SIDS report in 2003 states that *“there are government regulations concerning land reclamation, but there is little enforcement and compliance with these regulations and many projects are completed without government approval¹⁹¹”*.

8.02 Reporting

8.02.01 National Reporting

It would be appropriate to say that all the Articles in the Convention on Biodiversity require information support and all the 2010 targets need to be reported on using information.

¹⁸⁷ Bahrain SIDS assessment, 2003, p. 15 (DID0343)

¹⁸⁸ Bahrain SIDS assessment, 2003, (DID0343)

¹⁸⁹ Bahrain national report to UNCCD, 2000 (DID0361)

¹⁹⁰ National Environmental Strategy, 2006, p.31 (DID0231)

¹⁹¹ Bahrain SIDS Assessment, 2003, p. 15 (DID0343)

The following represent reporting obligations to the CBD.

- **First National Report**

The Bahrain First National Report to the Convention on Biological Diversity was produced on 4th February 2006 by the Public Commission for the Protection of Marine Resources, Environment and Wildlife, General Directorate for Environment and Wildlife Protection, Kingdom of Bahrain¹⁹².

The First National Report¹⁹³ indicates that *“the implementation of the biodiversity section would logically take the form of preparation of a much more detailed NBSAP, which is, indeed, a high priority recommendation of the NES (see Annex 3)”*.

A second and third National Reports are due and have not been prepared and a fourth is pending.

- **National Environment Strategy**

Bahrain has prepared the National Environment Strategy¹⁹⁴ (NES) with the financial and technical support of the UNDP. This was approved by the Council of Ministers by Edict no. 02 – 1902 at the session held on 08th October 2006.

A list of 23 future perspectives/actions under a future vision is taken from the draft National Environment Strategy, Biodiversity Sector report and presented in the First National Report¹⁹⁵. To the extent possible, because the list is wide-ranging, the future perspectives have been taken into consideration in identifying the specific BNBSAP projects proposed later.

- **NBSAP in Bahrain (BNBSAP)**

Article 6 of the CBD¹⁹⁶ identifies the need to develop national strategies and ensure cross-sectoral integration and is highlighted as one of two articles that need to be the focus for future action in the First National Report¹⁹⁷.

¹⁹² Bahrain First National Report, 2006, (DID0230)

¹⁹³ Bahrain First National Report, 2006, p.10 (DID0230)

¹⁹⁴ Bahrain National Environmental Strategy, 2006, (DID0231)

¹⁹⁵ Bahrain First National Report, 2006, Annex III pages 53-57 (DID0230)

¹⁹⁶ Convention on Biological Diversity, 1992, Article 6: General measures for conservation and sustainable use (develop and national strategies and integrate between sectors) (DID0121).

The current status of the BNBSAP in Bahrain is described in the Introductory Section 1.0 above. The present report provides a situation analysis and an initial document proposing BNBSAP Action Plan Programmes.

8.02.02 EIA Reporting

Article 14 of the Convention relates to Impact Assessment. Bahrain has a substantial Environmental Impact Assessment (EIA) Procedure. Three EIA were briefly examined¹⁹⁸. All were of high professional quality. However, one appeared to have been exempted from the EIA procedure even though an environmental Mitigation and Enhancement Package was prepared. A second shoreline development assessment appeared **not** to have considered public access to the shoreline.

A significant success should be noted in that there is now a requirement that the project proponent provide all EIA information and reports electronically.

8.02.03 Information Management

Delivery of effective management requires information. Data have to be collected, managed and provided in an integrated manner. At the moment data are collected but it is done in a relatively ad-hoc manner¹⁹⁹. In addition much of the information that exists is not readily available despite moves to improve electronic government (E-Government) and freedom of information.

PCPMREW has a proposal currently under consideration for NEMSIS2²⁰⁰ (*National Environmental Management Spatial Information System NEMSIS*).

8.03 Legal and administrative

8.03.01 International laws

Bahrain is not party to the NCSA process which is designed to catalyze integration between key environmental treaties²⁰¹. However, this is an activity under discussion for implementation in 2008.

¹⁹⁷ Bahrain First National Report, 2006, Section 4.3a, p.9 (DID0230)

¹⁹⁸ Zallaq Resort Hotel Environmental evaluation, 2007 (DID0162), Al Areen Desert Spa & Resort environmental mitigation package, 2005 (DID0165), Diyaar Al Muharraq Environmental Statement (DID0166).

¹⁹⁹ See Appendix 2.01

²⁰⁰ NEMSIS2, 2007 (DID0221)

²⁰¹ National Capacity Self Assessment (NCSA) process, 2005-2008 (<http://ncsa.undp.or>)

- **Framework Convention on Climate Change²⁰² and Kyoto Protocol.**

The BNBSAP team met with Dr. Sabah Saleh Aljenaid from the Climate Change enabling project on 06th September and it was agreed that, to the extent possible, there should be efforts to collaborate. As it is climate adaptation issues are suggested to be central to the checklists presented below for developing all the BNBSAP Projects.

A whole range of species and habitats are at serious risk from climate change including:-

- **corals**, which are sensitive to rising sea temperatures
- **birds**, whose migration and availability of food, roosting and nesting sites are controlled by the seasons
- **reptiles**, in which the sex of certain species is determined by ambient temperature during incubation.

- **The Ramsar Convention**

No additional sites to the original two, Tubli Bay and Hawar, which are already included in the Ramsar List^{203,204} have been notified to the BNBSAP team as being proposed.

- **World Heritage Convention**

The Hawar Islands application is the only submitted property in Bahrain relating to natural heritage and is currently deferred.

- **CITES Convention**

Bahrain has yet to sign the CITES convention. It is not known whether there are any initiatives to do so. To do so would allow Bahrain to have greater control over international trade in its own biodiversity and contribute towards global efforts to control the international trade that puts the biodiversity of other sovereign nations in danger.

²⁰² <http://unfccc.int/2860.php>

²⁰³ Ramsar (1998). Tubli Bay Information sheet. Pp. 5. <http://www.wetlands.org/rsis/> (DID0181)

²⁰⁴ Ramsar (1998). Hawar Islands Information sheet. Part 1 Pp. 3. Part 2 Pp. 2 <http://www.wetlands.org/rsis/> (DID0180)

- **CMS/Bonn Convention**

As of 01st October 2007 Bahrain had not signed the Bonn Convention²⁰⁵. It is not known whether there are any initiatives to do so. To do so would allow Bahrain to have greater influence in the conservation of migratory species such as turtle, dugong and birds that are such important components of the biodiversity of Bahrain.

- **The Cartagena Protocol on Biosafety**²⁰⁶

Bahrain has not signed up to the Protocol. It is not known whether there are any initiatives to do so. It would be appropriate for Bahrain to do a risk assessment with respect to biosafety.

- **UN Desertification Convention.**

Bahrain produced a report to the Convention in 2000²⁰⁷. It makes a number of recommendations including suggesting that *“Imposing a nominal charge per cubic meter would help prevent further deterioration of groundwater and would save more than 17 million m3/year”*. The current situation is not known but there is no reason, other than with respect to water distribution and treatment that the situation is improving.

- **UNESCO Man and the Biosphere**

Mention is made of the Bahrain application for Hawar under the UNESCO Man and the Biosphere Programme (MAB). Unfortunately no information was forthcoming from a web search since Bahrain is not listed in the Country list at the MAB website²⁰⁸.

- **GCC Wildlife Convention**

No information is available concerning current initiatives under this Convention. This Convention may provide a framework for encouraging international co-operation on biodiversity issues.

²⁰⁵ http://www.cms.int/about/Partylist_eng.pdf

²⁰⁶ Cartagena Protocol on Biosafety

²⁰⁷ Bahrain national report to UNCCD, 2000 (DID0361)

²⁰⁸ <http://www.unesco.org/mabdb/br/brdir/directory/database.asp>

8.03.02 National laws

No information is currently available concerning proposed regulations designed to facilitate more effective delivery of biodiversity management. No quantitative information is currently available concerning the effectiveness of use of existing statutory instruments (arrests, prosecutions, fines, etc.).

8.03.03 Administrative Status

It is not known whether there are plans for any administrative restructuring of PCPMREW. The NES²⁰⁹ identifies a significant number of constraints faced by the General Directorate Environment & Wildlife Protection in delivering its mandate.

In these respects PCPMREW might benefit from an **independent** organisation and administrative review.

A comprehensive SEA review of other administrations might also be useful to ensure that constraints to effective biodiversity management are identified and recommendations made and delivered accordingly.

8.04 In situ conservation

8.04.01 Introduction

Article 8 of the CBD²¹⁰ identifies the need to use systems of protected areas to maintain biodiversity at the ecosystem and species level. Article 8 is highlighted as one of two articles that need to be the focus for future action in the First National Report²¹¹. In addition the 2010 targets²¹² include goal 1 to promote the conservation of the biological diversity of ecosystems, habitats and biomes and Targets 1.1: At least 10% of each of the world's ecological regions effectively conserved and 1.2: Areas of particular importance to biodiversity protected. In addition many of the other 2010 goals and targets also related to in situ conservation.

²⁰⁹ Bahrain National Environmental Strategy, 2006, p. 21-22 (DID0231)

²¹⁰ Convention on Biological Diversity, 1992. Article 8: In-situ conservation (Protected areas etc) (DID0121).

²¹¹ Bahrain First National Report, 2006, Section 4.3a, p.9 (DID0230)

²¹² <http://www.cbd.int/2010-target/goals-targets.shtml>

8.04.02 Protected Areas

The First National Report indicates that efforts at improving in situ conservation are mixed.

- Al Areen

Chapter 4 of the draft National Environmental Report identifies 12 areas for additional work including follow-up on Al Areen²¹³.

The First National Report²¹⁴ indicates that:

“The Al-Areen Wildlife Park and Reserve is the centerpiece of the Bahrain terrestrial protected area system and managed on daily-basis. Situated adjacent to the central western coastline of the main island, Al-Areen occupies a total area of about 8 km² which is divided equally into a fenced reserve and a zoological and botanical park. The park is built to modern standards allowing most animals to live in open semi- natural habitats with a minimum of enclosure. The protected area harbors representatives of indigenous plants and animals in addition to exotic faunal species from Africa and west and south Asia. The park also offers a modern facility supporting the falconry sport and the associated heritage in Bahrain.

The key objectives of Al-Areen Wildlife Park and Reserve are to promote scientific research, ecotourism, public awareness in addition to conservation of biodiversity in Bahrain. Currently, the park and the reserve are becoming an essential part of tourism development activity in Bahrain attracting visitors of all age groups. The captive breeding programs undertaken by Al-Areen have succeeded in the re- introduction of sand gazelle and Arabian Oryx into open protected desert areas such as Hawar Islands.

It has to be noted that development has been accelerated around Al-Areen, and the designation of a buffer zone deems necessary to promote the integration between the protected area and the bordering desert ecosystem.”

²¹³ Bahrain draft National Environment Report, 2005 (DID0190)

²¹⁴ Bahrain First National Report, 2006, p.16-17 (DID0230)

In 2000 Al Areen Wildlife Park and reserve was placed under the management of the then National Commission for the Protection of Wildlife (now PCPMREW) by Amiri Decree 28 of 2000²¹⁵. It is reported that the area was never designated as a Natural Protected Area under Law.

A recent general environmental mitigation and enhancement package report for the Al Areen Desert Spa & Resort suggests²¹⁶ that *“It seems that Al-Areen Wildlife Park and Reserve will lose a considerable part of its size which may have a direct impact on the conservation of some important species, especially those that are native”*.

It has been understood that up to 2km² of the original 9km² area (the 8km² area of Al Areen referred to in the First National Report may be incorrect) has been transferred to a Water Park development. It has been indicated that compensation was reportedly provided and is being used to meet infrastructure and operational costs for Al Areen. It is not known whether the change in land use was subject to an Environmental Impact Assessment.

It was noted from a visit in early September that the “natural nature” of the area within the fencing is being disturbed by the planting of palms and associated artificial irrigation along the edges of the scenic drives.

Nevertheless the area seems well managed and relatively well resourced and is, therefore, not considered to be a priority for a BNBSAP action plan though Al Areen could well host the gene bank and other relevant long list of proposed BNBSAP Programmes.

- **Dowhat Araad**

Dowhat Araad was declared as a Marine Natural Protected Area under Ministerial Order (4) 2003²¹⁷. The only available description includes that from the First National Report where it is described as a sheltered bay²¹⁸ whilst the draft First

²¹⁵ Amiri Decree 28 of 2000 (DID0369a, Arabic).

²¹⁶ Al Areen Desert Spa & Resort environmental mitigation package, 2005, Appendix B.1 (DID0165)

²¹⁷ Bahrain Ministerial Order 4 of 2003 concerning Dawhat Araad protected area (DID0247)

²¹⁸ Bahrain First National Report, 2006, p. 16 (DID0230)

National Report identifies it as “a sheltered bay” and “very tiny”²¹⁹. It is reported to be surrounded by built-up area, close to the airport and difficult to sustain as a viable representative natural habitat.

Construction of a BD8.9 million public walkway around the protected area of Arad (Araad) Bay was launched on 30th October 2007²²⁰.

For these reasons it is not proposed as a site for a BNBSAP Project.

- **Hawar Islands**²²¹

The nominated site is 97% state-owned. The remaining 3% is owned by a consortium of Government shareholders. All the other islands are state owned²²². The marine area around the islands was declared as a Wildlife Sanctuary in 1995 (Royal Decree N° 2/95) and the islands were established by Prime Ministerial Order as a protected area in 1996 (Edict N° 16/96) in accordance to Decree (2) 1995 with respect to the Protection of Wildlife.

In 1997 the site was declared as Ramsar site 920 under the Ramsar Convention on Wetlands on 27th October 1997²²³. The Convention was ratified at the national level by Royal Decree N° 3/97 of 26 February 1997.

Hawar Islands was nominated for inclusion in the World Heritage List²²⁴ in 2002 supported by a substantive management plan document²²⁵. The nomination was considered by IUCN on behalf of the Contracting parties. IUCN recommendation submitted to the World Heritage Committee in 2004²²⁶ was **not** to accept the nomination primarily because of integrity concerns.

²¹⁹ Bahrain draft National Environment Report, 2005, p. 27 (DID0190)

²²⁰ Gulf Daily News, DID0367

²²¹ Al-Zayani, A.A, Ph.D., thesis, 2003, Chapter 9 (DID0288)

²²² http://hawar-islands.com/iucn_evaluation.html (DID0234)

²²³ The Ramsar Information Sheet (RIS) is reported, in this document to be from 2002. In fact it is from 1998 (DID0256).

²²⁴ http://hawar-islands.com/Hawar_application.htm (DID0234)

²²⁵ Hawar Islands Management Plan, 2003 (DID0177)

²²⁶ http://hawar-islands.com/iucn_evaluation.html

4. Integrity

“The nominated site, as discussed in Section 4, does not meet the conditions of integrity as required under the Operational Guidelines of the Convention”.

IUCN also recommended:-

7. Recommendations

“IUCN recommends the World Heritage Committee not to inscribe Hawar Islands on the World Heritage List. IUCN would also like to recommend to the Committee to encourage the States Parties of Bahrain, Qatar, the United Arab Emirates and Saudi Arabia to consider, if they wish to do so, the possibility of preparing a marine trans-boundary nomination covering, but not limited to, the Gulf of Salwah”.

There was a robust response to the IUCN recommendation²²⁷ resulting in a deferred decision^{228,229,230}:-

WHC recommended deferred decision²³¹

*“1. Defers the nomination of the **Hawar Islands, Bahrain**, on the World Heritage List; to allow the State Party to:*

a) review and assess options for a marine trans-boundary nomination, of which Hawar would be an important element, covering critical sites for the conservation of dugongs and sea grass beds in the Arabian Gulf and in particular the Gulf of Salwah; and

²²⁷ http://hawar-islands.com/hawar_iucn.html

²²⁸ <http://whc.unesco.org/archive/2004/whc04-28com-14Badde.pdf> (DID0235)

²²⁹ http://hawar-islands.com/suzhou_decision.html

²³⁰ <http://whc.unesco.org/archive/2004/whc04-28com-26e.rtf> (DID0236)

²³¹ <http://whc.unesco.org/archive/2004/whc04-28com-14Badde.pdf> (DID0235)

b). address the integrity issues raised in the IUCN evaluation report regarding this site.”

The actual decision notified on 29th October 2004 is somewhat less clear:-

WHC recommended deferred decision²³²

“1. Defers examination of the nomination of the Hawar Islands, Bahrain, to the World Heritage List to allow the State Party to consider an appropriate extension to the property.”

The Convention on the Conservation of Wildlife and Natural Habitats in the Gulf Co-Operation Council States could provide a framework for expanding the boundary of Hawar to become an international trans-boundary Park as could accession to the CMS/Bonn convention.

In the meantime whilst there is a management plan for Hawar²³³ there is no evidence of biodiversity related management.

- Mashtan Island²³⁴

Mashtan Island and surrounding reef area are described as “sensitive habitat” in a review dated 2000 of activities in Bahrain related to the Convention on Biological Diversity²³⁵. In the absence of other comment this may explain why Mashtan was declared as a Protected Area by Ministerial Order 1 of 2002²³⁶. No substantive information has been made available concerning the Island and its surrounding waters and certainly there is no evidence of biodiversity related management. It is understood that there are plans to dredge material approximately 1km from Mashtan. The status of these plans is unclear.

²³² <http://whc.unesco.org/archive/2004/whc04-28com-26e.rtf> (DID0236, page 16)

²³³ Hawar Islands Protected Area Management Plan, 2003 (DID0177)

²³⁴ Al-Zayani, A.A, Ph.D., thesis, 2003, Chapter 9 (DID0288)

²³⁵ National Biodiversity Planning in the Arab World, Bahrain, 2000 (DID0160)

²³⁶ Bahrain Ministerial Order 1 of 2002 concerning Mashtan Protected Area (DID0244)

However, Mashtan is legally recognised as one of only four designated Marine Protected areas in Bahrain and could form an edge to the Mashtan, Jabbarri, Tighaylib, to Hawar triangle which is considered to be a high biodiversity area. It is, therefore, suggested that it warrants further investigation as a potential site for a BNBSAP Project.

- **Tubli Bay and Ras Sanad**²³⁷

According to the Ramsar Site sheet for Tubli Bay²³⁸ *“a decision was taken in 1988 to declare the mangrove area at Ras Sanad²³⁹ as natural reserve under the supervision of Environmental Protection Committee. This area represents only a small section of the bay, which does not exceed 250 ha. A mangrove replanting programme was conducted but the result was not as expected. The boundary of the area was designated but no management plan was implemented during that period”*.

The Bahrain First National Report 2006²⁴⁰ states that *“Tubli bay was declared as a protected area in 1995²⁴¹ and designated as a RAMSAR site in 1997²⁴² in attempt to promote the protection of the coastline from coastal development. However, strict regulations associated with effective management are currently of pressing need to prevent further ecosystem collapse in Tubli Bay”*.

The First National report further indicates that *“Tubli bay combines a variety of marine biotopes such as mangrove swamps, extensive mudflats and rocky shores. In Bahrain, the mangrove grows only in Tubli Bay, and, naturally, found no where else around the country. With its productive mudflats, Tubli Bay serves as important feeding and breeding grounds for migratory and resident birds. Also, the bay is a nursery ground of exceptional significance for commercial shrimps and harbors a variety of inertial and sub tidal marine biota. Unfortunately, the area has not been well managed or protected. Due to unsustainable reclamation operations, the total area of the bay has declined from approximately 25 km² to 13 km²²⁴³. Most of the*

²³⁷ Al-Zayani, A.A, Ph.D., thesis, 2003, Chapter 9 (DID0288)

²³⁸ Tubli Bay Ramsar Information Sheet, 1998 (DID0181)

²³⁹ presumably Ras Sanad

²⁴⁰ Bahrain First National Report, 2006, p.17 (DID0230)

²⁴¹ This may relate to Ministerial Order (1) 1995 (DID0250) with respect to the banning of Infilling and Urbanization in Tubli Bay. Cannot find reference to declaring the area as a natural protectorate at this time.

²⁴² See also Annotated Ramsar list specifying Tubli Bay as site 921 under the Ramsar Convention on Wetlands on 27th October 1997 (DID0256). The latest Ramsar Information Sheet given for Tubli is for 1998 (DID0181).

²⁴³ 24 sq km in 1956 to a mere 12 sq km by 2000, (DID0178, p.16)

acquired land has been allocated to the construction of causeways and highways and the erection of houses. Other anthropogenic impacts in the bay include five sand washing plants, a major outfall discharging secondary-treated wastewater, and illegal dumping of municipal solid wastes.”

Tubli Bay was declared as a natural protected area by Decree (35) 2006²⁴⁴. This regulation requires that:-

Article 2: “All sorts of infilling activities in Tubli Bay to be prohibited, and the final reclamation line in the bay to be delineated provided it is not straight and it secures a total enclosed area around 13.5 Km².”

Article-3: “Without conflicting the provisions of Article (2) of this decree or reducing the existing total area of the bay, the competent authority should install physical marks on land identifying the features, boundaries and area of Tubli Bay as well as delineating the final reclamation line and the buffering line provided that the competent authorities develop maps facilitating the execution of these requirements within 3 months following issuing this decree”.

There is no evidence either that the requirements of the decree have been met or that there is effective management. It is understood that a management plan for Tubli Bay is under development but it is unclear whether, or not, the priority of the plan is to maintain the natural function of the area.

Two areas in Ras Sanad, which lies within Tubli Bay, are under the management and title deed of the PCPMREW.

²⁴⁴ Bahrain decree 53 of 2006 concerning Tubli Bay as a natural protected area (DID0246)

Ras Sanad title

As far as is known no official legislation (e.g. Legislative Decree or Ministerial Order) designating Ras-Sanad as an official protected area was released in 1988. It is likely that the 1988 reference is to the deeding of Ras-Sanad in the name of the Environmental Protection Committee²⁴⁵. The Deed expressly states: *“The rationale of issuing this deed is that the Ministry of Housing (based on a request from the Environmental Protection Committee and following kind approval from His Highness Crown Prince and Acting Prime Minister) requested to register the land situated in Sanad from Manama for the intention of breeding aquatic organisms, and hence, the directorate registered it after the State’s name for the aforementioned specified purpose and issued this deed ... etc.”*

Ras Sanad was visited on 05th September 2007 by the BNBSAP Team. Whilst the mangroves appeared healthy there was little evidence of management. A second stand, also under PCPMREW, is likely to be more secure because there is no access, except by sea, due to encroaching buildings preventing landward access. In both cases continuing infill of channels feeding the stands, let alone unmanaged access, could restrict water flow to the stands so putting the stands under pressure.

Appendix 2 provides the results of a structured interview concerning the Ras Sanad/Tubli Bay area undertaken in September 2007.

- **Areas proposed for In situ conservation**

It is understood²⁴⁶ that there is a proposal under consideration by the PCPMREW for designation of Lawzi Lake as a biodiversity protected area because of its importance for birds.

²⁴⁵ Land-1 (which was visited 05th September 2007). Deed No.: 51220. Date of Deed: 02/04/1989. Case No.: 1987/3109. Date (of issuing the attached map): 06/12/1988. Area: 393502.4 m². Land-2. Deed No.: 51223. Date of Deed: 02/04/1989. Case No.: 1987/5645. Date (of issuing the attached map): 20/12/1988. Area: 40183.1 m².

²⁴⁶ Abdul Qader Saeed Khamis (pers. comm., 05th December 2007)

A number of areas have been proposed for in situ conservation. A review of activities in Bahrain related to the Biodiversity Convention²⁴⁷ indicated areas with conservation status as:-

- East coast reef and sea grass zone
- Northern edge of Fasht Adhm
- Inner, northern and eastern Tubli Bay
- The Outer reefs, Jarada and Fasht Dibal

And areas with seasonal management Status as:-

- Southwestern coastal strips of main islands
- East coastal strip, Sitra to Asker
- Island nesting sites

The Bahrain First National Report²⁴⁸ states that Umm Na'ssan Island supports a considerably large community of antelopes found nowhere else in the country.

Fasht Abolthama (Bulthama) has been recommended by Dr Adel Khalifa Al Zayani as a priority marine biodiversity hotspot primarily because of its coral^{249,250}. In addition his PhD of 2003 presents 5 sites requiring protection to provide a representative network of Marine Parks²⁵¹. These are:-

- 1 Fasht Bulthama
- 2 Tubli Bay including Ras Sanad
- 3 Hawar Islands
- 4 The Islands and the Feshot of south-eastern Bahrain Island
- 5 Shtaya

Fasht Bulthama, Ras Sanad and Hawar Islands are specified as Action Plan Projects below.

²⁴⁷ National Biodiversity Planning in the Arab World, Bahrain, p. 176-179 (DID0160)

²⁴⁸ Bahrain First National Report, 2006, p. 18 (DID0230)

²⁴⁹ Appendix 3.1 this document

²⁵⁰ In 1998, a bleaching event resulted in massive coral mortality (> 90%) at most reefs of Bahrain. At present, live corals form merely scattered patches at several reefs situated in deep waters (DID0230 p. 4).

²⁵¹ Al-Zayani, A.A., PhD thesis, 2003, Chapter 9 (DID0288)

The Bahrain SIDS assessment in 2003 identifies²⁵² Ras Tubli, Southwest coast, Askar Coastal Area, Fasht al Adhm coral reefs as possible protected areas.

8.05 Ex situ conservation

8.05.01 Captive breeding

The NES²⁵³ summarises captive breeding programmes in Bahrain including captive breeding and re-introduction of fish, the Marsh frog, the spiny tailed lizard, the Caspian terrapin, the White-cheeked bulbul, the Gazelle and the Arabian Oryx (the Arabian Oryx is reported not to be native to Bahrain).

It is unclear whether traditional mainstays of the fishing sector including shrimp and pearl oyster are artificially cultivated.

8.05.02 Date palm tissue culture

The First National Report specifies²⁵⁴:

“The Date Palm Tissue Culture Laboratory at the Ministry of Municipality and Agriculture Affairs has implemented a program for the propagation of highly commercial varieties of date palms using advanced tissue culture techniques. It is hoped that the re-introduction program adopted by this laboratory succeeds to recover and rehabilitate the populations of commercial date palms and, hence, maintain the associated significant heritage associated with agriculture”.

8.06 Terrestrial ecosystems, habitats and species

8.06.01 Agricultural land

No substantive current information is available concerning active biodiversity management in the agricultural sector at the time of preparation of this document.

It is evident that there is considerable greening particularly in urban areas and if the species used and planting are appropriate this could provide some refuge for natural wildlife.

²⁵² Bahrain SIDS assessment, 2003, Annex 1 (DID0343)

²⁵³ Bahrain First National Report, 2006, Table 4.2, p.6-7 (DID0230)

²⁵⁴ Bahrain First National Report, 2006, p.21 (DID0230)

8.06.02 Freshwater, springs and wetlands

No substantive current information is available concerning active biodiversity management in the water resources sector at the time of preparation of this document. Significant efforts are being made to increase desalination capacity, to reduce transmission leakage and to increase water treatment. However, primary treated sewage continues to be discharged to Tubli Bay and groundwater resources continue to be depleted.

It is evident, from the review on in situ conservation above that there is little active biodiversity management within areas designated for biodiversity protection let alone outside them.

There is no evidence to suggest that there are now any freshwater springs in Bahrain let alone effective management of biodiversity associated with springs other than ex situ management (breeding programmes at Al-Areen).

8.06.03 Date Palm groves

There is no evidence to suggest that there is any effective management of biodiversity associated with palm groves in Bahrain.

8.06.04 Wadis

There is no evidence to suggest that there is any effective management of biodiversity associated with wadis in Bahrain. It would be interesting to see the extent to which the recommendations of the Al Areen Desert Spa and Resort concerning its associated Wadi have been implemented²⁵⁵.

8.06.05 Terrestrial animals

- Terrestrial Mammals²⁵⁶

The Arabian Oryx is not native to Bahrain. It has been bred in captivity at Al-Areen and introduced on Hawar Islands intentionally to support the relevant regional efforts aiming to conserve this species. The current status of these initiatives is not known.

The current status of gazelle populations and management initiatives is not known.

²⁵⁵ Al Areen Desert Spa & Resort. Generic Environmental Mitigation and Enhancement Package (DID0165, Appendix B, p. 2)

²⁵⁶ Bahrain First National Report, 2006, p.6 Species at risk Table 4.2 (DID0230)

The current status of efforts to manage invasive species is not known.

- **Birds²⁵⁷**

Several key species are currently reported to be in decline. The current status of efforts to manage the Indian crow and other invasive bird species is not known but recent discussions suggest that the efforts are limited.

- **Reptiles²⁵⁸**

The current management status of the spiny tailed lizard and Caspian terrapin are not known at this time. It is assumed that captive breeding programmes are continuing effectively at Al-Areen.

- **Amphibians²⁵⁹**

The current management status of the Marsh frog is not known at this time. It is assumed that captive breeding programmes are continuing effectively at Al-Areen.

- **Fish and invertebrates**

The current management status of any freshwater fish or invertebrates in Bahrain is not known.

8.06.06 Terrestrial plants

- **Date Palms**

It is assumed that the area of date palms continues to decline in Bahrain. It is assumed that the tissue culture activities described above relating to date palms are continuing.

- **Medicinal Plants**

The current management status of any freshwater fish or invertebrates in Bahrain is not known.

8.07 Marine and coastal ecosystems, habitats and species

²⁵⁷ Bahrain First National Report, 2006, p.6 Species at risk Table 4.2 (DID0230)

²⁵⁸ Bahrain First National Report, 2006, p.6 Species at risk Table 4.2 (DID0230)

²⁵⁹ Bahrain First National Report, 2006, 6 Species at risk Table 4.2 (DID0230)

Information is available about the status of key marine habitats and species in Bahrain²⁶⁰. However, there is no comprehensive inventory and/or list.

8.07.01 Reclamation/dredging

Current management status of reclamation and dredging in Bahrain is not known. However, dredging and reclamation are unlikely to reduce in rate and extent in the short term. The status of the Bahrain-Qatar Causeway is not known.

8.07.02 Wastewater discharge/pollution

Substantial wastewater discharges continue particularly in Tubli Bay and contamination of groundwater from septic tanks. However, there are plans in place, that are likely to be affected that should improve the situation in the short to medium term.

8.07.03 Fishing

The data tabled in the 2006 Bahrain Fisheries Resources report²⁶¹ suggests that artisanal fish landings are on increasing upwards trend since 1990 with 14,489 metric tonnes (mt) reported for 2004 compared with imports of 5,384mt. It would appear that there is some effective management of the shrimp fishery however, it is unclear the extent to which other forms of fishing are actively managed.

8.07.04 Coral reefs

The current management status of coral reefs in Bahraini waters is not known. However, it is suggested that management is limited and that recovery from bleaching events in 1996, 1998 and 2002 is likely to be limited.

8.07.05 Mangrove stands

The 5 small stands of *Avicennia marina* mangrove in Bahrain continue to be in reasonable condition partly because access is difficult. There is no evidence of active management.

8.07.06 Sea grass beds

The current management status of sea grass in Bahraini waters is not known. However, it is suggested that management is limited.

²⁶⁰ Bahrain First National Report, 2006, Status of species Table 4.2 p. 5-6, ecosystem trends Table 4.3 p. 8-9 (DID0230)

²⁶¹ Bahrain Fisheries Resources 2004, Table 6.1 p. 91 (DID0366)

8.07.07 Tidal flats

There continues to be marginal encroachment of tidal flats in Tubli bay. Dredging and reclamation are unlikely to reduce in rate and extent in the short term.

8.07.08 Marine animals

- Dugong

There has been a recent survey (2006) by James Cook University of turtles, dugong and dolphins and a report is available²⁶². The report makes a number of recommendations for the conservation of dugongs and other marine Megafauna listed below:-

Recommendations²⁶³
<p><i>“Recommendation 1: That the Bahraini government define the ecological and socioeconomic objectives for dugong and other marine megafauna management in Bahraini waters and develop a management plan for the waters of Bahrain in consultation with appropriate stakeholders. The plan should include a program of research and monitoring of threatened marine megafauna to inform the agreed management objectives.</i></p>
<p><i>Recommendation 2: That the Bahraini government work with the other countries in the dugong’s range in the Arabian Gulf (Saudi Arabia, Qatar, UAE) to define the ecological and socio-economic objectives for dugong and other marine megafauna management in the region and develop a management plan for the Arabian Gulf in conjunction with relevant stakeholders. The plan should include a program of research and monitoring of threatened marine megafauna to inform the management objectives.</i></p>
<p><i>Recommendation 3: That this survey be repeated and extended to include the whole south-western area of the Arabian Gulf as per</i></p>

²⁶² Bahrain Dugong and marine megafauna survey, 2006 (DID0287)

²⁶³ Bahrain Dugong and marine megafauna survey 2006, p. 4-5 (DID0287)

the survey conducted by Preen (2004).

Recommendation 4: That survey of dugong populations and other marine megafauna in Bahrain / the Arabian Gulf is conducted regularly to allow monitoring of the population's abundance and distribution.

Recommendation 5: That the behavior and movement patterns of dugongs throughout Bahrain waters and the rest of the Arabian Gulf be studied through further aerial surveys and satellite tracking.

Recommendation 6: That the status of the dolphin population in Bahraini waters/throughout the Arabian Gulf be assessed through inshore boat-based surveys.

Recommendation 7: That the Ecological Value Index map developed during MARGIS II be reassessed in light of new information about dugong distribution.

Recommendation 8: That an assessment of the major cause of mortality of marine mammal / turtle mortalities be undertaken through: (1) establishing a centralized mortality database, and (2) providing a Marine Animal Hotline for all users of the marine environment to report marine mammal / turtle mortalities or injuries.”

- Marine turtles

The current management of marine turtles is likely to be limited. It is not known whether the turtle exclusion device that has been developed through technical co-operation with the relevant authorities in Saudi Arabia²⁶⁴ has been adopted.

- Marine Fish

The current management status of marine fish and fisheries is not known.

- Shrimp

The current management status of shrimp and shrimp fisheries is not known including the status of co-operation with neighbouring countries.

- Pearl Oyster

The current management status of the pearl oyster and pearl oyster fishery is not known including the status of the recommendation that Shtya²⁶⁵ be protected to conserve the historic and cultural elements of the oyster and fishery.

8.07.09 Mainstreaming biodiversity traditions

There is no evidence of any policy or strategy to actually designate areas for traditional use whether it is to sustain traditional palm planting, watering, cropping and products, for medicinal plants or, in the marine environment, for oysters. There may be potential for marketing such facilities for education and tourism.

²⁶⁴ Bahrain First National Report, 2006, p. 34 (DID0230).

²⁶⁵ Al-Zayani, A.A, Ph.D., 2003, Chapter 9 (DID0288)

9.0 MEASURES AND PROGRAMMES

Chapter 9 details the process used to develop the recommended measures and programmes for the first Bahrain NBSAP. It includes an overview of the procedure applied, feedback garnered, and final decision making processes.

Chapters 10-15 detail the final six Programmes (out of an original 21) recommended for inclusion in the NBSAP. Each chapter is a self-contained, costed proposal for a particular programme, that can be pulled out and implemented on its own or as part of a series of programmes to be implemented. The remaining programmes that were NOT proposed can be developed into costed programmes at a later date.

9.01 BNBSAP workshops

The BNBSAP process has been driven by a series of three workshops:-

- **September 2007**

The overall goal to which the BNBSAP goal contributes, the BNBSAP goal together with the six broad Measures (Outcomes) to be used to develop specific Programmes were identified and agreed at the first workshop. Comments in this first workshop²⁶⁶ were considered and responses to comments are presented in Appendix 4 of this BNBSAP report.

