






شركة تنمية نفط عُمان
Petroleum Development Oman



INTEGRATED IMPACT ASSESSMENT GUIDELINE

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User Notes:

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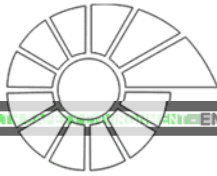
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EXECUTIVE SUMMARY

It is PDO policy to embrace the concept of Sustainable Development (SD) in all business decisions, allowing evaluation of economic, social and environmental impact of development options. This means taking a long term view in planning, implementing and operating in an efficient manner, whilst contributing to sustainable development of Oman. In the past, we have been good at assessing impact of our operations on the environment through Environmental Impact Assessment (EIA), but much less on social impact of our operations. Today, we have taken advantage of our SD objective to manage the impact of our activities by reviewing environment, social and health issues in a holistic manner through an Integrated Impact Assessment (IIA) process.

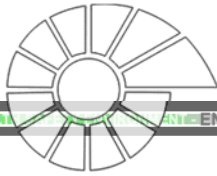
This guideline brings together the impact assessment process, its application to business, individual/team roles and responsibilities, as well as management control strategies which are needed to realise our SD objective. The IIA process follows a sequence of eleven steps which starts at the early stage of project definition so that findings may be fed back into design process to minimise impacts and maximise benefits. The process is linked throughout the project life cycle, from feasibility through design to decommissioning, with a clear deliverable at each phase of the Value Assurance Review (VAR) process. As a matter of policy, all projects irrespective of size and complexity will be subjected to this IIA process.

In parallel, and interacting with the process, are two other critical activities - stakeholder engagement and the design/decision making process. Stake holder engagement is critical as it will earn goodwill and support from local communities, address their expectations, enhance our reputation and help secure and maintain our licence to operate.

The IIA guideline advocates a multi-functional/discipline team approach, managed as a single integrated process. The project/asset manager, who is the project sponsor, is responsible for initiation and execution of the project IIA process and implementation of impact mitigation monitoring and SD programmes. There is a defined framework to show individual/team roles and responsibilities at each step of the process. By carrying out IIA, we demonstrate our commitment to Hazards and Effects Management Process (HEMP) leading to our policy to reduce impact to a level that is as low as is reasonably practicable (ALARP). The guideline clearly sets out how commitments that we have made will be delivered, check performance against predictions, through monitoring and audit programmes.

The IIA report shall be viewed as a "live" document which will be revised following changes in project work scope. Finally, this first edition of the new IIA guideline will be amended and added to in the near future as experience is gained and feedback is obtained from users. It will be revised bi-annually to ensure it represents best practise for PDO.

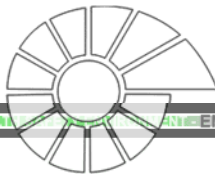




Abbreviations

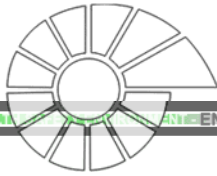
ADP	Asset Development Plan
ALARP	As Low As Reasonably Practicable
CFC	Chlorofluorocarbons
CH ₄	Methane
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
MSE	Corporate Safety Management
CTR	Cost-Time-Resources
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
E & P	Exploration and Production
FEED	Front End Engineering Design
FDP	Field Development Plan
FLG	Legal Affairs Department, PDO
HAZID	Hazards Identification
HAZOP	Hazards and Operability
HEMP	Hazards and Effects Management Process
HIA	Health Impact Assessment
HRA	Health Risk Assessment
H ₂ S	Hydrogen Sulphide
HSE	Health, Safety and Environment
HSE-MS	Health, Safety and Environment Management System
HXM	Corporate External Affairs, PDO
IEE	Initial Environmental Examination
IIIC	Initial Impact Identification Checklist
IIA	Integrated Impact Assessment
IMF	International Monetary Fund
IMMP	Impact Management and Monitoring Plan
MD	Ministerial Decision
MDC	Management Directors Committee
MRMEWR	Ministry of Regional Municipalities and Environment and Water Resources
NEO	No Environmental Objection
NH ₄	Ammonia
NGO	Non-Governmental Organisation





