



The 7 Steps SEA and EIA Practical Training



Outline

- **PART 1- SEA AND EIA FRAMEWORK**
- **PART 2- STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA)**
- **PART 3: ENVIRONMENTAL IMPACT ASSESSMENT (EIA)**

The Essence of SEA and EIA

ASSESSMENT TYPE	ACTIVITY FOCUS	RESPONSIBILITY	OUTPUTS
Strategic Environmental Assessment (SEA)	<ul style="list-style-type: none"> • Policies • Plans • Programmes <p><u>(Open Discussion on Examples)</u></p>	<ul style="list-style-type: none"> • Organs of State (Line Ministries, Parastatals, Regional Councils, Municipalities) 	SEA Report with an Strategic Environmental Management Plan (SEMP) e.g. the SEA Reports for the Kunene, Erongo, Hardap and Karas Regions
Environmental Impact Assessment (EIA)	<ul style="list-style-type: none"> • Project Specific <p><u>(Open Discussion on Examples)</u></p>	<ul style="list-style-type: none"> • Proponent (Private person, private entity such as companies) 	EIA Report with an Environmental Management Plan (EMP)

Challenges in SEA and EIA Processes



- **Competing Interests and Multi- Stakeholders Platforms !!!**



SEA and EIA Processes Parties - Outcome

Organ of State
and SEA Process

Environmental
Administration

Environmental
Assessment
Practitioner (EAP)

**SEA
Process**

Consulted
Stakeholder in
SEA and EIA
Process

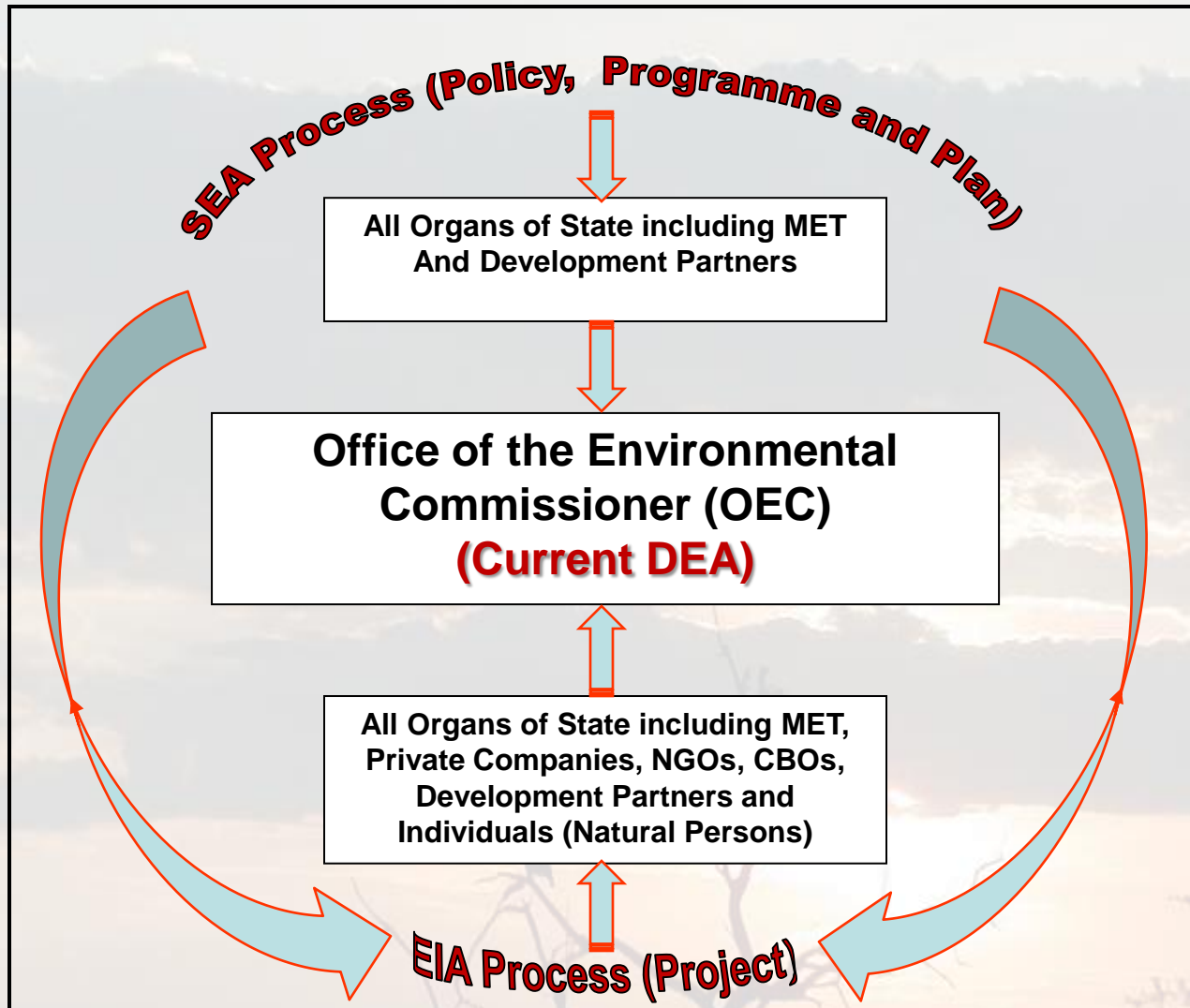
Proponent
and EIA
Process

**EIA
Process**

*“We only have one big circle around us and that is our **PLANET EARTH**. Hence we are all in this together and there is no need for environmental territorial boundaries because we are all working towards a better and sustainable greener **PLANET**” - (S. Mwiya 2007)*



SEA and EIA Management



Roles and Responsibilities in SEA and EIA Processes

- 1. Environmental Administrator (DEA / OEC)**
- 2. Organ of State and SEA**
- 3. Proponent**
- 4. Consulted Stakeholder**
- 5. Environmental Assessment**
- 6. Practitioner (EAP)**

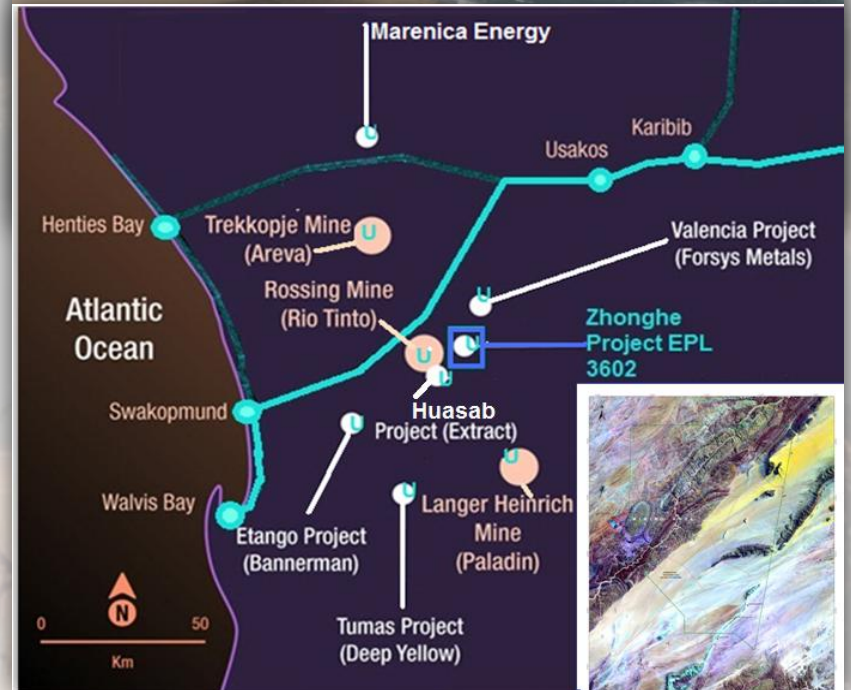
Examples of SEA in Namibia

Regional / Programme SEA Processes:

1. SEA for Kunene Region
2. SEA for Erongo Region
3. SEA for Hardap Region
4. SEA for Karas Region

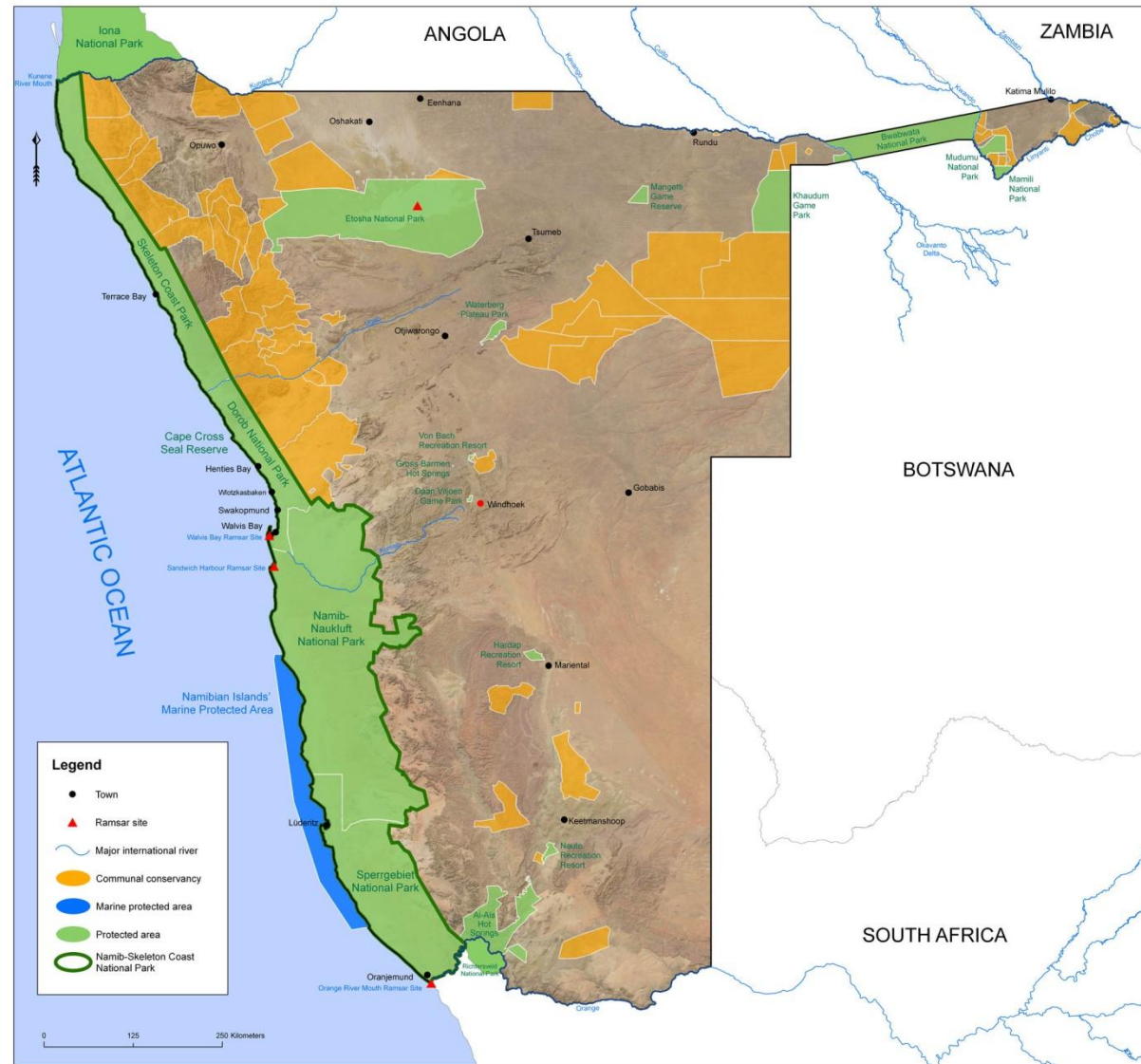
Sector SEA Process:

1. SEA for the Uranium Rush in the Erongo Region



Strategic Focus of the Coastal SEAs

1. A description of current land uses, impacts, threats and pressures along the coastal zone, with recommendations for prevention and mitigation overall and in relation to Policies, Plans and Programmes (PPPs), including spatial data for use in the DST;
2. A description of environmental / biodiversity conservation and management gaps problems and implementation difficulties of current environmental / biodiversity conservation and management targets;
3. The outcomes of the integration of (i) and (ii) above in relation to existing PPPs.