- **07th November 2007**

Based on additional consideration a total of nine broad Measures were presented at the second workshop. The nine measures were prioritised by attendees at the meeting²⁶⁷. 21 related programmes were not discussed due to limited time but were listed in the executive summary provided in English and Arabic to participants.

A subsequent meeting on 08th November between the BNBSAP consultants and representatives of the PCPMREW short listed the 21 Programmes to 8 Programmes²⁶⁸. The in-situ conservation programmes for Hawar, Mashtan and Ras Sanad were subsequently consolidated under one Programme to

²⁶⁶ BNBSAP September Workshop meeting report, 2007 (DID0283)

²⁶⁷ BNBSAP November Workshop meeting report, 2007 (DID0372)

²⁶⁸ BNBSAP PCPMREW meeting on 08th November 2007 (DID0375)

provide economies of scale and to avoid duplication of effort so reducing the total number of BNBSAP Programmes to six.

- **04th December 2007**

Detailed action plans for the six Programmes were presented at a third BNBSAP workshop and a workshop report includes the presentation and feedback²⁶⁹. Decisions made at a follow-up meeting with the PCPMREW on 05th December 2007 were also documented²⁷⁰.

By the third week of December the work plans for the short listed Programmes were, taking note of comments from the workshop and follow-up meeting with PCPMREW, included in Sections 10-15 of this BNBSAP report.

9.02 Review of existing information

The process was underpinned by a review of existing information primarily that provided by the First National Report and the English version of the National Environment Strategy. A full list of references examined is presented as Appendix 01.

9.03 Climate change enabling project

Climate change is identified as a key issue to be addressed in the short listed Programmes presented below.

9.04 Hotspots questionnaire

A survey questionnaire was prepared^{271,272} in English (and Arabic) and distributed to 39 possible respondents in September 2007 requesting comment on possible biodiversity “hot issues” and “hot-spots”²⁷³. 11 of the 12 returns from the survey were evaluated and presented to attendees at the November BNBSAP workshop²⁷⁴.

²⁶⁹ BNBSAP December Workshop meeting report, 2007 (DID0380)

²⁷⁰ Memorandum of follow-up meeting with PCPMREW, December 05th 2007 (DID0381)

²⁷¹ A standard questionnaire prepared by the Biodiversity Convention was completed for the Bahrain National Report (actually required for the fourth report²⁷¹) but it is completed by Government rather than Civil Society.

²⁷² Bahrain does not currently have a National Capacity Self Assessment (NCSA) process (<http://ncsa.undp.or>)

²⁷³ BNBSAP hotspots questionnaire (DID0176); BNBSAP hotspots questionnaire sample (DID0228).

²⁷⁴ BNBSAP November Workshop Hotspots questionnaire PowerPoint, 2007 (DID0373).

Of the 12 returns evaluated all were from Bahraini's (see table 5 below). four were from oman and 6 from men whilst two did not specify the sex. The issues identified in the returns were wide ranging. Some comments do not specifically relate to biodiversity issues whilst others are general comments relating to the condition of habitats and species over a wide range. Where possible comments have been considered on the prioritization of the six Programmes bearing in mind that the second workshop did not prioritize ex situ conservation or the development of additional biodiversity protection areas.

A key issue identified in the third BNBSAP workshop in December related to the lack of Programmes for the conservation of terrestrial biodiversity. Unfortunately the additional biodiversity protection areas measure was not given a high priority in the BNBSAP November workshop²⁷⁵. In addition no specific additional areas (wadi, freshwater spring) have been proposed for in situ conservation.

²⁷⁵ BNBSAP November Workshop meeting report, 2007 (DID0372)

Table 5: Hot spot questionnaire return summaries

Name	Nationality	Age	Sex	Hotspot	Action	Email
Dr. Asma Ali Abahussain	Bahraini	48	F	N/W Coastal/Palm trees	Enforcement/physical protection	asma@aqu.edu.bh
				Tubli/Fisheries/pollution/dredging/ reclamation	Governance	
				Fasht al Azam/coral reef/BHN-QTR bridge	Protection	
				All Fasht/coral reef/dredging/reclamation	Governance	
				East Bahrain/seagrass/pollution	Governance	
				Tubli/mangrove/dredging/reclamation/ building	Physical protection/governance	
				Ras al bar/Sandy shore/tourism development/climate	Physical protection	
				Al Areen/Tourism	Governance/physical protection	
Dr. AbdulAziz Mohamed AbdulKareem	Bahraini	48	M	Insects/drainage/sweet water/agriculture areas	Protected Area, Waste Managements, Research, Rehabilitation, Education	ama_mohamed@hotmail.com

				Plants/Wadi/Desert/campers/g razing/	Protected Area, Managements, Research, Rehabilitation, Education	
Ebrahim A. A. Abdulqader	Bahraini	57	M	Fasht Adhom/coral reef	Dredging silt control	eabdulqader@bcsr.gov.bh
				Bulthama/coral reef	Manage	
				Fasht (all)	Protect	
				Marine turtle	Protect	
				Finfishing	Protect	
Sabah Saleh Aljenaïd	Bahraini	47	F	Palm trees/All Bahrain/destruction/	Rehabilitation	Sabah@agu.edu.bh
				Mangrove/Tubli bay/destruction/ pollution	Protected area/ rehabilitation	
				Dugong/surrounding Bahrain/ dredging/ reclamation/ climate change/ pollution	Enforcement/education/ laws	
				Turtle/Hawar Islands/ Pollution/ climate change	Enforcement/laws	
				Sea grass/pollution/climate change	Protected area	
Abdullah Majeed Ibrahim Al al'li	Bahraini	59	M	Coral Reef – death	Protection, policies activation	sabdullamajeed@hotmail.com
				Coasts - disappear	Stop filling up, policies activation	
				Algae – reduction	Stop Curettage works	

				Turtles – endanger	Caring, protection, and policies activation	
Nada A. D. Alkhalili	Bahraini	33	F	Sea grass/NW &SE Bahrain/Destruction	Accountability/physical protection/rehabilitation	nada.alkhalili@scottwilson.bh
				Dugong/Sea grass/NW &SE Bahrain/	MPAs/Research/Patrolling	
				Sandy shore/Mumtalah	Physical protection/enforcement/ mitigation	
				Hawar Islands	Enforcement/education/responsibility/mitigation	
				Shrubs/trees/grasses (exotic)	Education/laws/accountability/enforcement	
Ahmed Hassan Al-shaikh	Bahraini	42	M	South of Aljarim/sea grass	Dredging control	aalshaikh@bcsr.gov.bh
				South of Yasooof Island/sea grass	Research	
				South of Khawr fasht/coral reef	Minimizing dredging	
				West of Khawr fasht/oyster	Minimizing dredging	
				Hawar Umm Hazwarah island/algae/climate change	Research	
Environment Friends Society	1000 + members	-	-	Tubli bay/Mangrove/climate change/pollution/destruction	Waste management/protection	Almuhannadi.khawla@gmail.com

				Coral reef/ Fasht Al Adhim, Fasht AL Jarim, Bulthama (all other fashts) /Climate/ Over exploitation, Destruction, Pollution Climate change	Management	eefmembership@yahoo.com
				Coastal shores/destruction/	Moratorium	
				Sea bed mainly E and SE/reclamation/dredging	New areas/protection	
				Old farms/North Bahrain/destruction from changed land use	Protection/Green belt	
Drs Khadija and Hashim	-	-	-	Tubli/Ras Sanad/Mangrove/ reclamation/ factories	Protection	kzainal@sci.uob.bh
				Fasht Aladhun/land reclamation/fisheries	Protection	
				NE Bahrain/tidal flats/land reclamation/factories	Protection	
				Hawar/Ras Albar/Sea grass/Dredging/ fishing	Protection	
				Sooty falcon nesting/Hawar/urban development	Protection	

				Sea dugong/Hawar/ Habitat destruction (feeding)	Protection	
				Turtles/South Bahrain/Sea grass/habitat destruction	Protection	
				Fishes/coastal/coral/overexploitation/ habitat destruction	Protection	
				Crustacea/habitat change/destruction	Protection	
				Molluscs/coastal area/habitat change	Protection	
				Algal mat/Arad and Hawar/Land reclamation/factories	Protection	
Ahmed Khalifa	Bahraini	59	M	Desert plants	Fencing	bu-abdalahman@hotmail.com
					Botanic garden	
					Seeds	
Qaher Ali Mandeel	Bahraini	43	M	Desert truffles/(Sakhier, Huwar, Um Jedder, Dhalaa, Raas Al Bar...etc)/Destruction/ overexploitation/ collecting	Education/laws/protected area	Qmandeel@sci.uob.bh
				Desert lichens/Sakhier/Destruction/ pollution	Education/laws/protected area	

Halel Khalid Yousif	Bahraini	32	F	Dugong/dredging/reclamation/ pollution/ fishing	Governance/ Management	
				Green turtle/ dredging/reclamation/pollution/ fishing	Governance/ Management	
				Sea grass habitat/Climate change/ dredging/reclamation/pollution/ fishing	Governance/ Management	
				Reefs/Fasht/ Climate change/ dredging/reclamation/pollution/ fishing	Governance/ Management	
				Ras Sanad/Tubli/mangrove/ reclamation/dumping/sewage	Governance/management /fencing	

9.05 Interviews

A number of face-to-face interviews were undertaken. These have been both structured and open-ended. The former are presented in Appendix 2 and the latter in Appendix 3.

Table 6: Interviews

Appendix	Subject	Interviewees
02.01	Information systems	Wisam E. Mohammed
02.02	Ras Sanad/Tubli Bay	Abdul Qader Saeed Khamis, Ali Mansoor Abbas.
03.01	Bahrain Marine Environment	Dr Adel Khalifa Al Zayani
03.02	Bahrain Birds	Dr Brendan Kavanagh
03.03	Freshwater springs	Prof. Dr. Waleed Khalil Al-Zubari
03.04	Hawar Island Resort	Sudheer Nair

9.06 Measures

9.06.01 Introduction

A plethora of advice has been presented to help Bahrain deliver its national and international obligations in the environment sector. However, the environmental sector is complex. The resources, both human and financial, available for effective delivery in Bahrain appear to be limited. Howard King in his 1999 book “The breeding birds of Hawar²⁷⁶” provided excellent advice on how best to proceed with delivery of the BNBSAP and cautioned:-

“The publication of the NBSAP must be considered a matter of utmost urgency to prevent development compromising Bahrain's International standing; its integrity but more importantly its biodiversity and last remaining wilderness of the Hawar Islands²⁷⁷”.

²⁷⁶ Hawar Breeding Birds, 1999 (DID0161)

²⁷⁷ Hawar Breeding Birds, 1999, p. 88 (DID0161)

Unfortunately in 2007 and some eight years later the BNBSAP continues to be on the drawing board. It was, therefore, suggested that a slightly different approach needed to be taken to get the BNBSAP moving. NBSAPs, in any case are viewed as process driven and adaptive. There is no fixed end date for this process and Government will need to continue delivering the process as long as it is a requirement of the Convention and is necessary.

In the BNBSAP workshop presentation on 04th September 2007²⁷⁸ it was indicated, by the Consultants, that “It is better to do a few things well than a lot of things badly.”

In this approach, it was suggested that the BNBSAP focus on delivering a limited set of detailed activities over the next five years rather than on a large number of general ones. This would remove the constraint that resources were limited. It was also suggested that it would provide greater accountability for delivery.

9.06.02 List of Measures

Six of the Measures listed in Table 7 below were identified as BNBSAP outcomes at the first BNBSAP workshop in September²⁷⁹. These six measures are primarily measures designed to deliver **existing** policies. Three additional measures were subsequently been proposed to introduce **new** policies.

The hierarchy used at the September workshop is illustrated on the left column, the hierarchy at the second BNBSAP workshop in the centre column and the delivery statement for each Measure in the right hand column.

A compliance matrix showing the measures against the criteria specified in the Method sub-section 3.8 is presented in Appendix 5.

What is evident, in attempting to complete this matrix, is that the criteria statements from most of the sources are not particularly exclusive and tend to overlap. For example effective management of a protected area should include management of exotics.

²⁷⁸ WHGME, BNBSAP September meeting notes, 2007 (DID0283)

²⁷⁹ Powerpoint at September BNBSAP workshop (DID0175).

Table 7: Measures in BNBSAP framework

Before	November	Delivery statement
Goal	Overall Goal	Sustainable environmental, economic and social development
Objective	BNBSAP Goal	Loss of biodiversity within Bahraini ecosystems is reversed (terrestrial, freshwater and marine)
None	Measure BNBSAP Objective 1	Strategic Environmental Assessment Policy adopted
None	Measure 2 BNBSAP Objective 2	National Capacity Self Assessment Policy adopted
None	Measure 3 BNBSAP Objective 3	Green procurement policy adopted
Outcome 1	Measure 4 BNBSAP Objective 4	Integrated Biodiversity Management Information System (BMIS) operational
Outcome 2	Measure 5 BNBSAP Objective 5	Biodiversity Protected Area Network better managed
Outcome 3	Measure 6 BNBSAP Objective 6	Biodiversity Protected Area Network expanded
Outcome 4	Measure 7 BNBSAP Objective 7	Key species protected throughout their range
Outcome 5	Measure 8	Point and diffuse sources of pollution

	BNBSAP Objective 8	(solid, liquid and gaseous) reduced
Outcome 6	Measure 9 BNBSAP Objective 9	“Institutional” legal, policy and advocacy framework for public participation in access and benefit-sharing measures improved

Each of the Measures comprises the Goal statement for one or more Programmes.

9.06.03 Prioritization of Measures

The list of Measures was prioritised by participants in the November workshop with each participant casting up to three votes in total for one or more measures²⁸⁰.

Table 8: Measures prioritisation

Now	Delivery statement	Score	Priority
Overall Goal	Sustainable environmental, economic and social development	-	-
BNBSAP Goal	Loss of biodiversity within Bahraini ecosystems is reversed (terrestrial, freshwater and marine)	-	-
Measure 1	Strategic Environmental Assessment Policy adopted	24	1
Measure 2	National Capacity Self Assessment Policy adopted	5	5
Measure 3	Green procurement policy adopted	12	2
Measure 4	Integrated Biodiversity Management Information System (BMIS) operational	3	7
Measure 5	Biodiversity Protected Area Network better	10	3

²⁸⁰ BNBSAP November Workshop meeting report, 2007 (DID0372)

	managed		
Measure 6	Biodiversity Protected Area Network expanded	2	8
Measure 7	Key species protected throughout their range	4	6
Measure 8	Point and diffuse sources of pollution (solid, liquid and gaseous) reduced	9	4
Measure 9	“Institutional” legal, policy and advocacy framework for public participation in access and benefit-sharing measures improved	10	3

9.07 Prioritisation of Programmes

9.07.01 Introduction

Twenty one Programmes linked to specific Measures were proposed under the BNBSAP as illustrated in Figure 21 below. An additional two Programmes linked to all Measures were subsequently proposed. These comprised Programme Management and Public Communications.

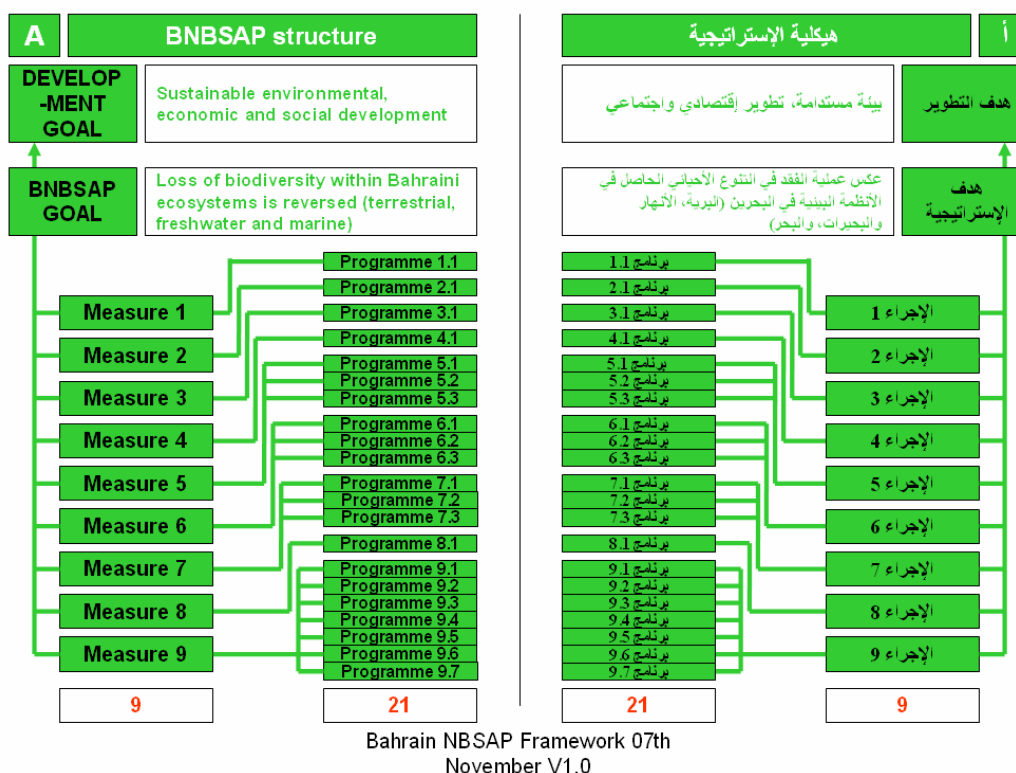


Figure 21: Relationship between Measures and Programmes

9.07.02 Prioritised Programmes

The following 6 Programmes were short listed based on the measure prioritizations described in Section 9.06 and confirmed at the meeting between the BNBSAP Consultants and representatives from the PCPMREW on 08th November 2007²⁸¹. Green procurement which scored second highest in the Measures list was not included because the links to biodiversity are not as clear as for the other Programmes.

Table 9: Programmes shortlist

No	Code ²⁸²	Delivery statement	Why
1	-	BNBSAP managed including Programme coordination and public communications	BNBSAP delivery needs to be coordinated
2	-	Public Communications in support of	Delivery of the BNBSAP

²⁸¹ BNBSAP PCPMREW meeting on 08th November 2007 (DID0375)

²⁸² Comprises Measure and Programme code

		the BNBSAP goal are delivered	needs to be facilitated by an integrated public communications Programme rather than by individual programme specific initiatives.
3	1.1	Policy to require Strategic Environmental Assessment as a tool in local and national sector and cross-sector development planning adopted.	Highest priority given in November workshop and critical to mainstreaming
4	5.1, 5.2, 5.3	Hawar/Mashtan/Ras Sanad Management Authorities Operational ²⁸³ . Biodiversity hotspot.	Third highest priority Measure in November workshop. Article 8 of Convention prioritized in First National Report.
5	9.3	Environmental Trust Fund operations, capacity and transparency enhanced ²⁸⁴ .	Critical to sustainable financing of biodiversity conservation initiatives and to good governance
6	9.4	Compensation framework within EIA strengthened	Critical to equitable sharing of benefits, valuation of biodiversity, sustainable financing of biodiversity conservation and good governance.

Details of all Programmes are listed below. The six short listed Programmes are detailed in Sections 10-15.

²⁸³ Howar Islands Protected Area Management Plan, 2003 (DID0177)

²⁸⁴ Bahrain First National Report, 2006 relating to financial issues (Annex III pages 53-57, DID0230)

9.07.03 Proposed BNBSAP budget

Table 10 lists the total budget for the six proposed Programmes. A budget breakdown for each Programme is provided in the relevant section as listed below.

The proposed budget for each Programme is presented in Bahraini Dinar (BDR) at a nominal exchange rate of \$US3.5 to BDR1. The budget does not cover the provision of substantial infrastructure (new buildings etc).

58% of the budget is expended on the Biodiversity Protected Areas Programme. A significant proportion of this Programme budget relates to staff salaries since there will need to be regular patrolling of the biodiversity protection Areas.

Table 10: Proposed BNBSAP budget

Section	Programmes	BDR*	%
10	Management Framework for Bahrain Biodiversity Conservation	**261,117	18.8
11	Public Communications for participation in Bahrain biodiversity Conservation	133,458	9.6
12	Strategic Environmental Assessment	50,881	3.7
13	Biodiversity Protected Areas Programme – Hawar, Mashtan and Ras Sanad	808,680	58.1
14	Environmental Trust Fund	91,365	6.6
15	Environmental Compensation Framework	46,951	3.4
Total		1,392,451	100

*BDR = Bahraini Dinar (exchange rate \$US3.5:BDR1); ** Includes 10% overhead for UNDP-CO

The Strategic Environmental Assessment and Environmental Compensation Framework Programmes are proposed to be delivered in three years. In the event that an enabling policy and regulatory framework is delivered during this period there should be follow-up Programmes to build capacity in delivering Strategic Environmental Assessment and the Environmental Compensation Framework.

The other four Programmes are scheduled to be delivered over five years.

9.08 Programmes list

9.08.01 Introduction

An “objective” delivery statement for each of the Programmes is listed below.

Climate change is not identified in any of the criteria statements listed in Appendix 5.

It is present in the National Environment Strategy itself²⁸⁵.

²⁸⁵ National Environment Strategy (DID0231, Section 4 Marine and Coastal Environment, Strategic Vision 6, Pp. 40-41: “Endorsement of an environmental strategy that takes into account the appropriate preventive precautions and procedures in anticipation of the global climate change and attendant rise in sea level and the consequences on the coastal environment and its contents of investment enterprises and infrastructures”.

Each of the Programmes is presented in a standard format below comprising:-

- the link to one of the nine measures
- a specific Programme number and associated Objective statement
- a justification for the objective statement
- a checklist of key issues to be addressed.

The checklist of key issues is structured according to the following sequence:-

1. **Stocktaking**: collection and review of available information and presentation of preliminary plans and recommendations (may already exist).
2. **Socialisation**: Involvement of relevant stakeholders in the process at an early stage and formally in terms of agreement to the stocktaking review.
3. **Guidelines**: production of necessary regulations, business plans, stakeholder involvement (participation) plans, operational procedures etc.
4. **Training**: Training in the use of the various materials
5. **Implementation**: Implementation of the activities
6. **Evaluation**: Assessment of how things are going.

9.08.02 BNBSAP Management Framework for Bahrain Biodiversity Conservation.

This Programme was identified during the November BNBSAP workshop²⁸⁶ and was short listed as a result of discussions with the Public Commission on 08th November 2007²⁸⁷.

²⁸⁶ BNBSAP November Workshop meeting report, 2007 (DID0372)

²⁸⁷ BNBSAP PCPMREW meeting on 08th November 2007 (DID0375)

The Programme title has been modified from “Programmes Management Programme” to “Management Framework for Bahrain Biodiversity Conservation” as suggested in feedback at the third BNBSAP workshop on 04th December and agreed at a meeting with the Public Commission on 05th December. This reflects the need to recognise that this Programme aims to build capacity in delivering biodiversity conservation even though it also aims to support delivery of the other BNBSAP Programmes.

This Programme comprises the coordination of BNBSAP delivery. It covers all measures associated with short listed Programmes and is detailed in Section 10 below.

9.08.03 BNBSAP Public Communications for participation in Bahrain biodiversity Conservation.

This Programme was identified during the November BNBSAP workshop²⁸⁸ and was short listed as a result of discussions with the Public Commission on 08th November 2007²⁸⁹.

The Programme title has been modified from “Public Communications Programme” to “Public Communications for participation in Bahrain Biodiversity Conservation” as suggested in feedback at the third BNBSAP workshop on 04th December and agreed at a meeting with the Public Commission on 05th December. This change in title reflects the need to focus public communications on participation in biodiversity conservation.

This Programme comprises Public Communications in support of BNBSAP delivery. It covers all measures associated with short listed Programmes and is detailed in Section 11 below.

9.08.04 Strategic Environmental Assessment Programme

Measure 1 related to Strategic Environmental Assessment scored highest in the November BNBSAP workshop²⁹⁰. This Programme was short listed on the basis of

²⁸⁸ BNBSAP November Workshop meeting report, 2007 (DID0372)

²⁸⁹ BNBSAP PCPMREW meeting on 08th November 2007 (DID0375)

²⁹⁰ BNBSAP November Workshop meeting report, 2007 (DID0372)

the measure score and as a result of discussions with the Public Commission on 08th November 2007²⁹¹. This Programme is detailed in Section 12 below.

9.08.05 National Capacity Self Assessment

The following proposed Programme to help deliver measure 2 was not short listed as a result of discussions with the Public Commission on 08th November 2007²⁹² though it may be provided later under an evolving BNBSAP.

<p>Measure 2 Goal</p>	<p>National Capacity Self Assessment policy adopted²⁹³ (see Appendix 5 for policy compliance)</p>
<p>Programme 2.1 Objective</p>	<p>Policy to require National Capacity self assessment as a tool to improve delivery of international environmental conventions adopted.</p> <p>Justification? The use of and response to international environment treaties needs to be integrated and mainstreamed to avoid duplication and International treaty commitment “fatigue” The National Capacity Self Assessment Project provides a framework for three key conventions in Bahrain namely the Conventions on Biological Diversity, the Climate Change and Desertification.</p>

²⁹¹ BNBSAP PCPMREW meeting on 08th November 2007 (DID0375)

²⁹² BNBSAP PCPMREW meeting on 08th November 2007 (DID0375)

²⁹³ Bahrain does not currently have a National Capacity Self Assessment (NCSA) process (<http://ncsa.undp.or>)

	<p>Checklist: Precautionary considerations. Climate change. NCSA committee.</p> <ol style="list-style-type: none"> 1. Stocktaking: Participatory review including draft policy statement 2. Socialisation: Presentation of findings 3. Guideline: Revised policy statement. Presentation of and agreement to policy by relevant stakeholders. 4. Implementation: Issuing of policy statement 5. Evaluation: Evaluation of process. <p>If agreed this Programme should lead on to a NCSA implementation programme that will include training.</p>
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9.08.06 Green Procurement

Measure 3 scored second highest in the November BNBSAP workshop²⁹⁴.

However, the associated Programme was not short listed as a result of discussions with the Public Commission on 08th November 2007²⁹⁵. This was because the links with biodiversity were not felt to be as strong as those covered by other Programmes. However, a Green Procurement Programme may be provided later under an evolving BNBSAP.

Measure 3	Green Procurement policy adopted^{296,297}. (see
Goal	Appendix 5 for policy compliance)
Programme	Policy to require Green Procurement in the State and
3.1	Public Sector adopted.

²⁹⁴ BNBSAP November Workshop meeting report, 2007 (DID0372)

²⁹⁵ BNBSAP PCPMREW meeting on 08th November 2007 (DID0375)

²⁹⁶ Green Procurement ENACT Programme Government of Jamaica 2001 (DID0134).

²⁹⁷ National Youth Policy, 2006, Strategic Objective 1, Priority Intervention 8, p.41 (DID0346).

<p>Objective</p>	<p>Justification? Green procurement is the “open sesame” to a range of regional and global environmental agreements (for example buying timber or fish from sustainable sources will help sustain supply and minimise impact on non-sustainable sources). Green procurement is good for the local environment (think globally and act locally) and is good for business in a services sector economy (green procurement can save money). The proposed Hawar Resort Programme aims to test green procurement.</p>
	<p>Checklist: Precautionary considerations. Climate change. Green procurement committee.</p> <ol style="list-style-type: none"> 1. Stocktaking: Participatory review including draft policy statement 2. Socialisation: Presentation of findings 3. Guideline: Revised policy statement. Presentation of and agreement to policy by relevant stakeholders. 4. Implementation: Issuing of policy statement 5. Evaluation: Evaluation of process. <p>If agreed this Programme should lead on to a green procurement implementation programme that will include training.</p>

9.08.07 Biodiversity Information Management System

The following proposed Programme to help deliver measure 4 was not short listed as a result of discussions with the Public Commission on 08th November 2007²⁹⁸.

However, a database and web site are proposed under the Programme “BNBSAP Management Framework for Bahrain Biodiversity Conservation”.

<p>Measure 4 Goal</p>	<p>Integrated Biodiversity Management Information System (BMIS) operational^{299,300} (see Appendix 5 for policy compliance)</p>
<p>Programme 4.1 Objective</p>	<p>Integrated Biodiversity Management Information System (BMIS) operational. Justification? Appropriate management can only be delivered using informed decision making³⁰¹. See also the review notes on existing IT systems within GDEWP (Appendix 2).</p>

²⁹⁸ BNBSAP PCPMREW meeting on 08th November 2007 (DID0375)

²⁹⁹ Appendix 1, Table 3 Future Prospect 10 relating to databases (DID0232)

³⁰⁰ See First National Report Annex III pages 53-57 (DID0230)

³⁰¹ Bahrain First National Report states that “Effective management of data is a fundamental requirement for the long-term strategic biodiversity planning” (DID0230, p.10).

Checklist: Precautionary considerations. Climate change. Biodiversity Information Committee.

1. Stocktaking: Review, to comply with checklists below, of opportunities and constraints to development of system together with recommendations. The review should take note of the need to: (i) integrate information sources; (ii) provide a national standard Data dictionary/glossary; (iii) support monitoring, control and surveillance activities; (iv) support reporting; (v) support management decision making; (vi) ensure public access to information; (vii) help strengthen links with and involvement of relevant stakeholders; (viii) Support Public Communications (Education and Public Awareness) including awareness of climate change; (ix) provide web enabled entry, management and use of information by relevant stakeholders; (x) help support financial management (Trust Fund, Government and private sector sponsorship); (xi) provide a Legal Information System; (xii) provide a geographic information System supporting management of information from other BNBSAP Programmes, point and diffuse sources of pollution (solid, liquid and gaseous), centralised wildlife mortality information database³⁰², other;

2. Socialisation: Presentation of review to key stakeholders

3. Guidelines: Design of system according to requirements agreed at socialisation.

4. Training: Training in use of the system

5. Implementation: Delivery and use of the system

6. Evaluation: Evaluation of the system

³⁰² Bahrain Dugong and marine megafauna survey 2006, p. 43 (10/2007)

9.08.08 Biodiversity Protected Area management improved

Measure 5 scored joint third in the BNBSAP November workshop³⁰³. This Programme was subsequently short listed as a result of discussions with the Public Commission on 08th November 2007³⁰⁴. Hawar, Mashtan and Ras Sanad Biodiversity Protected Areas are all included under this Programme which is detailed in Section 12 below.

9.08.09 Biodiversity Protected Area network expanded

Measure 6 came 8th in the list of measures voted on in the second BNBSAP workshop in November 2007³⁰⁵. The following proposed Programmes to help deliver measure 6 were not subsequently short listed as a result of discussions with the Public Commission on 08th November 2007³⁰⁶. However, the Programmes may be supported later under an evolving BNBSAP.

Measure 6 goal	Biodiversity Protected Area Network expanded 307,308,309 (see Appendix 5 for policy compliance)
Programme 6.1 Objective	Fasht Abolthama (Bulthama) Management Authority Operational³¹⁰ Justification? Fasht Abolthama (Bulthama) has been recommended by Dr Adel Khalifa Al Zayani as a priority marine biodiversity hotspot primarily because of its coral ³¹¹ and potential for management and collaboration with private sector partners (see Appendix 3).

³⁰³ BNBSAP November Workshop meeting report, 2007 (DID0372)

³⁰⁴ BNBSAP PCPMREW meeting on 08th November 2007 (DID0375)

³⁰⁵ BNBSAP November Workshop meeting report, 2007 (DID0372)

³⁰⁶ BNBSAP PCPMREW meeting on 08th November 2007 (DID0375)

³⁰⁷ Noted "For instance, it has been reported that Umm Na'ssan Island supports a considerably large community of antelopes found nowhere else in the country (Bahrain First National Report, DID0230, p.18).

³⁰⁸ Appendix 1, Table 3 Future Prospect 16 relating to expanded protected areas and 22 concerning natural heritage (DID0232)

³⁰⁹ See First National Report Annex III pages 53-57 (DID0230)

³¹⁰ Al-Zayani, A.A., PhD thesis, 2003, Chapter 9 DID0288 and pers. comm.

³¹¹ In 1998, a bleaching event resulted in massive coral mortality (> 90%) at most reefs of Bahrain. At present, live corals form merely scattered patches at several reefs situated in deep waters (DID0230 p. 4).

Checklist: Precautionary considerations. Climate change. Formation and operation of a “Fasht Abolthama” Management Board.

1. Stocktaking: (A) baseline field survey of reef and associated biota; (B) Participatory review, based on the baseline survey and to comply with the checklists below, of opportunities and constraints to management with recommendations (i) Ownership under PCPMREW; (ii) Infrastructure – moorings, demarcation buoys; (iii) Management strengthening needs assessment (organisational including staffing, institutional and regulatory, equipment, operations (enforcement - monitoring, control and surveillance), illegal uses, species action plans, pollution, green procurement, compensations assessment and framework for loss of access/use rights, training needs assessment); (iv) financial sustainability/business development planning (Trust Fund, Government and private sector sponsorship); (v) Participation - Strengthening links with and involvement of relevant stakeholders – Tourism (Public and private sector), Fisheries (Public and private sector including local and international fisher folk), relevant NGOs; necessary stakeholder participation framework plans; (vi) education and public communications.

2. Socialisation: Socialisation of and agreement to the recommendations of the review.

3. Guidelines: Drafting of necessary materials (regulations – including gazetting of the area, operational procedures, business plans, stakeholder involvement (participation) plans).

4. Training: Necessary training in use of the guideline materials.

<p>Programme 6.2 objective</p>	<p>Representative “Wadi” Biodiversity Management Operational³¹²</p>
	<p>Justification?</p> <p>Mention is made of the need to protect representative Wadi habitats³¹³. Despite the general comment that desert area is under little immediate threat in Bahrain³¹⁴ the opportunity to act now to secure representative Wadi habitat before any remaining Wadi is allocated for other development.</p>

³¹² It seems unlikely that the desert environment will be at immediate risk in the near future (Bahrain First National Report, 2006, p.7, DID0230).

³¹³ Al Areen Desert Spa & Resort. Generic Environmental Mitigation and Enhancement Package (DID0165, Appendix B, p. 2)

³¹⁴ It seems unlikely that the desert environment will be at immediate risk in the near future (DID0230 p. 7).

Checklist: Precautionary considerations. Climate change. Formation and operation of a “Wadis” Management Board.

1. Stocktaking: (A) baseline field survey of proposed Wadi and associated biota; (B) Participatory review, based on the baseline survey and to comply with the checklists below, of opportunities and constraints to management with recommendations (i) Purchase of land under PCPMREW; (ii) Infrastructure – walkways, trails and information boards, rubbish bins etc; (iii) Management strengthening needs assessment (organisational including staffing, institutional and regulatory (including gazetting of the area), equipment, operations (enforcement - monitoring, control and surveillance), illegal uses, species action plans, point and diffuse sources of pollution (solid, liquid and gaseous), green procurement, compensations assessment and framework for loss of access/use rights, training needs assessment; (iv) financial sustainability/business development planning (Trust Fund, Government and private sector sponsorship); (v) Participation - Strengthening links with and involvement of relevant stakeholders – Tourism (Public and private sector), Military, Education, relevant NGOs; necessary stakeholder participation framework plans; (vi) education and public communications.

2. Socialisation: Socialisation of and agreement to the recommendations of the review.

3. Guidelines: Drafting of necessary materials (regulations, operational procedures, business plans, stakeholder involvement (participation) plans).