NOx	Nitrogen Oxides
N ₂ O	Nitrous Oxide
O/G	Oil and Grease
ONH	North Asset Public Relations, PDO
OPAL	Oman Society for Petroleum Services
OSH	South Asset Public Relations, PDO
ORP	Opportunity Realisation Process
PEP	Project Execution Plan
PDO	Petroleum Development Oman
PIIF	Preliminary Impact Identification Form
PO ₄	Phosphate
PRA	Participatory Rural Appraisal
QA/QC	Quality Assurance and Quality Control Checks
QRA	Quantitative Risk Assessment
RD	Royal Decree
RS/GIS	Remote Sensing/Geographical Information System
SD/SP	Sustainable Development/Social Performance
SIEP	Shell International Exploration and Production
SIA	Social Impact Assessment
SOx	Sulphur Oxides
SQU	Sultan Qaboos University
ToR	Terms of Reference
VAR	Value Assurance Review
VOC	Volatile Organic Compounds
XTG	Exploration and Geomatics GIS & MAPPING SERVICES





1.0 INTRODUCTION

1.1 Background

PDO's Statement of General Business Principles has made it mandatory to conduct Environmental Impact Assessment (EIA) prior to all new activities and facility developments, or significant modifications of existing ones. This is further reflected in PDO HSE Policy. Environmental Impact Assessment (EIA) is a requirement of Omani legislation which directs that, in order to obtain an environmental permit or No Environmental Objection (NEO) letter, an Environmental Impact Statement (EIS) be submitted for such category of developments and activities that have potential to cause pollution. Across the globe, daunting challenge to combine business with long term human development without causing damage to environment and health of persons have brought about changes in policies. In PDO, Integrated Impact Assessment (IIA) has been adopted as a tool to meeting the emerging business challenge.

An Integrated Impact Assessment is an instrument to identify and assess the potential environmental, social and health impacts (natural, physical, social and health) of a proposed project, evaluate alternatives, and design appropriate mitigation, management and monitoring measures. This means:

- a) Looking at environment, social and health issues in a holistic manner
- b) Integrating impact assessment process with business and project development
- c) Reviewing issues raised by business through projects in the overall context of communities, national and international interests
- d) Using key project impacts to deliver environmental protection, sustainable development and social performance
- e) Contribute to Sustainable Development of Oman
- f) Integrating impact assessment with HSE-MS and ISO 14001 processes

1.2 Purpose

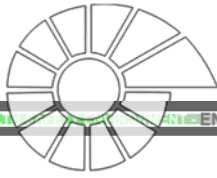
In PDO the purpose of adopting the guideline is for:

- i) Best practice
- ii) Meeting international standards
- iii) Complimenting the legislative role of government
- iv) License to operate
- v) Means to reduce the overall business cost.
- vi) Sustainable Development of Oil and Gas in Oman

1.3 Audience

The document is intended for individuals or groups who will be responsible for or involved in conducting Integrated Impact Assessment for PDO. This includes PDO





staff, project managers, project engineers, HSE Advisors, external consultants; environmental, social and health specialists.

1.4 Policy, Legal Framework, and Standards

1.4.1 PDO Policies

The requirement for impact assessment by PDO is stated in corporate policy documents, guidelines and standards. Major among them are:

- PDO’s Statement of General Business Principles describes how we conduct the business, that “The company will endeavour to conduct its business in such a way as to protect the health, safety of its employees, contractor employees and other persons affected by its activities, as well as to protect the environment, minimise pollution and seek improvement in the efficient use of natural resources.”
- PDO Health, Safety and Environment (HSE) policy describes how a systematic approach will be applied to HSE management (See *Attachment 1*).
- PDO Management Systems provides a structured process for continuous improvement of HSE performance.
- Minimum Environmental and Health standards specify environmental and health issues that must be considered in impact assessment.
- Sustainable Development: It is PDO policy to embrace the concept of SD in all business decisions which allows for evaluation of economic, social and environmental impact of development options.

It is about integration and balancing short term wants with long term needs which will allow Oman build better future. To this end PDO allows between 0.5 – 1.0% of major project budget to be set aside for SD/SP projects.

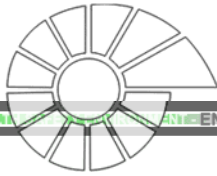
Through IIA, PDO is able to establish inter-connected impacts between projects and community risks. This approach enables PDO to put in place measures to:

- a) mitigate project impacts through sustainable development projects
- b) reduce the risk of community-related delays to project schedules through sustained consultation
- c) mitigate against increased time spent by staff or contractors in solving environmental and community issues
- d) mitigate against a breach of new regulatory standards on environmental, health and social issues and impacts.