Coastal SEA Processes

1. The Namibian coastal SEAs can be seen as institution-centred regional SEAs, focused on assisting the decision-making process at the regional level.
2. The assessments were undertaken for reaching a common understanding and a shared strategic perspective on the economic, social and environmental interactions necessarily involved in the coastal development of the four regions.
3. Stakeholder involvement has focused on delivery of planning documents and data, methodologies related to the analysis of land use suitability, including the analysis of biodiversity trends as well as on discussions on individual land use plans.
4. An important element of the project has been the establishment of the NACOMA SEA GIS – a GIS mapping system covering all major landscape, biodiversity, infrastructure, land use and PPP data of the coastal regions.
5. The available physical, biological and land use data have been analysed in an integrated way using multi-criteria evaluation to enable trade-offs between economic, social and environmental issues in identifying opportunities.

Erongo SEA Recommendations

1. **Sandwich Harbour** - The SEA classified the area as of very high conservation priority. In line with the new Wetland That should be declared a Marine Protected Area
2. **Walvis Bay Wetland** - The SEA classified the area as of very high conservation priority.
3. **Dune belt** - The dune belt should be included in the Walvis Bay Nature Reserve, and free zones for offroad driving should be maintained east of Walvis Bay and east of Long Beach.
4. **Walvis Bay** - Resolve the land use and zoning issues that have caused controversy for a long period.
5. **Swakopmund** - Portions of the land between Mile 4 and the Mile 4 Saltworks be assessed for possible future urban development opportunities
6. **Mile 4 Saltworks** - No conflicts seem to exist.
7. **Brandberg Massif** - The SEA classified the area as of very high conservation priority.
8. **Cape Cross Nature Reserve** - New development should be subject of environmental impact assessment.
9. **National West Coast Tourist Recreation Area** - MET should develop a new conservation management regime, which satisfies the requirements for improved integration of growing land uses and nature protection.



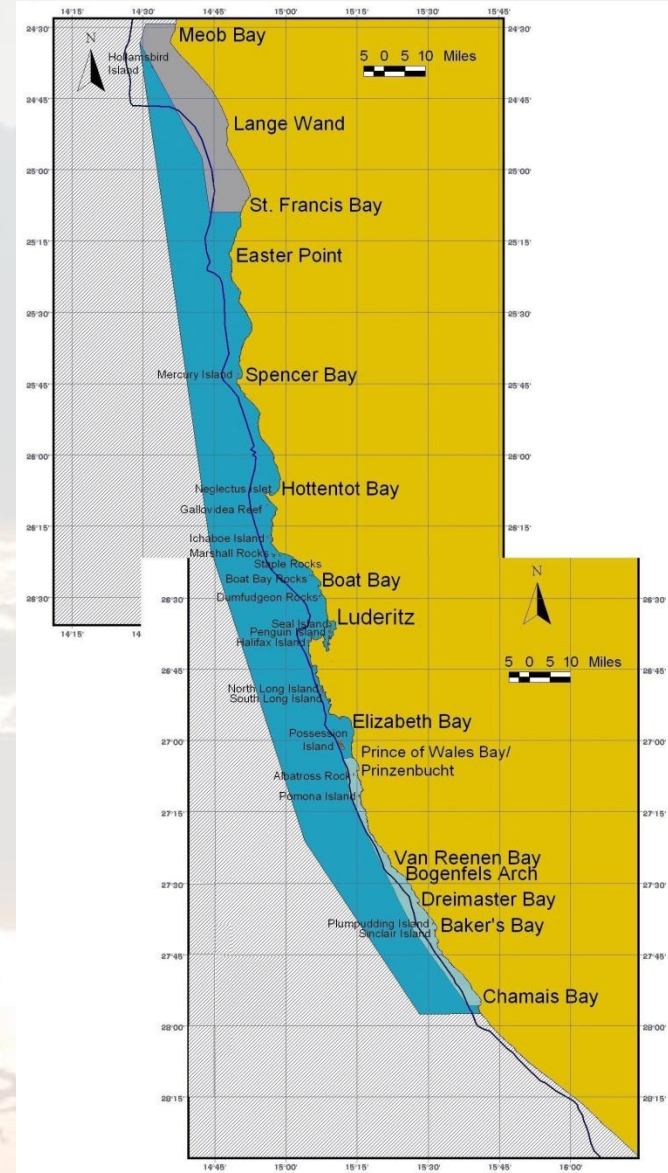
Kunene SEA Recommendations

- 1. Skeleton Coast National Park** - Master Plan should be agreed upon and enforced. New management plans for the Skeleton Coast National Park, the TFCA, and the proposed extension to Etosha should establish target habitats for conservation and species
- 2. Conservancies** - In order to develop a wider palette of tourist services in the Skeleton Coast National Park with the involvement of the conservancies it is of the utmost importance that the Master Plan adopts a multiple use framework for the management of the park, which includes the three
- 3. Kunene River Mouth** - The building of a dam at Epupa will require that a management framework be set up covering the entire lower Kunene River for successful management of the TFCA.



Hardap SEA Recommendations

- 1. Namib Naukluft Park** - The entire terrestrial coastal environment of the Hardap region falls within the Namib Naukluft Park (NNP), while the inshore zone from Meob Bay and southwards forms part of the Namibian Islands Marine Protected Area. The development opportunities are heavily constrained by either lack of resolution in the knowledge of the distribution of biodiversity or lack of infrastructure and support from nearby towns.
- 2. Namibian Islands' Marine Protected Area** - The Namibian Islands' Marine Protected Area (NIMPA) was proclaimed in February 2009, following approval by Cabinet on 2 September 2008, and finally launched in July 2009 as the first Namibian MPA following the new global framework for marine habitat protection as a means to promote sustainable marine resource use and marine biodiversity conservation.
- 3. The Meob Bay – Conception Bay Area** - The terrestrial part of the Hardap Region coastal area, which wholly falls within the protected area of the Namib Naukluft National Park, is characterised now by only the remnants of human settlements.



Karas SEA Recommendations

1. **Namib Naukluft Park** The management goals, biodiversity characteristics and development potentials of the Namib Naukluft Park.
2. **Namibian Islands' Marine Protected Area** - As for the Namib-Naukluft Park the development opportunities are heavily constrained by either lack of resolution in biodiversity or lack of infrastructure and support from nearby towns. This is especially the case near Lüderitz where the entire coastal area is classified as important.
3. **Sperrgebiet National Park** -The vision for the SNP is to protect, manage and sustainably develop the SNP within the context of the greater Succulent Karoo, Nama Karoo, Namib and Coastal ecosystems, to enhance conservation and socio-economic values for the region and nation and to place primary importance on the globally significant biodiversity and landscape values of the area.
4. **Lüderitz** - Land use and urban development within the area under the jurisdiction of the Lüderitz Town Council are subject to both policy and regulatory practices. As per the Town Planning Ordinance of 1954, Lüderitz has an approved Town Planning Scheme in place: The Lüderitz Town Planning Amendment Scheme No. 5 of October 2002.
5. **Oranjemund** - Establishment of the basic regulatory framework for land use development for what is to become a proclaimed town.

Examples of EIA Processes in Namibia

EIA are widely undertaken in various sector in Namibia and in particular in the mining and Petroleum Industries. A number of EIAs covering various sectors are completed annually include the following:

1. EIAs for various mining projects commissioned by private companies;
2. EIAs for various petroleum projects commissioned by private companies;
3. EIAs for various land use and infrastructure development commissioned by private / public companies and local authorities;
4. EIAs for various water infrastructure development commissioned by NamWater/ Ministry of Water Affairs and Forestry as well as private companies and NGOs;
5. EIAs for Tourism development projects commissioned by private companies, Ministry of Environment and Tourism, NWR, and NGOs;
6. Other EIA for various sectors commissioned by private, public, private individuals and NGOs.

SEA and EIA Regulatory Framework

1. **Namibian Constitution - Article 95 (I) of the Namibian Constitution** commits the Government of Namibia to sustainable utilisation of Namibia's natural resources for the benefit of all Namibians;
2. **Green Plan** - "Namibia's tourism industry is based largely on its natural resources such as wildlife, wilderness and scenery. A sustainable tourism industry must be managed carefully to complement and broaden this resource base, not undermine it;"
3. **Environmental Assessment Policy:** The principle of achieving and maintaining sustainable development must underpin all policies, programmes and projects undertaken within Namibia. In particular, the wise utilization of the country's natural resources, together with the responsible management of the biophysical environment, must be for the benefit of both present and future generations;
4. **Environmental Management Act, (Act No. 7 of 2007)** - The Act gives general principles for the management of the environment and natural resources. Once implemented the Act will require Environmental Assessment for policies, plans, programmes and projects and related activities.

SEA and EIA Legal Basis

The legal basis for the development of the regulations is provided for in the Part X: General Provisions, Section 56 of the Environmental Assessment Act, 2007 (Act No. 7 of 2007) and provided for in Article 95 of the Constitution as follows:

- *"the State shall actively promote and maintain the welfare of the people by adopting, inter alia, policies aimed at maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilisation of natural resources on a sustainable basis for the benefit of all Namibians both present and future" Article 101 further states that; "the principles embodied within the constitution "shall not of and by themselves be legally enforceable by any court, but shall nevertheless guide the Government in making and applying laws." The courts are entitled to have regard to the said principles in interpreting any laws based on them."*

Regulatory Linkages

Namibian Constitution
Article 95 of the Constitution



Policy, Bill then Acts of Parliament on EMA
Makes provisions for the Development of the different types of Regulations



Regulations

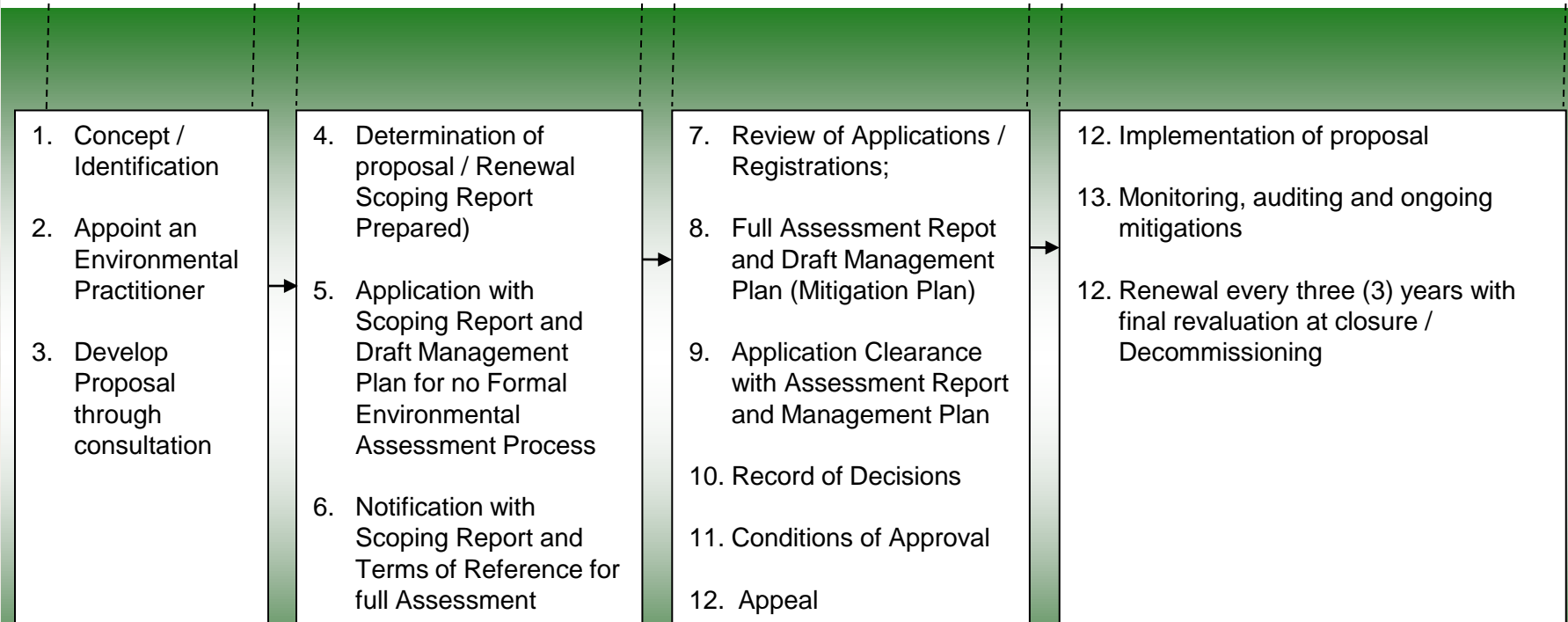
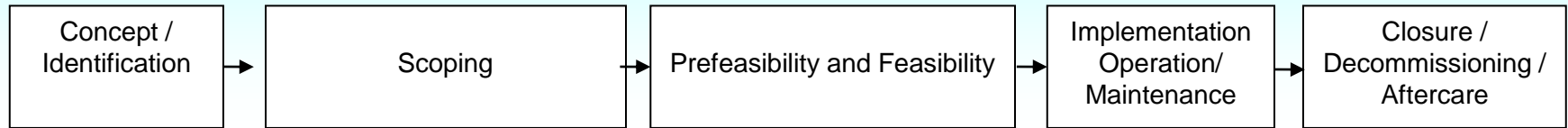
1. Specific or General Regulations covering various aspects of the SEA and SEMP, EIA and EMP are developed as provided for in the Act.
2. Regulations may make general provisions and guidance on SEA, EIA and EMP with the specific guidance on the content etc to be included in the guidelines and procedures documents,