4. Training: Necessary training in use of the guideline materials.

5. Implementation: Delivery of the recommendations,

Programme 6.3 objective	Representative “Spring” Biodiversity Management Operational³¹⁵.
	Justification? <p>It is indicated that there are no more freshwater springs operational in Bahrain^{316,317}. However, it is necessary to confirm the situation on precautionary grounds and because freshwater springs were such an important part of the natural and cultural heritage of Bahrain.</p>

³¹⁵ National environment Strategy, 2006, p. 31 (DID0231)

³¹⁶ Sadly, however, the freshwater springs have vanished due to over-exploitation of underground water (NES, DID0230, p. 3).

³¹⁷ Caspian terrapin *Clemmys (Mauremys) caspica* and, to a lesser extent, the marsh frog *Rana ridibunda* are threatened following the disappearance of freshwater springs. (Bahrain First National Report, DID230, p.20)

Checklist – assuming suitable candidate spring(s) are identified: Precautionary considerations. Climate change. Formation and operation of a “Springs” Management Board.

1. Stocktaking: (A) baseline field survey of proposed spring and associated biota; (B) Participatory review, based on the baseline survey and to comply with the checklists below, of opportunities and constraints to management with recommendations (i) Purchase of land, spring and water rights under PCPMREW; (ii) Infrastructure – walkways, trails and information boards, rubbish bins etc; (iii) Management strengthening needs assessment (organisational including staffing, institutional and regulatory (including gazetting of the area), equipment, operations (enforcement - monitoring, control and surveillance), illegal uses, species action plans, point and diffuse sources of pollution (solid, liquid and gaseous), green procurement, compensations assessment and framework for loss of access/use rights, training needs assessment; (iv) financial sustainability/business development planning (Trust Fund, Government and private sector sponsorship); (v) Participation - Strengthening links with and involvement of relevant stakeholders – Tourism (Public and private sector), Municipality, Agriculture, Education, relevant NGOs; necessary stakeholder participation framework plans; (vi) education and public communications.

2. Socialisation: Socialisation of and agreement to the recommendations of the review.

3. Guidelines: Drafting of necessary materials (regulations, operational procedures, business plans, stakeholder involvement (participation) plans).

4. Training: Necessary training in use of the guideline

9.08.10 Key species protected throughout their range

Measure 7 came 6th in the list of measures voted on in the second BNBSAP workshop in November 2007³¹⁸. The following proposed Programmes to help deliver measure 7 were not subsequently short listed as a result of discussions with the Public Commission on 08th November 2007³¹⁹. However, Dugong are a key outcome indicator for the Hawar Islands in situ Conservation Programme which is presented for funding under this BNBSAP. Other Programmes may be supported later under an evolving BNBSAP.

<p>Measure 7 goal</p>	<p>Key species protected throughout their range. (see Appendix 5 for policy compliance)</p>
<p>Programme 7.1 Objective</p>	<p>Dugong Management Plan Operational³²⁰ Justification? Whilst Dugong populations are not currently considered to be threatened in Bahraini waters³²¹ the precautionary principle plus the regional significance of the Bahraini dugong population suggests that some sort of management plan be provided and made operational³²². Dugong are subject to national protection³²³. Dugong are also an important indicator of ecosystem health, may be vulnerable to climate change and also could provide an important opportunity for catalysing international trans-boundary waters cooperation including a trans-boundary Park based on the Hawar Islands natural protected area.</p>

³¹⁸ BNBSAP November Workshop meeting report, 2007 (DID0372)

³¹⁹ BNBSAP PCPMREW meeting on 08th November 2007 (DID0375)

³²⁰ Bahrain Dugong and Marine Megafauna Survey, 2006 (DID0287)

³²¹ The dugongs *D. dugon*, vulnerable according to the IUCN's Red List, have been under full in-situ protection in Bahrain, and it seems highly likely that they are not threatened at the national level (Bahrain First National Report, DID0230 p. 19).

³²² Bahrain Dugong and marine megafauna survey 2006, (DID0287)

³²³ Bahrain Ministerial Order 3 of 2003 concerning banning hunting of sea cows, turtle and dolphin (DID0248)

Checklist: Precautionary considerations. Climate change. Integrate with Biodiversity Management Information System. Use/help develop National standard Data dictionary/glossary. Formation and operation of a Dugong Management Board.

1. Stocktaking: Participatory review, based on the recent dugong survey and to comply with the checklists below, of opportunities and constraints to management with recommendations (i) migration; (ii) critical feeding and breeding areas (iii) Management strengthening needs assessment (organisational including staffing, institutional and regulatory (including gazetting of key feeding and breeding areas), equipment, operations (enforcement - monitoring, control and surveillance), illegal uses, species action plan, dugong watching guidelines based on carrying capacity/limits of acceptable change methods, green procurement compensations assessment and framework for loss of access/use rights, training needs assessment; (iv) financial sustainability/business development planning (Trust Fund, Government and private sector sponsorship); (v) Participation - Strengthening links with and involvement of relevant stakeholders – Tourism (Public and private sector), Fisheries (public and private including local and international fisher folk), Military, Education, relevant NGOs; International partners; necessary stakeholder participation framework plans; (vi) education and public communications.

2. Socialisation: Socialisation of and agreement to the recommendations of the review.

3. Guidelines: Drafting of necessary materials (regulations, operational procedures, business plans, stakeholder involvement (participation) plans).

4. Training: Necessary training in use of the guideline

<p>Programme 7.2 objective</p>	<p>National list (Threatened and endemic species inventory developed)</p> <p>Justification? The First National Report indicates that there is no substantive National List³²⁴. The development of a National List is not only necessary to support more effective national reporting it also allows Bahrain to make more informed decisions about which species to prioritise for investment in conservation.</p>
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³²⁴ "No national lists of threatened and endemic species have been developed" (DID0230, P. 5). A provisional species is presented at the end of the Bahrain First National Report (DID0230, Annex IV p.58-102)

Checklist: Precautionary considerations. Climate change. Integrate with Biodiversity Management Information System. Use/help develop National standard Data dictionary/glossary. Formation and operation of a National List Steering Committee.

1. Stocktaking: Participatory review, based on the checklists below, of opportunities and constraints to development and maintenance of a national species list with recommendations: (i) key information needs - data standards including integration with the BMIS, data glossary and data dictionary, data collection, management and use; (ii) institutional home for the list; (iii) institutional strengthening (staff and operations, regulatory (including gazetting of key inter- and intra-ministerial obligations), equipment, green procurement, training needs assessment; (iv) financial sustainability/business development planning (Trust Fund, Government and private sector sponsorship); (v) Participation - Strengthening links with and involvement of relevant stakeholders – Tourism (Public and private sector), Agriculture and Fisheries (Public and private), Military, Education, relevant NGOs; necessary stakeholder participation framework plans; (vi) education and public communications.

2. Socialisation: Socialisation of and agreement to the recommendations of the review.

3. Guidelines: Drafting of necessary materials (regulations, operational procedures, business plans, stakeholder involvement (participation) plans).

4. Training: Necessary training in use of the guideline materials.

5. Implementation: Delivery of the recommendations,

<p>Programme</p> <p>7.3</p> <p>Objective</p>	<p>Gene bank developed</p> <p>Justification? There is a need to ensure that key species with low population size and/or at risk of further reduction in gene pool size are incorporated into a gene bank^{325,326,327,328}.</p>
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³²⁵ There is essentially no information available about the “status” of genetic diversity in plant or animal species in Bahrain (DID0230).

³²⁶ At least 20 different indigenous plant species have been recorded to have potential medicinal uses (DID0230, p. 12).

³²⁷ Date Palm tissue culture initiative at the Date Palm Tissue Culture Laboratory at the Ministry of Municipality and Agriculture Affairs (Bahrain First National Report, DID0230, p. 21)

³²⁸ Bahrain First National Report Annex III pages 53-57 (DID0230)

Checklist: Precautionary considerations. Climate change. Integrate with Biodiversity Management Information System. Development of a glossary. Gene bank steering committee.

1. Stocktaking: Participatory review, based on the checklists below, of opportunities and constraints to development and maintenance of a gene bank with recommendations: (i) key information needs - data standards including integration with the BMIS, data glossary and data dictionary, data collection, management and use; (ii) institutional home(s) for the bank; (iii) institutional strengthening (staff and operations, regulatory (including gazetting of key inter- and intra-ministerial obligations), equipment, green procurement, training needs assessment; (iv) financial sustainability/business development planning (Trust Fund, Government and private sector sponsorship); (v) Participation - Strengthening links with and involvement of relevant stakeholders – Tourism (Public and private sector), Agriculture and Fisheries (Public and private), Military, Education, other Government Institutions, relevant NGOs; necessary stakeholder participation framework plans; (vi) education and public communications.

2. Socialisation: Socialisation of and agreement to the recommendations of the review.

3. Guidelines: Drafting of necessary materials (regulations, operational procedures, business plans, stakeholder involvement (participation) plans).

4. Training: Necessary training in use of the guideline materials.

5. Implementation: Delivery of the recommendations, approval of proposed regulations including gazetting of key

9.08.11 Point and diffuse pollution reduced

Measure 8 came 4th in the list of measures voted on in the second BNBSAP workshop in November 2007³²⁹. The following proposed Programme to help deliver measure 8 was not subsequently short listed as a result of discussions with the Public Commission on 08th November 2007³³⁰. This is because pollution has less clear links to biodiversity than other short listed Programmes and is also a key issue identified under other thematic in the Bahrain National Environment Strategy³³¹.

However, point and diffuse pollution are identified as key outcome indicators for the in-situ conservation biodiversity protected area Programme for Hawar, Mashtan and Ras Sanad detailed in Section 12 below. Additional Programmes may be supported later under an evolving BNBSAP.

Measure 8 goal	Point and diffuse sources of pollution (solid, liquid and gaseous) reduced
Programme 8.1 Objective	None proposed. Addressed on an areas/species specific basis under other Projects
	Justification? These pressures are addressed within the other projects and also by other initiatives in the National Environment Strategy which are not under the Biodiversity sector remit.
	Checklist: None unless Project developed.

9.08.12 Biodiversity Public participation framework improved

Measure 9 came 3rd in the list of measures voted on in the second BNBSAP workshop in November 2007³³². Only two of the five Programmes proposed to deliver this measure were subsequently short listed as a result of discussions with the Public Commission on 08th November 2007³³³. These were the Environmental

³²⁹ BNBSAP November Workshop meeting report, 2007 (DID0372)

³³⁰ BNBSAP PCPMREW meeting on 08th November 2007 (DID0375)

³³¹ Bahrain National environmental Strategy, 2006 (DID0231).

³³² BNBSAP November Workshop meeting report, 2007 (DID0372)

³³³ BNBSAP PCPMREW meeting on 08th November 2007 (DID0375)

Trust Fund Programme and the Environmental Compensation Framework Programme.

The following proposed Programme to help deliver measure 9 was not short listed though it may be provided later under an evolving BNBSAP.

<p>Measure 9 goal</p>	<p>“Institutional” legal, policy and advocacy framework for public participation in access and benefit-sharing measures improved^{334, 335} (see Appendix 5 for policy compliance)</p>
<p>Programme 9.1 objective</p>	<p>National legal framework supporting biodiversity mainstreaming strengthened³³⁶.</p> <p>Justification? The justification for incorporation of strategic environmental assessment and other mainstreaming tools such as green procurement into national legislation is the same as that for developing the mainstreaming policy. If the policy is necessary then the policy also needs to be implemented initially at the legal level and then by action.</p>

³³⁴ See First National Report Annex III pages 53-57 relating to financial issues (DID0230)

³³⁵ This not only relates to genetic resources under Article 15 of the Convention but to the general use of biodiversity/ecosystem goods and services.

³³⁶ For example for Strategic Environmental Assessment of Programmes and Policies

Checklist: Precautionary considerations. Climate change. Legal mainstreaming committee.

1. Stocktaking: Participatory review, based on the checklists below, of opportunities and constraints to development and maintenance of a gene bank with recommendations: (i) institutional and regulatory gaps of PCPMREW and other key environment/biodiversity sector agencies (SEA, Green Procurement, enforcement, revenue generation, inter- and intra- institutional mandates, institutional homes; (ii) institutional strengthening (staff and operations), training needs assessment; (iii) preliminary drafts of key legislation; (iv) financial sustainability/business development planning (Trust Fund, Government and private sector sponsorship); (v) Participation - Strengthening links with and involvement of relevant stakeholders – Tourism (Public and private sector), Agriculture and Fisheries (Public and private), Military, Education, Other Government Institutions, relevant NGOs; necessary stakeholder participation framework plans; (vi) education and public communications.

2. Socialisation: Socialisation of and agreement to the recommendations of the review.

3. Guidelines: Drafting of necessary materials (regulations, operational procedures, business plans, stakeholder involvement (participation) plans).

4. Training: Necessary training in use of the guideline materials.

5. Implementation: Delivery of the recommendations, approval of proposed regulations including gazetting of key areas, mobilisation of financial resources, mobilisation of operations.

The following proposed Programme to help deliver measure 9 was not short listed though it may be provided later under an evolving BNBSAP.

<p>Programme 9.2 objective</p>	<p>International mechanisms for supporting biodiversity mainstreaming adopted into national legislation.</p>
	<p>Justification? The justification for incorporation of international mechanisms into national legislation is the same as that for developing the mainstreaming policy.</p>

Checklist: Precautionary considerations. Climate change. Legal mainstreaming committee.

1. Stocktaking: Participatory review, based on the checklists below, of opportunities and constraints to introduction of key international biodiversity linked regulatory mechanisms (CITES, CMS/Bonn etc): (i) institutional homes; (ii) capacity building needs; (iii) regulatory frameworks; (iv) preliminary drafts of necessary new regulations; (iv) financial sustainability/business development planning (Trust Fund, Government and private sector sponsorship); (v) training needs assessment; (v) Participation – Identification of key stakeholder groups and necessary stakeholder participation framework plans; (vi) education and public communication requirements.

2. Socialisation: Socialisation of and agreement to the recommendations of the review.

3. Guidelines: Drafting of necessary materials (regulations, operational procedures, business plans, stakeholder involvement (participation) plans).

4. Training: Necessary training in use of the guideline materials.

5. Implementation: Delivery of the recommendations, approval of proposed regulations, mobilisation of financial resources, mobilisation of operations.

6. Evaluation: Evaluation of progress.

The Environment Trust Fund Programme 9.3 was short listed as a result of discussions with the Public Commission on 08th November 2007³³⁷. The Environmental Trust Fund Programme is detailed in Section 16 below.

The Environment Compensation Framework Programme 9.4 was shortlisted as a result of discussions with the Public Commission on 08th November 2007³³⁸. The Environment Compensation Framework is detailed in Section 16 below.

The following proposed Programme to help deliver measure 9 was not short listed though it may be provided later under an evolving BNBSAP.

Programme 9.5 objective	Public access to Biodiversity Management Information System (BMIS) ensured³³⁹
	Justification? Access to information is critical to delivering transparency, accountability, public confidence, participation and a service ethic. This service ethic is critical to a Country with an economy dependent on the Financial and Tourism Services sectors. Apart from these points there is the fact that “two heads are better than one when it comes to solving problems”.

³³⁷ BNBSAP PCPMREW meeting on 08th November 2007 (DID0375)

³³⁸ BNBSAP PCPMREW meeting on 08th November 2007 (DID0375)

³³⁹ Bahrain First National Report, 2006. Action and benefits -no program is likely to be developed in the near future (Table 4.3 p.8, DID0230):

Checklist: Precautionary considerations. Climate change. Public Access Steering Committee/Freedom of Information Committee.

1. Stocktaking: Participatory review, based on the checklists below, of opportunities and constraints to greater access to information in support of decision-making including consideration of the need for a freedom of information law: (i) administrative (institutional home, transparency, independence and oversight) and regulatory (requirement for new regulatory frameworks/instruments; (iii) Security protocols for access to information. Public Access/ Information sharing agreements with relevant information providers and users (what and how information is to be made available.). (iv) needs assessment for compensations framework for loses due to lack of information; (v) capacity building needs; (vi) preliminary drafts of necessary new regulations; (vii) Participation – Identification of key stakeholder groups and necessary stakeholder participation framework plans; (viii) education and public communication requirements.

2. Socialisation: Socialisation of and agreement to the recommendations of the review.

3. Guidelines: Drafting of necessary materials (regulations, operational procedures, stakeholder involvement (participation) plans).

4. Training: Necessary training in use of the guideline materials.

5. Implementation: Delivery of the recommendations, approval of proposed regulations, mobilisation of financial resources, mobilisation of operations.

6. Evaluation: Evaluation of progress.

The following proposed Programme to help deliver measure 9 was not short listed though it may be provided later under an evolving BNBSAP.

Programme 9.6 objective	Hawar Resort delivers a regional example of environmental good practice in the sustainable tourism sector³⁴⁰
	Justification? Hawar resort is ideally positioned as a private sector client to assist in the delivery of more effective environmental management in the Hawar islands. In addition it is ideally positioned to develop and provide an example of good practice for a tourism facility located in arid and environmentally sensitive coastal areas.

³⁴⁰ Bahrain First National Report, 2006 relating to ecotourism, Annex III pages 53-57, (DID0230)

Checklist: Precautionary considerations. Climate change. Hawar resort environmental tourism committee.

1. Stocktaking: Participatory review, based on the checklists below, of opportunities and constraints to more effective environmental operations for Hawar Resort: (i) green procurement; (ii) carbon neutrality; (iii) Environmental tourism/Ecotourism; (iv) branding; (v) regulatory and other incentives; (vi) business development planning; (vii) capacity building; (viii) preliminary drafts of necessary new regulations; (ix) Participation – Identification of key stakeholder groups and necessary stakeholder participation framework plans; (x) education and public communication requirements.

2. Socialisation: Socialisation of and agreement to the recommendations of the review.

3. Guidelines: Drafting of necessary materials (regulations, operational procedures, stakeholder involvement (participation) plans).

4. Training: Necessary training in use of the guideline materials.

5. Implementation: Delivery of the recommendations, approval of proposed regulations, mobilisation of financial resources, mobilisation of operations.

6. Evaluation: Evaluation of progress.

The following proposed Programme to help deliver measure 9 was not short listed though it may be provided later under an evolving BNBSAP.

<p>Programme 9.7 objective</p>	<p>International cooperation supports management of trans-boundary issues³⁴¹.</p>
	<p>Justification? A number of species at risk are migratory including dugong, turtle and certain species of bird. In addition the World Heritage deferment on Hawar identifies the need to manage the area in a trans-boundary context as well as within Bahrain. This requires that the relevant international instruments are explored and adopted. There is precedence in the form of the regional agreements for shrimp fishing. There may be others.</p>

³⁴¹ Bahrain does not currently have a National Capacity Self Assessment (NCSA) process (<http://ncsa.undp.or>)

Checklist: Precautionary considerations. Climate change. Trans-boundary steering committee.

1. Stocktaking: Participatory review, based on the checklists below, of opportunities and constraints to more effective trans-boundary co-operation: (i) engagement protocols and draft engagement plans; (ii) Hawar trans-boundary Park, Dugong, Turtle, migratory birds, migratory fish; (ii) comparison of enabling regulations between the potential partners; (iii) institutional home, capacity building and training needs assessment); (iv) financing mechanisms; (v) education and public communication requirements.

2. Socialisation: Socialisation of and agreement to the recommendations of the review.

3. Guidelines: Drafting of necessary materials (regulations, operational procedures, stakeholder involvement (participation) plans).

4. Training: Necessary training in use of the guideline materials.

5. Implementation: Bilateral and multilateral engagement.

6. Evaluation: Evaluation of progress.

10.0 PROGRAMME: MANAGEMENT FRAMEWORK FOR BAHRAIN BIODIVERSITY CONSERVATION

10.01 Justification for the Programme

It was agreed at a meeting between the BNBSAP Consultants and representatives from the PCPMREW on Thursday 08th November 2007 that the BNBSAP should contain a “Programmes Management” Programme designed to support delivery of the other BNBSAP³⁴² Programmes.

The title has been modified from “Programmes Management Programme” as suggested in feedback at the third BNBSAP workshop on 04th December and agreed at a meeting with the Public Commission on 05th December. This reflects the need to recognise that this Programme aims to build capacity in delivering biodiversity conservation even though it also aims to support delivery of the other BNBSAP Programmes.

10.02 Logical framework

10.02.1 Introduction

This section 10.02 provides a description of the delivery of this Programme.

Key outcome (result) indicators and means of verification are described in Section 10.03 under the description of indicators.

The logical framework for this Programme is then presented in three matrices in Section 10.04. Indicators are not fully detailed in the matrices because of limited space.

The **first** matrix presents the development Goal to which the BNBSAP Goal contributes together with the BNBSAP Goal, the specific Programme Goal, Programme Outcome, Outputs and Activities.

³⁴² BNBSAP PCPMREW meeting on 08th November 2007 (DID0375)

The **second** matrix presents the “Costs” to “Activities” vertical logic. This presents the activities required for delivery of particular outputs and the means and costs associated with delivery of these activities.

The **third** matrix presents the scheduling of activities by quarter.

10.02.2 Coding

The vertical logic of the logical framework is linked together by a standard coding system comprising a string of numbers. Each pair of numbers in the numbers string provides an identifier for each level of vertical logic in the logical framework.

The first pair of numbers specifies the Programme. The second pair of numbers specifies each of the Programme Outcomes contributing to delivery of the Programme specified by the first pair of numbers. The third pair of numbers specifies each of the Programme Outputs contributing to the Programme Outcome specified by the preceding string of four numbers. The fourth pair of numbers then specifies each Programme Activity contributing to the Programme Output specified by the preceding string of six numbers. Additional sub-numbering can be proposed for the means and costs associated with delivering each of the specified activities but this is not done here.

10.02.3 Vertical logic

The **Development Goal** to which the BNBSAP contributes is “**Sustainable environmental, economic and social development**”.

The **BNBSAP Goal** to which the BNBSAP Measures and Programmes contribute is “**Loss of biodiversity within Bahraini ecosystems is reversed (terrestrial, freshwater and marine)**”.

The **Goal** of the BNBSAP Programme Management Programme is: “**Management Framework for Bahrain Biodiversity Conservation delivered.**”

The **Objective** of this BNBSAP Programme is the same as the Goal: “**Management Framework for Bahrain Biodiversity Conservation delivered**”.

The objective will be delivered by ensuring that BNBSAP short listed Programmes are:-

- tendered and awarded in a transparent and accountable way;
- delivered in an efficient, effective and relevant way and have the maximum impact and sustainability both separately and collectively
- monitored and evaluated for delivery.

There is only one **Outcome** proposed for this Programme "**Programmes Management delivered.**" Consideration was given to having a separate outcome for groups of activities. However, it was felt that this was not necessary since the associated activities and outputs are closely linked and better delivered under one outcome.

Outputs: The Programme outputs are not delivered in a modular phased sequence as is proposed for the other Programmes. Nine (9) Outputs are proposed for the Programme Management Programme.

Procurement: There needs to be support for transparent accountable tendering of goods and services in support of the delivery of the Programmes.

Reporting: There needs to be some regular reporting to the BNBSAP National Steering Committee on progress in delivery of the Programmes.

Mid-term evaluation: There should be an independent mid-term evaluation of progress in delivering the BNBSAP.

Final evaluation: There should be an independent final evaluation of progress in delivering the BNBSAP.

BNBSAP secretariat: There needs to be a secretariat and focal point for overall co-ordination of delivery of the BNBSAP Programmes.

BNBSAP National Steering Committee: There needs to be a high level Steering Committee and regular meetings of the Steering Committee to ensure that key stakeholders are informed about and involved in delivery of the BNBSAP.

BNBSAP Database: There should be a database developed for information generated by the BNBSAP Programmes.

BNBSAP Web site: There should be a web site, ideally with the BNBSAP database web enabled, to assist in dissemination of information and public communications.

Permits/tickets: Permits/Tickets for access to and use of Biodiversity Protected areas should be designed and printed preferably within a bar coding framework. Costs are provided under this Programme rather than the Biodiversity protected Area Programmes to provide economies of scale.

The contents of these outputs and contributory activities, with respect to this particular Programme, are described in further Section 10.02 below. Indicators are described in Section 10.03 and matrices are presented in Section 10.04.

10.02 Outputs

10.02.01 General

All contractors should provide electronic copies of all source materials used and of all reports produced. All materials should be coded according to Programme, Outcome, Output and Activity. Where there are several possible code combinations they should be listed in order of relevance.

Where training is necessary then training materials for the trainee(s) and trainer(s) should be produced in electronic format and include systems for evaluating training.

Information should be obtained and provided with a format and content that best meets the requirements of the BNBSAP database and web site proposed under the Programme Management Programme.

10.02.02 Procurement

Project Management should include assistance in the specification and tender evaluation for BNBSAP Programme tenders in order to maximise transparency and accountability of the tender process. The following will probably need to be put out to tender:-

- (1) Public Communications tender(s);
- (2) Strategic Environmental Assessment tender(s);

- (3) Hawar, Sanad and Mashtan tender(s);
- (4) Environmental Trust Fund tender(s);
- (5) Environmental Compensation Framework tender(s);
- (6) Mid-term evaluation;
- (7) Final evaluation;
- (8) Database development;
- (9) Web site development;
- (10) Permit production.

International and national consulting time, international and local travel, consumables and tender advertising are provided for this Output within the proposed Programme Management budget.

10.02.03 Review and reporting of progress

It is necessary for there to be a review of any reports and other materials produced by the Programmes as a condition of payment and to provide feedback to the National Steering Committee.

International and national consulting time, international and local travel and consumables are provided for this Output within the proposed Programme Management budget.

10.02.04 Mid-Term Evaluation

There should be an independent mid-term evaluation of the delivery of the BNBSAP. It is suggested that this be delivered by one international and one national consultant over 15 working days.

International and national consulting time, international and local travel and consumables are provided for this Output within the proposed Programme Management budget.

10.02.05 Final Evaluation

There should be an independent final evaluation of the delivery of the BNBSAP. It is suggested that this be delivered by one international and one national consultant over 15 working days.

International and national consulting time, international and local travel and consumables are provided for this Output within the proposed Programme Management budget.

10.02.06 National Focal Point

There needs to be a national focal point and secretariat to the National Steering Committee for the delivery of the BNBSAP. The national focal point should contain at least 1.5 full-time junior administrative staff from PCPMWER together with 20% time of a senior administrative staff from PCPMWER together with office space, equipment and consumables. The National Focal Point should act as the Secretariat for the National Steering Committee meetings and be available to facilitate delivery of the BNBSAP Programmes including organising any workshops and meetings.

UNDP-Bahrain should provide support for Programme Management including contracting and accounting unless the Client wishes to do this. There should be a 10% management fee on the Programme Management costs to cover this.

10.02.07 National Steering Committee

Activities delivering this output include preparation and agreement to the terms of reference for and operations of the National Steering Committee. These should include:-

- (1) specification and recruitment of representatives;
- (2) disclosure of interest;
- (3) meeting protocols etc including: (a) welcome; (b) voting; (c) chair; (d) quorum; (e) apologies; (f) agree preceding meeting minutes; (g) emergency items; (h) agenda items; (i) any other business; (j) location, date, time of next meeting; (k) closure of meeting.

International and national consulting time are provided for developing the ToR and a limited stipend and refreshments for members attending meetings are provided for this Output within the proposed Programme Management budget.

10.02.08 BNBSAP Database

Database design and web enabling including full documentation. To comply with checklists below including support for delivery of the other BNBSAP Programmes: (i) integrate information sources; (ii) provide a national standard Data dictionary/glossary; (iii) support monitoring, control and surveillance activities; (iv) support a permit management system; (v) support reporting; (vi) support management decision making; (vii) ensure public access to information; (viii) help strengthen links with and involvement of relevant stakeholders; (ix) Support Public Communications (Education and Public Awareness) including awareness of climate change; (x) provide web enabled entry, management and use of information by relevant stakeholders; (xi) help support financial management (Trust Fund, Government and private sector sponsorship); (xii) provide a Legal Information System; (xiii) provide a geographic information System supporting management of information from other BNBSAP Programmes, point and diffuse sources of pollution (solid, liquid and gaseous), centralised wildlife mortality information database , other.

Database design and web enabling including full documentation. Database operations including training manual(s), subsequent training, consumables, a database technical officer, maintenance and support.

Lump sums for equipment, consultancy and consumables are provided for database design within the proposed Programme Management budget.

Lump sums for consumables, consultant call-down and training to maintain and manage the database are provided for within the proposed Programme Management budget. A full time database technician/data entry person should be provided by PCPMREW. A salary for this person is included in the budget.

10.02.09 BNBSAP Web site

Web site design including web enabling of database, full documentation and operations/training manual(s). Provision of web master, web site technical support, training and operational costs.

Lump sums for equipment, consultancy and consumables are provided for web site design within the proposed Programme Management budget.

Lump sums for consumables, consultant call-down and training to maintain and manage the web site are provided for within the proposed Programme Management budget. A full time web content technician should be provided by PCPMREW. A salary for this person is included in the programme management budget.

10.02.10 Backstopping

International and national consulting time and associated expenses are provided for additional management support within the Programmes Management budget.

10.03 Outcome Indicators

10.03.1 Introduction

Indicators and their means of verification are described below according to a standard structure.

In order to evaluate there must be indicators to show whether a project outcome has been delivered. These are termed objectively verifiable indicators. Ideally they should be outcome indicators and preferably they should also be output indicators and even activity indicators. Sometimes they may comprise a combination of sub-indicators. The important thing is that they should show real change.

The “OUTCOME INDICATOR DESCRIPTION” is broken down into a standard format as follows:-

General comments

Free text Outcome Indicator title

(1) Justification for the outcome indicator

- (2) Location where the outcome indicator should be sampled
- (3) Timing of sampling of outcome indicator
- (4) Means of verification of outcome indicator
- (5) Targets in delivery of outcome indicators at specified times
- (6) Risks and assumptions

Programme Management will be reflected in the delivery of the Outcome indicators specified for the BNBSAP Programmes and described for each respective Programme. However, one Programme Management Outcome Indicator is proposed.

It should be noted that there will be considerable reluctance to collect this information partly because the need will not be recognised and partly because it will involve extra work. It will be necessary to provide ongoing encouragement for this process which should, eventually, become the institutionally acceptable/work-place cultural norm.

10.03.2 Outcome Indicator

Q=quarter. All key terms should be defined. All target indicators should be geo-referenced (spatially located).

NSC meetings take place according to an action oriented agenda. Agenda item action points addressed and minutes agreed.

(1) **Justification**: The BNBSAP requires that there be regular meetings of a National level Steering Committee designed to facilitate implementation of the BNBSAP Programmes.

(2) **Location**: NSC meetings

(3) **Timing**: Quarterly

(4) **Means of verification**: Agreed minutes.

(5) **Target**: By Q4 Meetings procedures agreed and in operation. Q10 at least 4

NSC meetings held with at least one minute action resolved and resolution minute agreed. Q18 at least 4 NSC meetings held with at least four minute actions resolved and resolution minutes agreed.

(6) **Risks and assumptions**: Key stakeholders selected and attend. Secretariat operates effectively. Key stakeholders agree the ToR for meeting operations. Meetings and meeting agenda prepared and presented in an action oriented way. Decisions made in the best interest of the BNBSAP. Proposed Actions can be implemented and are implemented.

10.04 Logical Framework

10.04.1 Outputs to Goal

Table 11: Programmes Management Outputs to Goal

Risks and assumptions are provided related to delivery of Indicators and are presented in Section 10.03 above.