Procedures, Rules and Guidelines

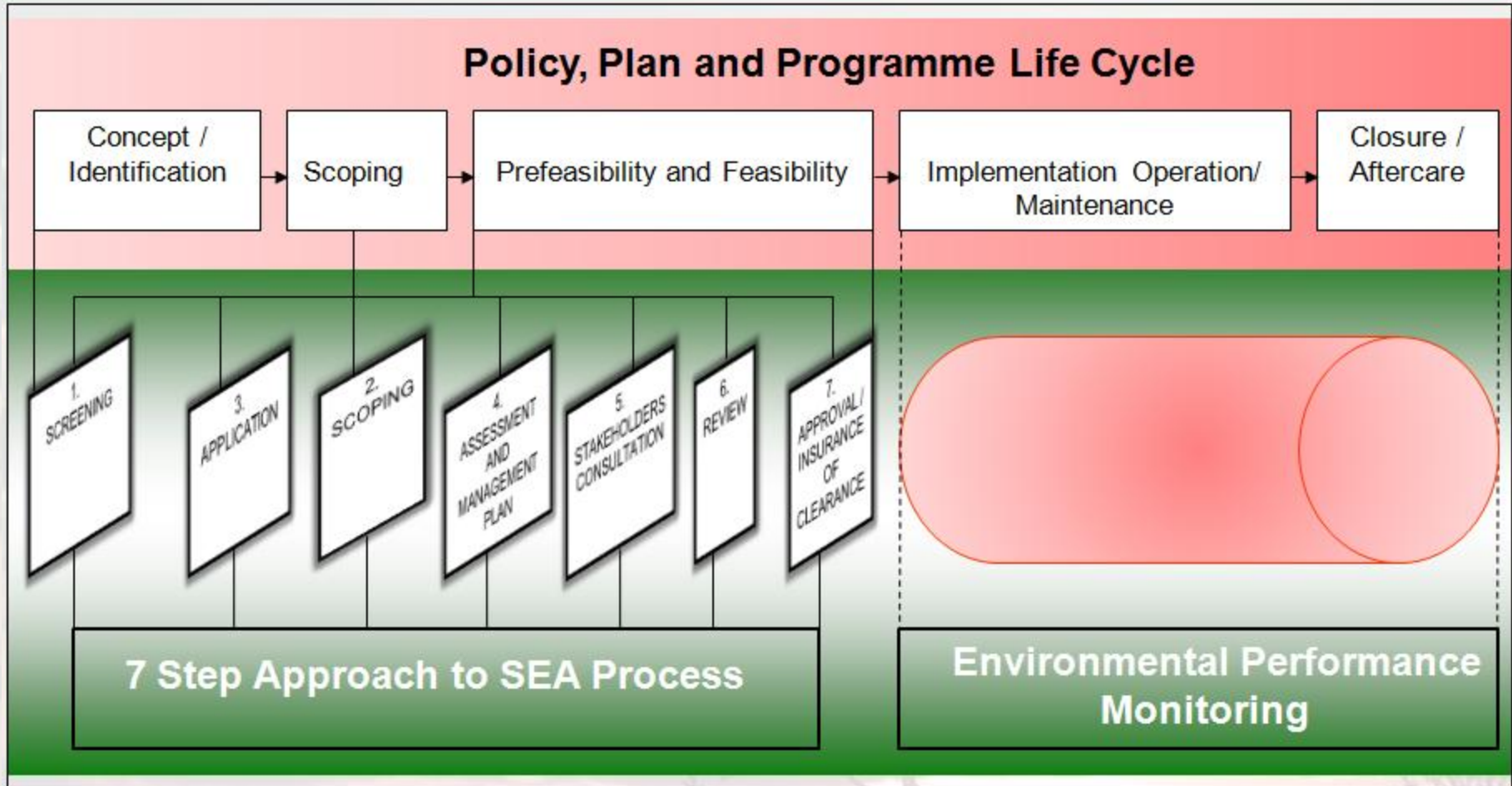
In Accordance with the Provisions of the Act, Regulations and based on the requirements of SEA and EIA, Procedure, Rules and / or Guidelines are prepared for SEA and SEMP, EIA and EMP

Policy, Plan, Programme or Project Life Cycle



Environmental Assessment Procedure

Introduction to the SEA 7 Steps



Step 1: Screening

An early step in the SEA process is “screening”. This is the exercise of deciding whether an SEA is appropriate and legally required.

1. Organ of State has to check, whether a proposed policy, plan or programme has to undergo a full SEA;
2. EMA and Environmental Assessment Regulations clearly define, when this is the case. The Schedule lists those plans requiring SEA such as rezoning of land or route determination / planning;
3. The Organs of State such as the Line Ministry, Parastatals, Agencies, Regional or Local Authorities are responsible for developing the policy, plan or programme and, therefore, also for the clarification whether a SEA is required or not;
4. In solving this question, the Organs of State might search for help from the OEC.

Step 1: Examples on Screening

PART VII - ENVIRONMENTAL ASSESSMENT

Listing of activities and prohibition in respect of listed activities

27. (1) The Minister, after following the consultative process referred to in section 44, may list, by notice in the *Gazette*, activities which may not be undertaken without an environmental clearance certificate.

(2) Activities listed, under subsection (1), may include activities in respect of any of the following areas -

- (a) land use and transformation;
- (b) water use and disposal;
- (c) resource removal, including natural living resources;
- (d) resource renewal;
- (e) agricultural processes;
- (f) industrial processes;
- (g) transportation;
- (h) energy generation and distribution;
- (i) waste and sewage disposal; chemical treatment;
- (j) recreation; and
- (k) any other area which the Minister considers necessary for the purpose of listing.

(3) Despite any other law to the contrary, a person may not undertake a listed activity, unless the person is a holder of an environmental clearance certificate in relation to that activity.

Step 2: Scoping

Scoping is a most important phase at the beginning of an SEA, which sets the focus and establishes the content of the SEA, the relevant criteria for assessment and sets these out in a “scoping report”.

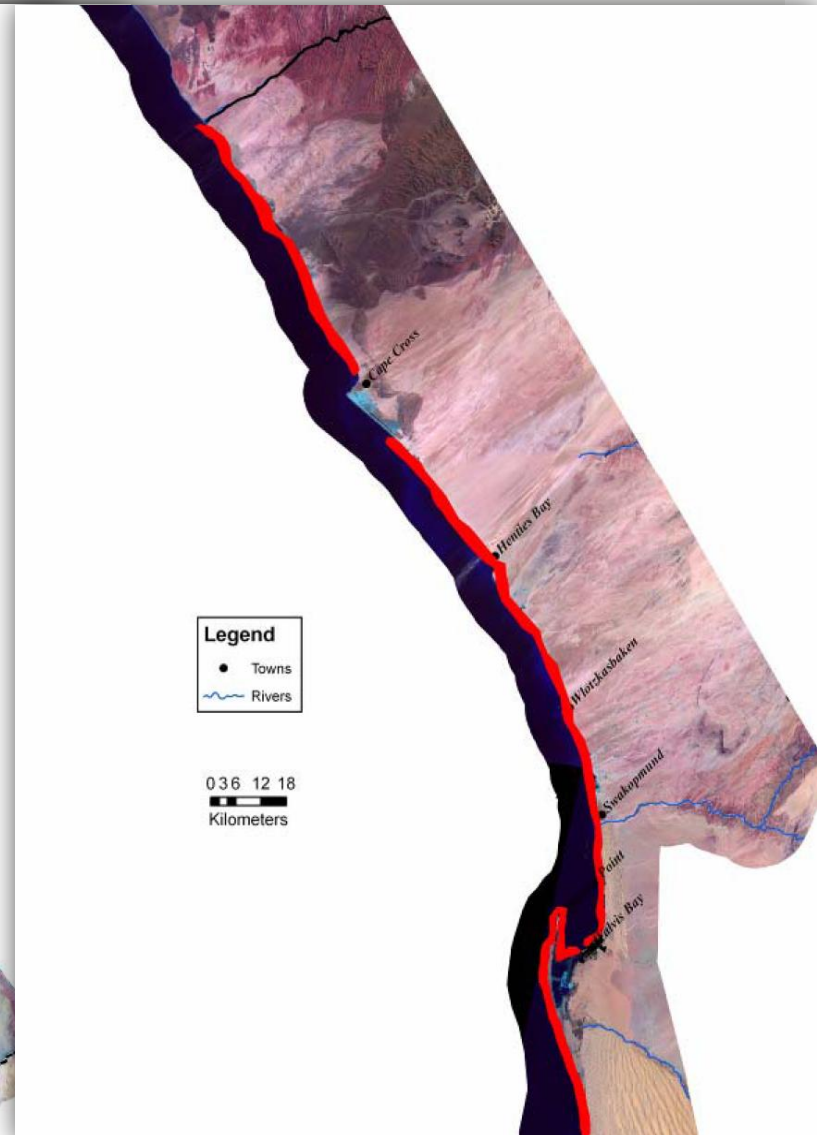
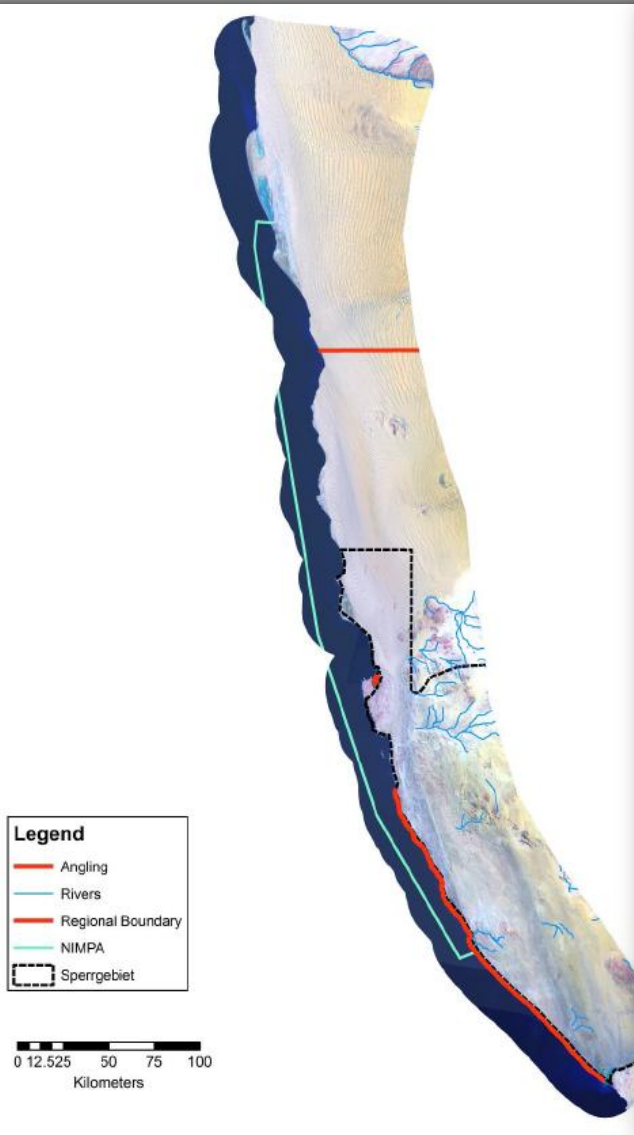
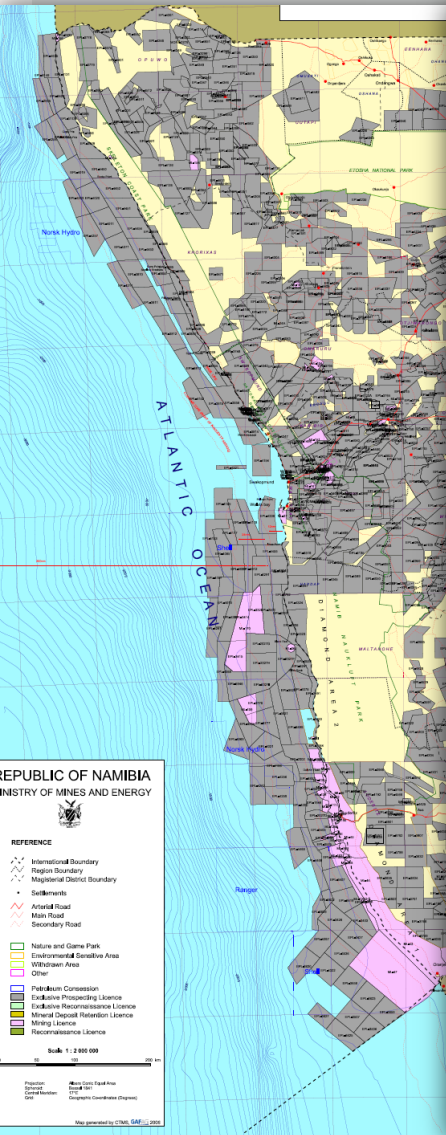
1. Since the interactions of a policy, plan or programme with the environment can be quite complex, it is most important to set a focus on the most important issues. Otherwise the assessment might become too complex and the required resources for its elaboration might not be in good relationship any more with its outcome.
2. It is important to understand, that an SEA is not a comprehensive scientific study but the systematic assessment of those facts which are relevant for the decision-making on the policy, plan or programme.
3. The key findings of the scoping will be condensed into the scoping report together with the ToR where a full assessment is required or an SEMP if no full assessment is necessary.

Step 2: Examples of Scoping Outcomes

Accordingly, gradients in biodiversity were estimated by mapping the Distribution of the following 20 priority areas or habitats for conservation:

1. Lichen distribution
2. Main habitat for Welwitschia
3. Main habitat for Quiver tree
4. Main habitat for Mopane
5. Main breeding zone for Damara tern
6. Breeding colonies of Fur seal
7. Zone of medium herbivore abundance
8. Zone of regular Elephant occurrence
9. Lion density above 0.004/ km²
10. Leopard density above 0.005/km²
11. Mountain zebra density above 0.25/km²
12. Wetlands of global importance
13. Distance less than 30 km from the Escarpment
14. Rock outcrops and cliffs
15. Distance less than 140 km from Etosha
16. Distance less than 2 km from regularly vegetated ephemeral rivers
17. Distance less than 5 km from the Brandberg massif
18. Zones of extensive coverage of higher plants
19. Areas of high topographic complexity
20. Rocky shoreline

Step 2: Examples of Scoping Outcomes



Step 3: Submit Application / Notification

The Organ of State – through the EAP - submits its notification / application of the intended SEA to the OEC. The EAP must include the scoping report including the ToR for the SEA as described under step 2.

1. This is the first time, where the OEC gets officially notice of the intended SEA. OEC might have been, however, already been informally involved for advice during the previous steps.
2. At this point, the OEC acknowledges the receipt of the notification and might require changes to the scoping report / the ToR.

Step 4: Assessment and Management

The assessment step is the core of SEA where the comprehensive assessment of all relevant impacts of the proposed policy, plan or programme including possible planning alternatives takes place.

For being able to identify these impacts, you have to have a fairly good knowledge on your ecosystem you are intervening with. Therefore, the assessment usually starts with a baseline analysis.

The baseline is the existing situation of the environment including its future evolution if the policy, plan or programme is not implemented.

Baseline information provides the basis for predicting and monitoring environmental effects and helps to identify environmental problems and ways of dealing with them. However, baseline analysis should be done only to the extent of relevance for the assessment.



Step 4: Assessment Methodologies

PHASE 1: Desk Study for SEA Strategic Implementation

- *Identifying Relevant Data, Policies, Plans and Programmes*
- *Conduct Initial Data Collection Process*
- *Testing SEA Objectives*
- *Predicting the Effects of Specific Policies, Plans or Programmes*

PHASE 2: SEA Strategic Development

- *Collecting Detailed Baseline Information*
- *Policies, Plans, Programmes Objectives and SEA Objectives*
- *Appraising Strategic Alternatives (Reasons for eliminating alternatives must be documented. Justifications for these choices must be robust, as they can affect decisions on major developments)*
- *Consulting on the Scope of SEA*
- *Consulting on the Scope of SEA*

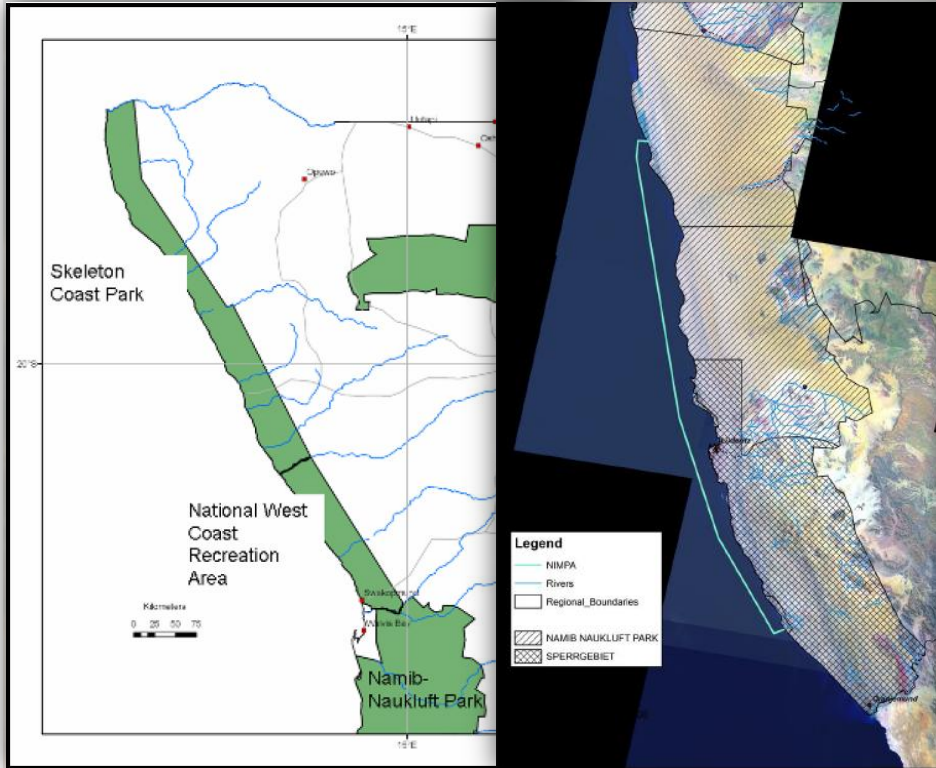
PHASE 3: Influence and Impact Analysis

- *Predicting the Effects of the Plan or Programme, Including Alternatives*
- *Evaluating Policy, Plan or Programme Effects, Including Alternatives*
- *Preparing the Draft SEA Report*

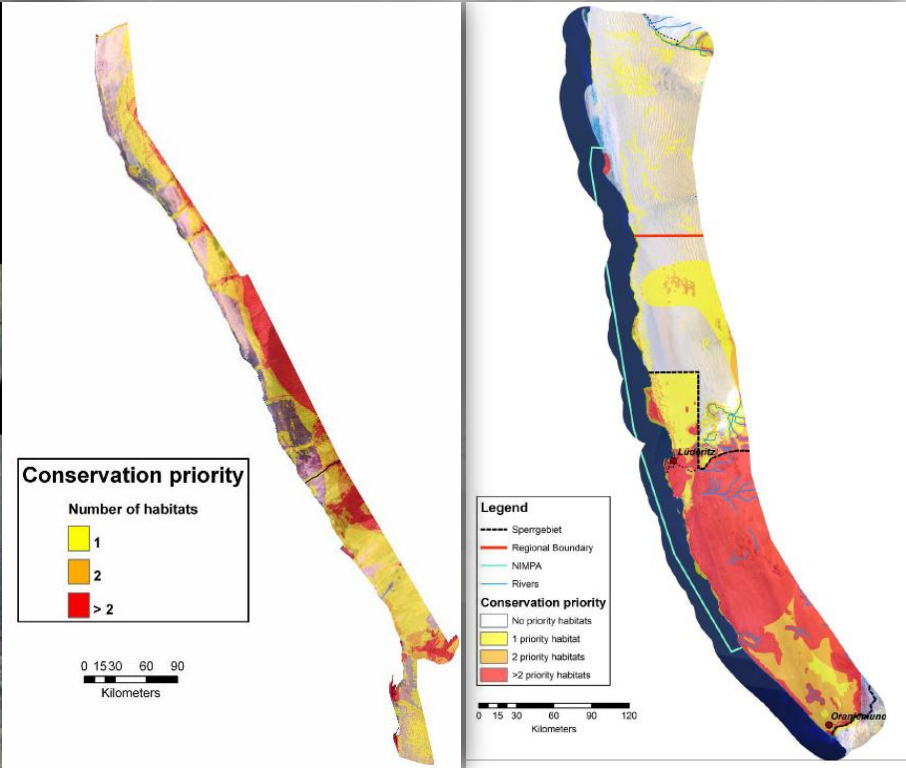


Step 4: Example of Assessment Outcomes

Protected Areas



Biodiversity



Step 6: Review

The competent authority / OEC review the submitted SEA Report including the Environmental Management Plan. It might involve further external support or invite further public comments to be in a position to have a founded decision.

1. The Organ of State had submitted already an application / notification form during step 3. Now the following documents must be supplemented to complete the application and enable the competent authority / OEC to review the SEA in total:
 - ✓ The full Strategic Environmental Assessment Report about the proposed policy, plan, programme;
 - ✓ The Draft Environmental Management Plan (EMP).
2. The competent authority / OEC will review the documents with the assistance of local and/or outside experts, sector ministries, and any other organisations / individuals as considered necessary. The cost of external review shall be borne by the Organ of State.

Step 5: Stakeholders Consultation

Public / Stakeholders consultation is a key element for SEA. Persons who may be affected by the activity must be notified and given a chance to inspect the SEA Report and make submissions on it.

1. The draft SEA Report is a key stage for public / stakeholders consultation.
2. Identified interested and affected parties get access to the draft SEA Report and have the opportunity to submit comments in writing. These comments have to be included in the final report.
3. If meetings are held for public / stakeholders commenting, smaller, focused meetings may be preferable to ensure adequate time for comment, rather than larger meetings where few people have the opportunity to speak. There is a variety of ways to gather opinion from the more vulnerable groups and ensure that they can meaningfully participate, e.g. surveys, interviews and meetings.
4. The scoping report / ToR should include communication plan. The EAP has to open and maintain a register of names and addresses of all persons or institutions who contributed written or oral statements during different phases of the SEA Process.

Step 5: Stakeholders Consultation (PPP)

- Public and Other Relevant Stakeholder Consultation and Screening (Workshops and Meetings)
- Assessment of Significant Changes
- Decision Making and Provision of Information
- Preparing and Submission of the Final SEA Report and the Maps