Code	Vertical logic	Objectively verifiable indicators	Means of verification
	OVERALL GOAL		
	Sustainable environmental, economic and social development		
	BNBSAP GOAL		
	Loss of biodiversity within Bahraini ecosystems is reversed (terrestrial, freshwater and marine)		
01	PROGRAMME GOAL	Agenda and minutes of NSC meetings, Outcome indicators from other Programmes	NSC Meeting minutes, Programme reports.
	Management Framework for Bahrain Biodiversity Conservation delivered		
	PROGRAMME OBJECTIVE		
	Management Framework for Bahrain Biodiversity Conservation delivered		

01.01	OUTCOME 1		
	Programmes Management delivered		
01.01.07	Output 07 Procurement	Tenders outcomes	Tender evaluation documents Tender documents
01.01.08	Output 08 Review and reporting of Progress	Programme Outcomes Indicators	Consultancy review reports
01.01.09	Output 09 Mid-Term Evaluation	Mid-Term Evaluation Report	Mid-Term Evaluation Report
01.01.10	Output 10 Final Evaluation	Final evaluation Report	Final evaluation Report
01.01.11	Output 11 National Focal Point	Staff, facilities and equipment	Progress reports/Audit
01.01.12	Output 12 National Steering Committee	Agenda and minutes of NSC meetings, Outcome indicators from other Programmes	NSC Meeting minutes, Programme reports.
01.01.13	Output 13 BNBSAP database	Database delivering Programmes Outcome Indicators	Database
01.01.14	Output 14 BNBSAP web site	Web site delivering Programmes Outcome indicators. Web site being used.	Web site Web site access figures

10.04.2 Costs to Activities

Table 12: Programmes Management Costs to Activities

Note: Exchange rate \$US3.5:BDR1

Code	SQ	FQ	Activity	MEANS	UNITS	NOS	UNIT COST BDR	COST BDR
01.01.16.01	1	20	Backstopping	National travel	Lump	4	72.5	290
01.01.16.01	1	20	Backstopping	National consultant	Days	120	101.5	12180
01.01.16.01	1	20	Backstopping	International DSA	Days	30	72.5	2175
01.01.16.01	1	20	Backstopping	International travel	Lump	4	1160	4640
01.01.16.01	1	20	Backstopping	International consultant	Days	60	203	12180
01.01.16.01	1	20	Backstopping	Consumables	Lump	4	72.5	290
01.01.15.01	4	8	Permits/tickets	Printing	Lump	1	1450	1450
01.01.15.01	4	8	Permits/tickets	Design/development	Days	10	101.5	1015
01.01.14.02	7	20	Web site operations	Consultancy support	Lump	1	2900	2900
01.01.14.02	7	20	Web site operations	Technician/content manager (PCPMWER)	Months	42	652.5	27405
01.01.14.02	7	20	Web site operations	Consumables	Months	42	29	1218

Code	SQ	FQ	Activity	MEANS	UNITS	NOS	UNIT COST BDR	COST BDR
01.01.14.02	7	20	Web site operations	Training	Lump	1	2900	2900
01.01.14.01	4	8	Web site design	Consultancy	Lump	1	14500	14500
01.01.14.01	4	8	Web site design	Equipment and software	Lump	1	2900	2900
01.01.14.01	4	8	Web site design	Consumables	Lump	2	72.5	145
01.01.13.02	7	20	Database operations	Training	Lump	1	2900	2900
01.01.13.02	7	20	Database operations	Technician/data entry (PCPMREW)	Months	48	435	20880
01.01.13.02	7	20	Database operations	Consultant call down	Lump	1	2900	2900
01.01.13.02	7	20	Database operations	Consumables	Months	42	29	1218
01.01.13.01	4	8	Database design	Consumables	Lump	2	72.5	145
01.01.13.01	4	8	Database design	Consultancy	Lump	1	7250	7250
01.01.13.01	4	8	Database design	Equipment and software	Lump	1	5800	5800
01.01.12.20	20	20	Quarter 20 meeting of National Steering Committee	Stipend	Lump	10	29	290
01.01.12.20	20	20	Quarter 20 meeting of National Steering Committee	Refreshments	Lump	1	14.5	14.5
01.01.12.19	19	19	Quarter 19 meeting of National Steering	Stipend	Lump	10	29	290

Code	SQ	FQ	Activity	MEANS	UNITS	NOS	UNIT COST BDR	COST BDR
			Committee					
01.01.12.19	19	19	Quarter 19 meeting of National Steering Committee	Refreshments	Lump	1	14.5	14.5
01.01.12.18	18	18	Quarter 18 meeting of National Steering Committee	Stipend	Lump	10	29	290
01.01.12.18	18	18	Quarter 18 meeting of National Steering Committee	Refreshments	Lump	1	14.5	14.5
01.01.12.17	17	17	Quarter 17 meeting of National Steering Committee	Stipend	Lump	10	29	290
01.01.12.17	17	17	Quarter 17 meeting of National Steering Committee	Refreshments	Lump	1	14.5	14.5
01.01.12.16	16	16	Quarter 16 meeting of National Steering Committee	Stipend	Lump	10	29	290
01.01.12.16	16	16	Quarter 16 meeting of National Steering Committee	Refreshments	Lump	1	14.5	14.5
01.01.12.15	15	15	Quarter 15 meeting of National Steering Committee	Stipend	Lump	10	29	290
01.01.12.15	15	15	Quarter 15 meeting of National Steering Committee	Refreshments	Lump	1	14.5	14.5

Code	SQ	FQ	Activity	MEANS	UNITS	NOS	UNIT COST BDR	COST BDR
			Committee					
01.01.12.14	14	14	Quarter 14 meeting of National Steering Committee	Stipend	Lump	10	29	290
01.01.12.14	14	14	Quarter 14 meeting of National Steering Committee	Refreshments	Lump	1	14.5	14.5
01.01.12.13	13	13	Quarter 13 meeting of National Steering Committee	Refreshments	Lump	1	14.5	14.5
01.01.12.13	13	13	Quarter 13 meeting of National Steering Committee	Stipend	Lump	10	29	290
01.01.12.12	12	12	Quarter 12 meeting of National Steering Committee	Stipend	Lump	10	29	290
01.01.12.12	12	12	Quarter 12 meeting of National Steering Committee	Refreshments	Lump	1	14.5	14.5
01.01.12.11	11	11	Quarter 11 meeting of National Steering Committee	Stipend	Lump	10	29	290
01.01.12.11	11	11	Quarter 11 meeting of National Steering Committee	Refreshments	Lump	1	14.5	14.5
01.01.12.10	10	10	Quarter 10 meeting of National Steering	Stipend	Lump	10	29	290

Code	SQ	FQ	Activity	MEANS	UNITS	NOS	UNIT COST BDR	COST BDR
			Committee					
01.01.12.10	10	10	Quarter 10 meeting of National Steering Committee	Refreshments	Lump	1	14.5	14.5
01.01.12.09	9	9	Quarter 9 meeting of National Steering Committee	Stipend	Lump	10	29	290
01.01.12.09	9	9	Quarter 9 meeting of National Steering Committee	Refreshments	Lump	1	14.5	14.5
01.01.12.08	8	8	Quarter 8 meeting of National Steering Committee	Stipend	Lump	10	29	290
01.01.12.08	8	8	Quarter 8 meeting of National Steering Committee	Refreshments	Lump	1	14.5	14.5
01.01.12.07	7	7	Quarter 7 meeting of National Steering Committee	Refreshments	Lump	1	14.5	14.5
01.01.12.07	7	7	Quarter 7 meeting of National Steering Committee	Stipend	Lump	10	29	290
01.01.12.06	6	6	Quarter 6 meeting of National Steering Committee	Stipend	Lump	10	29	290
01.01.12.06	6	6	Quarter 6 meeting of National Steering Committee	Refreshments	Lump	1	14.5	14.5

Code	SQ	FQ	Activity	MEANS	UNITS	NOS	UNIT COST BDR	COST BDR
			Committee					
01.01.12.05	5	5	Quarter 5 meeting of National Steering Committee	Stipend	Lump	10	29	290
01.01.12.05	5	5	Quarter 5 meeting of National Steering Committee	Refreshments	Lump	1	14.5	14.5
01.01.12.04	4	4	Quarter 4 meeting of National Steering Committee	Stipend	Lump	10	29	290
01.01.12.04	4	4	Quarter 4 meeting of National Steering Committee	Refreshments	Lump	1	14.5	14.5
01.01.12.03	3	3	Quarter 3 meeting of National Steering Committee	Stipend	Lump	10	29	290
01.01.12.03	3	3	Quarter 3 meeting of National Steering Committee	Refreshments	Lump	1	14.5	14.5
01.01.12.02	2	2	Quarter 2 meeting of National Steering Committee	Stipend	Lump	10	29	290
01.01.12.02	2	2	Quarter 2 meeting of National Steering Committee	Refreshments	Lump	1	14.5	14.5
01.01.12.01	1	1	Quarter 1 (Inception) meeting of	Refreshments	Lump	1	14.5	14.5

Code	SQ	FQ	Activity	MEANS	UNITS	NOS	UNIT COST BDR	COST BDR
			National Steering Committee					
01.01.12.01	1	1	Quarter 1 (Inception) meeting of National Steering Committee	Stipend	Lump	10	29	290
01.01.12.00	1	1	Terms of reference for NSC	National Consultant	Lump	3	101.5	304.5
01.01.12.00	1	1	Terms of reference for NSC	International consultant	Lump	3	203	609
01.01.11.01	1	20	National Focal Point	0.2 Staff senior (PCPMREW)	Months	12	652.5	7830
01.01.11.01	1	20	National Focal Point	Consumables (PCPMREW)	Months	60	58	3480
01.01.11.01	1	20	National Focal Point	Equipment (PCPMREW)	Lump	1	2900	2900
01.01.11.01	1	20	National Focal Point	1.5 Staff junior (PCPMREW)	Months	90	435	39150
01.01.11.01	1	20	National Focal Point	Office space (PCPMREW)	Year	5	0	0
01.01.10.01	18	18	Final Evaluation	International DSA	Days	15	72.5	1087.5
01.01.10.01	18	18	Final Evaluation	International Consultant	Days	15	203	3045
01.01.10.01	18	18	Final Evaluation	International travel	Lump	1	1160	1160
01.01.10.01	18	18	Final Evaluation	Consumables	Lump	1	72.5	72.5
01.01.10.01	18	18	Final Evaluation	National Consultant	Days	15	101.5	1522.5
01.01.10.01	18	18	Final Evaluation	Local travel	Lump	2	72.5	145
01.01.09.01	10	10	Mid-term evaluation	International DSA	Days	15	72.5	1087.5

Code	SQ	FQ	Activity	MEANS	UNITS	NOS	UNIT COST BDR	COST BDR
01.01.09.01	10	10	Mid-term evaluation	Consumables	Lump	1	72.5	72.5
01.01.09.01	10	10	Mid-term evaluation	Local travel	Lump	2	72.5	145
01.01.09.01	10	10	Mid-term evaluation	National Consultant	Days	15	101.5	1522.5
01.01.09.01	10	10	Mid-term evaluation	International Travel	Lump	1	1160	1160
01.01.09.01	10	10	Mid-term evaluation	Independent Consultant	Days	15	203	3045
01.01.08.01	1	20	Review and reporting of progress	Consumables	Lump	2	72.5	145
01.01.08.01	1	20	Review and reporting of progress	International Consultant	Days	20	203	4060
01.01.08.01	1	20	Review and reporting of progress	National Consultant	Days	40	101.5	4060
01.01.08.01	1	20	Review and reporting of progress	Local travel	Lump	2	72.5	145
01.01.08.01	1	20	Review and reporting of progress	International DSA	Days	20	72.5	1450
01.01.08.01	1	20	Review and reporting of progress	International travel	Lump	2	1160	2320
01.01.07.01	1	4	Tender(s) preparation and evaluation	International Consultant	Days	40	203	8120
01.01.07.01	1	4	Tender(s) preparation and evaluation	International DSA	Days	40	72.5	2900
01.01.07.01	1	4	Tender(s) preparation and evaluation	Tender advertising	Lump	10	580	5800
01.01.07.01	1	4	Tender(s) preparation and evaluation	Consumables	Lump	2	72.5	145
01.01.07.01	1	4	Tender(s) preparation and evaluation	Local travel	Lump	2	72.5	145
01.01.07.01	1	4	Tender(s) preparation and evaluation	International travel	Lump	2	1160	2320

Code	SQ	FQ	Activity	MEANS	UNITS	NOS	UNIT COST BDR	COST BDR
01.01.07.01	1	4	Tender(s) preparation and evaluation	National Consultant	Days	40	101.5	4060

SQ = Start Quarter, FQ = Finish Quarter

Cost: BDR 237,380
UNDP-Bahrain Management fee @ 10%: BDR 23,738
Total cost: BDR 261,117

10.04.3 Activities schedule

Table 13: Scheduling of Activities by Quarter

Code	SQ *	FQ *	Activity	PROGRAMME QUARTERS (3 months)																			
				01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
01.01.16.01	1	20	Backstopping	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
01.01.15.01	4	8	Permits/tickets				X	X	X	X	X												
01.01.14.02	7	20	Web site operations							X	X	X	X	X	X	X	X	X	X	X	X	X	
01.01.14.01	4	8	Web site design				X	X	X	X	X												
01.01.13.02	7	20	Database operations							X	X	X	X	X	X	X	X	X	X	X	X	X	
01.01.13.01	4	8	Database design				X	X	X	X	X												
01.01.12.20	20	20	Quarter 20 meeting of National Steering Committee																			X	
01.01.12.19	19	19	Quarter 19 meeting of National Steering Committee																		X		
01.01.12.18	18	18	Quarter 18 meeting of National Steering Committee																		X		
01.01.12.17	17	17	Quarter 17 meeting of National Steering Committee																X				

Code	SQ *	FQ *	Activity	PROGRAMME QUARTERS (3 months)																			
				01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
01.01.12.16	16	16	Quarter 16 meeting of National Steering Committee															X					
01.01.12.15	15	15	Quarter 15 meeting of National Steering Committee															X					
01.01.12.14	14	14	Quarter 14 meeting of National Steering Committee														X						
01.01.12.13	13	13	Quarter 13 meeting of National Steering Committee													X							
01.01.12.12	12	12	Quarter 12 meeting of National Steering Committee												X								
01.01.12.11	11	11	Quarter 11 meeting of National Steering Committee											X									
01.01.12.10	10	10	Quarter 10 meeting of National Steering Committee											X									
01.01.12.09	9	9	Quarter 9 meeting of National Steering Committee											X									
01.01.12.08	8	8	Quarter 8 meeting of National Steering Committee										X										

11.0 PROGRAMME: PUBLIC COMMUNICATIONS FOR PARTICIPATION IN BAHRAIN BIODIVERSITY CONSERVATION

11.01 Justification for the Programme

It was agreed at a meeting between the BNBSAP Consultants and representatives from the PCPMREW on Thursday 08th November 2007 that the BNBSAP should contain a Public Communications Programme designed to support delivery of the BNBSAP and associated short listed Programmes³⁴³.

The title has been modified from “Public Communications Programme” as identified in feedback at the third BNBSAP workshop on 04th December and agreed at a meeting with the Public Commission on 05th December. This change in title reflects the need to focus public communications on participation in biodiversity conservation.

11.02 Logical framework

11.02.1 Introduction

This section 11.02 provides a description of the delivery of this Programme.

Key outcome (result) indicators and means of verification are described in Section 11.03 under the description of indicators.

The logical framework for this Programme is then presented as three matrices in Section 11.04. Indicators are not presented in the matrices because of limited space.

The **first** matrix presents the development Goal to which the BNBSAP Goal contributes together with the BNBSAP Goal, the specific Programme Goal, Programme Outcome, Outputs and Activities.

The **second** matrix presents the “Costs” to “Activities” vertical logic. This presents the activities required for delivery of particular outputs and the means and costs associated with delivery of these activities.

The **third** matrix presents the scheduling of activities by quarter.

³⁴³ BNBSAP PCPMREW meeting on 08th November 2007 (DID0375)

11.02.2 Coding

The vertical logic of the logical framework is linked together by a standard coding system comprising a string of numbers. Each pair of numbers in the numbers string provides an identifier for each level of vertical logic in the logical framework.

The first pair of numbers specifies the Programme. The second pair of numbers specifies each of the Programme Outcomes contributing to delivery of the Programme specified by the first pair of numbers. The third pair of numbers specifies each of the Programme Outputs contributing to the Programme Outcome specified by the preceding string of four numbers. The fourth pair of numbers then specifies each Programme Activity contributing to the Programme Output specified by the preceding string of six numbers. Additional sub-numbering can be proposed for the means and costs associated with delivering each of the specified activities but this is not done here.

11.02.3 Vertical logic

The **Development Goal** to which the BNBSAP contributes is “**Sustainable environmental, economic and social development**”.

The **BNBSAP Goal** to which the BNBSAP Measures and Programmes contribute is “**Loss of biodiversity within Bahraini ecosystems is reversed (terrestrial, freshwater and marine)**”.

The **Goal** of this BNBSAP Programme is: “**Public Communications for participation in Bahrain Biodiversity Conservation delivered**”

The **Objective** of this BNBSAP Programme is the same as the goal statement: “**Public Communications for participation in Bahrain Biodiversity Conservation delivered**”.

This objective will be delivered through development of a Public communications strategy and associated materials and a Sponsorship strategy as evaluated by an Attitudes and Opinions survey at the start, middle and end of the Programme. These

three groups of activities are designed to maximise awareness of and support for the other BNBSAP shortlist Programmes.

There is only one **Outcome** proposed for this Public Communications Programme that “**Attitudes and opinions to BNBSAP improved.**” Consideration was given to having a separate outcome for groups of activities. However, it was felt that this was not necessary since the associated activities and outputs are closely linked and better delivered under one outcome.

Outputs: The Programme outputs are delivered in a modular phased sequence comprising one or more of 6 output modules.

Stocktaking and initial planning: Collection of information and specification of the framework for delivering the Programme.

Socialisation and prioritization: Presentation to and agreement from key stakeholders of the proposed framework for delivering the Programme.

Guidelines development: Necessary materials (plans, training documents) for implementing the Programme.

Training: Necessary training for implementing the Programme using the guidelines developed in the Guidelines development phase. This phase may also involve revision of training materials.

Implementation: Delivery of the activities that will help deliver the Programme Outcome(s), Objective and Goal.

Evaluation: This Phase aims to evaluate effectiveness of implementation to see what has been achieved, lessons to be applied and next steps.

The contents of these phases and contributory activities, with respect to this particular Programme, are described in further Section 11.02 below. Indicators are described in Section 11.03 and matrices are presented in Section 11.04.

11.02 Outputs

11.02.1 General

All contractors should provide electronic copies of all source materials used and of all reports produced. All materials should be coded according to Programme, Outcome, Output and Activity. Where there are several possible code combinations they should be listed in order of relevance.

Where training is necessary then training materials for the trainee(s) and trainer(s) should be produced in electronic format and include systems for evaluating training.

Information should be obtained and provided with a format and content that best meets the requirements of the BNBSAP database and web site proposed under the Programme Management Programme.

11.02.2 Stocktaking

The stocktaking output module contains two key outputs. The first is a **Stocktaking report** and the second is a baseline **Attitude and Opinion survey**.

Stocktaking report

The Consultant is required to provide a Stocktaking report including electronic copies of all referenced documents. The report should comply with the following checklist:-

1. Attitude and opinions questionnaire: A baseline survey demographic sampling methodology, and tested questionnaire to deliver information on the attitude and opinion indicators described below based on preliminary information from stocktaking (or indicators as revised with the agreement of the Client).
2. Identify opportunities and constraints to delivering a public communications strategy designed to deliver improvements in responses to the baseline attitude and opinions survey framework. Identify and incorporate recommendations to realise opportunities and alleviate constraints in the Public Communications strategy. Particular note should be taken of precautionary considerations and climate change issues.
3. Identify the framework for a public communications strategy to deliver:-

- improvements in responses to the baseline attitude and opinions survey
- raised awareness concerning the 6 BNBSAP Programmes taking particular note of climate change issues

4. Identify the framework for:-

- a BNBSAP Programmes brand and marketing materials
- sponsors identification plan, sponsorship plan and public communications sustainable financing plan (e.g. for permits/tickets)

5. Identify key elements, in the context of this Programme, for:-

- the database proposed under the Programme Management Programme
- the web site proposed under the Programme Management Programme

6. Present the Stocktaking report at the socialisation workshop.

Attitude and Opinions Survey

The stocktaking consultant, or another consultant, should undertake the baseline (stocktaking phase), mid-term (implementation phase) and final (evaluation phase) attitude and opinions survey according to the specifications of the stocktaking consultant. There should be full reports including comparisons between surveys and recommendations for survey changes and lessons to be applied from each of the reports together with relevant revisions based on appropriate feedback.

The Consultant should present the results of the surveys at the Socialisation workshop and the Evaluation workshop.

The indicators to be evaluated are presented in Section 11.03 below.

11.02.3 Socialisation

There should be public communications socialisation/launch workshop delivered in Quarter 4.

The Stocktaking Consultant and the Attitude and Opinion Survey consultant should present their respective reports and recommendations to the Client at least one month before the workshop so that they can be distributed. They should be represented at the workshop and be prepared to make appropriate revisions as identified and agreed at the time of the workshop within two weeks following the date of the workshop.

The Workshop should be facilitated by an independent national Consultant who should be responsible for ensuring that:-

1. the reports are presented and discussed
2. feedback is minute and clarifications provided
3. there is a full workshop report delivered within one month of the workshop comprising:-
 - i. minutes
 - ii. list of participants
 - iii. materials presented

11.02.4 Guidelines

One, or more, independent consultants should be employed to develop and deliver a Public communications strategy, Public communications materials and a Sponsorship strategy designed to raise awareness about the BNBSAP generally and the BNBSAP short list programmes in particular.

The strategies and materials should aim to address recommendations from the Stocktaking report and baseline attitude and opinion survey and should aim to deliver improvements in response to the mid-term and final evaluation attitude and opinion questionnaire surveys when these are undertaken.

The Public Communications strategy should identify who, what, why, when and where, of public communications. The strategy should design and arrange production of the public communications materials. It should specify how distribution of materials is to be undertaken and recorded. It should provide a framework for delivering the sponsorship strategy. It should identify a business plan, branding and marketing strategy for the BNBSAP.

The public communications materials should aim to re-enforce the public communications strategy.

The sponsorship strategy should deliver sponsorship for the BNBSAP in the intermediate to long-term.

11.02.5 Training

A budget for 8 one day training sessions is provided for this Programme. Training for use of the database and web site should come under the Programme Management component.

11.02.6 Implementation

The implementation outputs phase involves delivery of activities designed to raise awareness about the BNBSAP generally and the BNBSAP short list programmes in particular in the context of delivering improved responses to the attitude and opinions questionnaire.

1. Public communications for participation strategy,
2. Public communications materials
3. Sponsorship strategy
4. Attitude and opinions mid-term survey

Public Communications for participation strategy: This should be implemented primarily through the dissemination of public communications materials, workshop and additional sponsored events that may be mobilised through delivery of the sponsorship strategy.

Public communications materials: These should be distributed by PCPMREW and other relevant stakeholders.

Sponsorship Strategy: This should be delivered based on the Sponsorship Strategy guidelines developed in the Guidelines Output phase. It should involve a series of face-to-face, roundtable and workshop meetings. The consultant should provide regular reports including a final report to be submitted at least one month before the final evaluation workshop to be revised as relevant within two weeks of

the workshop and based on feedback. The sponsorship consultant will be expected to leverage funds for additional activities during the course of the BNBSAP.

Attitude and Opinions Survey (mid programme): The stocktaking consultant, or another consultant, should undertake the mid-term Attitude and Opinions survey according to the specifications of the stocktaking consultant. There should be a full report including comparisons with the baseline survey, recommendations for survey changes and lessons to be applied together with relevant revisions based on appropriate feedback.

Finalise the mid-term survey report and submit to the Client at least one month before the due date.

The preliminary indicators to be evaluated are presented in Section 11.03.

11.02.7 Evaluation

The stocktaking consultant, or another consultant, should undertake the final (evaluation phase) attitude and opinions survey according to the specifications of the stocktaking consultant. There should be full reports including comparisons between surveys and recommendations for survey changes and lessons to be applied from each of the surveys together with relevant revisions based on appropriate feedback.

Finalise the attitude and opinion evaluation output phase report and submit to the Client at least one month before the evaluation workshop.

The Consultant should present the results of the surveys at the Evaluation workshop.

The preliminary indicators to be evaluated are presented in Section 11.03.

The final evaluation workshop should be facilitated by an independent national Consultant who should be responsible for ensuring:-

1. that the reports are presented and discussed
2. that feedback is minute and clarifications provided

3. that there is a full workshop report delivered within one month of the workshop comprising:-
 - i. minutes
 - ii. list of participants
 - iii. materials presented

11.03 Outcome Indicators

11.03.1 Introduction

Indicators and their means of verification are described below according to a standard structure.

In order to evaluate there must be indicators to show whether a project outcome has been delivered. These are termed objectively verifiable indicators. Ideally they should be outcome indicators and preferably they should also be output indicators and even activity indicators. Sometimes they may comprise a combination of sub-indicators. The important thing is that they should show real change.

The “OUTCOME INDICATOR DESCRIPTION” is broken down into a standard format as follows:-

General comments

Free text Outcome Indicator title

- (1) Justification for the outcome indicator
- (2) Location where the outcome indicator should be sampled
- (3) Timing of sampling of outcome indicator
- (4) Means of verification of outcome indicator
- (5) Targets in delivery of outcome indicators at specified times
- (6) Risks and assumptions

11.03.2 Outcome Indicator

Q=quarter. All key terms should be defined. All target indicators should be georeferenced (spatially located).

Attitudes and opinions in target groups towards BNBSAP Programmes at demographically selected sampling points show improvement from baseline.

(1) **Justification**: Improved attitudes and opinions towards Bahraini biodiversity are a key outcome of the BNBSAP Public Communications Programme generally and the other Programmes specifically.

(2) **Location**: Random sampling strategy determined by target group demographics, key locations and times in the stocktaking phase by the Public Communications survey consultants.

(3) **Timing**: Questionnaires at Q7,Q12,Q18

(4) **Means of verification**: Face to face questionnaires (undertaken by interviewers) amongst representative demographics at representative locations completed.

The Public Communications strategy should be designed and delivered to specifically raise awareness and responsiveness concerning the key questions listed below.

(4.1) Demographic: Age, Sex, Nationality, Place of residence, livelihood (parental livelihood for minor).

(4.2) Questionnaire:

(4.2.1) Are you aware that Bahrain has a system of Protected Areas designed to maintain natural wildlife? If so please give some examples.

(4.2.2) How important are these Protected to you? If so please give some examples.

(4.2.3) Are the Protected Areas well managed? If so please give some examples.

(4.2.4) Do you do any volunteer work on environment? If so please give some examples and the percent of your time you spend overall volunteering.

(4.2.5) Are you prepared to pay for efforts to protect natural wildlife?

(4.2.6) Do you think Government should help to protect natural wildlife? How do you think they should help?

(4.2.7) Do you think that Business should help to protect natural wildlife? How do

you think they should help?

(4.2.7) In terms of your future what worries you? For each worry please give a score and if possible some examples.

- Your education
- Your health
- Your employment
- Social change
- The natural world
- Climate change
- War
- Other

(4.3) Coding: (0 = don't know, 1 = very little, 2 = little, 3 = moderate, 4 = much, 5 = very much) and free text response to be coded, where possible, by the interviewer.

(5) **Target:** By Q4 survey methodology and forms developed and pilot tested. Q12 2,000 questionnaires completed and analysed. Q12 2,000 questionnaires completed and analysed and showing an improving trend in responses. Q18 2,000 questionnaires completed in the field and at least 50% of respondents score "moderate" or more on all relevant questions.

(6) **Risks and assumptions:** Data collected and analysed properly. Clarity of questions and honesty of response. The targets assume that natural or anthropogenic phenomenon beyond the control of the Programme does not have a significant adverse impact.

11.04 Logical Framework

11.04.1 Outputs to Goal

Table 14: Public Communications Outputs to Goal

Risks and assumptions are provided related to delivery of Indicators and are presented in Section 11.03 above.

Code	Vertical logic	Objectively verifiable indicators	Means of verification
	OVERALL GOAL		
	Sustainable environmental, economic and social development		
	BNBSAP GOAL		
	Loss of biodiversity within Bahraini ecosystems is reversed (terrestrial, freshwater and marine)		
02	PROGRAMME GOAL		
	Public Communications for participation in Bahrain Biodiversity Conservation delivered		
	PROGRAMME OBJECTIVE		

	Public Communications for participation in Bahrain Biodiversity Conservation delivered	BNBSAP awareness outcome indicators improved	Attitude and opinion survey
02.01	OUTCOME 1		
	Attitudes and opinions to BNBSAP improved		
02.01.06	Output 6 Evaluation	Workshop report, BNBSAP awareness outcome indicators improved	Workshop report, Attitude and opinion survey results
02.01.05	Output 5 Implementation	BNBSAP awareness outcome indicators improved, Sponsorship Events Materials	Attitude and opinion survey results Reports/Accounts Events reports Materials
02.01.04	Output 4 Training	Training	Training reports/certificates
02.01.03	Output 3 Guidelines	Sponsorship strategy Public communications materials Draft communications strategy	Agreement/materials Agreement/materials Agreement/materials
02.01.02	Output 2 Socialisation	Workshop materials and	Workshop materials and report

		report	
02.01.01	Output 1 Stocktaking	BNBSAP awareness outcome indicators baselined Stocktaking report	Baseline Attitude and Opinion Survey Stocktaking report

11.04.2 Costs to Activities

Table 15: Public Communications Costs to Activities

Note: Exchange rate \$US3.5:BDR1

Activities are delivered from bottom to top.

Code	SQ *	FQ *	Activity	MEANS	UNITS	NOS	UNIT COST BDR	COST BDR
02.01.06.02	19	19	Evaluation workshop	National Evaluation Consultant	Days	2	101.5	203
02.01.06.02	19	19	Evaluation workshop	National Consultant Facilitator	Lump	5	101.5	507.5
02.01.06.02	19	19	Evaluation workshop	Evaluation workshop	Lump	1	580	580
02.01.06.01	18	18	Attitude and opinion re-survey	Consumables	Lump	4	72.5	290
02.01.06.01	18	18	Attitude and opinion re-survey	Local travel	Lump	4	72.5	290
02.01.06.01	18	18	Attitude and opinion re-survey	National consultants survey	Days	60	29	1740
02.01.06.01	18	18	Attitude and opinion re-survey	National consultant supervision	Days	20	101.5	2030
02.01.06.01	18	18	Attitude and opinion re-survey	International Consultant	Days	5	203	1015
02.01.05.04	10	10	Attitude and opinions mid-term survey	Consumables	Lump	4	72.5	290
02.01.05.04	10	10	Attitude and opinions mid-term survey	National Consultant supervision	Days	20	101.5	2030

Code	SQ *	FQ *	Activity	MEANS	UNITS	NOS	UNIT COST BDR	COST BDR
02.01.05.04	10	10	Attitude and opinions mid-term survey	Local travel	Lump	4	72.5	290
02.01.05.04	10	10	Attitude and opinions mid-term survey	International Consultant	Days	5	203	1015
02.01.05.04	10	10	Attitude and opinions mid-term survey	National Consultant survey	Days	60	29	1740
02.01.05.03	7	17	Sponsorship strategy	National Consultant	Days	90	101.5	9135
02.01.05.03	7	17	Sponsorship strategy	International Consultant	Days	10	203	2030
02.01.05.03	7	17	Sponsorship strategy	Local travel	Lump	2	72.5	145
02.01.05.03	7	17	Sponsorship strategy	Consumables	Lump	4	72.5	290
02.01.05.03	7	17	Sponsorship strategy	Workshops	Workshop	3	580	1740
02.01.05.03	7	17	Sponsorship strategy	International DSA	Days	10	72.5	725
02.01.05.03	7	17	Sponsorship strategy	International travel	Lump	2	1160	2320
02.01.05.02	7	17	Public communications events	Workshops	Workshop	5	580	2900
02.01.05.02	7	17	Public communications events	International consultant	Days	10	203	2030
02.01.05.02	7	17	Public communications events	National consultant	Days	60	101.5	6090
02.01.05.02	7	17	Public communications events	International travel	Lump	2	1160	2320

Code	SQ *	FQ *	Activity	MEANS	UNITS	NOS	UNIT COST BDR	COST BDR
02.01.05.02	7	17	Public communications events	Consumables	Lump	8	72.5	580
02.01.05.02	7	17	Public communications events	International DSA	Days	10	72.5	725
02.01.05.02	7	17	Public communications events	Local travel	Lump	8	72.5	580
02.01.05.01	7	17	Public communications materials	PCPMWER and other stakeholders	Lump	1	580	580
02.01.04.01	7	20	Training	International DSA	Days	6	72.5	435
02.01.04.01	7	20	Training	International travel	Lump	2	1160	2320
02.01.04.01	7	20	Training	10 one day training sessions for 10 persons each.	Modules	10	2218.5	22185
02.01.03.03	5	6	Sponsorship strategy	Local travel	Lump	2	72.5	145
02.01.03.03	5	6	Sponsorship strategy	International consultant	Days	10	203	2030
02.01.03.03	5	6	Sponsorship strategy	International travel	Lump sum	2	1160	2320
02.01.03.03	5	6	Sponsorship strategy	National consultant	Days	20	101.5	2030
02.01.03.03	5	6	Sponsorship strategy	International DSA	Days	10	72.5	725
02.01.03.03	5	6	Sponsorship strategy	Consumables	Lump	2	72.5	145
02.01.03.02	5	6	Public communications	Translation	Lump	1	580	580

Code	SQ *	FQ *	Activity	MEANS	UNITS	NOS	UNIT COST BDR	COST BDR
			materials					
02.01.03.02	5	6	Public communications materials	Designer - local	Days	20	101.5	2030
02.01.03.02	5	6	Public communications materials	Production	Lump	1	21750	21750
02.01.03.01	5	6	Public communications strategy	National Consultant	Days	20	101.5	2030
02.01.03.01	5	6	Public communications strategy	International Travel	Lump sum	1	1160	1160
02.01.03.01	5	6	Public communications strategy	Local travel	Lump sum	1	72.5	72.5
02.01.03.01	5	6	Public communications strategy	Consumables	Lump sum	1	72.5	72.5
02.01.03.01	5	6	Public communications strategy	International DSA	Days	10	72.5	725
02.01.03.01	5	6	Public communications strategy	International consultant	Days	10	203	2030
02.01.02.03	4	4	Consultant support	International DSA	Days	5	72.5	362.5

Code	SQ *	FQ *	Activity	MEANS	UNITS	NOS	UNIT COST BDR	COST BDR
02.01.02.03	4	4	Consultant support	National consultant	Days	5	101.5	507.5
02.01.02.03	4	4	Consultant support	International travel	Lump	1	1160	1160
02.01.02.03	4	4	Consultant support	International consultancy	Days	5	203	1015
02.01.02.02	4	4	Workshop Facilitator	Consumables	Lump	2	72.5	145
02.01.02.02	4	4	Workshop Facilitator	National Consultant (facilitator)	Days	5	101.5	507.5
02.01.02.01	4	4	Socialization Workshop	Workshop	Lump sum	1	580	580
02.01.01.02	2	2	Baseline attitude and opinion survey	Translating	Lump	1	580	580
02.01.01.02	2	2	Baseline attitude and opinion survey	National consultant supervision	Days	30	101.5	3045
02.01.01.02	2	2	Baseline attitude and opinion survey	International travel	Travel	2	1160	2320
02.01.01.02	2	2	Baseline attitude and opinion survey	Local travel	Lump	4	72.5	290
02.01.01.02	2	2	Baseline attitude and opinion survey	Consumables	Lump	2	72.5	145

Code	SQ *	FQ *	Activity	MEANS	UNITS	NOS	UNIT COST BDR	COST BDR
02.01.01.02	2	2	Baseline attitude and opinion survey	National consultant surveyors	Lump	60	29	1740
02.01.01.02	2	2	Baseline attitude and opinion survey	International DSA	Days	20	72.5	1450
02.01.01.02	2	2	Baseline attitude and opinion survey	Data processing	Lump	1	1450	1450
02.01.01.02	2	2	Baseline attitude and opinion survey	International consultants	Days	20	203	4060
02.01.01.01	1	3	Stocktaking	National consultants	Days	30	101.5	3045
02.01.01.01	1	3	Stocktaking	International travel	Travel	1	1160	1160
02.01.01.01	1	3	Stocktaking	Local travel	Lump sum	1	72.5	72.5
02.01.01.01	1	3	Stocktaking	Consumables	Lump sum	1	72.5	72.5
02.01.01.01	1	3	Stocktaking	International DSA	Days	10	72.5	725
02.01.01.01	1	3	Stocktaking	International consultants	Days	10	203	2030

SQ = Start Quarter, FQ = Finish Quarter

Total cost: BDR 133,45

Code	SQ	FQ	Activity	PROGRAMME QUARTERS (3 months)																			
	*	*		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
02.01.01.01	1	3	Stocktaking	X	X	X																	

SQ = Start Quarter, FQ = Finish Quarter

12.0 STRATEGIC ENVIRONMENTAL ASSESSMENT PROGRAMME

12.01 Justification for the Programme

Environment needs to be mainstreamed into Policies and Sectors. Policy and Sector plans need to accommodate environmental considerations as a condition of approval. Strategic Environmental Assessment (SEA) provides an internationally acceptable tool to do this.

One key value of the SEA process is in providing an appropriate policy and planning framework for making decisions in the Environmental Impact Assessment process. Environmental Impact Assessment and Strategic Environmental Assessment are addressed by Article 14 of the Convention on Biological Diversity³⁴⁴.

Strategic Environmental Assessment was afforded the highest score by a substantial margin during a free vote on proposed BNBSAP Measures at the second BNBSAP workshop on 07th November 2007³⁴⁵.

It was further agreed at a meeting between the BNBSAP Consultants and representatives from the PCPMREW on Thursday 08th November 2007 that the BNBSAP should contain a Strategic Environmental Assessment Programme³⁴⁶.

12.02 Logical framework

12.02.1 Introduction

This section 12.02 provides a description of the delivery of this Programme.

Key outcome indicators and means of verification are described in Section 12.03 under the description of indicators.

The logical framework for this Programme is then presented in three matrices in Section 12.04. Indicator details are not presented in the matrices because of limited space.

³⁴⁴ Convention on Biological Diversity, 1992, Article 14 (DID0121)

³⁴⁵ BNBSAP November Workshop on 07th November 2007 Report Final (DID0372)

³⁴⁶ BNBSAP PCPMREW meeting on 08th November 2007 (DID0375)

The **first** matrix presents the development Goal to which the BNBSAP Goal contributes together with the BNBSAP Goal, the specific Programme Goal, Programme Outcome, Outputs and Activities.

The **second** matrix presents the “Costs” to “Activities” vertical logic. This presents the activities required for delivery of particular outputs and the means and costs associated with delivery of those activities.

The **third** matrix presents the scheduling of activities by quarter.

12.02.2 Coding

The vertical logic of the logical framework is linked together by a standard coding system comprising a string of numbers. Each pair of numbers in the numbers string provides an identifier for each level of vertical logic in the logical framework.

The first pair of numbers specifies the Programme. The second pair of numbers specifies each of the Programme Outcomes contributing to delivery of the Programme specified by the first pair of numbers. The third pair of numbers specifies each of the Programme Outputs contributing to the Programme Outcome specified by the preceding string of four numbers. The fourth pair of numbers then specifies each Programme Activity contributing to the Programme Output specified by the preceding string of six numbers. Additional sub-numbering can be proposed for the means and costs associated with delivering each of the specified activities but this is not done here.