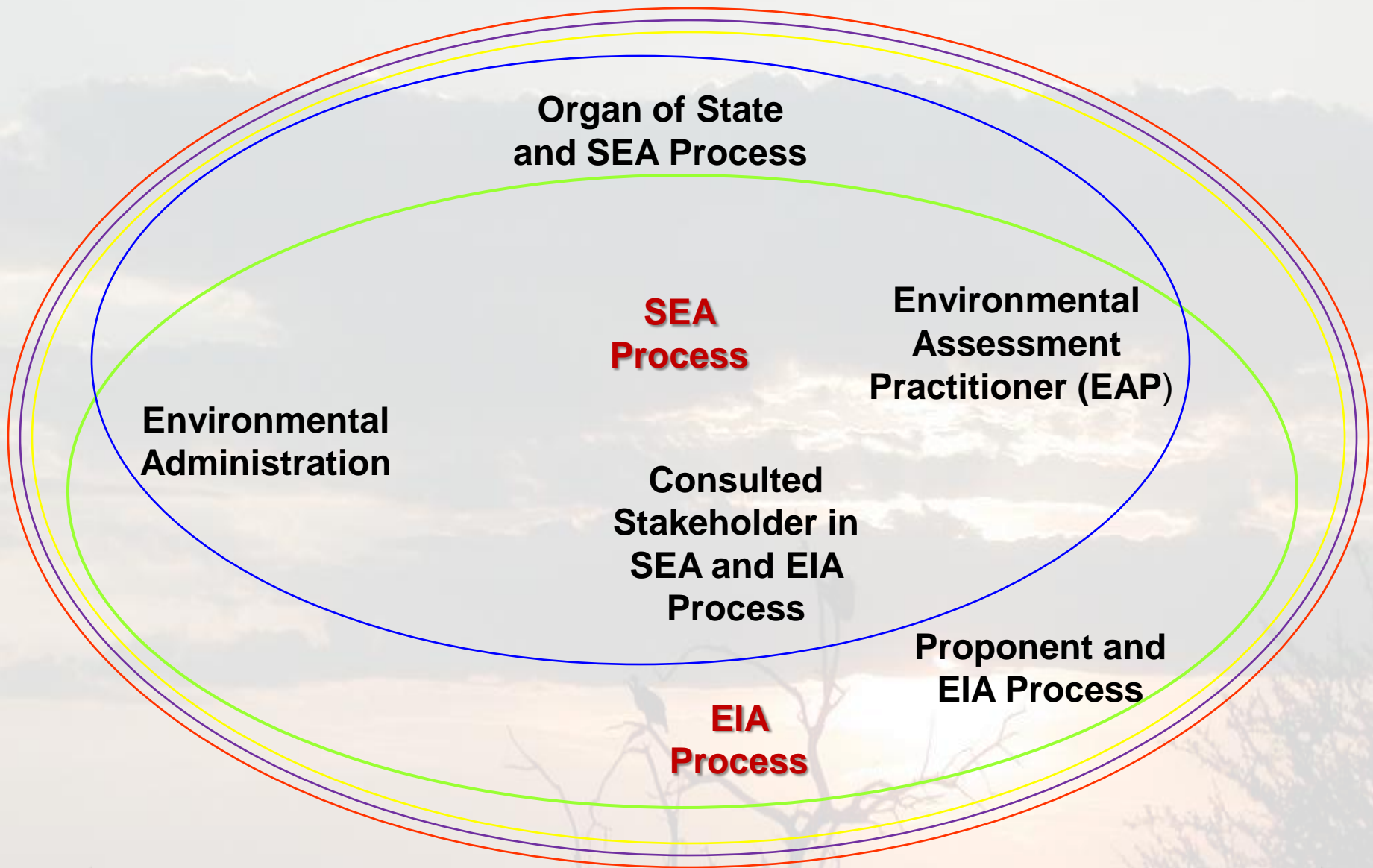
Step 7: Approval / Issuance of Clearance Certificate

The final decision on the SEA will be made by the Minister of Environment and Tourism through the DEA for Now or the OEC for the EMA. It can result in approval, approval under conditions / amendments or rejection of the SEA Report.

1. The DEA / OEC will send the SEA Report / environmental management plan including received comments and his / her recommendations based on the review to the Environmental Minister.
2. If the SEA / environmental plan has been approved, the policy, plan or programme can be published by the Organ of State in the Gazette.

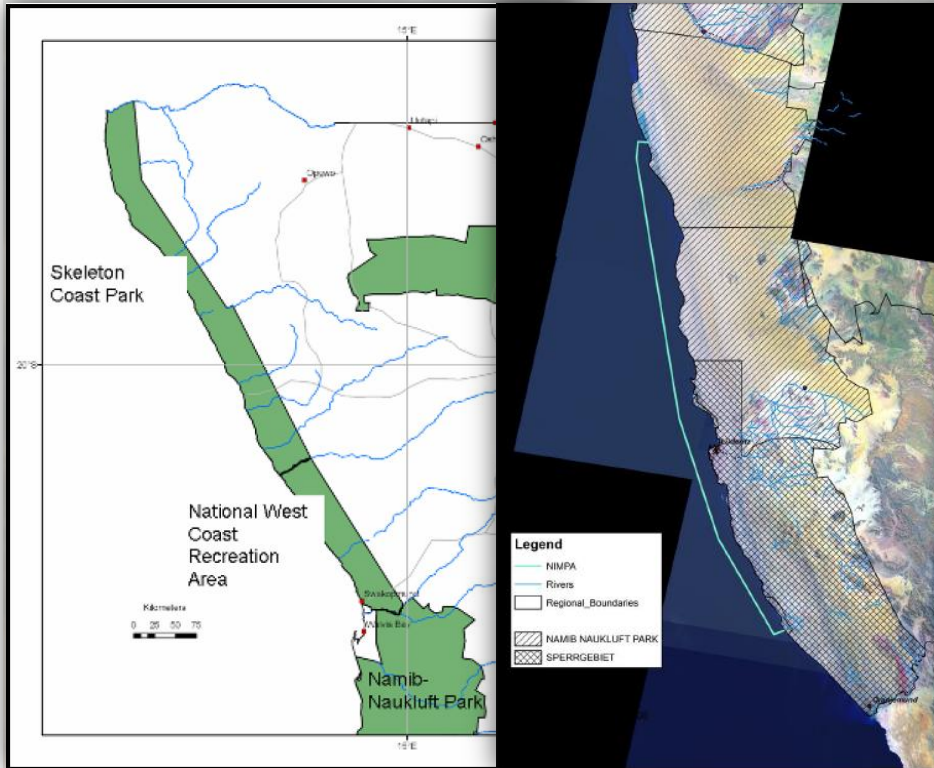


SEA and EIA Processes Parties - Exercise

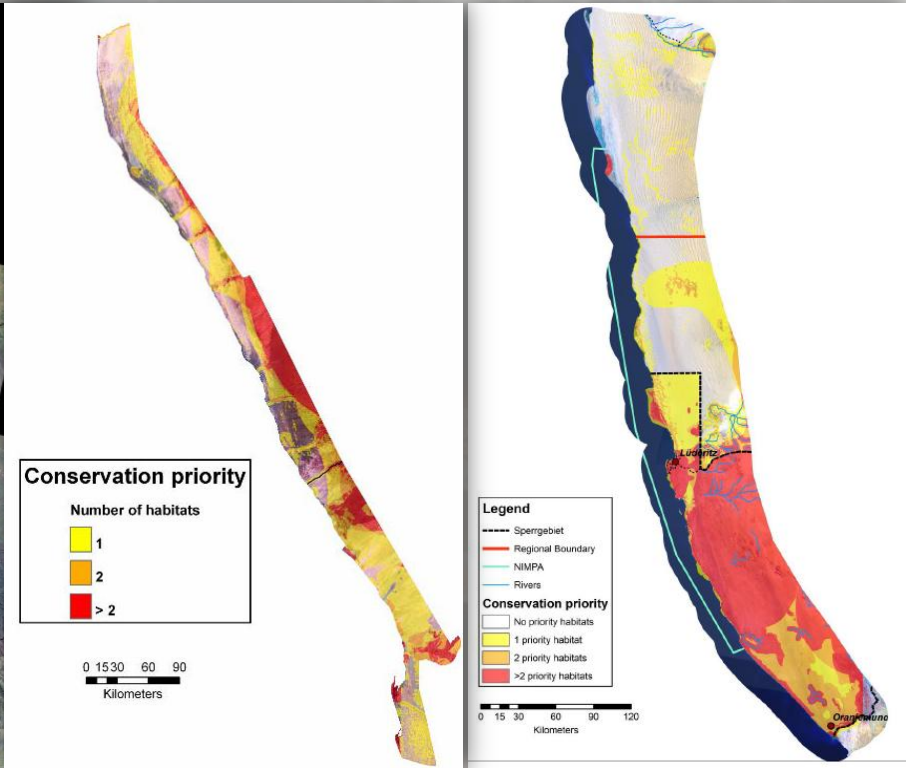


Example of the SEA Assessment Outcomes

Protected Areas



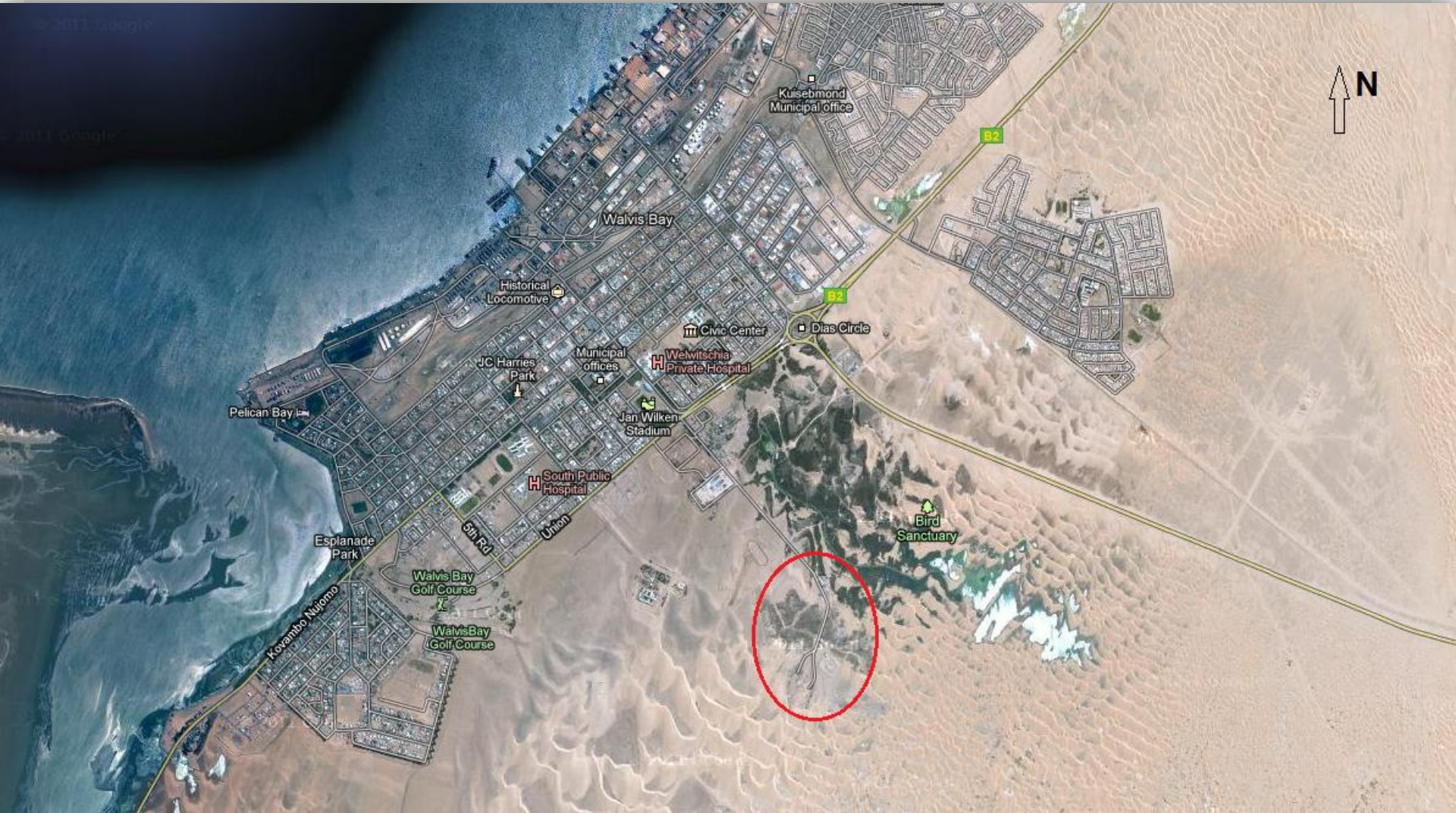
Biodiversity



Coastal Waste Disposal Sites Example - Lüderitz



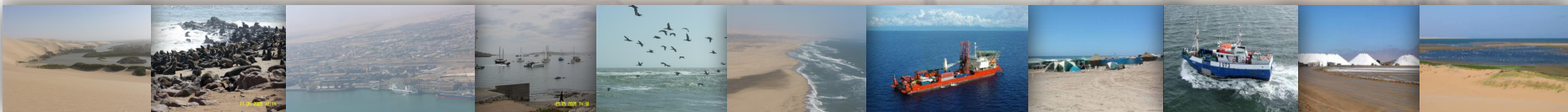
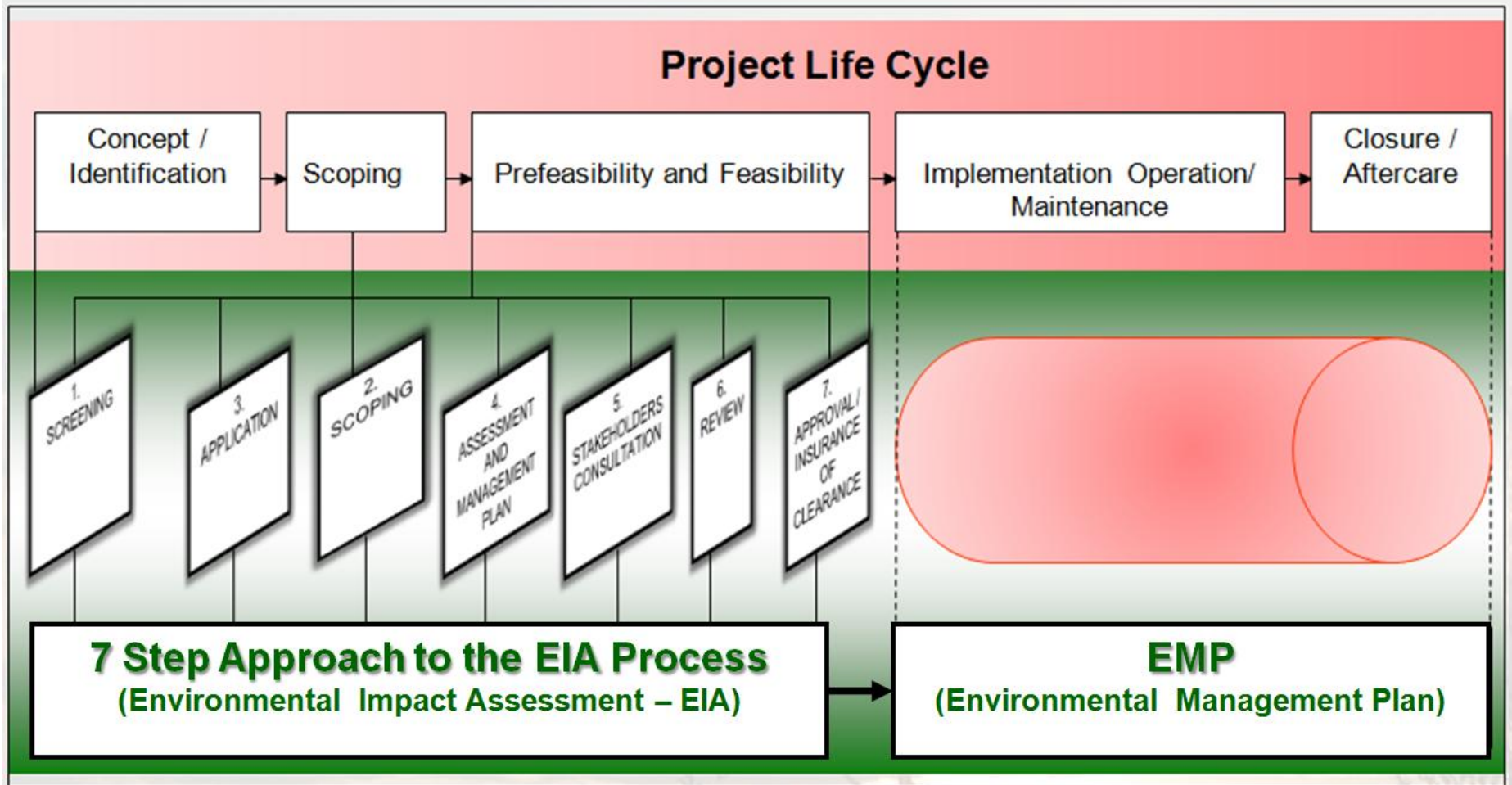
Coastal Waste Disposal Sites Example – Walvis Bay



Coastal Waste Disposal Sites Example - Swakopmund



Introduction to the EIA 7 Steps



Step 1: Screening

An early step in the EIA process is “screening”. This is the exercise of deciding whether an EIA is appropriate and legally required.

1. In a first step, the proponent of an activity has to check, whether his / her proposal has to undergo EIA.
2. The Schedule of the Environmental Assessment Regulations lists those activities requiring EIA. Examples for categories of projects with mandatory EIA include activities such as large infrastructure projects (roads, railways, airports, transmission lines, canals, pipelines, waste / water treatment etc.), large manufacturing and processing facilities (power stations, refineries, production plants etc.), larger housing projects (hotels, resorts etc.), mining activities (prospecting, mining, processing of minerals, gas / oil extraction etc.), and larger agricultural activities (aquaculture projects, veterinary fences, alterations of wetlands, boreholes, peat extraction).
3. Certain projects maybe subject to certain exemptions.

Step 2: Scoping

Scoping is a most important phase at the beginning of an EIA, which sets the focus and establishes the content of the EIA, the relevant criteria for assessment and sets these out in a “scoping report”.

1. Since the interactions of project with the environment can be quite complex, it is most important to set a focus on the most important issues.
2. It is important to understand, that an EIA is not a comprehensive scientific study but the systematic assessment of those facts which are relevant for the decision-making on the project.
3. The key findings of the scoping will be condensed into the scoping report.
4. The scoping report will propose in detail the approaches, procedures and methods envisaged for the assessment.
5. Scoping procedures and methods, such as checklists and matrices, can be used to identify the key environmental issues of relevance for the project. The Environmental Commissioner will later check the scoping report (step 3) and has the power to vary the scope, procedures and methods for the assessment.

Step 2: Specialist Studies Undertaken

A number of specialist studies will be undertaken as part of the full Environmental Assessment process covering the EIA and the development of the EMP. The specialist studies were undertaken by specialist consultants and the results of these studies comprised the full EIA and EMP reports. The following is a summary of the key specialist studies undertaken with respect to the proposed uranium mine project covering the proposed mine site and surrounding areas within the EPL 3602:

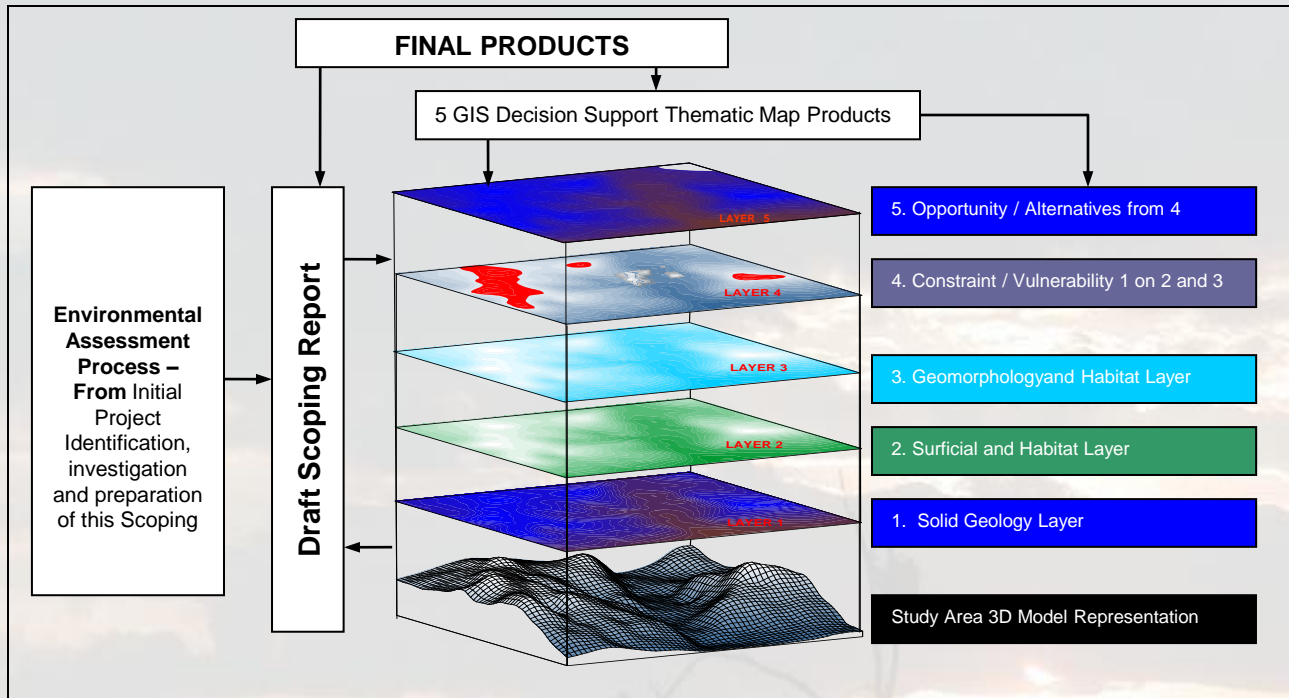
1. Visual impact;
2. Air Quality;
3. Surface and Groundwater;
4. Socio-economic;
5. Current and potential land use zonations;
6. Fauna;
7. Flora;
8. Geomorphology, geology and hydrogeology;
9. Archaeological setting;
10. Radiological;
11. Others to be indentified during consultation process and full Environmental Assessment process.

Step 3: Submit Application / Notification

The proponent – through the EAP - submits its notification / application of the intended EIA to the competent authority and pays the required fee. The EAP must include the scoping report for the EIA as described under step 2.

1. This is the first time, where the competent authority / OEC gets officially notice of the intended EIA. DEA / OEC might have been, however, already been informally involved for advice during the previous steps.
2. At this point, the competent authority acknowledges the receipt of the notification and forwards it to the OEC.
3. The OEC might require changes to the scoping report / the ToR.
4. The OEC will record the application in an environmental assessment register.
5. The regulations made under the Environmental Management Act give more detail about what information must be included in this register.

Step 4: Assessment and Management



Step 5: Stakeholders Consultation

Persons who may be affected by the activity must be notified and given a chance to inspect the draft assessment report and make submissions on it.

1. The notification to interested persons (stakeholders) could be done by publication of a notice in local newspapers. The Regulations give more details about the notification process.
2. The proponent take care of the notification which is currently the case.
3. The notification must say that interested persons can view the full application and assessment report at specific locations. The OEC may also decide that a public hearing has to be convened as an appropriate means of public involvement.
4. The public hearing must be announced in line with certain requirements of the EMA. The proponent should attach the received comments to the final version of the EIA Report.

Step 6: Review

The OEC reviews the EIA Report including the Environmental Management Plan. It might involve further external support to have a founded decision.

1. The OEC will review the documents and might involve local and/or outside experts, sector ministries, and any other organisations / individuals as considered necessary.
2. The cost of external review shall be borne by the proponent.

Step 7: Approval / Issuance of Clearance Certificate

The final decision on the Clearance Certificate will be made by the OEC. It can result in approval, approval under conditions / amendments or rejection of the Clearance.

1. The OEC will notify the proponent of the decision made, keep a record of decision and make the same publicly accessible.

SEA and EIA Management and Monitoring Plans

1. The Strategic Environmental Management Plan (SEMP) as for an SEA and an Environmental Management Plan (EMP) as for an EIA) are both key documents and should consists of the set of measures to be taken during implementation and operation to enhance positive impacts and eliminate, offset, or reduce adverse negative environmental impacts to acceptable levels. Also included in the plan are the actions needed to implement them.
2. ***Monitoring allows the actual significant environmental effects of implementing specific policies, plans, programmes or project to be tested against those predicted.***

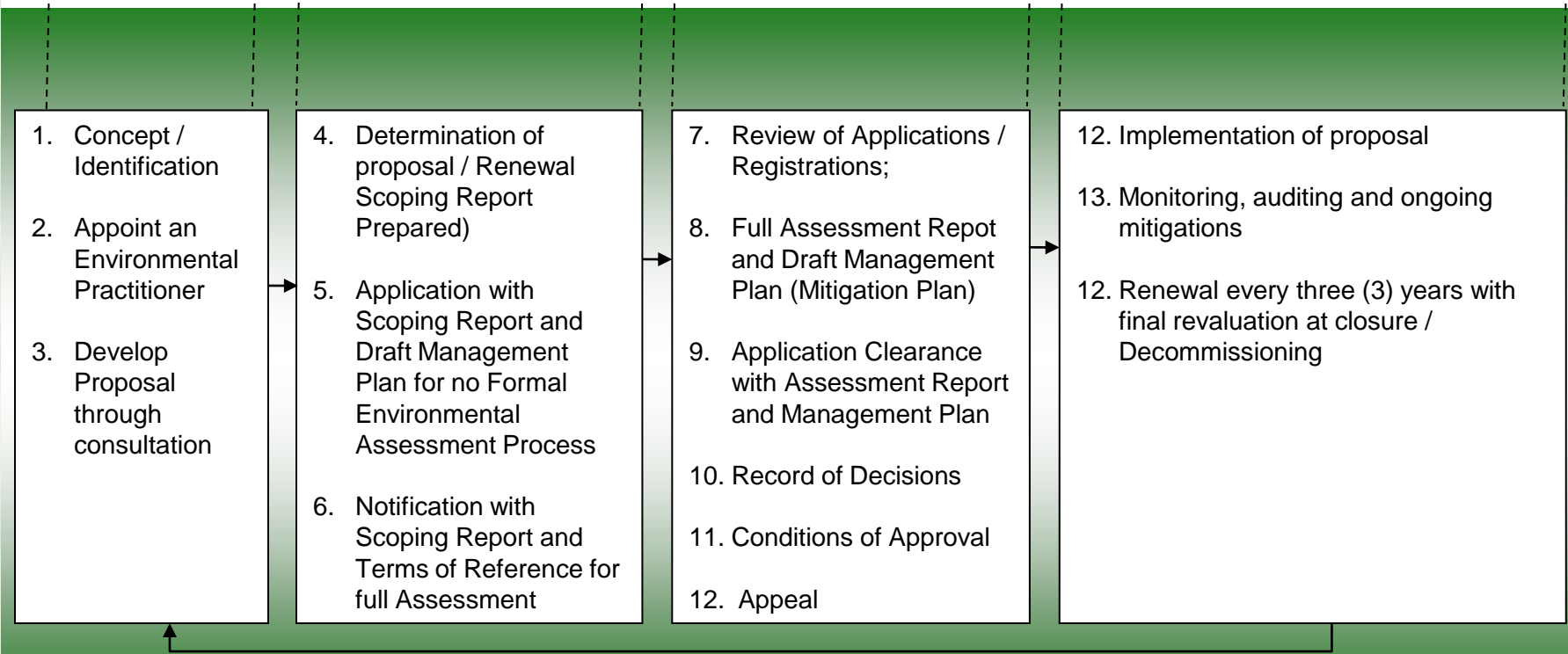
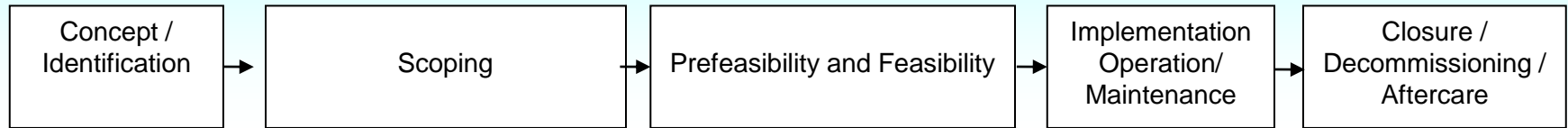