12.02.3 Vertical logic

The **Development Goal** to which the BNBSAP contributes is “**Sustainable environmental, economic and social development**”.

The **BNBSAP Goal** to which the BNBSAP Measures and Programmes contribute is “**Loss of biodiversity within Bahraini ecosystems is reversed (terrestrial, freshwater and marine)**”.

The **Goal** of this BNBSAP Programme is: “**Strategic Environmental Assessment Policy adopted**”

The **Objective** and **Outcome** of this BNBSAP Programme is: “**Policy to require Strategic Environmental Assessment as a tool in local and national sector and cross-sector development planning adopted.**” Only one outcome is proposed so as to simplify Programme delivery.

This objective will be delivered through stocktaking of the present legal and administrative situation with respect to an enabling environment for adoption of SEA and the drafting and processing of appropriate policy and legislative instruments.

If successful then consideration should be given to a follow-on programme for capacity building in delivery of SEA.

Outputs: The Programme outputs are delivered in a modular phased sequence comprising one or more of 6 output modules.

Stocktaking and initial planning: Collection of information and specification of the framework for delivering the Programme.

Socialisation and prioritization: Presentation to and agreement from key stakeholders of the proposed framework for delivering the Programme.

Guidelines development: Necessary materials (draft policies and legislation) for implementing the Programme.

Training: Training is not included in this Programme. Training should be included in a follow-up SEA Programme should the policy and legislative framework be adopted.

Implementation: Follow-up on the processing of policy and legislative instruments.

Evaluation: This Phase aims to evaluate effectiveness of implementation to see what has been achieved, lessons to be applied and next steps.

The contents of these phases and contributory activities, with respect to this particular Programme, are described in further Section 12.02 below. Indicators are described in Section 12.03 and matrices are presented in Section 12.04.

12.03 Outputs

12.03.1 General

All contractors should provide electronic copies of all source materials used and of all reports produced. All materials should be coded according to Programme, Outcome, Output and Activity. Where there are several possible code combinations they should be listed in order of relevance.

Where training is necessary then training materials for the trainee(s) and trainer(s) should be produced in electronic format and include systems for evaluating training.

Information should be obtained and provided with a format and content that best meets the requirements of the BNBSAP database and web site proposed under the Programme Management Programme.

12.03.2 Stocktaking

Activities delivering this Output involve the Preparation of a stocktaking report by an International and National Consultant containing:

1. Review of existing policy and legal framework with respect to the opportunities and constraints to introduction of SEA Policy(ies) and Legislation.
2. Identification of key sector and cross-sector stakeholders likely to influence delivery of effective policy and legislative instruments.
3. Preliminary drafting of Policy(ies) and legislation taking note of key sectoral and cross-sectoral issues including precautionary considerations and climate change.

A number of documents relating to Strategic Environmental Assessment are available in the Project Management Information System and should, where relevant, be referred to³⁴⁷.

12.03.3 Socialisation

There should be an SEA workshop delivered in Quarter 4 facilitated by a National Consultant and with a presentation by the Stocktaking consultant(s).

The SEA Stocktaking Consultants should present their respective report and recommendations to the Client at least one month before the workshop so that it can be distributed. The SEA Stocktaking consultants should be represented at the workshop and be prepared to make appropriate revisions as identified and agreed at the time of the workshop within two weeks following the date of the workshop.

The Workshop should be facilitated by an independent national Consultant who should be responsible for ensuring:-

1. that the reports are presented and discussed
2. that feedback is minute and clarifications provided
3. that there is a full workshop report delivered within one month of the workshop comprising:-
 - i. minutes
 - ii. list of participants
 - iii. materials presented

12.03.4 Guidelines

The International and National Consultants should draft necessary policy(ies) and legislation based on the preliminary drafts prepared in the stocktaking phase and presented at the socialisation workshop and designed to support an enabling environment for delivery of effective SEA. They should work with necessary key stakeholders to ensure that the drafts are appropriate and relevant and suitable for processing.

³⁴⁷ SEA materials (DID0060, 0316, 0317, 0318, 0319, 0320, 0323, 0324, 0327, 0342)

12.03.5 Training

Some training is proposed under this Programme to socialise Strategic Environmental Assessment amongst key stakeholding sectors. There should be additional training in a follow-up Programme when the necessary enabling framework for SEA is in place.

12.03.6 Implementation

This Phase should comprise lobbying for adoption of policy(ies) and legislation drafted in the guidelines phase.

12.03.7 Evaluation

The stocktaking consultant, or another consultant, should undertake the final (evaluation phase) survey of the status of implementation of SEA enabling policy(ies) and legislation based on the key outcome indicator(s) specified for this Programme. There should be a full report which should be finalised and submitted to the Client at least one month before the evaluation workshop.

The final evaluation workshop should be facilitated by an independent national Consultant who should be responsible for ensuring:-

1. that the reports are presented and discussed
2. that feedback is minute and clarifications provided
3. that there is a full workshop report delivered within one month of the workshop comprising:-
 - i. minutes
 - ii. list of participants
 - iii. materials presented

The National Consultant who helped prepare the evaluation report should present at the workshop.

12.04 Outcome Indicators

12.04.1 Introduction

Outcome indicators and their means of verification are described below according to a standard structure.

In order to evaluate there must be indicators to show whether a project outcome has been delivered. These are termed objectively verifiable indicators. Ideally they should be outcome indicators and preferably they should also be output indicators and even activity indicators. Sometimes they may comprise a combination of sub-indicators. The important thing is that they should show real change.

The “OUTCOME INDICATOR DESCRIPTION” is broken down into a standard format as follows:-

General comments

Free text Outcome Indicator title

- (1) Justification for the outcome indicator
- (2) Location where the outcome indicator should be sampled
- (3) Timing of sampling of outcome indicator
- (4) Means of verification of outcome indicator
- (5) Targets in delivery of outcome indicators at specified times
- (6) Risks and assumptions

12.04.2 Outcome Indicator

Q=quarter. All key terms should be defined. All target indicators should be georeferenced (spatially located).

Gazetted law(s), publicised policy(ies) and supporting official correspondence enable Strategic Environmental Assessment.

(1) **Justification:** SEA can only be implemented and capacity built if the enabling policy and legislative environment are in place.

(2) **Location:** State of Bahrain.

(3) **Timing:** End of Programme Evaluation Q12

(4) **Means of verification:**

Relevant Policy - Publicly endorsed and notified

Relevant Legislation – Gazetted

Relevant Official correspondence – relating to the process of acceptance

(5) **Target:** By Q12 SEA Policy(ies) and legislation in place and/or official correspondence shows a commitment to processing the proposed policy(ies) and legislation.

(6) **Risks and assumptions:** An appropriate policy and legislative enabling environment for SEA policy(ies) and legislation exists. There is support for the Programme. Relevant policy(ies) and legislation can be drafted. Relevant policy(ies) and legislation can be adopted in the proposed timescale.

12.05 Logical Framework

12.05.1 Outputs to Goal

Table 17: Strategic Environmental Assessment Outputs to Goal

Risks and assumptions are provided related to delivery of Indicators and are presented in Section 12.03 above.

Code	Vertical logic	Objectively verifiable indicators	Means of verification
	OVERALL GOAL		
	Sustainable environmental, economic and social development		
	BNBSAP GOAL		
	Loss of biodiversity within Bahraini ecosystems is reversed (terrestrial, freshwater and marine)		
03	PROGRAMME GOAL		
	Strategic Environmental Assessment Policy adopted		
	PROGRAMME OBJECTIVE		

	Policy to require Strategic Environmental Assessment as a tool in local and national sector and cross-sector development planning adopted.	Policy(ies) and legislative instruments status	Gazetted law(s) and publicised policy(ies), Official correspondence
03.01	OUTCOME 1		
	Policy to require Strategic Environmental Assessment as a tool in local and national sector and cross-sector development planning adopted.		
03.01.06	Output 6 Evaluation	Workshop report	Workshop report
03.01.05	Output 5 Implementation	Policy(ies) and legislation at various stages of drafting and approval.	Policy and legislative materials Official correspondence
03.01.04	Output 4 Training	None	None
03.01.03	Output 3 Guidelines	Drafted Policy(ies) Drafted Legislation	Drafted Policy(ies) Drafted Legislation
03.01.02	Output 2 Socialisation	Workshop materials and report	Workshop materials and report
03.01.01	Output 1 Stocktaking	Stocktaking report Draft policy(ies) and draft legislation	Stocktaking report Draft policy(ies) and draft legislation

12.05.2 Costs to Activities

Table 18: SEA Costs to Activities

Note: Exchange rate \$US3.5:BDR1

Activities are delivered from bottom to top.

Code	S Q *	F Q *	Activity	MEANS	UNIT S	NO S	UNIT COST BDR	COST BDR
03.01.06. 02	12	12	Evaluation workshop	Consumables	Lum p	1	72.5	72.5
03.01.06. 02	12	12	Evaluation workshop	Workshop	Lum p	1	580	580
03.01.06. 02	12	12	Evaluation workshop	National Consultant (evaluation reporter)	Days	3	101.5	304.5
03.01.06. 02	12	12	Evaluation workshop	National Consultant facilitator	Days	5	101.5	507.5
03.01.06. 02	12	12	Evaluation workshop	National travel	Lum p	1	72.5	72.5
03.01.06.	12	12	Evaluation report	International Consultant	Days	10	203	2030

Code	S Q *	F Q *	Activity	MEANS	UNIT S	NO S	UNIT COST BDR	COST BDR
01								
03.01.06. 01	12	12	Evaluation report	International DSA	Days	10	72.5	725
03.01.06. 01	12	12	Evaluation report	Consumables	Lum p	1	72.5	72.5
03.01.06. 01	12	12	Evaluation report	Local travel	Lum p	1	72.5	72.5
03.01.06. 01	12	12	Evaluation report	National Consultant	Days	20	101.5	2030
03.01.06. 01	12	12	Evaluation report	International travel	Lum p	1	1160	1160
03.01.05. 01	6	12	Adoption of SEA Policy(ies) and legislation	International consultant	Days	10	203	2030
03.01.05. 01	6	12	Adoption of SEA Policy(ies) and legislation	International travel	Lum p	2	1160	2320
03.01.05. 01	6	12	Adoption of SEA Policy(ies) and legislation	National Consultant	Days	20	101.5	2030
03.01.05. 01	6	12	Adoption of SEA Policy(ies) and legislation	Local travel	Lum	1	72.5	72.5

Code	S Q *	F Q *	Activity	MEANS	UNIT S	NO S	UNIT COST BDR	COST BDR
01			legislation		p			
03.01.05. 01	6	12	Adoption of SEA Policy(ies) and legislation	International DSA	Days	10	72.5	725
03.01.05. 01	6	12	Adoption of SEA Policy(ies) and legislation	Consumables	Lum p	1	72.5	72.5
03.01.04. 01	6	12	Training	International DSA	Days	6	72.5	435
03.01.04. 01	6	12	Training	International travel	Lum p	2	1160	2320
03.01.04. 01	6	12	Training	Training	Lum p	4	2218.5	8874
03.01.03. 01	4	6	Guidelines	Consumables	Lum p	1	72.5	72.5
03.01.03. 01	4	6	Guidelines	International consultancy	Days	20	203	4060
03.01.03. 01	4	6	Guidelines	National Consultant	Days	30	101.5	3045
03.01.03. 01	4	6	Guidelines	International DSA	Days	20	72.5	1450

Code	S Q *	F Q *	Activity	MEANS	UNIT S	NO S	UNIT COST BDR	COST BDR
01								
03.01.03. 01	4	6	Guidelines	Translating	Lum p	1	580	580
03.01.03. 01	4	6	Guidelines	International Travel	Lum p	1	1160	1160
03.01.02. 03	4	4	Workshop Stocktaking Consultant support	International DSA	Days	3	72.5	217.5
03.01.02. 03	4	4	Workshop Stocktaking Consultant support	National Consultant	Days	3	101.5	304.5
03.01.02. 03	4	4	Workshop Stocktaking Consultant support	International travel	Lum p	1	1160	1160
03.01.02. 03	4	4	Workshop Stocktaking Consultant support	International Consultant	Days	5	203	1015
03.01.02. 02	4	4	Workshop facilitator	Consumables	Lum p	2	72.5	145
03.01.02. 02	4	4	Workshop facilitator	National Consultant facilitator	Days	5	101.5	507.5
03.01.02.	4	4	Socialization workshop	Workshop	Lum	1	580	580

Code	S Q *	F Q *	Activity	MEANS	UNIT S	NO S	UNIT COST BDR	COST BDR
01					p			
03.01.02. 01	4	4	Socialization workshop	Consumables	Lum p	1	72.5	72.5
03.01.01. 01	1	3	Stocktaking	International Consultant	Days	20	203	4060
03.01.01. 01	1	3	Stocktaking	International DSA	Days	20	72.5	1450
03.01.01. 01	1	3	Stocktaking	Consumables	Lum p	2	72.5	145
03.01.01. 01	1	3	Stocktaking	Local travel	Lum p	2	72.5	145
03.01.01. 01	1	3	Stocktaking	National Consultant	Days	30	101.5	3045
03.01.01. 01	1	3	Stocktaking	International travel	Lum p	1	1160	1160

SQ = Start Quarter, FQ = Finish Quarter

Total cost: BDR 50,881

13.0 BIODIVERSITY PROTECTED AREAS PROGRAMME– HAWAR, MASHTAN, AND RAS SANAD

13.01 Justification for the Programme

Article 8 (*in-situ*) conservation has been identified as one of two articles for priority consideration in the BNBSAP³⁴⁸. In-situ conservation came joint third during a free vote on proposed BNBSAP Measures at the second BNBSAP workshop on 07th November 2007³⁴⁹.

Specifically, the workshop recommended improvement of the management of existing protected areas, but did not recommend as highly the establishment of new protected areas.

It was further agreed at a meeting between the BNBSAP Consultants and representatives from the PCPMREW on Thursday 08th November 2007 that the BNBSAP should contain a Programme for improving the biodiversity management of the Hawar Islands, Mashtan Island, and Ras Sanad³⁵⁰.

Hawar Islands:

The Hawar Island Group^{351,352} is only one of two internationally recognised biodiversity protected areas (Ramsar Sites) in Bahrain and is recognised under existing national legislation. It has potential, subject to trans-boundary park formation with neighbouring countries, to become a World Heritage Site. It does not presently have an operational management board or operational management.

Mashtan Islands:

Mashtan Island and surrounding reef area are described as “sensitive habitat” in a review dated 2000 of activities in Bahrain related to the Convention on Biological Diversity³⁵³. In the absence of other comment this may explain why Mashtan was

³⁴⁸ Bahrain First National Report, 2006 (Section 4.3a, p.9, DID0230)

³⁴⁹ BNBSAP November Workshop on 07th November 2007 Report Final (DID0372)

³⁵⁰ BNBSAP PCPMREW meeting on 08th November 2007 (DID0375)

³⁵¹ Al-Zayani, A.A, Ph.D., thesis, 2003, Chapter 9 (DID0288)

³⁵² Howar Islands Protected Area Management Plan, 2003 (DID0177)

³⁵³ National Biodiversity Planning in the Arab World, Bahrain, 2000 (DID0160)

declared as a Protected Area by Ministerial Order 1 of 2002³⁵⁴. No substantive information has been made available concerning the Island and its surrounding waters and certainly there is no evidence of biodiversity related management.

It is legally recognised as one of only 4 designated Marine Protected areas in Bahrain and could form an edge to the Mashtan, Jabbarri, Tighaylib, to Hawar triangle which is considered to be a high biodiversity area.

Ras Sanad:

Ras Sanad is one of only six small areas of *Avicennia marina* mangrove in Bahrain. All are located within the Tubli Bay Ramsar Site. Ras Sanad is under title deed to the PCPMREW and subject to protection under National Law.

It is suggested by the BNBSAP team that the more effective management of Ras Sanad should prove catalytic to the conservation of what remains of the Tubli Bay Ramsar site in that it should, at least, secure water exchange and water quality to the area and raise awareness in support of wider conservation efforts in Tubli Bay as a whole. However, to the extent possible the Project should also catalyze the implementation of the requirements specified in Decree 53/2006³⁵⁵.

The Bahrain First National Report 2006³⁵⁶ states that “*Tubli bay was declared as a protected area in 1995³⁵⁷ and designated as a RAMSAR site in 1997³⁵⁸ in attempt to promote the protection of the coastline from coastal development. However, strict regulations associated with effective management are currently of pressing need to prevent further ecosystem collapse in Tubli Bay*”.

13.02 Logical framework

13.02.1 Introduction

This section 13.02 provides a description of the delivery of this Programme.

³⁵⁴ Bahrain Ministerial Order 1 of 2002 concerning Mashtan Protected Area (DID0244)

³⁵⁵ Bahrain Decree 53 of 2006 concerning Tubli Bay protected area (DID0246)

³⁵⁶ Bahrain First National Report, 2006, p.17 (DID0230)

³⁵⁷ This may relate to Ministerial Order (1) 1995 (DID0250) with respect to the banning of Infilling and Urbanization in Tubli Bay. Cannot find reference to declaring the area as a natural protectorate at this time.

³⁵⁸ See also Annotated Ramsar list specifying Tubli Bay as site 921 under the Ramsar Convention on Wetlands on 27th October 1997 (DID0256). The latest Ramsar Information Sheet given for Tubli is for 1998 (DID0181).

Key indicators and means of verification are described in Section 13.03 under the description of indicators.

The logical framework for this Programme is then presented in three matrices in Section 13.04. Indicator details are not presented in the matrices because of limited space.

The **first** matrix presents the development Goal to which the BNBSAP Goal contributes together with the BNBSAP Goal, the specific Programme Goal, Programme Outcome, Outputs and Activities.

The **second** matrix presents the Costs to Activities vertical logic. This presents the Activities required for delivery of particular outputs and the Means and Costs associated with delivery of those Activities.

The **third** matrix presents the scheduling of activities by quarter.

13.02.2 Coding

The vertical logic of the logical framework is linked together by a standard coding system comprising a string of numbers. Each pair of numbers in the numbers string provides an identifier for each level of vertical logic in the logical framework.

The first pair of numbers specifies the Programme. The second pair of numbers specifies each of the Programme Outcomes contributing to delivery of the Programme specified by the first pair of numbers. The third pair of numbers specifies each of the Programme Outputs contributing to the Programme Outcome specified by the preceding string of four numbers. The fourth pair of numbers then specifies each Programme Activity contributing to the Programme Output specified by the preceding string of six numbers. Additional sub-numbering can be proposed for the means and costs associated with delivering each of the specified activities but this is not done here.

13.02.3 Vertical logic

The **Development Goal** to which the BNBSAP contributes is “**Sustainable environmental, economic and social development**”.

The **BNBSAP Goal** to which the BNBSAP Measures and Programmes contribute is “**Loss of biodiversity within Bahraini ecosystems is reversed (terrestrial, freshwater and marine)**”.

The **Goal** of this BNBSAP Programme is: “**Biodiversity Protected Area Network better managed**”.

The **Objective and Outcome** of this BNBSAP Programme are the same: “**Hagar Islands, Mashtan Island, and Ras Sanad Biodiversity Management Authority Operational**”. Only one outcome is proposed to simplify delivery.

Outputs: The Programme outputs are delivered in a modular phased sequence comprising one or more of 6 output modules.

Stocktaking and initial planning: Collection of information and specification of the framework for delivering the Programme.

Socialisation and prioritization: Presentation to and agreement from key stakeholders of the proposed framework for delivering the Programme.

Guidelines development: Necessary materials (draft policies and legislation) for implementing the Programme.

Training: Training should be focussed on delivering effective management.

Implementation: Delivery of effective management.

Evaluation: This Phase aims to evaluate effectiveness of implementation to see what has been achieved, lessons to be applied and next steps.

The contents of these phases and contributory activities, with respect to this particular Programme, are described in further Section 13.02 below. Indicators are described in Section 13.03 and matrices are presented in Section 13.04.

13.02 Outputs

13.02.1 General

All contractors should provide electronic copies of all source materials used and of all reports produced. All materials should be coded according to Programme, Outcome, Output and Activity. Where there are several possible code combinations they should be listed in order of relevance.

Where training is necessary then training materials for the trainee(s) and trainer(s) should be produced in electronic format and include systems for evaluating training.

Information should be obtained and provided with a format and content that best meets the requirements of the BNBSAP database and web site proposed under the Programme Management Programme.

13.02.2 Stocktaking

There are two activity areas proposed during the stocktaking phase, to be undertaken on a parallel path for each of the three existing, targeted protected areas. These are a needs assessment for the Biodiversity Management Authority. The second is a baseline assessment of the status of proposed Outcome indicators for management operations.

Stocktaking is proposed to be undertaken by an International and National Technical Consultant. Site visits are included in the costs. Stocktaking should comprise:-

A. Participatory review^{359,360} taking note of precautionary and climate change issues. It should also meet and comply and determine opportunities and constraints to management with recommendations according to the checklist below:-

- (i) Purchase of land under PCPMREW;
- (ii) Boundaries specification/demarcation, zoning
- (iii) Infrastructure needs (Accommodation/shelter, bird Observatory/hides, moorings, demarcation buoys, rubbish bins etc);
- (iv) Management strengthening needs assessment (organisational including staffing, institutional and regulatory);
- (v) Operations - consultative meetings, enforcement, monitoring, control and surveillance, illegal hunting and fishing, species action plans, point and diffuse sources of pollution (solid, liquid and gaseous), green procurement, protected areas expansion, compensations assessment and framework for loss of access/use rights, training needs assessment; Permits system.
- (vi) Equipment needs;
- (vii) Budget planning, financial sustainability/business development planning (Trust Fund, Government and private sector sponsorship);
- (viii) Participation - Strengthening links with and involvement of relevant stakeholders – For instance, for Hawar Resort, Military, Tourism, relevant NGOs, trans-boundary/ international; necessary stakeholder participation framework plans;
- (ix) Education and public communications (taking note of the Public Communications Programme);
- (x) Outcome indicators and means of verification.

B. Stocktaking report according to checklist comprising:-

1. Management board meeting guidelines (Terms of reference including: (i) specification and recruitment of representatives; (ii)

³⁵⁹ Howar Islands Protected Area Management Plan, 2003 (DID0177)

³⁶⁰ See also a number of other relevant documents held in the Programme Management Information System

- disclosure of interest; (iii) meeting protocols etc including: (a) welcome; (b) voting; (c) chair; (d) quorum; (e) apologies; (f) agree preceding meeting minutes; (g) emergency items; (h) agenda items; (i) any other business; (j) location, date, time of next meeting; (k) closure of meeting).
2. Management plan comprising zoning, permit systems, infrastructure, species action plans, stakeholder participation plans, Monitoring, control and surveillance procedures, Outcome indicators monitoring
 3. Business plan
 4. Draft legislation
 5. Training materials (i) Management meetings/management; (ii) Habitat and species monitoring; (iii) Pollution monitoring; (iv) Infrastructure monitoring; (v) Visitors/permits monitoring; (vi) Offences (Monitoring, control and surveillance); (vii) Business planning and budgeting; (viii) Safety; (ix) Equipment maintenance; (x) Other
 6. Other

Outcome Indicators Baseline Survey

Consultants should undertake a baseline survey of key outcome indicators outlined in Section 13.03 of this document and to be further detailed in the stocktaking process. A lump sum is assigned for this survey. It may be possible to integrate with existing monitoring initiatives.

13.02.3 Socialisation

There should be a Protected Areas workshop delivered in Quarter 5 facilitated by a National Consultant and with a presentation by the Stocktaking consultant(s). At this workshop, Hawar Islands, Mashtan Island, and Ras Sanad will all be discussed.

The Workshop should be facilitated by an independent national Consultant who should be responsible for ensuring that:-

1. the reports are presented and discussed
2. feedback is minute and clarifications provided
3. there is a full workshop report delivered within one month of the workshop comprising:-

- i. minutes
- ii. list of participants
- iii. materials presented

The stocktaking Consultants should present their report and recommendations to the Client at least one month before the workshop so that it can be distributed. The Stocktaking consultants should be represented at the workshop and be prepared to make appropriate revisions as identified and agreed at the time of the workshop within two weeks following the date of the workshop.

13.02.4 Guidelines Development

Based on the stocktaking report and outcome indicators baseline report, Consultants should prepare:

1. Management board guidelines (revised and based on those prepared as part of stocktaking).
2. Management plan guidelines comprising: (i) zoning; (ii) permit systems; (iii) infrastructure; (iv) species action plans; (v) stakeholder participation plans; (vi) Monitoring, control and surveillance procedures (patrolling etc); (vii) refine the Outcome indicators monitoring developed and tested during the stocktaking phase.
3. Business plan
4. Draft legislation
5. Training materials comprising: (i) Management meetings/management; (ii) Habitat and species monitoring; (iii) Pollution monitoring; (iv) Infrastructure monitoring; (v) Visitors/permits monitoring; (vi) Offences (Monitoring, control and surveillance); (vii) Business planning and budgeting; (viii) Safety; (ix) Equipment maintenance; (x) Other
6. Other

13.02.5 Training

Training and training certificates in: (i) Management meetings/management; (ii) Habitat and species monitoring; (iii) Pollution monitoring; (iv) Infrastructure monitoring; (v) Visitors/permits monitoring; (vi) Offences (Monitoring, control and surveillance); (vii) Business planning and budgeting; (viii) Safety; (ix) Equipment maintenance; (x) Other

Training should be provided by National Consultants. The budget includes funds for one two day training session for each of the ten subject areas listed above. There should be support from an International Consultant to help in the finalisation of training materials and in supervising a limited number of the initial training sessions to build capacity in training.

13.02.6 Implementation

Implementation will comprise the following groups of activities:-

(1) Operations

Operations including patrolling, reporting, maintenance of equipment and infrastructure. Also includes permits/tickets. Costs for production of permits/tickets are included under the "Programme Management" Programme rather than under any specific Biodiversity Protected Area programme to provide economies of scale.

Where possible, rangers should use facilities provided by others (e.g. tourism operator and Coast Guard transport).

It is expected that operational costs will be met by PCPMREW recurrent budget from the last year of the Programme.

(2) Equipment and infrastructure

To be determined but lump sum provided. The lump sum does not cover substantial infrastructure such as new buildings and associated services, jetties or more than minimal mooring and demarcation signs and/or buoys.

(3) Staff

The following staffs are proposed. It is expected that the costs of these staff would be met by PCPMWER from its recurrent budget.

- (i) Director (1);
- (ii) Finance Officer (1);
- (iii) Administrative officer (1);
- (iv) Legal Officer (1) (part time);
- (v) Secretary (1);
- (vi) Site Officers (2*);
- (vii) Rangers (20*)

* To provide full-time cover

In addition it would be expected that relevant officers in other parts of PCPMREW would be used (for example for public communications etc) and there would be collaborative patrolling/support from relevant stakeholders (Coast Guard, Tourism operators, etc).

(4) Monitoring of Outcome Indicators:

The same Outcome Indicators should be monitored as were monitored during the baseline in the stocktaking phase although there may be revisions resulting from the stocktaking, socialisation and guidelines development exercises.

(5) Management Board Meetings:

Monthly Management Board meetings with agenda and agreed minutes. Issues identified, Actions proposed and delivered (costs of meetings met in kind by PCPMREW).

Outputs from these activities are proposed to be:-

1. Operations reports including equipment/infrastructure and staff recruitment.
2. Mid-term outcome indicators report

3. Agenda and minutes of monthly Management board meetings.

13.02.7 Evaluation

There should be an (evaluation phase) survey of the status of the Protected Area outcome indicator(s). There should be a full report which should be finalised and submitted to the Client at least one month before the evaluation workshop.

The stocktaking consultant, or another consultant, should undertake the final (evaluation phase) survey of the status of implementation of this Programme. There should be a full report which should be finalised and submitted to the Client at least one month before the evaluation workshop taking particular note of the final outcome indicators evaluation report.

The final evaluation workshop should be facilitated by an independent national Consultant who should be responsible for ensuring that:-

1. the reports are presented and discussed
2. feedback is minute and clarifications provided
3. there is a full workshop report delivered within one month of the workshop comprising:-
 - i. minutes
 - ii. list of participants
 - iii. materials presented

The National Consultant who helped prepare the evaluation report should present at the workshop.

13.03 Outcome Indicators

13.03.01 Introduction

Indicators and their means of verification are described below according to a standard structure.

In order to evaluate there must be indicators to show whether a project outcome has been delivered. These are termed objectively verifiable indicators. Ideally they should be outcome indicators and preferably they should also be output indicators

and even activity indicators. Sometimes they may comprise a combination of sub-indicators. The important thing is that they should show real change.

The “OUTCOME INDICATOR DESCRIPTION” is broken down into a standard format as follows:-

General comments

Free text Outcome Indicator title

- (1) Justification for the outcome indicator
- (2) Location where the outcome indicator should be sampled
- (3) Timing of sampling of outcome indicator
- (4) Means of verification of outcome indicator
- (5) Targets in delivery of outcome indicators at specified times
- (6) Risks and assumptions

The Client will need to determine which of the Outcome Indicators (and additional Outcome Indicators identified in stocktaking and socialisation) should be prioritised for actual sampling.

It should be noted that there will be considerable reluctance to collect this information partly because the need will not be recognised and partly because it will involve extra work. It will be necessary to provide ongoing encouragement for this process which should, eventually, become the institutionally acceptable/work-place cultural norm.

13.03.02 Management Meetings

Q=quarter. All key terms should be defined. All target indicators should be georeferenced (spatially located).

Outcome indicators comprise:

A relevant Management Issue should be identified to a Management Meeting in the form of an Agenda item. The Management Meeting should minute an Action Plan for addressing the issue. Subsequent Management Meetings should minute what Action has been taken and the Result of the Action.

(1) **Justification**: The Outcome of Management is a satisfactory, justified and documented, resolution of relevant issues.

(2) **Location**: Management Board meetings

(3) **Timing**: Q4, Q10, Q18

(4) **Means of verification**: Management Board meeting minutes and supporting documentation.

(5) **Targets**: By Q4: Draft Board meeting procedures prepared. By Q10: (i) Board meeting procedures agreed and in operation. "Results" for 2 issues linked Actions reported and approved by the Management Board. By Q18: Board meeting procedures in operation. "Results" for an additional 4 issues linked Actions reported and approved by the Management Board.

(6) **Risks and assumptions**: Management Board operational and meeting procedures followed. Relevant issues were raised. Capacity exists to address issues. The targets assume that natural or anthropogenic phenomena beyond the control of the Project do not have a significant adverse impact.

13.03.03 Staff

The following staffs are proposed for all three protected areas. It is expected that the costs of these staff would be met by the PCPMWER budget.

- | | |
|-----------------------------------|-------------------------------------|
| (i) Director (1); | (ii) Finance Officer (1); |
| (iii) Administrative officer (1); | (iv) Legal Officer (1) (part time); |
| (v) Secretary (1) | (vi) Site Officers (2*); |
| (vii) Rangers (20*) | |

* To provide full-time cover

Q=quarter. All key terms should be defined. All target indicators should be georeferenced (spatially located).

Outcome indicators comprise:

Staff employed and staff performance assessed*

This should take the form of staff performance review which should comprise a joint performance assessment between the staff member and supervisor and a personal development action plan with targets agreed mutually between the staff member and supervisor. Progress in achieving targets will be assessed in the subsequent review. The performance assessment can be as quantitative and detailed as is felt to be necessary taking note of the background and role of the person under review.

(1) **Justification:** Effective management can only be delivered if necessary and sufficient staffs are employed and they are motivated and perform well.

(2) **Location:** Work place

(3) **Timing:** Q4, Q10, Q18

(4) **Means of verification:** Staff contracts and annual performance review.

(5) **Targets:** By Q4: Staff contracts prepared and agreed. Draft performance review guidelines prepared. By Q10: At least ten proposed staff contracted. Draft performance guidelines agreed and staff baseline performance reviews prepared for all staff. 90% of staff performing at a satisfactory or higher level. By Q18: All proposed staff contracted. Staff performance reviews prepared for all staff. 100% of staff performing at a satisfactory or higher level.

(6) **Risks and assumptions:** Employment budget available. Suitable staff available. Suitable staff supported and motivated. Capacity exists to perform. The targets assume that natural or anthropogenic phenomena beyond the control of the Project do not have a significant adverse impact.

13.03.04 Habitat: Coral (Mashtan islands)

Q=quarter. All key terms should be defined in the PMIS Dictionary. All target indicators should be georeferenced (spatially located).

Outcome indicators comprise:

Status of coral* at indicative fixed/permanent monitoring sites (more broad scale monitoring using manta tows or equivalent may be considered).

*Note: Coral may not be found.

(1) **Justification:** Coral is an important biotope in certain areas in the waters of Bahrain and supports high biological productivity and diversity where it is found. It is a contributor to marine ecosystem and marine biodiversity health by providing a nursery ground, shelter and food. It is also an important recreational asset.

(2) **Location** (determined from Stocktaking and Socialisation):

(2.1) Baseline: Q4 - 3 fixed coral reef monitoring Sites and more extensive mapping.

(2.2) Mid-Project: Q10: Sampling as for baseline.

(2.3) End of Project: Q18: 5 fixed coral reef monitoring Sites and more extensive

mapping.

(3) **Timing:** Q4, Q10, Q18 assessment of target delivery.

(4) Means of verification: ASEAN/AIMS coral reef sampling methods or equivalent and extended survey using manta tows and/or remote sensing. Prime indicator is percent of live hard coral cover.

Oceanographic and water quality sampling should be undertaken at these Sites.

(5) **Targets:** By Q5 - **Baseline** coral reef fixed sites and extended swim data from 3 sites within a database. By Q11: - **Mid-Programme** coral reef fixed sites and extended swim data from baseline sites within a database and showing no deterioration in percent cover. By Q18 **End-of-Programme** coral reef monitoring site data and extended swim data from 5 sites within a database and showing no deterioration in percent cover with respect to the baseline.

(6) **Risks and assumptions:** Programme Management Information System is operational. Data collected and analysed properly. These targets assume that natural or anthropogenic phenomena beyond the control of the Project do not have a significant adverse impact.

13.03.05 Habitat: Sea grass (Hawar and Mashtan islands)

Q=quarter. All key terms should be defined in the PMIS Dictionary. All target indicators should be georeferenced (spatially located).

Outcome indicators comprise:

Status of sea grass at indicative fixed/permanent monitoring sites (more broad scale monitoring using manta tows or equivalent may be considered).

(1) **Justification**: Sea grass is an important biotope within Hawar and Mashan islands. Sea grass is a contributor to marine ecosystem and marine biodiversity health by providing a nursery ground, source of food for dugong and green turtles and through sediment stabilisation.

(2) **Location** (determined from Stocktaking and Socialisation):

(2.1) Baseline: Q4 - 3 fixed sea grass monitoring Sites and more extensive mapping.

(2.2) Mid-Project: Q10: Sampling as for baseline.

(2.3) End of Project: Q18: 5 fixed sea grass monitoring Sites and more extensive mapping.

(3) **Timing**: Q4, Q10, Q18 assessment of target delivery.

(4) Means of verification: ASEAN/AIMS sea grass sampling methods or equivalent and extended survey using manta tows and/or remote sensing. Prime indicator is percent of live sea grass cover. Non-intrusive sampling preferred - Visual assessment of recruits including visual assessment of night-time light attracted fauna could be considered.

Oceanographic and water quality sampling should be undertaken at these Sites.

(5) **Targets**: By Q5 - **Baseline** sea grass fixed sites and extended swim data from 3 sites within a database. By Q11: - **Mid-Programme** sea grass fixed sites and extended swim data from baseline sites within a database and showing no

deterioration in percent cover. By Q18 **End-of-Programme** sea grass monitoring site data and extended swim data from 5 sites within a database and showing no deterioration in percent cover with respect to the baseline.

(6) **Risks and assumptions:** Programme Management Information System is operational. Data collected and analysed properly. These targets assume that natural or anthropogenic phenomena beyond the control of the Project do not have a significant adverse impact.

13.03.06 Habitat: Desert vegetation (Hawar and Mashtan islands)

Q=quarter. All key terms should be defined in the PMIS Dictionary. All target indicators should be georeferenced (spatially located).

Outcome indicators comprise:

Status of desert vegetation at indicative fixed/permanent monitoring sites (more broad scale monitoring using transects or equivalent may be considered).

(1) **Justification:** Desert vegetation is an important biotope within Hawar and Mashtan Islands primarily providing food, shelter and nesting material for a variety of species.

(2) **Location** (determined from Stocktaking and Socialisation):

(2.1) Baseline: Q4 - 3 fixed desert vegetation monitoring Sites and more extensive mapping.

(2.2) Mid-Project: Q10: Sampling as for baseline.

(2.3) End of Project: Q18: 5 fixed desert vegetation monitoring Sites and more extensive mapping.

(3) **Timing:** Q4, Q10, Q18 assessment of target delivery.

(4) **Means of verification:** Quadrant sampling methods or equivalent and extended survey using line transects and/or remote sensing. Prime indicator is percent of

cover and health.

(5) **Targets:** By Q5 - **Baseline** desert vegetation fixed sites and extended swim data from 3 sites within a database. By Q11: - **Mid-Programme** desert vegetation fixed sites and extended swim data from baseline sites within a database and showing no deterioration in percent cover and health. By Q18 **End-of-Programme** desert vegetation monitoring site data and extended swim data from 5 sites within a database and showing no deterioration in percent cover and health with respect to the baseline.

(6) **Risks and assumptions:** Programme Management Information System is operational. Data collected and analysed properly. These targets assume that natural or anthropogenic phenomena beyond the control of the Project do not have a significant adverse impact.

13.03.07 Species: Socotra cormorant (Hawar Island)

Q=quarter. All key terms should be defined in the PMIS Dictionary. All target indicators should be georeferenced (spatially located).

Outcome indicators comprise:

Status of Socotra Cormorant population

Q=quarter. All key terms should be defined in the PMIS Dictionary. All target indicators should be georeferenced (spatially located).

Status (abundance and breeding success) of Socotra Cormorant population at indicative fixed/permanent monitoring sites (more broad scale monitoring using transects or equivalent may be considered).

(1) **Justification:** Hawar Islands provide a major regional breeding and roosting site for Socotra Cormorant. It has been indicated that the population is declining.

(2) **Location** (determined from Stocktaking and Socialisation):

(2.1) Baseline: Q4 – Survey according to recommendations from stocktaking/socialisation.

(2.2) Mid-Project: Q10: Sampling as for baseline.

(2.3) End of Project: Q18: Sampling as for baseline.

(3) **Timing**: Q4*, Q10*, Q18* assessment of target delivery.

* Timing determined from Stocktaking and Socialisation

(4) **Means of verification**: Determined from Stocktaking and Socialisation.

(5) **Targets**: By Q5 - **Baseline** data from sampling within a database. By Q11: - **Mid-Programme** data from sampling within a database and showing no deterioration in abundance and breeding success with respect to the baseline. By Q18 **End-of-Programme** data from sampling within a database and showing no deterioration in abundance and breeding success with respect to the baseline and mid-programme assessment.

(6) **Risks and assumptions**: Programme Management Information System is operational. Data collected and analysed properly. These targets assume that natural or anthropogenic phenomena beyond the control of the Project do not have a significant adverse impact.

13.03.08 Species: Dugong (Hawar and Mashtan islands)

The cost for assessing Dugong by aerial reconnaissance is not included in the budget.

Q=quarter. All key terms should be defined in the PMIS Dictionary. All target indicators should be georeferenced (spatially located).

Outcome indicators comprise:

Status (abundance) of Dugong including mortalities (Observed and Marine animal

hotline).

(1) **Justification**: Hawar Islands provide an area of regional and possibly international importance for Dugong. More effective management in the waters of Hawar will contribute towards the protection of this species though international efforts will also be required.

(2) **Location** (determined from Stocktaking and Socialisation):

(2.1) Baseline: Q4 – Survey according to recommendations from stocktaking/socialisation and 2006 Megafauna survey³⁶¹.

(2.2) Mid-Project: Q10: Sampling as for baseline.

(2.3) End of Project: Q18: Sampling as for baseline.

(3) **Timing**: Q4*, Q10*, Q18* assessment of target delivery.

* Timing determined from Stocktaking and Socialisation

(4) **Means of verification**: Determined from Stocktaking and Socialisation.

Patrolling reports and guidelines from the 2006 Megafauna survey⁸.

(5) **Targets**: By Q5 - **Baseline** data from sampling within a database. By Q11: - **Mid-Programme** data from sampling within a database and showing no deterioration in abundance of Dugong. By Q18 **End-of-Programme** data from sampling within a database and showing no deterioration in abundance of Dugong.

(6) **Risks and assumptions**: Programme Management Information System is operational. Data collected and analysed properly. These targets assume that natural or anthropogenic phenomena beyond the control of the Project do not have a significant adverse impact.

³⁶¹ Bahrain Dugong and marine megafauna survey 2006 (DID0287)

13.03.09 Habitat: Mangrove (Ras Sanad)

Q=quarter. All key terms should be defined in the PMIS Dictionary. All target indicators should be georeferenced (spatially located).

Outcome indicators comprise:

Status (abundance and health) of mangroves including mortalities, recruitment, condition.

(1) **Justification**: Ras Sanad provides an area of regional and possibly international importance for mangroves. More effective management of the mangrove area will contribute towards the protection of this important habitat though international efforts will also be required.

(2) **Location** (determined from Stocktaking and Socialisation):

(2.1) Baseline: Q4 – Survey according to recommendations from stocktaking/socialisation and 2006 Megafauna survey³⁶².

(2.2) Mid-Project: Q10: Sampling as for baseline.

(2.3) End of Project: Q18: Sampling as for baseline.

(3) **Timing**: Q4*, Q10*, Q18* assessment of target delivery.

* Timing determined from Stocktaking and Socialisation

(4) **Means of verification**: Determined from Stocktaking and Socialisation.

Patrolling reports and guidelines from appropriate management.

(5) **Targets**: By Q5 - **Baseline** data from sampling within a database. By Q11: - **Mid-Programme** data from sampling within a database and showing no deterioration in abundance and condition of mangroves. By Q18 **End-of-Programme** data from sampling within a database and showing no deterioration in abundance and condition of mangroves.

³⁶² Bahrain Dugong and marine megafauna survey 2006 (DID0287)

(6) **Risks and assumptions:** Programme Management Information System is operational. Data collected and analysed properly. These targets assume that natural or anthropogenic phenomena beyond the control of the Project do not have a significant adverse impact.

13.03.10 Pollution: Sediment traps (all three protected area sites)

Q=quarter. All key terms should be defined in the PMIS Dictionary. All target indicators should be georeferenced (spatially located).

Outcome indicators comprise:

Nature (location, time, type) of sediment from Sea grass monitoring sites.

(1) **Justification:** Sediment due to dredging and other anthropogenic factors is considered to be a significant pressure/stressor on the marine environment in Bahrain. Protected area sediment monitoring may act as part of a national network, a control and as a baseline for monitoring the effects of any developments that take place in the future.

It is assumed that sediment traps have been located at a number of development locations in Bahrain to meet environmental impact assessment and environmental management plan requirements so providing the framework for a national network.

(2) **Location:**

(2.1) Baseline: Q4 - None (unless pre-existing)..... traps should be located during the baseline study.

(2.2) Mid-Project: Q10 - 2 sediment traps at each sea grass monitoring site.

(2.3) End of Project: Q18 - 2 sediment traps at each sea grass monitoring site.

(3) **Timing:** Q10, Q18 assessment of target delivery.

(4) **Means of verification**: Sediment traps (based on the ASEAN/AIMS model³⁶³) at Sea grass monitoring sites. Analyses of geochemistry and contaminants to be determined.

(5) **Targets**: By Q4 - (i) Sources of existing sediment information and sediment metadata in the PMIS database. By Q6: (i) Sediment monitoring protocols developed and incorporated into monitoring forms to include characterisation of sediment source. (ii) Proposals for installation of sediment traps prepared. By Q10: - Mid-Project - (i) Sediment data accessible/entered within the PMIS up to month 35. (ii) As proposed at least 2 sediment traps operational within each of the sea grass monitoring Sites. By Q18 (i) Sediment data accessible/entered within the PMIS up to month 53. (ii) As proposed at least 2 sediment traps operational within each sea grass monitoring site. (iii) Sediment traps showing a no significant change in trend in the rate of sedimentation.

(6) **Risks and assumptions**: PMIS operational. Data collected and analysed properly. These targets assume that natural or anthropogenic phenomena beyond the control of the Project do not have a significant adverse impact.

³⁶³ Survey Manual for Tropical Marine Resources. 2nd edition, 1997 (DID0114)

13.03.11 Pollution: Water - Ammoniacal nitrogen, faecal coliforms, POPs, Oil (all three protected area sites)

Q=quarter. All key terms should be defined in the PMIS Dictionary. All target indicators should be georeferenced (spatially located).

Outcome indicators comprise:

State of Ammoniacal nitrogen, Faecal coliforms, POPs and oil in Marine and groundwater samples.

Note: Consideration should be given to moving to meet one or more of the "Blue flag" beach (www.blueflag.org) and "Good beach Guide" (www.goodbeachguide.co.uk) criteria.

(1) **Justification**: All can have an adverse effect (biological oxygen demand/eutrophication/pollution) on marine biodiversity. They can also have an adverse effect on the amenity value of marine biodiversity and so the resources generated from the use of this amenity to improve management. The amount of these indicators in water quality samples is also a clear indication of management effectiveness in terms of discharges to the marine environment and to the groundwater. In all these respects these pollutants should be outcome indicators.

(2) **Location**: Determined at stocktaking.

(2.1) Baseline: Q4 - 9 fixed monitoring sites each with three replicates (3 sea grass, 3 marine, 3 groundwater)

(2.2) Mid-Project: Q10: Sampling as for baseline.

(2.3) Target (end of Project): Q18 – Sampling as for baseline

(3) **Timing**: Q4, Q10, Q18 assessment of target delivery.

Note: All water quality samples can be taken during the same sampling trip.

(4) **Means of verification**: i. Water quality sampling and analyses (Ammoniacal

nitrogen, Faecal coliforms, POPs and oil) methods to be determined.

(5) **Targets:** By Q4 - (i) All existing sampling information, data collection forms and procedure/process guidelines relating to pollution indicators in the PMIS database. (ii) baseline data collected and compiled in the PMIS database. By Q6: Existing sampling procedures and forms reviewed and new/revised sampling procedures and forms agreed. By Q10: - Mid-Project - (i) Sampling information being collected using new/revised forms, processed to the end of month 35 and available in the PMIS. By Q18 (i) Continuing use of procedures and processing of forms to the end of month 53 and; (ii) Any significant trend in the amount of pollution indicators in water quality samples detected.

(6) Risks and assumptions: PMIS operational. Data collected and analysed properly. These targets assume that natural or anthropogenic phenomena beyond the control of the Project do not have a significant adverse impact.

13.03.12 Pollution: Point sources and waste management (all three protected area sites)

Q=quarter. All key terms should be defined in the PMIS Dictionary. All target indicators should be georeferenced (spatially located).

Outcome indicators comprise:

Point sources and quantities of solid (fill, rubbish) and liquid (sewage, oil) pollution, intermediate state (e.g. litter bins) and fate (e.g. waste disposal) determined.

Note: Consideration should be given to moving to meet one or more of the "Blue flag" beach (www.blueflag.org) and "Good beach Guide" (www.goodbeachguide.co.uk) criteria.

(1) **Justification:** Point sources of pollution have an impact on biodiversity and amenities that are linked to biodiversity. Intermediate and final management of point sources determines the level of impact.

(2) **Location:** Determined at stocktaking.

(2.1) Baseline: Q4 – Inventory of point sources, intermediate state and fate by location and type. At least 10 solid and 10 liquid point sources, intermediate state and fate of pollution also quantified.

Engine oil > Waste engine oil storage > Waste engine oil disposal

Organic waste> Composting > Garden use

Household waste> Bins > Landfill or other

Sewage > Treatment > Discharge/Landfill or other

(2.2) Mid-Project: Q10: Sampling as for baseline.

(2.3) Target (end of Project): Q18 – Sampling as for baseline

(3) **Timing:** Q4, Q10, Q18 assessment of target delivery.

(4) **Means of verification:** Sampling survey forms and survey procedures to be determined.

(5) **Targets:** By Q4 - (i) All existing information, data collection forms and procedure/process guidelines relating to point source, intermediate and final fate sampling are in the PMIS database. (ii) baseline data collected and compiled in the PMIS database. By Q6: Existing sampling procedures and forms reviewed and new/revised sampling procedures and forms agreed. By Q10: - Mid-Project - (i) Sampling information being collected using new/revised forms, processed to the end of month 35 and available in the PMIS. By Q18 (i) Continuing use of procedures and processing of forms to the end of month 53 and; (ii) Any significant trend in point sources, intermediate and final fate of point sources detected.

(6) **Risks and assumptions:** PMIS operational. Data collected and analysed properly. These targets assume that natural or anthropogenic phenomena beyond the control of the Project do not have a significant adverse impact.

13.03.13 Infrastructure: Mooring/demarcation buoys and signage (all three protected areas)

Q=quarter. All key terms should be defined in the PMIS Dictionary. All target indicators should be georeferenced (spatially located).

Outcome indicators comprise:

Operational mooring and demarcation buoys by location, type, condition and use (regular patrolling report).

Designed to maximise carrying capacity by helping to keep visitors in designated areas.

(1) **Justification**: Infrastructure designed to maximise carrying capacity by managing access and so avoiding collateral damage should help sustain biodiversity.

Demarcation and Mooring buoys for the island sites, and signage for the Ras Sanad site, are also an indicator of effective management.

(2) **Location**: (determined from Stocktaking, Socialisation and the consultative management process):

(2.1) Baseline: Q4 – All mooring and demarcation buoys

(2.2) Mid-Project: Q10 - All mooring and demarcation buoys

(2.3) End of Project: Q18 - All mooring and demarcation buoys

(3) **Timing**: Q4, Q10, Q18 assessment of target delivery.

(4) **Means of verification**: Patrol forms. Permits.

(5) **Targets**: By Q4 - All existing information on mooring and demarcation buoys in Project Sites in PMIS database and preliminary mooring/demarcation buoy patrol assessment forms prepared. By Q10 – Mid-Project. Patrol forms finalised and agreed. Monthly report on location, type, condition, upgrade and use of all mooring and demarcation buoys using approved patrolling forms. Regulation setting

demarcated areas considered for inclusion in management plans and if agreed implemented. By Q18 Increase of 20% in mooring and demarcation buoys and at least 80% of recorded mooring and demarcation buoys operational.

(6) **Risks and assumptions**: PMIS operational. Data collected and analysed properly. These targets assume that natural or anthropogenic phenomena beyond the control of the Project do not have a significant adverse impact.

13.03.14 Infrastructure: Trails (all three protected areas)

Q=quarter. All key terms should be defined in the PMIS Dictionary. All target indicators should be georeferenced (spatially located).

Outcome indicators comprise:

Operational trails by location, type, condition and use (regular patrolling report).

Designed to maximise carrying capacity by keeping visitors to designated areas. Includes underwater trails, beach access trails, bird watching trails.

(1) **Justification**: Infrastructure designed to maximise carrying capacity by managing access and so avoiding collateral damage should help sustain biodiversity. Trails are also an indicator of effective management and a potentially effective public communications tool.

(2) **Location** (determined from Stocktaking, Socialisation and the consultative management process):

(2.1) Baseline: Q4 – Hawar Islands

(2.2) Mid-Project: Q10 - Hawar Islands

(2.3) End of Project: Q18 - Hawar Islands

(3) **Timing**: Q4, Q10, Q18 assessment of target delivery.

(4) **Means of verification**: Patrol forms, Permits.

(5) **Targets:** By Q4 - All existing information on trails in PMIS database. By Q10: - Mid-Project monthly report on location, type, condition, upgrade and use of all trails. At least one trail in place. By Q18 - At least 2 trails in place.

(6) **Risks and assumptions:** PMIS operational. Data collected and analysed properly. These targets assume that natural or anthropogenic phenomena beyond the control of the Project do not have a significant adverse impact.

13.03.15 Visitors: Numbers, demographics and permit types (all three protected areas)

Q=quarter. All key terms should be defined in the PMIS Dictionary. All target indicators should be georeferenced (spatially located).

Outcome indicators comprise:

Visitor numbers, demographics and permit types (permits issued and regular patrolling report).

(1) **Justification:** Visitor numbers need to be tracked to provide information for biodiversity management planning including carrying capacity. Permits can be issued to manage visitor numbers within carrying capacity limits and possibly to generate revenue. Information on visitors and permits are Outcome indicators for management.

(2) **Location** (determined from Stocktaking, Socialisation and the consultative management process):

(2.1) Baseline: Q4 – Hawar Islands

(2.2) Mid-Project: Q10: Hawar Islands

(2.3) End of Project: Q18: Hawar Islands

(3) **Timing:** Q4, Q10, Q18 assessment of target delivery.

(4) **Means of verification:** Patrol forms, Permits.

(5) **Targets:** By Q4 - All existing information on permits and visitor numbers in PMIS database. Preliminary patrol reporting formats and permits framework developed and designed of permits (ideally permits should be bar coded). By Q10 – Patrol and permit formats agreed and in use. Mid-Project quarterly report on visitor demographics and permits issued using patrol and permit information. By Q18 – Quarterly patrolling and permit reports. End of Project report on visitor demographics and permits issued using patrol and permit information.

(6) **Risks and assumptions:** Agreement to proposed systems. PMIS operational. Data collected and analysed properly. These targets assume that natural or anthropogenic phenomena beyond the control of the Project do not have a significant adverse impact.

13.03.16 Offences: Processing of Offences (all three protected areas)

Q=quarter. All key terms should be defined in the PMIS Dictionary. All target indicators should be georeferenced (spatially located).

Outcome indicators comprise:

Ratio of Patrols> Offences>Arrests>Prosecutions>Convictions>Punishment delivered>Repeat Offence/rehabilitation

Patrols are not just about moving from A to B and back to A in a boat, in a vehicle or on foot. They are part of the logistical framework within which information is collected about the state of the Marine Parks, the pressures on Marine Parks and the resulting impacts. Monitoring, control and surveillance (MCS) may also be used to implement management, for example through arrests and by public communications initiatives (helping tourists). MCS needs to produce objectively collected information to help inform management decisions. MCS therefore needs to be supported by patrol forms. The forms need to support the collection of information about key outcome indicators. The following outcome indicator thematics all need to have some sort of monitoring form that may, or may not, be used on a particular type of

MCS (patrol):-

- (i) Management meetings
- (ii) Habitat and species monitoring
- (iii) Water quality monitoring
- (iv) Pollution
- (v) Infrastructure monitoring
- (vi) Visitors monitoring/Permits
- (vii) Offences (Monitoring, control and surveillance)
- (viii) Business planning and budgeting
- (ix) Safety

The Attitude and Opinion Survey associated with the Public Communications Programme may also be facilitated by a patrolling form.

(1) Justification: Information on the process by which investment in management results in a reduction in offences is necessary to identify whether management is effective and how best to target management. For example if there are plenty of prosecutions but no convictions then the evidence collection and presentation elements of the process need to be evaluated. Conversely if there is no patrolling then it is unlikely that any offences will be detected.

(2) Location:

(2.1) Baseline: Q4 – all three protected areas

(2.2) Mid-Project: Q10 – all three protected areas

(2.3) End of Project: Q18 – all three protected areas

(3) Timing: Q4, Q10, Q18 assessment of target delivery.

(4) Means of verification: (i) Patrol forms specifying patrol details and offences; (ii) Arrest forms and evidence; (iii) Prosecutions forms; (iv) Prosecution briefs; (v) Court convictions; (vi) Punishment delivered; (vii) Repeat offence; (viii) Repeat offender rehabilitation reports*.

(5) Targets: By Q4 - (i) All existing patrol information on the above process collected; (ii) Existing procedures and forms under review and new/revised patrol procedures and forms being designed. By Q10: - Mid-Project - (i) Forms and procedures agreed. Information being collected using new/revised forms, processed to the end of month 35 and available in the PMIS. By Q18 (i) Continuing use and processing of forms to the end of month 53 and; (ii) Outcome indicators showing an improving trend.

(6) Risks and assumptions: PMIS operational. Data collected and analysed properly. These targets assume that natural or anthropogenic phenomena beyond the control of the Project do not have a significant adverse impact.

*Any repeat offender should be required to prepare an offence reduction action plan designed to identify and alleviate the causes of the offence. The repeat offender should then be required to deliver the action plan. The requirement for development and delivery of the plan should be part of the court ruling.

13.03.17 Budget: Revenue and expenditure (all three protected areas)

Q=quarter. All key terms should be defined in the PMIS Dictionary. All target indicators should be georeferenced (spatially located).

Outcome indicators comprise:

Income and expenditure

(1) **Justification**: Budget planning and business development requires a good understanding of income and expenditure related to Biodiversity protected areas operations. Information on income and expenditure are Outcome indicators for management.

(2) **Location** (determined from Stocktaking, Socialisation and the consultative management process):

(2.1) Baseline: Q4 – all three protected areas

- (2.2) Mid-Project: Q10: all three protected areas
(2.3) End of Project: Q18: all three protected areas

(3) **Timing:** Q4, Q10, Q18 assessment of target delivery.

(4) **Means of verification:** Accounts

(5) **Targets:** By Q4 - All existing information on income and expenditure in PMIS database. Preliminary accounting categories, formats and procedures developed (ideally infrastructure parts and permits should be bar coded). By Q10 – Accounting categories, formats and procedures agreed and in use. At least BDR 500 per quarter generated from permits. Mid-Project report on accounts. By Q18 – At least BDR 1,000 per quarter generated from permits. End of Project report on income and expenditure including any significant trends/changes.

(6) **Risks and assumptions:** Agreement to proposed systems. PMIS operational. Data collected and analysed properly. These targets assume that natural or anthropogenic phenomena beyond the control of the Project do not have a significant adverse impact.

13.03.18 Accidents: Accident number, location and type (all three protected areas)

Q=quarter. All key terms should be defined in the PMIS Dictionary. All target indicators should be georeferenced (spatially located).

Outcome indicators comprise:

Safety information: Accidents by location and type

(1) **Justification:** The numbers, locations and types of accident are a reflection of the level of risk management. Whilst accidents are not a direct indicator of biodiversity management they are a surrogate indicator because management that

operates with minimal accidents is more likely to be effective in managing biodiversity than management that does not.

(2) **Location**: Workplace

(3) **Timing**: Q4, Q10, Q18 assessment of target delivery.

(4) **Means of verification**: Accident report forms

(5) **Targets**: By Q4 - All existing information on accidents in PMIS database. Preliminary accident risk assessment and prevention guidelines and accident reporting forms produced. By Q10 – Risk assessment and prevention guidelines and accident reporting forms agreed and in use. Regular notifications on accidents. Mid-Project report on accidents. By Q18 – Regular notifications on accidents. End of Project report on accidents.

(6) **Risks and assumptions**: Agreement to proposed systems. PMIS operational. Data collected and analysed properly. These targets assume that natural or anthropogenic phenomena beyond the control of the Project do not have a significant adverse impact.

13.03.19 Equipment: Equipment type down time and reasons (all three protected areas)

Q=quarter. All key terms should be defined in the PMIS Dictionary. All target indicators should be georeferenced (spatially located).

Outcome indicators comprise:

Equipment maintenance: Equipment type down time by reasons.

(1) **Justification**: The nature and level of equipment downtime by equipment type is a reflection of management effectiveness. Whilst equipment downtime is not a direct indicator of biodiversity management it is a surrogate indicator because non-

operating equipment can have a knock-on effect on operations. Management that operates with minimal equipment down-time is more likely to be effective in managing biodiversity than management that does not.

(2) **Location**: Workplace

(3) **Timing**: Q4, Q10, Q18 assessment of target delivery.

(4) **Means of verification**: Equipment down time report forms

(5) **Targets**: By Q4 - All existing information on equipment in the PMIS database. Preliminary equipment status report forms produced. By Q10 – Equipment status report forms agreed and in use. Regular notifications on equipment status. Mid-Project report on equipment status. By Q18 – Regular notifications on equipment status. End of Project report on equipment status.

(6) **Risks and assumptions**: Agreement to proposed systems. PMIS operational. Data collected and analysed properly. These targets assume that natural or anthropogenic phenomena beyond the control of the Project do not have a significant adverse impact.

13.04 Logical Framework

13.04.1 Outputs to Goal

Table 20: Protected Areas Management Outputs to Goal

Risks and assumptions are provided related to delivery of Indicators and are presented in Section 13.03 above.

Code	Vertical logic	Objectively verifiable indicators	Means of verification
	OVERALL GOAL		
	Sustainable environmental, economic and social development		
	BNBSAP GOAL		
	Loss of biodiversity within Bahraini ecosystems is reversed (terrestrial, freshwater and marine)		
04	PROGRAMME GOAL	As detailed: 1. Management meetings etc	Baseline, mid Programme and Final Outcome indicators
	Biodiversity Protected Area Network better managed.		
	PROGRAMME OBJECTIVE		

	Hawar Islands, Mashtan Island, and Ras Sanad Biodiversity Management Authority Operational	2. Habitat and species monitoring	evaluation.
04.01	OUTCOME 1	3. Pollution monitoring	
	Hawar Islands, Mashtan Island, and Ras Sanad Biodiversity Management Authority Operational	4. Infrastructure monitoring	
		5. Visitors/permits monitoring	
		6. Offences (Monitoring, control and surveillance)	
		7. Budget	
		8. Safety	
		9. Equipment maintenance	
		10. Other	
04.01.06	Output 6 Evaluation	1. End of Programme Outcome indicators evaluation report.	Documents
		2. Workshop report	
04.01.05	Output 5 Implementation	1. Operations reports including equipment/infrastructure and staff recruitment.	Documents

		<ul style="list-style-type: none"> 2. Mid-term outcome indicators report 3. Agenda and minutes of monthly Management board meetings. 	
04.01.04	Output 4 Training	<ul style="list-style-type: none"> 1. Management meetings etc 2. Habitat and species monitoring 3. Pollution monitoring 4. Infrastructure monitoring 5. Visitors/permits monitoring 6. Offences (Monitoring, control and surveillance) 7. Budget 8. Safety 9. Equipment maintenance 10. Other 	Training certificates

04.01.03	Output 3 Guidelines Development	<ol style="list-style-type: none"> 1. Management board meeting guidelines 2. Management plan comprising zoning, infrastructure, species action plans, stakeholder participation plans, Monitoring, control and surveillance procedures, Outcome indicators monitoring*, permits 3. Business plan 4. draft legislation 5. training materials* 6. Other 	Documents and approvals
04.01.02	Output 2 Socialisation	Workshop materials and report	Workshop materials and report
04.01.01	Output 1 Stocktaking	Stocktaking report and baseline outcome indicators report	Stocktaking survey Baseline outcome indicators survey

* See full lists in main text

13.04.2 Costs to Activities

Table 21: Protected Area Management Programme - Costs to Activities

Note: Exchange rate \$US3.5:BDR1

Activities are delivered from bottom to top.

Code	SQ *	FQ *	Activity	MEANS	UNITS	NOS	UNIT COST BDR	COST BDR
04.01.06.03	19	19	Evaluation workshop	National Consultant facilitator	Days	5	101.5	507.5
04.01.06.03	19	19	Evaluation workshop	Workshop	Lump	1	580	580
04.01.06.03	19	19	Evaluation workshop	National Consultant Evaluator Reporter	Days	3	101.5	304.5
04.01.06.03	19	19	Evaluation workshop	Consumables	Lump	1	72.5	72.5
04.01.06.02	19	19	Evaluation report	International Travel	Lump	1	1160	1160
04.01.06.02	19	19	Evaluation report	International Consultant	Days	10	203	2030
04.01.06.02	19	19	Evaluation report	National Consultant	Days	20	101.5	2030
04.01.06.02	19	19	Evaluation report	Local travel	Lump	1	72.5	72.5
04.01.06.02	19	19	Evaluation report	Consumables	Lump	1	72.5	72.5
04.01.06.02	19	19	Evaluation report	International DSA	Days	10	72.5	725

Code	SQ *	FQ *	Activity	MEANS	UNITS	NOS	UNIT COST BDR	COST BDR
04.01.06.01	18	18	Outcome indicators end of Programme evaluation	Outcome indicators end of Programme evaluation	Lump	2.5	17400	43500
04.01.05.05	7	20	Management board meetings	Meetings (PCPMREW)	Lump	36	58	2088
04.01.05.04	10	10	Outcome indicators mid-term evaluation	Outcome indicators mid-term evaluation	Lump	2.5	17400	43500
04.01.05.03	10	20	Staff (list in description)	Staff costs (PCPMREW)	Months	36	12542.5	451530
04.01.05.02	7	20	Equipment and infrastructure	Equipment and infrastructure lump-sum	Lump	2.5	29000	72500
04.01.05.01	7	20	Operations	Operational costs	Months	42	1740	73080
04.01.04.01	7	18	Training in plan delivery	Training module expenses	Modules	10	290	2900
04.01.04.01	7	18	Training in plan delivery	Training venue	Modules	10	580	5800
04.01.04.01	7	18	Training in plan delivery	Daily subsistence allowance	Persons x modules	100	72.5	7250
04.01.04.01	7	18	Training in plan delivery	International consultant	Days x Modules	50	203	10150
04.01.04.01	7	18	Training in plan delivery	International travel	Lump	2	1160	2320
04.01.04.01	7	18	Training in plan delivery	International DSA	Days	6	72.5	435

Code	SQ *	FQ *	Activity	MEANS	UNITS	NOS	UNIT COST BDR	COST BDR
04.01.04.01	7	18	Training in plan delivery	National consultant	Days x modules	70	101.5	7105
04.01.03.01	6	6	Guidelines development	National travel	Lump	2	72.5	145
04.01.03.01	6	6	Guidelines development	International DSA	Days	30	72.5	2175
04.01.03.01	6	6	Guidelines development	International Travel	Lump	1	1160	1160
04.01.03.01	6	6	Guidelines development	Consumables	Lump	4	72.5	290
04.01.03.01	6	6	Guidelines development	National Consultant	Days	30	101.5	3045
04.01.03.01	6	6	Guidelines development	International consultant	Days	30	203	6090
04.01.03.01	6	6	Guidelines development	Translating	Lump	1	580	580
04.01.02.03	5	5	Workshop Stocktaking Consultant support	International DSA	Days	5	72.5	362.5
04.01.02.03	5	5	Workshop Stocktaking Consultant support	International consultant	Days	5	203	1015
04.01.02.03	5	5	Workshop Stocktaking Consultant support	National Consultant	Days	3	101.5	304.5
04.01.02.03	5	5	Workshop Stocktaking Consultant support	International travel	Lump	1	1160	1160

Code	SQ *	FQ *	Activity	MEANS	UNITS	NOS	UNIT COST BDR	COST BDR
04.01.02.02	5	5	Workshop facilitator	National consultant (facilitator)	Days	5	101.5	507.5
04.01.02.01	5	5	Socialization workshop.	Consumables	Lump	1	72.5	72.5
04.01.02.01	5	5	Socialization workshop.	Workshop	Lump	1	580	580
04.01.01.02	4	4	Outcome indicators baseline survey	Outcome indicators baseline survey	Lump	2.5	17400	43500
04.01.01.01	1	3	Stocktaking	International consultant	Days	40	203	8120
04.01.01.01	1	3	Stocktaking	International DSA	Days	40	72.5	2900
04.01.01.01	1	3	Stocktaking	Consumables	Lump	4	72.5	290
04.01.01.01	1	3	Stocktaking	Local travel	Lump	4	72.5	290
04.01.01.01	1	3	Stocktaking	National Consultant	Days	40	101.5	4060
04.01.01.01	1	3	Stocktaking	International travel	Lump	2	1160	2320

SQ = Start Quarter, FQ = Finish Quarter

Total cost: BDR 808,680

Code	SQ *	FQ *	Activity	PROGRAMME QUARTERS (3 months)																				
				01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	
04.01.02.02	5	5	Workshop facilitator					X																
04.01.02.01	5	5	Socialization workshop.					X																
04.01.01.02	4	4	Outcome indicators baseline survey				X																	
04.01.01.01	1	3	Stocktaking	X	X	X																		

SQ = Start Quarter, FQ = Finish Quarter

14.0 Environmental Trust Fund

14.01 Justification for the Programme

It is a common theme both in the National Environment Strategy and the First National Report³⁶⁴ that availability of finance is a serious constraint to delivery of effective biodiversity management³⁶⁵. Bahrain has a Financial and Tourism Sectors oriented economy. There is a global trend towards improved corporate governance in both of these sectors. This should be viewed as an opportunity to engage these sectors in building the existing Environment (Wildlife) Trust fund to catalyse and subsidise Government support for environmental conservation as required by the Constitution.

Improvement in the “Institutional” legal, policy and advocacy framework for public participation in access and benefit-sharing measures came joint third during a free vote on proposed BNBSAP Measures at the second BNBSAP workshop on 07th November 2007³⁶⁶.

It was agreed, at a meeting between the BNBSAP Consultants and representatives from the PCPMREW on Thursday 08th November 2007, that the BNBSAP should contain a Programme titled “**Environmental Trust Fund operations, capacity and transparency enhanced**”³⁶⁷.

It should be a core ETF policy priority that it support productive efforts to maintain or return the environment and particularly the biodiversity of the natural environment to a reference state (where the reference state can be considered to be a natural state reflecting minimal human disturbance)³⁶⁸.

14.02 Logical framework

14.02.1 Introduction

This section 14.02 provides a description of the delivery of this Programme.

³⁶⁴ Bahrain First National Report, 2006 relating to financial issues, Annex III pages 53-57, (DID0230)

³⁶⁵ Bahrain First National Report, 2006, Table 4,3 p. 8: Financing - relative increase in the financial resources allocated to biodiversity. Increased international financial support (DID0230)

³⁶⁶ BNBSAP November Workshop on 07th November 2007 Report Final (DID0372)

³⁶⁷ BNBSAP PCPMREW meeting on 08th November 2007 (DID0375)

³⁶⁸ SER International Primer on Ecological Restoration, 2004 (DID0090)

Key indicators and means of verification are described in Section 14.03 under the description of indicators.

The logical framework for this Programme is then presented in three matrices in Section 14.04. Indicator details are not presented in the matrices because of limited space.

The **first** matrix presents the development Goal to which the BNBSAP Goal contributes together with the BNBSAP Goal, the specific Programme Goal, Programme Outcome, Outputs and Activities.

The **second** matrix presents the “Costs” to “Activities” vertical logic. This presents the activities required for delivery of particular outputs and the means and costs associated with delivery of these activities.

The **third** matrix presents the scheduling of activities by quarter.

14.02.2 Coding

The vertical logic of the logical framework is linked together by a standard coding system comprising a string of numbers. Each pair of numbers in the numbers string provides an identifier for each level of vertical logic in the logical framework.