The Essence of SEA and EIA – RBS 2011

ASSESSMENT TYPE	ACTIVITY FOCUS	RESPONSIBILITY	OUTPUTS
Strategic Environmental Assessment (SEA)	<ul style="list-style-type: none">• Policies• Plans• Programmes	<ul style="list-style-type: none">• Organs of State (Line Ministries, Parastatals, Regional Councils, Municipalities)	SEA Report with an Strategic Environmental Management Plan (SEMP)
Environmental Impact Assessment (EIA)	<ul style="list-style-type: none">• Project Specific	<ul style="list-style-type: none">• Proponent (Private person, private entity such as companies)	EIA Report with an Environmental Management Plan (EMP)



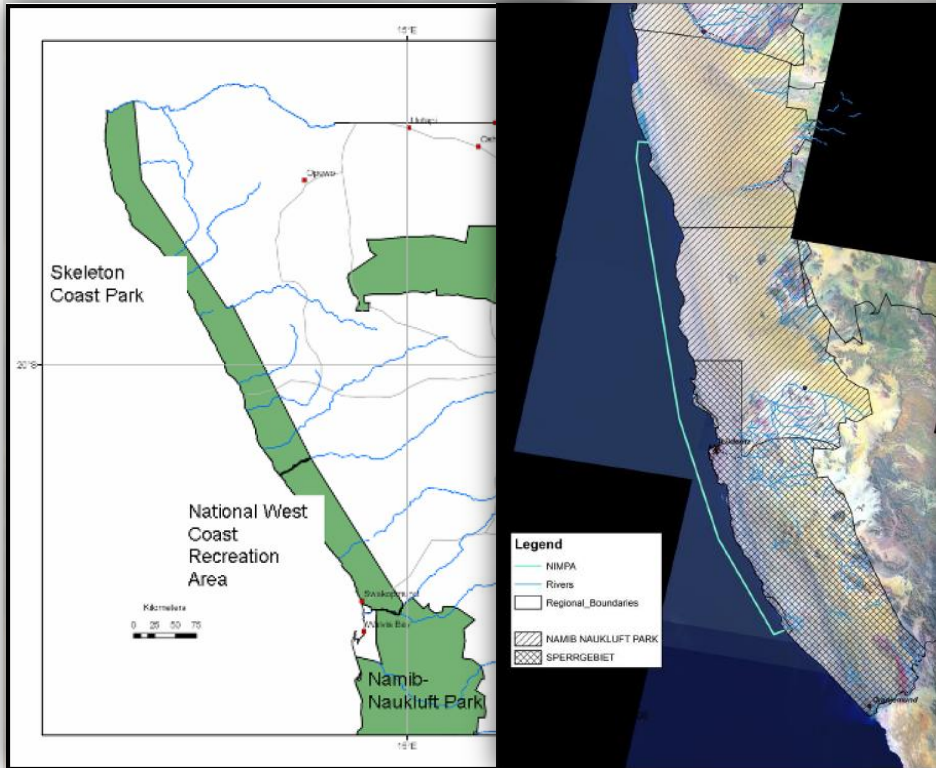
Policy, Plan, Programme or Project Life Cycle



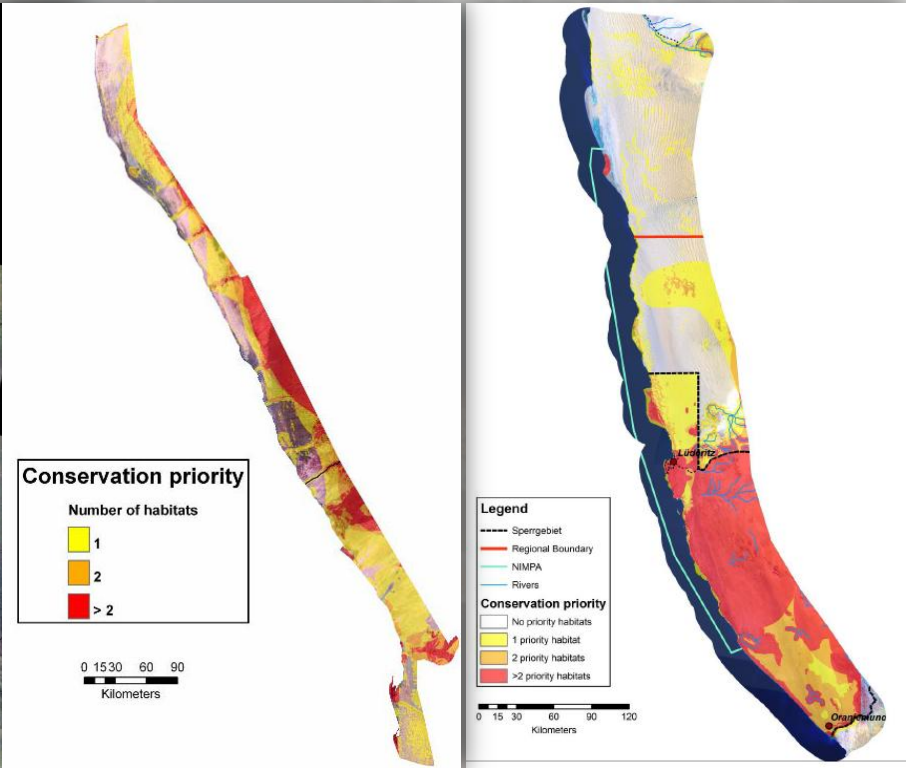
Environmental Assessment (SEA or EIA) Procedure

SEA Assessment Outcomes

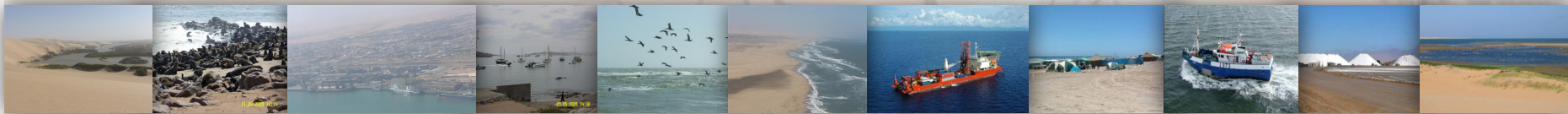
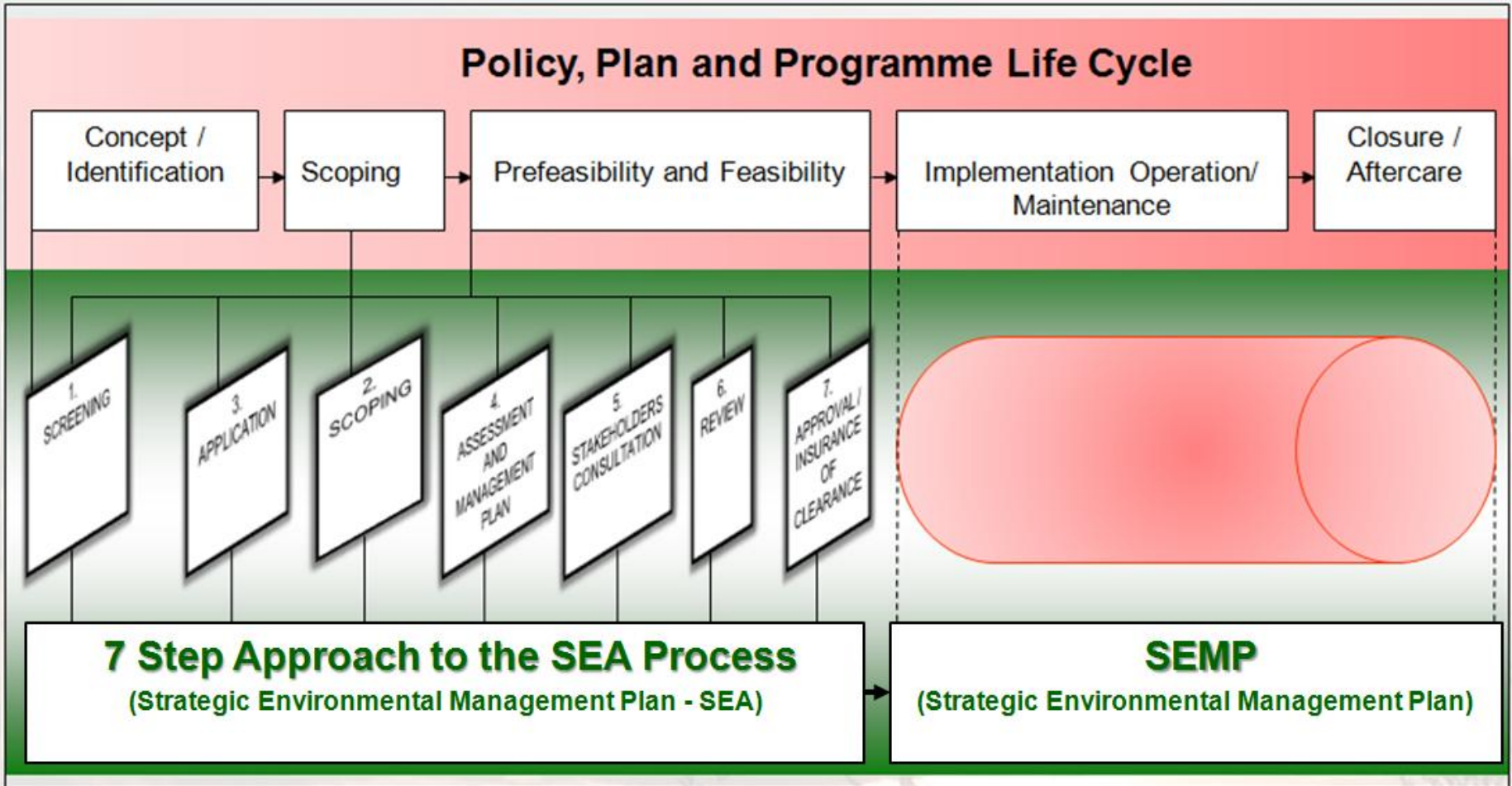
Protected Areas