The first pair of numbers specifies the Programme. The second pair of numbers specifies each of the Programme Outcomes contributing to delivery of the Programme specified by the first pair of numbers. The third pair of numbers specifies each of the Programme Outputs contributing to the Programme Outcome specified by the preceding string of four numbers. The fourth pair of numbers then specifies each Programme Activity contributing to the Programme Output specified by the preceding string of six numbers. Additional sub-numbering can be proposed for the means and costs associated with delivering each of the specified activities but this is not done here.

14.02.3 Vertical logic

The **Development Goal** to which the BNBSAP contributes is “**Sustainable environmental, economic and social development**”.

The **BNBSAP Goal** to which the BNBSAP Measures and Programmes contribute is “**Loss of biodiversity within Bahraini ecosystems is reversed (terrestrial, freshwater and marine)**”.

The **Goal** of this BNBSAP Programme is: “**‘Institutional’ legal, policy and advocacy framework for public participation in access and benefit-sharing measures improved.**”

The **Objective and Outcome** of this BNBSAP Programme are both: “**Environmental Trust Fund operations, capacity and transparency enhanced**”.

Outputs: The Programme outputs are delivered in a modular phased sequence comprising one or more of 6 output modules.

Stocktaking and initial planning: Collection of information and specification of the framework for delivering the Programme.

Socialisation and prioritization: Presentation to and agreement from key stakeholders of the proposed framework for delivering the Programme.

Guidelines development: Necessary materials (draft policies and legislation) for implementing the Programme.

Training: Training in the use of the guidelines and supporting legislation.

Implementation: Operation of the environmental Trust Fund.

Evaluation: This Phase aims to evaluate effectiveness of the revised environmental trust fund to see what has been achieved, lessons to be applied and next steps.

The contents of these phases and contributory activities, with respect to this particular Programme, are described in further Section 14.02 below. Indicators are described in Section 14.03 and matrices are presented in Section 14.04.

14.03 Outputs

14.03.1 General

All contractors should provide electronic copies of all source materials used and of all reports produced. All materials should be coded according to Programme, Outcome, Output and Activity. Where there are several possible code combinations they should be listed in order of relevance.

Where training is necessary then training materials for the trainee(s) and trainer(s) should be produced in electronic format and include systems for evaluating training.

Information should be obtained and provided with a format and content that best meets the requirements of the BNBSAP database and web site proposed under the Programme Management Programme.

14.03.2 Stocktaking

Participatory review, based on the checklist below, of opportunities and constraints to building the size, effectiveness and transparency of the environmental trust fund:

- (i) institutional home;
- (ii) fund management, transparency and oversight;
- (iii) capacity building needs;
- (iv) regulatory frameworks;
- (v) preliminary drafts of necessary new regulations;
- (vi) financial sustainability/business development planning (Central Government subvention, Tourism Bed Tax, EIA compensation, Private Contributions, permit fees, investments, other. Size and use of the fund).
- (vii) Information from the Public Communications Programme and the Environmental Compensation Programme.
- (vii) Participation – Identification of key stakeholder groups and necessary stakeholder participation framework plans;

- (viii) education and public communication requirements;
- (ix) precautionary and climate change issues.

Activities delivering this Output involve the Preparation of a stocktaking report by an International and National Consultant containing:

- (i) Review of existing policy and legal framework with respect to the above checklist (baseline review);
- (ii) Preliminary drafting of Policy(ies) and legislation taking note of (i) above.
- (iii) Guidelines/procedures for operation of the ETF delivering transparency and accountability including:-
 - a. formation and operations of an ETF Board (recruitment, declaration of interest, operation of meetings and voting procedures)
 - b. fund application procedures
 - c. fund selection criteria and procedures;
 - d. disbursement procedures;
 - e. accounting;
 - f. monitoring and evaluation of impact from use of funds.

14.03.3 Socialisation

There should be an ETF workshop delivered in Quarter 4 facilitated by a National Consultant and with a presentation by the Stocktaking consultant(s).

The ETF Stocktaking Consultants should present their respective report and recommendations to the Client at least one month before the workshop so that it can be distributed. The ETF Stocktaking consultants should be represented at the workshop and be prepared to make appropriate revisions as identified and agreed at the time of the workshop within two weeks following the date of the workshop.

The Workshop should be facilitated by an independent national Consultant who should be responsible for ensuring:-

1. that the reports are presented and discussed
2. that feedback is minuted and clarifications provided

3. that there is a full workshop report delivered within one month of the workshop comprising:-
 - i. minutes
 - ii. list of participants
 - iii. materials presented

14.03.4 Guidelines

The International and National Consultants should draft necessary guidelines and operating procedures, policy(ies) and legislation based on the preliminary drafts prepared in the stocktaking phase and presented and agreed at/immediately following the socialisation workshop. The consultants should work with necessary key stakeholders to ensure that the drafts are appropriate and relevant and suitable for processing.

14.03.5 Training

Training should be provided in the use of the ETF guidelines and procedures and in meeting relevant legislation that may already exist and/or have been prepared and agreed under this Programme. The training should be provided by a National Consultant and should include a pre-and post training questionnaire and some sort of a test. There should be support from an International Consultant to help in the finalisation of training materials and in supervising a limited number of the initial training sessions to build capacity in training.

14.03.6 Implementation

This Phase should comprise:-

- i. the use of the ETF according to the agreed guidelines, procedures and legislation (Applications, Board meetings/minutes etc)
- ii. lobbying for funds to go into the ETF (provided under the Public Communications budget)
- iii. Mid-term evaluation of Outcome indicators

20% full time for an ETF officer and 100% secretarial support for operations of the ETF are provided for in the budget.

14.03.7 Evaluation

The stocktaking consultant, or another consultant, should undertake the final (evaluation phase) survey of the status of implementation of the ETF based on the key outcome indicator(s) specified for this Programme. There should be a full report which should be finalised and submitted to the Client at least one month before the evaluation workshop.

The final evaluation workshop should be facilitated by an independent national Consultant who should be responsible for ensuring:-

1. that the reports are presented and discussed
2. that feedback is minute and clarifications provided
3. that there is a full workshop report delivered within one month of the workshop comprising:-
 - i. minutes
 - ii. list of participants
 - iii. materials presented

The National Consultant who helped prepare the evaluation report should present at the workshop.

14.04 Outcome Indicators

14.04.1 Introduction

Indicators and their means of verification are described below according to a standard structure.

In order to evaluate there must be indicators to show whether a project outcome has been delivered. These are termed objectively verifiable indicators. Ideally they should be outcome indicators and preferably they should also be output indicators and even activity indicators. Sometimes they may comprise a combination of sub-indicators. The important thing is that they should show real change.

The “OUTCOME INDICATOR DESCRIPTION” is broken down into a standard format as follows:-

General comments

Free text Outcome Indicator title

- (1) Justification for the outcome indicator
- (2) Location where the outcome indicator should be sampled
- (3) Timing of sampling of outcome indicator
- (4) Means of verification of outcome indicator
- (5) Targets in delivery of outcome indicators at specified times
- (6) Risks and assumptions

14.04.2 Outcome Indicator

Q=quarter. All key terms should be defined. All target indicators should be georeferenced (spatially located).

Outcome indicators for the ETF Programme include:-

- i. Sources of funds
- ii. Applications by type and source
- iii. Projects funded
- iv. Compliance with procedures;
- v. Increase in size of fund;
- vi. Increase in diversity of sources of funding;
- vii. Use of funds by source of applicant and type of activity
- viii. Impact from use of funds (outcome indicators for Projects supported by ETF)

(1) **Justification:** The ETF needs to be managed in a transparent and accountable way if it is to attract more funding particularly from the private sector and to ensure that the funds have a positive impact supporting more effective biodiversity management.

(2) **Location:** State of Bahrain.

(3) **Timing:** Q4, Q10, Q18

(4) **Means of verification:**

- Minutes from Meetings of ETF Board;
- Accounts of ETF;
- Evaluations of outcome indicators for ETF funded Projects

(5) **Target:** By Q4: Stocktaking report includes a detailed evaluation of the existing Wildlife Trust fund. Draft guidelines/operational procedures in place. Processing of draft policies and legislation started. By Q10: (i) ETF Board has met at least once; (ii) The ETF contains at least BDR100,000; (iii) ETF has disbursed at least BDR25,000 according to the agreed criteria and procedures; (iv) At least one Private sector organisation has contributed to the ETF to the tune of BDR25,000; (v) at least one public communication related activity has contributed BDR10,000. By Q18: (i) ETF Board has met at least eight times; (ii) The ETF contains at least BDR1,000,000; (iii) ETF has disbursed at least BDR250,000 according to the agreed criteria and procedures; (iv) At least five Private sector organisations have contributed to the ETF to the tune of BDR25,000; (v) at least three public communication related activities have collectively contributed BDR10,000 and one BDR25,000; At least BDR100,000 has entered the ETF in the form of compensation.

(6) **Risks and assumptions:** Proposed operations framework particularly with respect to transparency and accountability accepted and respected. Substantial funds accrue to the ETF. ETF Board meets and operates appropriately. Funds allocated appropriately. ETF funded Projects deliver efficiently, effectively, relevantly and with high impact and sustainability.

14.05 Logical Framework

14.05.1 Outputs to Goal

Table 23: Environmental Trust Fund Outputs to Goal

Risks and assumptions are provided related to delivery of Indicators and are presented in Section 14.03 above.

Code	Vertical logic	Objectively verifiable indicators	Means of verification
	OVERALL GOAL		
	Sustainable environmental, economic and social development		
	BNBSAP GOAL		
	Loss of biodiversity within Bahraini ecosystems is reversed (terrestrial, freshwater and marine)		
07	PROGRAMME GOAL		
	'Institutional' legal, policy and advocacy framework for public participation in access and benefit-sharing measures improved	i. Sources of funds	i. Accounts

	PROGRAMME OBJECTIVE	ii. Projects funded	ii. Mid-term and End of Programme evaluation.
	Environmental Trust Fund operations, capacity and transparency enhanced	iii. Compliance with procedures;	
07.01	OUTCOME 1	iv. Increase in size of fund	
	Environmental Trust Fund operations, capacity and transparency enhanced	v. Increase in diversity of sources of funding;	
		vi. Impact from use of funds (outcome indicators for Projects supported by ETF)	
07.01.06	Output 6 Evaluation	Final workshop report Final evaluation of outcome indicators	Final Workshop report Final Outcome indicators report
07.01.05	Output 5 Implementation	ETF Outcome Indicators	ETF Board Minutes Progress reports Lobby reports Mid-term ETF outcomes evaluation
07.01.04	Output 4 Training	Training certificates	Training certificates

07.01.03	Output 3 Guidelines	Policies. Legislation. Guidelines, Procedures.	Documents and official correspondence.
07.01.02	Output 2 Socialisation	Workshop materials and report	Workshop materials and report
07.01.01	Output 1 Stocktaking	Review, draft Policies, draft Legislation, Guidelines. Baseline for Outcome indicators	Reports

14.05.2 Costs to Activities

Table 24: Environmental Trust Fund Costs to Activities

Note: Exchange rate \$US3.5:BDR1

Activities are delivered from bottom to top.

Code	SQ *	FQ *	Activity	MEANS	UNITS	NOS	UNIT COST BDR	COST BDR
07.01.06.02	19	19	Final workshop	Workshop	Lump	1	580	580
07.01.06.02	19	19	Final workshop	National workshop Consultant	Days	5	101.5	507.5
07.01.06.02	19	19	Final workshop	National Evaluation Consultant	Days	3	101.5	304.5
07.01.06.02	19	19	Final workshop	Consumables	Lump	1	72.5	72.5
07.01.06.01	18	18	Final Outcomes evaluation	International consultant	Days	10	203	2030
07.01.06.01	18	18	Final Outcomes evaluation	Consumables	Lump	1	72.5	72.5
07.01.06.01	18	18	Final Outcomes evaluation	National travel	Lump	1	72.5	72.5
07.01.06.01	18	18	Final Outcomes evaluation	National consultant	Days	20	101.5	2030
07.01.06.01	18	18	Final Outcomes evaluation	International DSA	Days	10	72.5	725

Code	SQ *	FQ *	Activity	MEANS	UNITS	NOS	UNIT COST BDR	COST BDR
07.01.06.01	18	18	Final Outcomes evaluation	International travel	Lump	1	1160	1160
07.01.05.04	6	20	ETF Staffing	ETF secretary	Months	42	435	18270
07.01.05.04	6	20	ETF Staffing	ETF fund manager (20%)	Months	9	652.5	5872.5
07.01.05.03	10	10	ETF Mid-term Outcomes Evaluation	Consumables	Lump	1	72.5	72.5
07.01.05.03	10	10	ETF Mid-term Outcomes Evaluation	National Travel	Lump	1	72.5	72.5
07.01.05.03	10	10	ETF Mid-term Outcomes Evaluation	National Consultant	Days	20	101.5	2030
07.01.05.03	10	10	ETF Mid-term Outcomes Evaluation	International DSA	Days	10	72.5	725
07.01.05.03	10	10	ETF Mid-term Outcomes Evaluation	International travel	Lump	1	1160	1160
07.01.05.03	10	10	ETF Mid-term Outcomes Evaluation	International Consultant	Days	10	203	2030
07.01.05.02	6	20	Adoption of ETF Policy(ies) and legislation	International DSA	Days	10	72.5	725

Code	SQ *	FQ *	Activity	MEANS	UNITS	NOS	UNIT COST BDR	COST BDR
07.01.05.02	6	20	Adoption of ETF Policy(ies) and legislation	International consultant	Days	10	203	2030
07.01.05.02	6	20	Adoption of ETF Policy(ies) and legislation	International travel	Lump	2	1160	2320
07.01.05.02	6	20	Adoption of ETF Policy(ies) and legislation	National travel	Lump	1	72.5	72.5
07.01.05.02	6	20	Adoption of ETF Policy(ies) and legislation	Consumables	Lump	1	72.5	72.5
07.01.05.02	6	20	Adoption of ETF Policy(ies) and legislation	National Consultant	Days	20	101.5	2030
07.01.05.01	6	20	Quarterly Board meetings	Quarterly Board meetings	Meeting	15	145	2175
07.01.04.01	6	20	Training	International DSA	Days	4	72.5	290
07.01.04.01	6	20	Training	International consultant	International travel	2	1160	2320
07.01.04.01	6	20	Training	1 training module x 8 one day training sessions for 10 persons each.	Sessions	8	2218.5	17748

Code	SQ *	FQ *	Activity	MEANS	UNITS	NOS	UNIT COST BDR	COST BDR
07.01.03.01	5	5	Guidelines development	International Consultant	Days	20	203	4060
07.01.03.01	5	5	Guidelines development	Consumables	Lump	1	72.5	72.5
07.01.03.01	5	5	Guidelines development	Local travel	Lump	1	72.5	72.5
07.01.03.01	5	5	Guidelines development	National Consultant	Days	30	101.5	3045
07.01.03.01	5	5	Guidelines development	International DSA	Days	20	72.5	1450
07.01.03.01	5	5	Guidelines development	International travel	Lump	1	1160	1160
07.01.02.03	4	4	Socialization Workshop Stocktaking Consultant support	International Consultant	Days	5	203	1015
07.01.02.03	4	4	Socialization Workshop Stocktaking Consultant support	International consultant DSA	Days	5	72.5	362.5
07.01.02.03	4	4	Socialization Workshop Stocktaking Consultant support	National Consultant	Days	3	101.5	304.5
07.01.02.03	4	4	Socialization Workshop Stocktaking Consultant	International travel	Lump	1	1160	1160

Code	SQ *	FQ *	Activity	MEANS	UNITS	NOS	UNIT COST BDR	COST BDR
			support					
07.01.02.02	4	4	Socialization facilitator	Consumables	Lump	1	72.5	72.5
07.01.02.02	4	4	Socialization facilitator	National facilitator	Days	300	1.45	435
07.01.02.01	4	4	Socialization workshop	Workshop	Lump	1	580	580
07.01.01.01	1	3	Stocktaking	International Consultant	Days	20	203	4060
07.01.01.01	1	3	Stocktaking	Consumables	Lump	2	72.5	145
07.01.01.01	1	3	Stocktaking	National travel	Lump	2	72.5	145
07.01.01.01	1	3	Stocktaking	National consultant	Days	30	101.5	3045
07.01.01.01	1	3	Stocktaking	International DSA	Days	20	72.5	1450
07.01.01.01	1	3	Stocktaking	International travel	Trip	1	1160	1160

SQ = Start Quarter, FQ = Finish Quarter

Total cost: BDR 91,365

14.05.3 Activities schedule

Table 25: Scheduling of Activities by Quarter

Activities are delivered from bottom to top.

Code	SQ *	FQ *	Activity	PROGRAMME QUARTERS (3 months)																			
				01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
07.01.06.02	19	19	Final workshop																		X		
07.01.06.01	18	18	Final Outcomes evaluation																		X		
07.01.05.04	6	20	ETF Staffing					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
07.01.05.03	10	10	ETF Mid-term Outcomes Evaluation									X											
07.01.05.02	6	20	Adoption of ETF Policy(ies) and legislation					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
07.01.05.01	6	20	Quarterly Board meetings					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
07.01.04.01	6	20	Training					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
07.01.03.01	5	5	Guidelines development				X																
07.01.02.03	4	4	Socialization Workshop Stocktaking Consultant support			X																	
07.01.02.02	4	4	Socialization facilitator			X																	
07.01.02.01	4	4	Socialization workshop			X																	

Code	SQ	FQ	Activity	PROGRAMME QUARTERS (3 months)																			
	*	*		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
07.01.01.01	1	3	Stocktaking	X	X	X																	

SQ = Start Quarter, FQ = Finish Quarter

15.0 Environmental Compensation Framework Programme

15.01 Justification for the Programme

It is a common theme both in the National Environment Strategy and the First National Report³⁶⁹ that availability of finance is a serious constraint to delivery of effective biodiversity management³⁷⁰. A key potential source of funds for effective biodiversity management is compensation for loss of opportunity for access to and sharing of benefits from natural resources due to development. Such compensation can be a requirement of and determined through the environmental impact assessment process (EIA). The current EIA legislation does not provide a clear framework for identifying such compensation.

There are initiatives to develop such a framework. In the meantime some private sector developers³⁶⁹ are already providing relevant compensation to meet their social corporate governance obligations. However, these initiatives need to be mainstreamed and institutionalised within Bahrain.

Improvement in the “Institutional” legal, policy and advocacy framework for public participation in access and benefit-sharing measures ranked joint third during a free vote on proposed BNBSAP Measures at the second BNBSAP workshop on 07th November 2007³⁷¹.

It was further agreed at a meeting between the BNBSAP Consultants and representatives from the PCPMREW on Thursday 08th November 2007 that the BNBSAP should contain a Programme titled “**Environmental Compensation Framework**”³⁷² or ECF.

It should be a priority of the Environmental Compensation Framework to generate funds through the EIA process to mitigate the adverse environmental effects of developments. It is proposed that these funds are placed into the Environmental Trust Fund (the Environmental Trust Fund is the focus of another proposed

³⁶⁹ Bahrain First National Report, 2006 relating to financial issues, Annex III pages 53-57, (DID0230)

³⁷⁰ Bahrain First National Report, 2006, Table 4,3 p. 8: Financing - relative increase in the financial resources allocated to biodiversity. Increased international financial support (DID0230)

³⁷¹ BNBSAP November Workshop on 07th November 2007 Report Final (DID0372)

³⁷² BNBSAP PCPMREW meeting on 08th November 2007 (DID0375)

Programme under the BNBSAP). These funds can then be allocated to help return the biodiversity of the natural environment to a reference state (where the reference state can be considered to be a natural state reflecting minimal human disturbance)³⁷³.

15.02 Logical framework

15.02.1 Introduction

This section 15.02 provides a description of the delivery of this Programme.

Key indicators and means of verification are described in Section 15.03 under the description of indicators.

The logical framework for this Programme is then presented in three matrices in Section 15.04. Indicator details are not presented in the matrices because of limited space.

The **first** matrix presents the development Goal to which the BNBSAP Goal contributes together with the BNBSAP Goal, the specific Programme Goal, Programme Outcome, Outputs and Activities.

The **second** matrix presents the Costs to Activities vertical logic. This presents the Activities required for delivery of particular outputs and the Means and Costs associated with delivery of those Activities.

The **third** matrix presents the scheduling of activities by quarter.

15.02.2 Coding

The vertical logic of the logical framework is linked together by a standard coding system comprising a string of numbers. Each pair of numbers in the numbers string provides an identifier for each level of vertical logic in the logical framework.

The first pair of numbers specifies the Programme. The second pair of numbers specifies each of the Programme Outcomes contributing to delivery of the

³⁷³ SER International Primer on Ecological Restoration, 2004 (DID0090)

Programme specified by the first pair of numbers. The third pair of numbers specifies each of the Programme Outputs contributing to the Programme Outcome specified by the preceding string of four numbers. The fourth pair of numbers then specifies each Programme Activity contributing to the Programme Output specified by the preceding string of six numbers. Additional sub-numbering can be proposed for the means and costs associated with delivering each of the specified activities but this is not done here.

15.02.3 Vertical logic

The **Development Goal** to which the BNBSAP contributes is “**Sustainable environmental, economic and social development**”.

The **BNBSAP Goal** to which the BNBSAP Measures and Programmes contribute is “**Loss of biodiversity within Bahraini ecosystems is reversed (terrestrial, freshwater and marine)**”.

The **Goal** of this BNBSAP Programme is: “**‘Institutional’ legal, policy and advocacy framework for public participation in access and benefit-sharing measures improved.**”

The **Objective and Outcome** of this BNBSAP Programme are both: “**Environmental Compensation Framework Effective**”. A single outcome is proposed to simplify Programme delivery.

Actual delivery of the environmental compensation framework will be the subject of a follow-up programme.

Outputs: The Programme outputs are delivered in a modular phased sequence comprising one or more of 6 output modules.

Stocktaking and initial planning: Collection of information and specification of the framework for delivering the Programme.

Socialisation and prioritization: Presentation to and agreement from key stakeholders of the proposed framework for delivering the Programme.

Guidelines development: Necessary materials (draft policies and legislation) for implementing the Programme.

Training: Training is not included in this Programme. Training should be included in a follow-up ECF Programme should the policy and legislative framework be adopted.

Implementation: Follow-up on the processing of policy and legislative instruments.

Evaluation: This Phase aims to evaluate effectiveness of the revised Compensation Framework to see what has been achieved, lessons to be applied and next steps.

The contents of these phases and contributory activities, with respect to this particular Programme, are described in further Section 15.02 below. Indicators are described in Section 15.03 and matrices are presented in Section 15.04.

15.02 Outputs

15.02.1 General

All contractors should provide electronic copies of all source materials used and of all reports produced. All materials should be coded according to Programme, Outcome, Output and Activity. Where there are several possible code combinations they should be listed in order of relevance.

Where training is necessary then training materials for the trainee(s) and trainer(s) should be produced in electronic format and include systems for evaluating training.

Information should be obtained and provided with a format and content that best meets the requirements of the BNBSAP database and web site proposed under the Programme Management Programme.

15.02.2 Stocktaking

Activities delivering this Output involve the Preparation of a stocktaking report by an International and National Consultant containing:

1. Review of existing policy and legal framework with respect to the opportunities and constraints to introduction of SEA Policy(ies) and Legislation.
2. Identification of key sector and cross-sector stakeholders likely to influence delivery of effective policy and legislative instruments.
3. Preliminary drafting of Policy(ies) and legislation taking note of key sectoral and cross-sectoral issues including precautionary considerations and climate change.

15.02.3 Socialisation

There should be an ECF workshop delivered in Quarter 4 facilitated by a National Consultant and with a presentation by the Stocktaking consultant(s).

The ECF Stocktaking Consultants should present their respective report and recommendations to the Client at least one month before the workshop so that it can be distributed. The ECF Stocktaking consultants should be represented at the workshop and be prepared to make appropriate revisions as identified and agreed at the time of the workshop within two weeks following the date of the workshop.

The Workshop should be facilitated by an independent national Consultant who should be responsible for ensuring that:-

1. the reports are presented and discussed
2. feedback is minute and clarifications provided
3. there is a full workshop report delivered within one month of the workshop comprising:-
 - i. minutes
 - ii. list of participants
 - iii. materials presented

15.02.4 Guidelines

The International and National Consultants should draft necessary policy(ies) and legislation based on the preliminary drafts prepared in the stocktaking phase and presented at the socialisation workshop and designed to support an enabling environment for delivery of effective SEA. They should work with necessary key stakeholders to ensure that the drafts are appropriate and relevant and suitable for processing.

15.02.5 Training

Some training is proposed under this Programme to socialise the Environmental Compensation Framework amongst key stakeholding sectors. There should be additional training in a follow-up Programme when the necessary enabling framework for ECF is in place.

15.02.6 Implementation

This Phase should comprise lobbying for adoption of policy(ies) and legislation drafted in the guidelines phase.

15.02.7 Evaluation

The stocktaking consultant, or another consultant, should undertake the final (evaluation phase) survey of the status of implementation of the ECF based on the key outcome indicator(s) specified for this Programme. There should be a full report which should be finalised and submitted to the Client at least one month before the evaluation workshop.

The final evaluation workshop should be facilitated by an independent national Consultant who should be responsible for ensuring that:-

1. the reports are presented and discussed
2. feedback is minute and clarifications provided
3. there is a full workshop report delivered within one month of the workshop comprising:-
 - i. minutes
 - ii. list of participants
 - iii. materials presented

The National Consultant who helped prepare the evaluation report should present at the workshop.

15.03 Outcome Indicators

15.03.1 Introduction

Indicators and their means of verification are described below according to a standard structure.

In order to evaluate there must be indicators to show whether a project outcome has been delivered. These are termed objectively verifiable indicators. Ideally they should be outcome indicators and preferably they should also be output indicators and even activity indicators. Sometimes they may comprise a combination of sub-indicators. The important thing is that they should show real change.

The “OUTCOME INDICATOR DESCRIPTION” is broken down into a standard format as follows:-

General comments

Free text Outcome Indicator title

- (1) Justification for the outcome indicator
- (2) Location where the outcome indicator should be sampled
- (3) Timing of sampling of outcome indicator
- (4) Means of verification of outcome indicator
- (5) Targets in delivery of outcome indicators at specified times
- (6) Risks and assumptions

15.03.2 Outcome Indicator

Q=quarter. All key terms should be defined. All target indicators should be georeferenced (spatially located).

Gazetted law(s), publicised policy(ies) and supporting official correspondence enable an effective Environmental Compensation framework.

(1) **Justification:** ECF can only be implemented and capacity built if the enabling

policy and legislative environment are in place.

(2) **Location**: State of Bahrain.

(3) **Timing**: End of Programme Evaluation Q12

(4) **Means of verification**:

Relevant Policy - Publicly endorsed and notified

Relevant Legislation – Gazetted

Relevant Official correspondence – relating to the process of acceptance

(5) **Target**: By Q12 ECF Policy(ies) and legislation in place and/or official correspondence shows a commitment to processing the proposed policy(ies) and legislation.

(6) **Risks and assumptions**: An appropriate policy and legislative enabling environment for ECF policy(ies) and legislation exists. There is support for the Programme. Relevant policy(ies) and legislation can be drafted. Relevant policy(ies) and legislation can be adopted in the proposed timescale.

15.04 Logical Framework

15.04.1 Outputs to Goal

Table 26: Environmental Compensation Framework Outputs to Goal

Risks and assumptions are provided related to delivery of Indicators and are presented in Section 15.03 above.

Code	Vertical logic	Objectively verifiable indicators	Means of verification
	OVERALL GOAL		
	Sustainable environmental, economic and social development		
	BNBSAP GOAL		
	Loss of biodiversity within Bahraini ecosystems is reversed (terrestrial, freshwater and marine)		
08	PROGRAMME GOAL		
	'Institutional' legal, policy and advocacy framework for public participation in access and benefit-sharing measures improved	Policy(ies) and legislative	Gazetted law(s) and publicised

	PROGRAMME OBJECTIVE	instruments status	policy(ies), Official correspondence
	Environmental Compensation Framework Effective		
08.01	OUTCOME 1		
	Environmental Compensation Framework Effective		
08.01.06	Output 6 Evaluation	Workshop report	Workshop report
08.01.05	Output 5 Implementation	Policy(ies) and legislation at various stages of drafting and approval.	Policy and legislative materials Official correspondence
08.01.04	Output 4 Training	None	None
08.01.03	Output 3 Guidelines	Drafted Policy(ies) Drafted Legislation	Drafted Policy(ies) Drafted Legislation
08.01.02	Output 2 Socialisation	Workshop materials and report	Workshop materials and report
08.01.01	Output 1 Stocktaking	Stocktaking report Draft policy(ies) and draft legislation	Stocktaking report Draft policy(ies) and draft legislation

15.04.2 Costs to Activities

Table 27: Environmental Compensation Framework Costs to Activities

Note: Exchange rate \$US3.5:BDR1

Activities are delivered from bottom to top.

Code	SQ *	FQ *	Activity	MEANS	UNITS	NOS	UNIT COST BDR	COST BDR
08.01.06.02	12	12	Evaluation Workshop	Consumables		1	72.5	72.5
08.01.06.02	12	12	Evaluation Workshop	National Consultant facilitator	Days	5	101.5	507.5
08.01.06.02	12	12	Evaluation Workshop	National Consultant (evaluation reporter)	Days	3	101.5	304.5
08.01.06.02	12	12	Evaluation Workshop	Workshop	Lump	1	580	580
08.01.06.02	12	12	Evaluation Workshop	National travel	Lump	1	72.5	72.5
08.01.06.01	12	12	Evaluation report	International consultant	Days	10	203	2030
08.01.06.01	12	12	Evaluation report	Consumables	Lump	1	72.5	72.5
08.01.06.01	12	12	Evaluation report	National travel	Lump	1	72.5	72.5

Code	SQ *	FQ *	Activity	MEANS	UNITS	NOS	UNIT COST BDR	COST BDR
08.01.06.01	12	12	Evaluation report	National Consultant	Days	20	101.5	2030
08.01.06.01	12	12	Evaluation report	International DSA	Days	10	72.5	725
08.01.06.01	12	12	Evaluation report	International travel	Lump	1	1160	1160
08.01.05.01	6	12	Adoption of ECF Policy(ies) and legislation	International Consultant	Days	10	203	2030
08.01.05.01	6	12	Adoption of ECF Policy(ies) and legislation	International travel	Lump	2	1160	2320
08.01.05.01	6	12	Adoption of ECF Policy(ies) and legislation	International DSA	Days	10	72.5	725
08.01.05.01	6	12	Adoption of ECF Policy(ies) and legislation	National consultant	Days	20	101.5	2030
08.01.05.01	6	12	Adoption of ECF Policy(ies) and legislation	Local travel	Lump	1	72.5	72.5
08.01.05.01	6	12	Adoption of ECF Policy(ies) and legislation	Consumables	Lump	1	72.5	72.5
08.01.04.01	6	12	Training	International travel	Days	2	1160	2320

Code	SQ *	FQ *	Activity	MEANS	UNITS	NOS	UNIT COST BDR	COST BDR
08.01.04.01	6	12	Training	International consultant	Days	6	72.5	435
08.01.04.01	6	12	Training	Training	Lump	4	2073.5	8294
08.01.03.01	4	6	Guidelines	International DSA	Days	10	72.5	725
08.01.03.01	4	6	Guidelines	International consultant	Days	10	203	2030
08.01.03.01	4	6	Guidelines	International travel	Lump	1	1160	1160
08.01.03.01	4	6	Guidelines	National travel	Lump	1	72.5	72.5
08.01.03.01	4	6	Guidelines	Consumables	Lump	1	72.5	72.5
08.01.03.01	4	6	Guidelines	Translating	Lump	1	580	580
08.01.03.01	4	6	Guidelines	National Consultant	Days	20	101.5	2030
08.01.02.03	4	4	Workshop Stocktaking Consultant support	National Consultant	Days	5	101.5	507.5
08.01.02.03	4	4	Workshop Stocktaking Consultant support	International DSA	Days	5	72.5	362.5
08.01.02.03	4	4	Workshop Stocktaking Consultant support	International travel	Lump	1	1160	1160
08.01.02.03	4	4	Workshop Stocktaking Consultant support	International consultant	Days	5	203	1015

Code	SQ *	FQ *	Activity	MEANS	UNITS	NOS	UNIT COST BDR	COST BDR
			support					
08.01.02.02	4	4	Workshop facilitator	Consumables	Lump	2	72.5	145
08.01.02.02	4	4	Workshop facilitator	National Consultant facilitator	Days	5	101.5	507.5
08.01.02.01	4	4	Socialization workshop	Workshop	Lump	1	580	580
08.01.02.01	4	4	Socialization workshop	Workshop consumables	Lump	1	72.5	72.5
08.01.01.01	1	3	Stocktaking	International Consultant	Days	20	203	4060
08.01.01.01	1	3	Stocktaking	Consumables	Lump	2	72.5	145
08.01.01.01	1	3	Stocktaking	Local travel	Lump	2	72.5	145
08.01.01.01	1	3	Stocktaking	National consultant	Days	30	101.5	3045
08.01.01.01	1	3	Stocktaking	International DSA		20	72.5	1450
08.01.01.01	1	3	Stocktaking	International travel	Lump	1	1160	1160

SQ = Start Quarter, FQ = Finish Quarter

Total cost: BDR 46,951

15.04.3 Activities schedule

Table 28: Scheduling of Activities by Quarter

Activities are delivered from bottom to top.

Code	SQ *	FQ *	Activity	PROGRAMME QUARTERS (3 months)																		
				01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19
08.01.06.02	12	12	Evaluation Workshop										X									
08.01.06.01	12	12	Evaluation report										X									
08.01.05.01	6	12	Adoption of ECF Policy(ies) and legislation					X	X	X	X	X	X	X								
08.01.04.01	6	12	Training																			
08.01.03.01	4	6	Guidelines				X	X	X													
08.01.02.03	4	4	Workshop Stocktaking Consultant support				X															
08.01.02.02	4	4	Workshop facilitator				X															
08.01.02.01	4	4	Socialization workshop				X															
08.01.01.01	1	3	Stocktaking	X	X	X																

SQ = Start Quarter, FQ = Finish Quarter

APPENDIX 01 REFERENCES

DID: Document ID used to uniquely identify each reference in the Project Management Information System.

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APPENDIX 02 STRUCTURED INTERVIEWS

Appendix 02.01 Information Systems

This version has been revised based on feedback from PCPMREW.

Outcome 1: Integrated Biodiversity Management Information System (BMIS) operational

FORM CODE O1	INFORMATION SYSTEM LOCATION	DESCRIPTION
Form no: 01	Directorate of Planning and Assessment,	1. Database for Industry– MySQL. First phase. Hope to expand to all departments by Intranet.
Completed on: 05 and 06/09/07	General Directorate for Environment and Wildlife	2. GIS for protected area in Bahrain: - Hawar, In progress - Arrad finalised - Al Arreen planned
Revision No: 1	Protection, Public Commission for the Protection of	No guidelines/metadata standards/dictionary for this GIS.
Nos Pages: 4	Marine Resources, Environment and Wildlife.	3. MarGIS with web access not available to the Public (through Ministry secured portal). See NEMSIS2 proposal (<i>National Environmental Management Spatial Information System NEMSIS</i>). Many plans but no budget.
Completed by:	Dr Alec Dawson Shepherd, BNBSAP Consultant	

OUTCOME CONTACTS (additional contacts at end of form)			
Name	Wisam E. Mohammed	Position	GIS Expert, Directorate of Planning and Assessment, GDEWP. M.S.C. GIS. Candidate for PhD.
Biodiversity Stakeholding	Technical		
Email	wisam@env.gov.bh	Mobile	
Room		Building	
Street		Town/City	Isa
P.O. Box	32657	Post Code	
Country	Bahrain		

CHECKLIST (One form for each discrete management system)			
Code	KEYWORD	YES?	
01/	Biodiversity	✓	A very limited biodiversity information is digitised in the GIS available within the Directorate of Planning and Assessment (eg. Bird nesting in Hawar).
01/	Database type	✓	MySQL, Visual Basic Client. GIS ArcGIS/Info 9.2. Full license, Apache Http Server, and PHP
01/	Database software	✓	As for database type. Basemap scanned but no standard base available though other Agencies have it (Geomatec etc).
01/	Database hardware	✓	See GIS capability.
01/	Database web enabled?	✗	Not yet. Planned but cooperation required with CIO (Central Information Organization).
01/	Dredging	✗	No information in the Directorate of Planning and Assessment databases
01/	Education	✗	No information in the Directorate of Planning and Assessment databases
01/	Expenditure amount	✗	No information in Directorate of Planning and Assessment databases on budget issues.
01/	Expenditure type	✗	No information in the Directorate of Planning and Assessment databases on budget issues.
01/	Habitats	✓	Now, available for Hawar archipelago
01/	Human health	✓	Cancer in the Geographic Information System.

01/	Groundwater condition	✘	No information in the Directorate of Planning and Assessment databases
01/	GIS capability?	✓	3 workstations, 1 server, 1 plotter (A1 colour).
01/	Income amount	✘	No information on income/revenue generation amounts.
01/	Income source	✘	No information on income/revenue generation sources.
01/	Landscapes	✘	No information in the Directorate of Planning and Assessment databases
01/	Pollution sources: air	✓	Point source information on stacks in the database (monitoring ambient)
01/	Pollution sources: waste – oil	✘	Not available in Directorate of Planning and Assessment. Available in the Directorate of Environmental Control. Also MEMAC has oil spill information.
01/	Pollution sources: waste – liquid	✓	Industrial environmental monitoring system (IEMS) has information provided by DOC (department of pollution control).
01/	Pollution sources – solid	✓	Industrial environmental monitoring system (IEMS) has information provided by DOC..

INFORMATION CHECKLIST continued.....			
01/	Pollution sinks: air	✘	Ambient air quality information available in the Directorate of Environmental Control.
01/	Pollution sinks: waste – oil	✘	MEMAC might have. Ambient information might be held in the Directorate of Environmental Control.
01/	Pollution sinks: waste – liquid	✘	Ministry of Public Works monitors waste water. No location information available to Directorate of Planning and Assessment.
01/	Pollution sinks – solid	✓	Dump areas data held by the Directorate of Environmental Control.
01/	Reclamation	✘	Information available with Abdulqader S. Khamis
01/	Social	✘	No information available in Directorate of Planning and Assessment.
01/	Species	✓	Birds in Hawar including some nesting site information.
01/	Springs – freshwater	✘	Maybe with BAPCO.
01/	Staff (full-time)	✓	2 (One Manager Suhad who is primarily a biologist) + 1 candidate to join to staff before the end of year
01/	Staff (part time)	✘	None
01/	Agriculture	✘	No information available in Directorate of Planning and Assessment.
01/	Aquaculture	✘	No information available in Directorate of Planning and Assessment.
01/	Archaeology	✘	Planned from University of Lund.

01/	Biodiversity protection areas	✓	Hawar in progress, Arrad finalised, Al Arreen planned
01/	Fishing	✗	In MarGIS available through the E-Gov web portal.
01/	Industry – small scale	✗	Ministry of Commerce?
01/	Industry – large scale	✗	Industrial sectors by EIA license.
01/	Military areas	✗	No information available in Directorate of Planning and Assessment.
01/	Mining	✗	Have on maps but not in the database system in the Directorate of Planning and Assessment.
01/	Recreation	✗	No information available in Directorate of Planning and Assessment.
01/	Tourism	✓	Hotels, Public Beaches, Gardens/Green Areas from Ministry of Municipalities but latest is for year 2000.

Form code: 01. Form number: 02. Completed on: 06/09/07. Revision: 1.

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INFORMATION CHECKLIST continued.....			
01/	Urbanisation	✓	Population density, population distribution, general zones – residential, industrial, commercial, Governmental, mixed. From Ministry of Municipalities but latest is for year 2000.
01/	Wells	✓	Location not quality. BABCO may have more information.
01/	Mariculture	✗	In MarGIS available through the E-Gov web portal.
01/	Gene banks	✗	No information available in Directorate of Planning and Assessment.
01/	Captive breeding	✗	No information available in Directorate of Planning and Assessment.
01/	Release programmes	✗	No information available in Directorate of Planning and Assessment.

*	<p>Additional information:</p> <p>1. Unclear as to the reason why information from Ministry of Municipalities is only available to year 2000. Apparently there is a memorandum of understanding to facilitate exchange but still requires agreement on a case-by-case basis.</p> <p>2. Both Dr Dawson Shepherd and Wisam E. Mohammed tried to access MarGIS through the E-Gov portal on the morning of 06th September 2007 but were unable to do so.</p>
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*For additional information cut and paste the last row as many times as necessary. Enter the relevant code in the code column and complete. Additional information

may be provided as appendices but should all be labelled with the specified form, date and code

ADDITIONAL CONTACTS CONCERNING OUTCOME			
Name	None specified.	Position	
Biodiversity Stakeholding		Email	
Email		Mobile	
Room		Building	
Street		Town/City	
P.O. Box		Post Code	
Country			

Appendix 02.02 Ras Sanad/Tubli Bay

Outcome 2: Biodiversity Protected Area Network better managed

FORM CODE O2	PROTECTED AREA NAME	DESCRIPTION
Form no: 1	Ras Sanad, Tubli Bay	The largest of five small natural mangrove stands in Bahrain, all in Tubli Bay. According to the Ramsar Site sheet for Tubli Bay “a decision was taken in 1988 to declare the mangrove area at Ras Sand ³⁷⁴ . This area represents only a small section of the bay, which does not exceed 250 ha. The Bahrain First National Report 2006 states that “ <i>Tubli bay was declared as a protected area in 1995³⁷⁵ and designated as a RAMSAR site in 1997³⁷⁶</i> . The site was visited on 05 th September. The mangrove appeared healthy but the area is not managed (poor access, no signage, no markers, litter).
Completed on: 070905		
Revision No: 1		
Nos Pages: 5		
Completed by:	Dr Alec Dawson Shepherd BNBSAP Consultant, Abdul Qader Saeed Khamis, Ali Mansoor Abbas.	

OUTCOME CONTACTS (additional contacts at end of form)			
Name	Abdul Qader Saeed Khamis	Name	Ali Mansoor Abbas
Position	Senior Environmental Specialist	Position	Biologist
Biodiversity	Employee of	Biodiversity	Employee of

³⁷⁴ presumably Ras Sanad

³⁷⁵ This may relate to Ministerial Order (1) 1995 with respect to the banning of Infilling and Urbanization in Tubli Bay. Cannot find reference to declaring the area as a natural protectorate at this time.

³⁷⁶ See also Annotated Ramsar list specifying Tubli Bay as site 921 under the Ramsar Convention on Wetlands on 27th October 1997 (DID0256). The latest Ramsar Information Sheet given for Tubli is for 1998 (DID0181).

Stakeholding	PCPMREW, Environmental Affairs	Stakeholding	PCPMREW, GDEWP
Email	QaderK@env.gov.bh	Email	
Mobile		Mobile	
Room		Room	
Building		Building	
Street		Street	
Town/City	Isa Town	Town/City	Isa Town
PoBox	32657	PO Box	32657
Country	Bahrain	Country	Bahrain

Form code: 02. Form number: 1. Completed on: 07/09/05. Revision: 1.

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CHECKLIST (One form for each discrete protected area)			
Code	KEYWORD	YES?	
02/	Agriculture	✓	Bordering farmlands but considerably depleted.
02/	Aquaculture	✗	
02/	Archaeology	✓	National Report. Ruins of Mosques along coast. Nabih Salih Mosque situated on Nabih Salih Island in mouth of the Bay.
02/	Boundary specified?	✗	Unlike total area, boundary not specified for Tubli. Ras Sanad known from ownership certificate.

02/	Boundary markers?	✘	Ras Sanad may have some.
02/	Brochures about area	✓	There were some. Now finished.
02/	Budget requested	✘	Fund for the proposed Wetland Visiting Center at Ras Sanad was requested from Ramsar Convention
02/	Budget received	✘	None
02/	Educational outreach	✓	Ministry of Education. No liaison Officer. Inaccessible. Limited use. Request for Visitor Centre in 1999 rejected. Educational focal point – information and public relations (Zakaria Khoungi).
02/	Encroachment	✓	Garbage, Landfill for building (infilling not sure whether legal or illegal).
02/	Enforcement	✘	None
02/	Equipment	✓	Available for Research but not dedicated.
02/	Equipment inventory	✓	There is an inventory.
02/	Habitats present	✓	Mudflat, mangrove, sea grass (limited), Rocky outcrops and part of shore rocky.
02/	Habitats inventory	✓	Ramsar Convention application (note that the Site sheet has only limited information (DID0181)).
02/	Habitat monitoring	✓	Fisheries monitor the Mangrove. Not sure when last done.
02/	Habitat damage	✓	Mudflat damaged. Mangrove healthy.

02/	Habitat rehabilitation	✘	Plan to rehabilitate the Bay (Posford document, 2005)
02/	Legislation	✓	1995 Ministerial Order. Declared in 2006 by Royal Decree (DID0246)
02/	Mariculture	✘	None

Form code: 02. Form number: 1. Completed on: 07/09/05. Revision: 1.

Page 3 of 4.

CHECKLIST (One form for each discrete protected area)			
Code	KEYWORD	YES?	
02/	Management Plan	✓	Draft. Not approved. By Municipal Council.
02/	Management board	✗	None
02/	Management by consultation	✓	Many. Demonstrations, Camps, Cleaning Activities.
02/	Management reporting	✓	Very occasional reporting. Don't know where documents are/who keeps them.
02/	Patrols	✓	Ministry of Interior – Police/Security but not mainly to do with environmental/biodiversity management.
02/	Revenue	✗	None
02/	People resident within area	✗	None
02/	Species present	✓	<i>Avicennia marina</i> . Many migrant bird species (Kentish Plover, Western Reef Heron, Little Egret, Moorhen).
02/	Species inventory	✗	Informal
02/	Species – alien	✓	Indian Crow
02/	Species monitoring	✓	Mangrove by Fisheries. University Research.
02/	Species rehabilitation	✗	None

02/	Staff	✘	None
02/	Staff accommodation	✘	None
02/	Traditional uses	✓	Collect algae to bait traps. Some illegal fishing by hadarah. Hook and line OK.
02/	Traditional users	✓	Traditional collection of algae by Fishermen
02/	Trust fund	✓	There is a general trust fund for environment which should be available for Tubli Bay but not used yet.
02/	Uses – illegal	✓	Reclamation may be legal. Dumping illegal. Sewage discharge legal but excess illegal. Bird shooting in Ras Sanad. No cutting of mangrove. Some reclamation.
02/	Uses - unrestricted	✓	Fishing in bay – hook and line. Boating. There are two moorings.
02/	Uses – licensed	✓	Hadahrah if licensed and gagour (wire trap).
02/	Visitor centre	✘	Request for Visitor Centre in 1999 rejected.

CHECKLIST (One form for each discrete protected area)			
Code	KEYWORD	YES?	
*	Additional information:		

*For additional information cut and paste the last row as many times as necessary. Enter the relevant code in the code column and complete. Additional information may be provided as appendices but should all be labelled with the specified form, date and code

OUTCOME CONTACTS*			
Name	Abbass Mahfoodh	Name	Ibtisam Khalaf
Position		Position	Fisheries Officer
Biodiversity Stakeholding	Elected member of Central Municipality Council, also Ministry of Health.	Biodiversity Stakeholding	Fisheries Officer
Email		Email	
Mobile		Mobile	
Room		Room	
Building		Building	
Street		Street	

Town/City		Town/City	
Post Code		Post Code	
Country		Country	

APPENDIX 03 OPEN INTERVIEWS

Appendix 03.01 Dr Adel Khalifa Al Zayani

Item	Information
Name	Dr Adel Khalifa Al Zayani
Age	45
Sex	Male
Nationality	Bahraini
Employment	Director, Nature, Environmental Studies and Consultation. GIS expert and Marine Biologist. Used to work for Bahrain Centre for Studies and Research and Geomatec. Former acting General Director of Bahrain environmental authority, and former Deputy Director of Environment Department in the Gulf cooperation Council (Riyadh-KSA)
Stake in Bahraini environment	Environmentalism
Email	adel@naturebh.com
Telephone	+973 17311031
Mobile	+973 36458900
Fax	+973 17311063
Room	13
Building	602

Street/Road	2018
Town/City	Manama
Post Code	
P.O. Box	15636
Country	Bahrain
Web	www.naturebh.com

INTERVIEW

Item	Interview Information
Date of Interview	05/09/07
Place of interview	PCPMREW
Time of interview	10.22-13.00
Attendees	Abdel Qader Saeed Khamis, PCPMREW Ali Mansoor Abbas Dr Alec Dawson Shepherd, BNBSAP Consultant,

Interview
<p><u>General comments</u></p> <p>Considers that the Marine Environment is a priority. Much of the land is privatised and so there is little opportunity to manage it from an environmental perspective.</p>
<p><u>Key Information:</u></p> <p>MARGIS1/MARGIS2 is a MARine Geographic Information System with information on the environment³⁷⁷. It is based on information from 900 stations. The information from several layers used to provide an Ecological Value Index (EVI) based on the Clients requirements and based on the layers in the information system. The EVI is determined by applying the following criteria:</p> <p>(1) Habitats: criteria used are: Rarity, Biodiversity, Vulnerability, Recoverability as attributes</p>

³⁷⁷ Dr Shepherd tried to access MARGIS through the PCPMREW website on 09th September 2007 but was unable to do so.

(2) Birds: Using historical data (no survey)

(3) Dugong:³⁷⁸

(4) Turtle: Nesting data are not included because there are no nesting data and it is understood that turtle do not nest in Bahraini waters.

(5) Fishing grounds: (productivity and Diversity)

There is also a Marine Atlas in the process using this information and available from Geomatec and information available from the Authors in different field of the marine environment. It contains an overview section, sections on marine habitats (inter-tidal and subtidal), section about Hawar Islands, section about fisheries recourses, section about the key species in the marine and the evaluation of the marine environment with record from the past, present and the forecast of the future. Finally, the proposed management of the marine environment.

Existing protected areas in order of priority:

All the present MAPs are only protected in paper (paper reserves), these are:

1. Hawar Islands: Difficulties politically; no plans, only no fishing activities
2. Tubli Bay: Needs rehabilitation; and huge effort to protect it
3. Mashtan and surrounding waters: The definition of “surrounding waters” needs to be clarified. The area surrounding the Mashtan Island is important, if it can provide protection for the area between Mashtan, Jabbarri, Tighaylib, to Hawar, then this would be one of the hot spots for conservation.

Doesn't know about the need for terrestrial protected areas. He suggests contacting Dr Jameel Abbas or Dr Saeed for information.

It was noted that Atkins (the Environmental contractor in the National Master plan has prepared a report on the terrestrial environment and has made recommendations concerning priority terrestrial sites³⁷⁹.

Species protection priorities:

³⁷⁸ There has been a recent aerial survey by James Cook University (Helen Marsh) of turtles, dugong and dolphins and a report is available.

³⁷⁹ The Economic Masterplan still has to be finalised and is not yet available.

1. Dugong

Biodiversity Hotspots:

1. Fasht Abolthama: best existing live coral based on observations (Fisheries doing ReefCheck and MARGIS II project). The area is used for fishing by foreign vessels and this fishing needs to be controlled. It is also a Dive site (Aquatec Diving).

Suggests that could be managed initially by installing mooring/marker buoys and improved patrols. This area is remote from human activities especially from the land sources.

2. Shutaia: Oyster banks (10-12m) and fishing grounds.

3. Part of Fasht al Jarim: Sea grass, some coral, habitat diversity and fishing grounds.

4. Fasht al Adhm: Fisheries, Habitat diversity

5. The Area from Fasht al Adhm to Hawar (include Hawar Islands); diversity of habitats, dugong and sea turtles feeding area, shrimp and fish grounds, fish and shrimp nursery area, and local and migratory birds nesting and feeding area especially in Hawar Islands.

Appendix 03.02 Brendan Kavanagh (Birds)

Item	Information
Name	Dr Brendan Kavanagh
Age	-
Sex	Male
Nationality	Irish
Employment	Senior Lecturer, Medical Biology but has substantial prior experience of environmental management in Ireland.
Stake in Bahraini environment	Ornithologist
Email	bkavanagh@rcsi-mub.com
Telephone	+973 1758 3500 ext 234
Mobile	
Fax	+973 1758 3600
Room	
Building	Al Saffar Building, Bldg 1042
Street	Rd 3621, Blk 436
Town/City	Seef
Post Code	

P.O. Box	
Country	Bahrain
Web	www.rcsi-mub.com

INTERVIEW

Item	Interview Information
Date of Interview	05/09/07
Place of interview	RCSI MUB
Time of interview	14.30-16.20
Attendees	Abdel Qader Saeed Khamis, PCPMREW Ali Mansoor Abbas Dr Alec Dawson Shepherd, BNBSAP Consultant,

Interview
<p><u>General comments:</u></p> <p>Considers that legislation, implementation and education need to be strengthened before trying to deliver any kind of action plan.</p>
<p><u>Key Information:</u></p> <p>Substantial information on the distribution of birds is provided in the Bahrain Bird Report http://www.hawar-islands.com/blog/home_stub.php</p> <p>Key contacts include: Howard King PO Box 15344 Adliyah Manama Bahrain howardk@batelco.com.bh featherbrain@hawar-islands.com Tel mobile Bahrain (++973) 39642739</p>

Major Abdullah

Existing protected areas in order of priority:

1. Hawar Islands: Difficulties politically;
2. Tubli Bay: Needs rehabilitation;
3. Mashtan and surrounding waters: If the definition of surrounding waters can provide protection for the Fasht al Adhm and Hawar triangle then this would be good.

Doesn't know about the need for terrestrial protected areas. He suggests contacting Dr Jameel Abbas or Dr Saeed for information.

It was noted that the Economic Master plan Sub-committee on the terrestrial environment has made recommendations concerning priority terrestrial sites³⁸⁰.

Species protection priorities:

1. Grey Hypocolius (*Hypocolius ampelinus*). 10-20 birds over winter in Bahrain principally at a roost site in Saar where the dense palm vegetation (re-growth from the base) provides cover. The area (about 10 acres) is in private ownership and is prime development land. The area around is being encroached upon. No captive breeding of this species and its presence is in decline in Bahrain. Roosting sites have been lost to development, agriculture is in decline and traditional farming practices lost.

2. Sooty falcon (*Falco concolor*) (11 pairs and breeds in Hawar Islands). Winters in Madagascar. 100 pairs for the whole of the Gulf and 5,000 pairs in the world. Declining in numbers in Hawar – fewer chicks – maybe because of changes in the number/seasonality of migrant birds that they can prey on and little opportunity to change patterns of migration.

3. Socotra cormorant (*Phalacrocorax nigrogularis*). 30,000 pairs nest in the area.

³⁸⁰ The Economic Masterplan still has to be finalised and is not yet available.

The evening flights are a fantastic sight.

4. Indian House crow – general threat. Nothing specific. Maybe could threaten the White Cheeked Bulbul *Pycnonotus leucogenys*. National Bird of Bahrain.

5. Al Areen captive breeding of Hubara Bustard could be an important public communications tool for biodiversity in Bahrain.

Biodiversity Hotspots:

1. Saar Hypocolius roosting sites.

Appendix 03.03 Prof. Dr. Waleed Khalil Al-Zubari

Note: Opportunity has been provided to comment on the following material but no comments have been received to date.

Item	Information
Name	Prof. Dr. Waleed Khalil Al-Zubari
Age	-
Sex	Male
Nationality	Bahraini
Employment	Vice-Dean, Technological Studies, Editor-in-Chief, Arab Gulf Journal of Scientific Research, Arabian Gulf University, College of Graduate Studies.
Stake in Bahraini environment	Bahraini Citizen and professional
Email	waleed@agu.edu.bh
Telephone	+973 17 239 880/543
Mobile	+973 39433811
Fax	+973 17 239 552
Room	
Building	
Street	

Town/City	Manama
Post Code	
P.O. Box	26671
Country	Kingdom of Bahrain
Web	

INTERVIEW

Item	Interview Information
Date of Interview	06 th November 2007
Place of interview	Arab Gulf University
Time of interview	10.30-12.00
Attendees	Ali Mansoor Abbas, PCPMREW Dr David Aubrey, BNBSAP Consultant Dr Alec Dawson Shepherd, BNBSAP Consultant,

Interview
<p><u>General comments:</u></p> <p>Most people don't know what biodiversity is.</p>
<p><u>Key Information:</u></p> <p>15 Major springs inland as well as offshore fed by Dammam aquifer extending from eastern Arabia. Aquifer is between 6,000 and 22,000 years old. Decline and salinisation. Inflow of $100 \times 10^6 \text{m}^3$ per year and extraction of $150 \times 10^6 \text{m}^3$. (see thesis by Al-Gosaibi, H., A., (1997) (DID0370). In 1980's springs still discharging. Now head is at, or below, sea-level. Aquifer is very thin (-40m and 10m thick) and vertically interconnected so any natural surface recharge will drain away. Originally $2,000 \text{mg/l}^{-1}$ and now best is $3,000 \text{mg/l}^{-1}$ due to saline intrusion into the aquifer. Key springs are:-</p> <p>Adari Abuzaidan Ain Al Jin Umm al Shaoum As Safahiyah Arahaah (grinding of grain)</p>

Possibility of recovery if no abstraction. At one site recovered by 0.5m in 3 months. However, only an artificial solution is practical.

Existing protected areas in order of priority:

Didn't suggest any priority areas

Species protection priorities:

Frogs and freshwater turtle

Biodiversity Hotspots:

Agricultural drainage channels. Frogs not reproducing as before because too saline. Turtle (terrapin) being excluded because of invasive red nose turtle.

Appendix 03.04 Sudheer Nair

Note: Opportunity has been provided to comment on the following material but no comments have been received to date.

Item	Information
Name	Sudheer Nair
Age	-
Sex	Male
Nationality	Indian
Employment	Manager Operations
Stake in Bahraini environment	Involved in management of Hawar Resort for many years including at site,
Email	hawar@baisan.com
Telephone	+973 17849111
Mobile	+973 39895087
Fax	+973 17849100
Room	
Building	
Street	
Town/City	Manama

Post Code	
P.O. Box	804
Country	Kingdom of Bahrain
Web	www.hawarresort.com

INTERVIEW

Item	Interview Information
Date of Interview	06 th November 2007
Place of interview	Best Western
Time of interview	12.15-13.00
Attendees	Ali Mansoor Abbas, PCPMREW Dr David Aubrey, BNBSAP Consultant Dr Alec Dawson Shepherd, BNBSAP Consultant,

Interview
<p><u>General comments:</u></p> <p>Keen to collaborate. Staff likes to stay there long-term. Cormorants regularly fly overhead in season.</p>
<p><u>Key Information:</u></p> <p>Hawar Resort is leased from Government. Lease ends 2008. Privately managed. It has 40 rooms and 4 suites. Have operated for ten years. Don't know when the resort was first built.</p> <p>54 BDR weekdays and 74BDR weekends per night including transfers and full board. 5% bed tax,</p> <p>Desalinated water and power provided by Government.</p> <p>No fishermen operating from islands.</p> <p>Mostly day trips and overnights.</p>

Mainly Bahraini and Saudi guests (60%) and mostly in summer. 100% occupancy from June-September. Weekends 80-100%. Rest of time low occupancy. Resort doesn't close.

Limited nature tourism. Mostly just recreation and rest.

Normally don't do wildlife tour. Occasionally Dr Saeed does nature tour.

Travel by closed speed boat (plastic cover). Don't/not allowed to operate in the dark. Have 3 boats including one for supplies.

Southern Tourism Company operates low-cost chalets

Existing protected areas in order of priority:

None

Species protection priorities:

None

Biodiversity Hotspots:

None

APPENDIX 04 Response to BNBSAP comments 04th September

	Comment ³⁸¹	Response
1	Need for slides and other materials in Arabic	There was insufficient budget for this.
2	Lack of information on Protected Areas and their management in Bahrain	This is certainly a constraint to delivery of the BNBSAP but also justifies the need for it according to the precautionary principle ³⁸² .
3	Millennium approach was not used in the presentations: should be followed. Specifically, Bahrain should focus on protection of ecosystem services, not species Specifically, Bahrain should focus on protection of ecosystem services, not species	The preparation of the BNBSAP has taken note of the focus specified in the First National Report ³⁸³ regarding articles (6 ³⁸⁴) and (8 ³⁸⁵) of the CBD ³⁸⁶ and its 2010 targets ³⁸⁷ . A species focus is a part of the CBD framework as is protection of ecosystem services. It is not one or the other. However, it is up to stakeholders to identify and then support delivery of priority BNBSAP Projects.
4	The National Economic Strategy for Bahrain has been prepared but not yet approved. Review of this document (not currently available) would assist the BNBSAP process.	The BNBSAP is an ongoing process. When the National Economic Strategy becomes available new BNBSAP Projects can be designed to support and comply with it.
5	There is a need to protect Bahrain's protected areas, which now are not being protected.	This reflects CBD 2010 Goal 1 and Targets 1.1 and 1.2. The draft BNBSAP responds by proposing 6

³⁸¹ BNBSAP September meeting, Point "d" (DID0283)

³⁸² http://www.iucn.org/themes/law/pdffdocuments/LN250507_PPGuidelines.pdf

³⁸³ Bahrain First National Report, Section 4.3a, p.9 (DID0230)

³⁸⁴ Convention on Biological Diversity, 1992, Article 6: General measures for conservation and sustainable use (develop and national strategies and integrate between sectors) (DID0121).

³⁸⁵ Convention on Biological Diversity, 1992, Article 8: In-situ conservation (Protected areas etc) (DID0121).

³⁸⁶ Convention on Biological Diversity, 1992, DID0121

³⁸⁷ <http://www.cbd.int/2010-target/goals-targets.shtml>

		Projects focussing on existing or proposed protected Areas.
6	The biodiversity information system is an important part of the BNBSAP	This is reflected in the proposed BNBSAP Project Integrated Biodiversity Management Information System (BMIS) operational.
7	There needs to be a strong integration between the BNBSAP and the National Economic Strategy	This will only be possible when the National Economic Strategy is available.
8	Some individuals thought we needed much broader participation in the BNBSAP process, and not just the limited attendees at this first meeting.	There are two further workshops. A "Hotspots" questionnaire soliciting participation has been sent out. Hopefully there will be broader participation.

APPENDIX 05 MEASURES COMPLIANCE

Note many of the criteria statements are general and overlap making the allocation of specific links difficult.

Appendix 05.01 Convention on Biodiversity - Articles

Criteria	BNBSAP Measures* (direct links)								
	1	2	3	4	5	6	7	8	9
Convention on Biodiversity									
Preamble: Precautionary concerns/Climate	Included in Programme Checklists								
Article 01: Objectives									
Objective 1 – conservation of biological diversity					X	X	X		
Objective 2 – sustainable use of its components					X	X	X		
Objective 3 – equitable sharing of benefits									X
Article 05: Cooperation (International)		X							X
Article 06: General measures (NBSAP/mainstreaming)	X	X	X	X	X	X	X	X	X
Article 07: Identification and monitoring									
1. Ecosystems and habitats (significant) (annex I)				X	X	X	X		X
2. Species and communities (threatened, significant) (annex I)				X	X	X	X		X
3. Genomes and genes (significant) (Annex I)				X	X	X	X		X
Article 08: <u>In situ</u> conservation					X	X			X

Article 09: <u>Ex situ</u> conservation							X		X
Article 10: Sustainable use (mainstreaming)			X		X	X	X		X
Article 11: Incentive measures (economically/socially sound)									X
Article 12: Research and training	X	X	X	X	X	X	X	X	X
Article 13: Public education and awareness	X	X	X	X	X	X	X	X	X
Article 14: Impact assessment (EIA, SEA, International Agreements, Emergency response/liability/redress)	X	X							X
Article 15: Access to genetic resources		X			X	X	X		X
Article 16: Access to and transfer of technology		X							X
Article 17: Exchange of information	X	X	X	X	X	X	X	X	X
Article 18: Technical and scientific cooperation	X	X	X	X	X	X	X	X	X
Article 19: Handling of biotechnology and distribution of its benefits (Cartagena)		X						X	X
Article 20: Financial resources		X							X
Article 21: Financial mechanism		X							X
Article 22: Relationship with other international conventions		X							X
Article 26: Reports	X	X	X	X	X	X	X	X	X

*Measures: 1- Strategic Environmental Assessment policy adopted; 2 – National Capacity Self Assessment policy adopted; 3 – Green Procurement policy adopted; 4 – Integrated Biodiversity Management Information System (BMIS) operational; 5 - Biodiversity Protected Area Network better managed; 6 – Biodiversity protected area expanded; 7 – Key species protected

throughout their range; 8 – Point and diffuse sources of pollution (solid, liquid and gaseous) reduced); 9 – “Institutional”, legal, policy and advocacy framework for public participation in access and benefit-sharing measures improved.

Appendix 05.02 Convention on Biodiversity - 2010 targets

Criteria	BNBSAP Measures (direct links)								
	1	2	3	4	5	6	7	8	9
2010 targets – selected (Convention on Biodiversity)³⁸⁸									
Target 1.1: At least 10% of each of the world's ecological regions effectively conserved.					X	X			
Target 1.2: Areas of particular importance to biodiversity protected					X	X			
Target 2.1: Restore, maintain, or reduce the decline of populations of species of selected taxonomic groups							X		
Target 2.2: Status of threatened species improved.							X		
Target 3.1: Genetic diversity of crops, livestock, and of harvested species of trees, fish and wildlife and other valuable species conserved, and associated indigenous and local knowledge maintained.									
Target 4.1: Biodiversity-based products derived from sources that are sustainably managed, and Production areas managed consistent with the conservation of biodiversity.			X						

³⁸⁸ <http://www.cbd.int/2010-target/goals-targets.shtml>

Target 4.2: Unsustainable consumption, of biological resources, or that impact upon biodiversity, reduced.			X					X	
Target 4.3: No species of wild flora or fauna endangered by international trade.		X							X
Target 5.1: Rate of loss and degradation of natural habitats decreased.	X				X	X	X		X
Target 6.1: Pathways for major potential alien invasive species controlled.									
Target 6.2: Management plans in place for major alien species that threaten ecosystems, habitats or species.									
Target 7.1: Maintain and enhance resilience of the components of biodiversity to adapt to climate change							X		
Target 7.2: Reduce pollution and its impacts on biodiversity								X	
Target 8.1: Capacity of ecosystems to deliver goods and services maintained.	X				X	X	X	X	X
Target 8.2: biological resources that support sustainable livelihoods, local food security and health care, especially of poor people maintained.	X								X
Target 9.1 Protect traditional knowledge, innovations and practices	X			X	X	X			X
Target 9.2: Protect the rights of indigenous and local communities	X			X	X	X			X

over their traditional knowledge, innovations and practices, including their rights to benefit sharing									
Target 10.1: All transfers of genetic resources are in line with the Convention on Biological Diversity, the International Treaty on Plant Genetic Resources for Food and Agriculture and other applicable agreements.		X							X
Target 10.2: Benefits arising from the commercial and other utilization of genetic resources shared with the countries providing such resources.		X							X
Target 11.1: New and additional financial resources are transferred to developing country Parties, to allow for the effective implementation of their commitments under the Convention, in accordance with Article 20.		X							
Target 11.2: Technology is transferred to developing country Parties, to allow for the effective implementation of their commitments under the Convention, in accordance with its Article 20, paragraph 4.		X							

*Measures: 1- Strategic Environmental Assessment policy adopted; 2 – National Capacity Self Assessment policy adopted; 3 – Green Procurement policy adopted; 4 – Integrated Biodiversity Management Information System (BMIS) operational; 5 - Biodiversity Protected Area Network better managed; 6 – Biodiversity protected area expanded; 7 – Key species protected

throughout their range; 8 – Point and diffuse sources of pollution (solid, liquid and gaseous) reduced); 9 – “Institutional”, legal, policy and advocacy framework for public participation in access and benefit-sharing measures improved.

Appendix 05.03 National Environmental Strategy - Principles

Criteria	BNBSAP Measures								
	1	2	3	4	5	6	7	8	9
National Environmental Strategy Principles (NES) ³⁸⁹									
- Improving the status quo of the environment			X		X	X	X	X	X
- Taking the precautionary measures to prevent environmental deterioration	X	X	X	X	X	X	X	X	X
- Imposing fines on the persons causing the pollution resulting in environmental damages		X	X	X	X	X	X	X	X
- The principle of partnership.	X								X

Measures: 1- Strategic Environmental Assessment policy adopted; 2 – National Capacity Self Assessment policy adopted; 3 – Green Procurement policy adopted; 4 – Integrated Biodiversity Management Information System (BMIS) operational; 5 - Biodiversity Protected Area Network better managed; 6 – Biodiversity protected area expanded; 7 – Key species protected throughout their range; 8 – Point and diffuse sources of pollution (solid, liquid and gaseous) reduced); 9 – “Institutional”, legal, policy and advocacy framework for public participation in access and benefit-sharing measures improved.

³⁸⁹ P. 16, DID0231

Appendix 05.04 National Environmental Strategy - Future vision

Criteria	BNBSAP Measures								
	1	2	3	4	5	6	7	8	9
National Environmental Strategy/First national Report Future Vision³⁹⁰									
BNBSAP National Biodiversity Committee									X
Regional and International Cooperation		X			X	X	X		X
Habitat conservation and restoration plan³⁹¹					X	X			X
Endangered species conservation					X	X	X		X
Invasive species management plan									
Large scale biodiversity monitoring program				X	X	X	X		X
Captive breeding programmes									
Flora and fauna gene banks							X		
Biodiversity database				X					
Biodiversity sector resourcing (personnel, education and training)									X
Biodiversity technical capability									X
Financing for biodiversity initiatives									X
Improved national legislation									X
Accession to international regulations		X							X
Expand and manage protected areas system					X	X			

³⁹⁰ First National Report Annex III pages 53-57 (DID0230)

³⁹¹ An equivalent statement is basically repeated so one of the two is listed

National urbanisation strategy									
Pollution control								X	
Regulatory management and control of hunting and trade in wildlife		X			X	X	X		
Ecotourism mainstreaming	X								X
Biodiversity mainstreaming	X	X			X	X	X		X
Sustained heritage use of biodiversity	X	X			X	X	X		X
Biodiversity mainstreaming into agriculture and fisheries sectors	X								X

*Measures: 1- Strategic Environmental Assessment policy adopted; 2 – National Capacity Self Assessment policy adopted; 3 – Green Procurement policy adopted; 4 – Integrated Biodiversity Management Information System (BMIS) operational; 5 - Biodiversity Protected Area Network better managed; 6 – Biodiversity protected area expanded; 7 – Key species protected throughout their range; 8 – Point and diffuse sources of pollution (solid, liquid and gaseous) reduced); 9 – “Institutional”, legal, policy and advocacy framework for public participation in access and benefit-sharing measures improved.