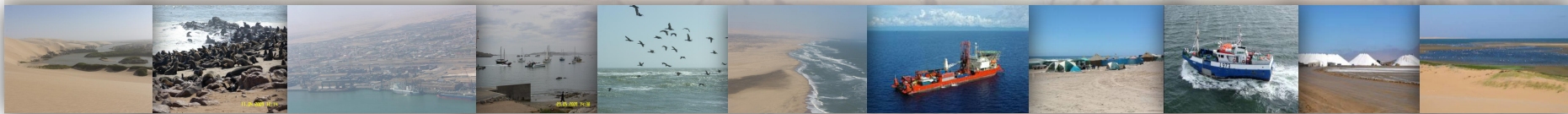
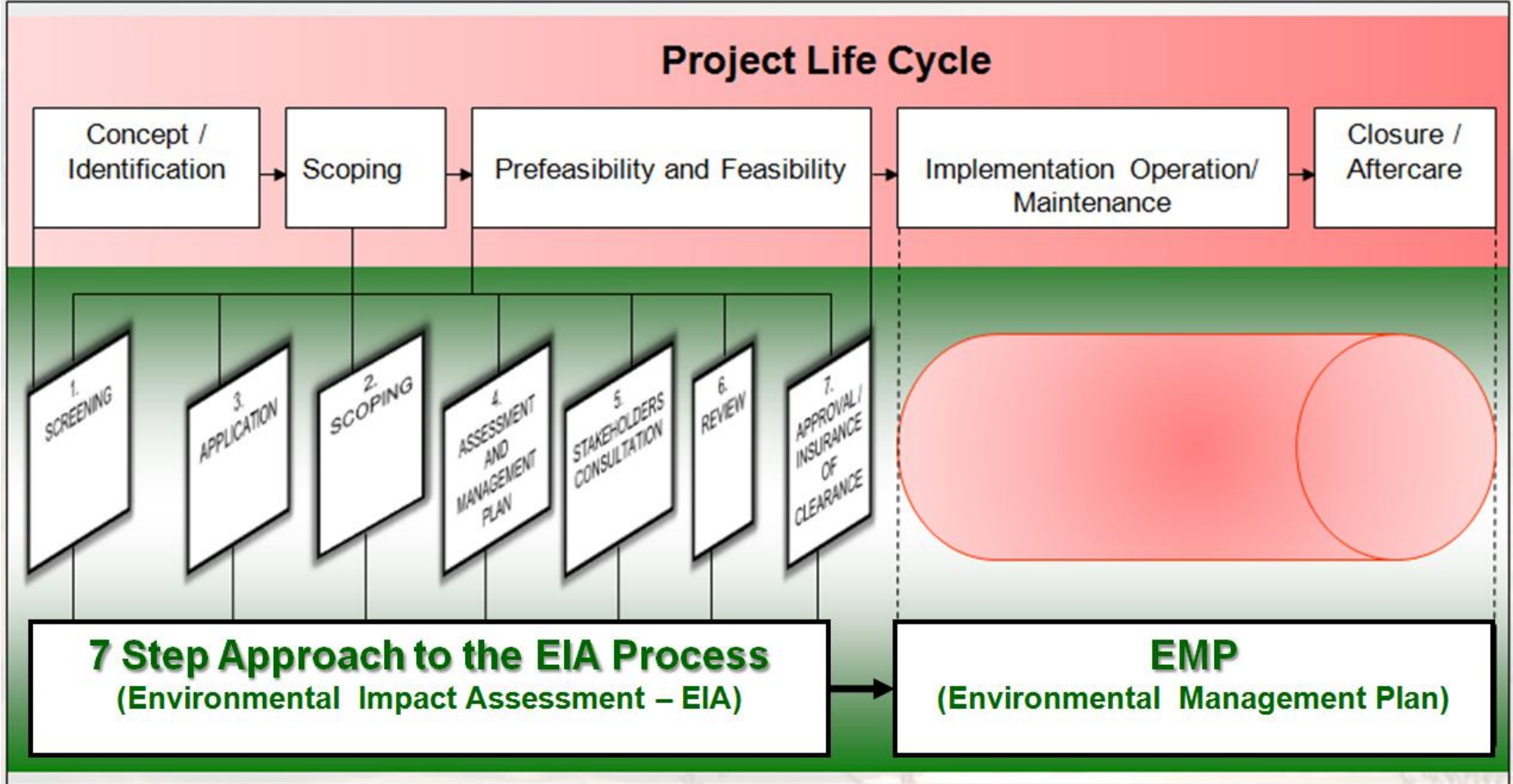
Biodiversity



SEA 7 Steps Summary



EIA 7 Steps Summary



Content of SEMP and EMP

An SEMP or EMP should include the following items:

1. Identification and summary of all the significant adverse environmental impacts that are anticipated;
2. Description and technical details for each mitigation measure;
3. Institutional arrangements (e.g., responsibilities which involve operation, supervision, enforcement, monitoring of implementation, remedial action, financing, reporting, and staff training);
4. Implementation schedule showing phasing and coordination with overall project implementation plans;
5. Monitoring and reporting procedures, progress and results of mitigation; and
6. Integration into the total project cost tables of the cost estimates and sources of funds for both the initial investment and the recurring expenses for implementing the mitigation plan including aftercare cost.

Types of Monitoring

There are several generic forms of monitoring, the purposes of which overlap:

1. Tracking;
 2. Impact or Effects Monitoring;
 3. Research Monitoring;
 4. Mitigation Monitoring;
 5. Compliance Monitoring;
 6. Monitoring as Postponed Decision-Making;
 7. Problem Identification;
 8. Finally, baseline data collection.
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Example on Petroleum Drilling – EIA Outcome

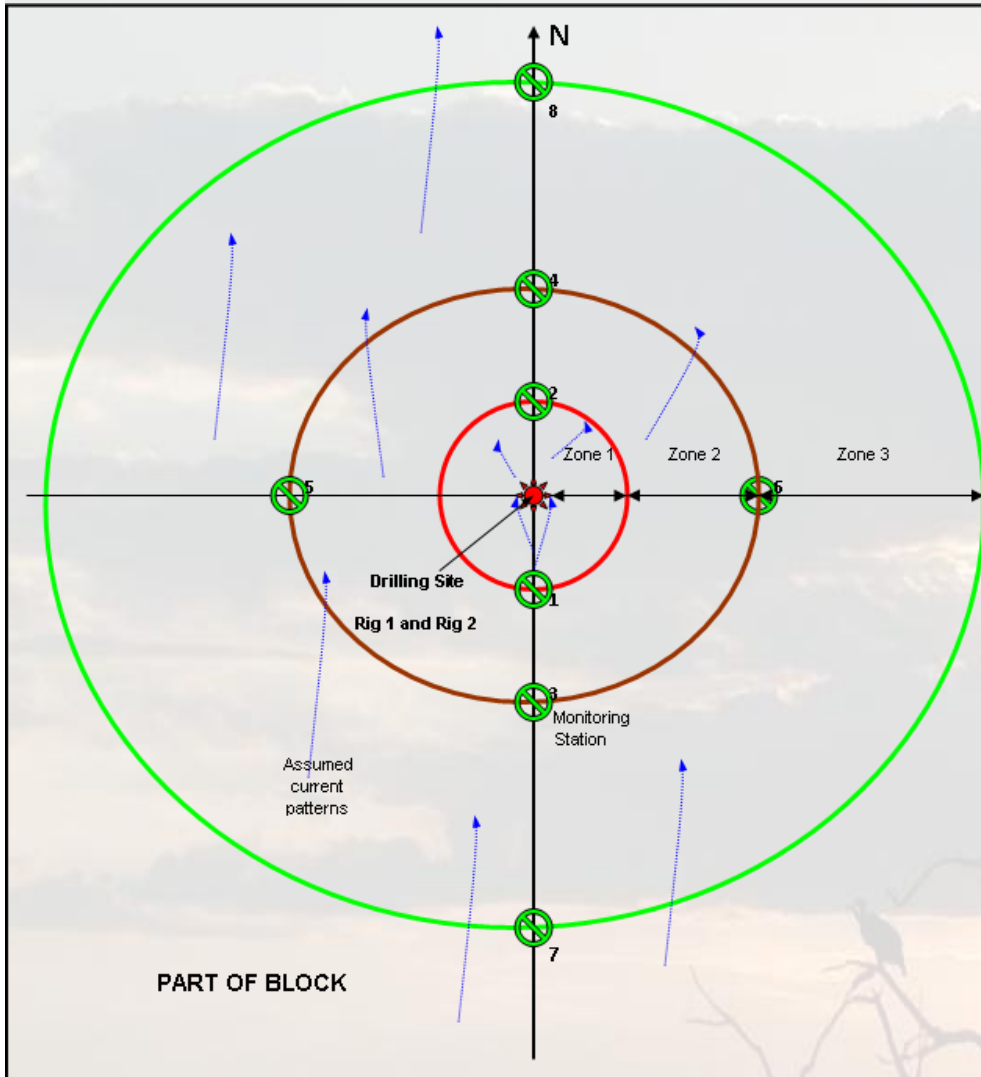
Protected Areas /Marine and Coastal Resources



Summary of the Predicted Impacts – EIA Outcome

Project Stage	Waste Type	Pre-Treatment	Management
1. Rig Positioning and	Cement slurry, living solid and liquid wastes as well as engine emissions	There are no pre-treatment options for the cement slurry waste.	Excess spill over onto seabed from casing to be reduced. The solid, liquids and gaseous emissions must be managed in accordance with outlined management plan (See 2. Drilling Operation)
2. Drilling Operations	Water based drilling mud.	None	Discharged overboard.
	Drill cuttings.		
	Cooling water.		
	Sewage and organic waste from kitchen.	Maceration.	Discharged overboard.
	Effluent from showers, wash sinks, floor gulleys and drinking fountains.	None.	
	Rubbish, garbage and trash.	Incinerated offshore or compacted.	Transported to for disposal at the Municipal Waste Disposal Site
	Scrap metal.	Stored in suitable labelled containers.	
	Waste oil.	Stored in suitable labelled containers.	
	Chemicals and hazardous substances.	Incinerated offshore or packed in sealed labelled containers.	Containers transported to shore for disposal.
	Laundry effluent.	Use non-toxic and bio-degradable detergents.	Discharged overboard.
	Drainage water.	Floating oil skimmed off with a surface pump and oil contents reduced to 100 ppm.	
	Exhaust gases from gas turbines, diesel engine generators and incinerator.	None. Visual inspection of diesel exhausts.	Emitted to atmosphere.
Fugitive and evaporative emissions.	None.	Unintentional leaks into the atmosphere.	
3. Well Testing	Produced formation water.	Water separated from oil by 3 phase separator. Oil content of formation water monitored.	Discharged overboard if oil content <100 ppm or inject into well.
	Atmospheric emission through combustion of oil and gas.	Combustion in efficient burner.	Emitted to atmosphere from flare stack and oil burners.
4. Well Abandonment	Drilling casing, cement and other structures.	There are no pre-treatment options for casing and other materials such as cement slurry waste	No visible evidence of the drilling operation will remain. Casing and other structures removed from above 1 m below mudline.

Monitoring Implementation Petroleum Drilling



Example on Petroleum Drilling Monitoring



Petroleum Drilling Monitoring Results – Drilling Completion Phase

PROJECT PHASE AND ACTIVITIES	ENVIRONMENTAL OBJECTIVES	AUDITABLE MANAGEMENT ACTIONS UNDERTAKEN IN MEETING MEET THE ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT OBJECTIVES	RESPONSIBILITY FOR IMPLEMENTATION	CONTROL MEASURES SUBMITTED	TIMING	MONITORING RESULTS – COMPLIANCE ARCHIVED (YES / NO)
1. OIL SPILL PREPAREDNESS AND PREVENTIONS	Protect the environment and all the resources and in particular the sensitive areas such as the Kunene River Mouth, the coastal environment of Namibia and Angola, the fisheries resources as well as all other resources that have been identified around Block 1711 from oil spill incidence occurring	(i) Additional requirements implemented in avoiding any collision either between the supply vessel and rig, the supply vessel and another vessel or another vessel with the rig.	Operator (EM, PG, GT, and Contractor (CONT) and in accordance with the National Oil Spill Contingency Plans	Audits Registers Record Books Daily / Monthly Reports	Throughout Drilling Operation	YES
		(i) Followed all operational procedures for well testing;				YES
		(i) Collected real time environmental data sets at the drill site to aid and enable real time oil spill modelling in an event of an oil spill. Continued testing of the model results onboard the rig undertaken based on the site-specific data collected and results used to update the Oil Spill Response Plan where appropriate.				YES
		(i) Tested the emergency response preparedness before and during well testing stage in order to make sure that roles and responsibilities are clear.				YES
		(i) Implemented Oil Spill Contingency Plans following the recommended clean-up operations of the environment if required.				YES
		(i) In accordance with the implemented Oil Spill Contingency Plans, mobilised the relevant equipment, personnel and expertise of Equipment Supplier with links to the International Oil Spill Response Centre in which has a response time of 48 hours.				YES
		(i) Ready to contain the oil at sea and if the seas conditions permits, recover the oil using appropriate and effective equipment including booms and skimmers and dispersants as recommended for specific environmental settings in terms of water depths and in consultation with the Ministry of Fisheries and Marine Resources.				YES

DSTs in the SEA or EIA Process