1.4.2 Omani Legislation

There is no specific legal requirement for PDO to have an IIA in place. However the Royal Decree RD 115/2001 “Law of the Environment and the Prevention of Pollution” is the all-encompassing environmental law in the Sultanate of Oman. It provides the overall framework for the protection and specific requirements for the submission of Environmental Impact Assessment. Also, MD No: 187/2001 provides directives for the issuance of environmental approvals and the final environmental permit. Other



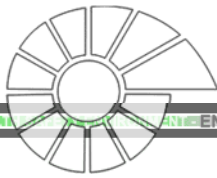


1.7 Critical Success Factors

A number of Critical Success Factors are considered

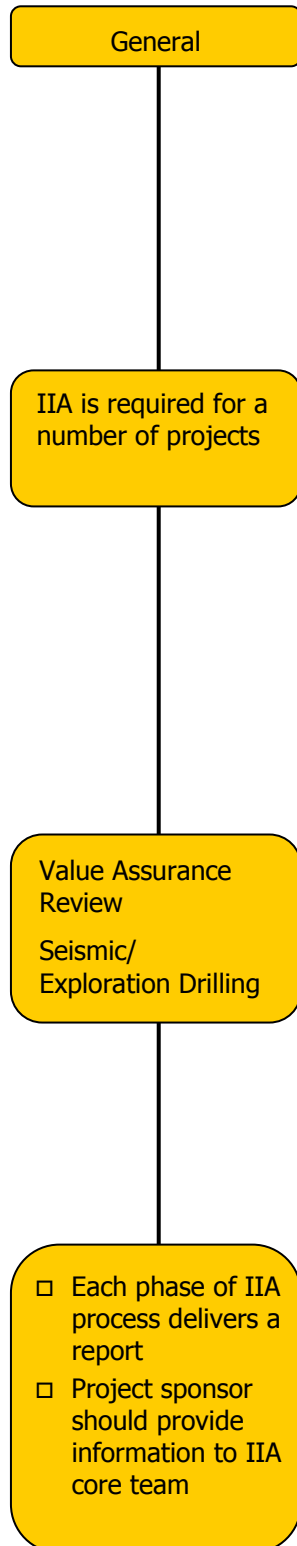
Management	Project Team	Consultants
Management commitment	Good team leadership	Competent staff
Provision of Budget	Single point responsibility	Timely delivery of quality report
Competent and motivated staff	Timely completion of IIA report	Understanding and application of right impacts assessment tools
Staff awareness	Effective communication and share responsibility	Quality assurance and quality control measures





2.0 INTEGRATED IMPACT ASSESSMENT PROCESS

2.1 Introduction



Introduction

In PDO, the Core elements of IIA are directly applied to the Opportunity Realisation Process (ORP). The following key issues are recommended:

- Apply IIA throughout a project life-cycle from feasibility, design through to discussing.
- Initiate IIA at early stage of project definition.
- Set up IIA team with defined roles and responsibilities.
- Use key project impact as basis for SD projects/programmes.
- Ensure implementation of impact/SD recommendation
- Handover all IIA reports/material to colleague during job change.
- Complete IIA at least three months to project construction.
- Revise final IIA report if there is any change in project workscope.

IIA & Projects

In PDO, IIA is carried out for a wide range of projects/activities regardless of size and complexity:

- any new project development
- any expansion and/or new construction project
- any structural, operational and/or maintenance change to an existing facility
- any joint venture, acquisition of an existing facility, sub-lease arrangement and/or acquisition of acreage.

Before PDO takes any decision at the end of or part way through the ORP, a Value Assurance Review (VAR) is usually performed for major and medium projects. This will assist decision makers decide whether the development should proceed.

Figure 1 shows how IIA is integrated into the Project Phases and VAR process

Projects that conform to the VAR process are called VAR projects whereas those that do not conform are called non-VAR projects. Projects such as expansion and/or new construction, exploration development do not conform to this process.

IIA Application to business

As a matter of policy, all projects including Exploration and Seismic development will be subjected to same IIA process, therefore projects are classified into VAR and Non-VAR projects.

- Exploration (seismic and exploration drilling) being front-end activities will be completed before end of VAR 2.
- The IIA for Exploration drilling should be site specific.
- Data generated during such activities will form part of Field Development project.
- For Brown fields, any new developments or expansions should be assessed for (E, S & H), depending on the magnitude and the existing IIA (or EIA) updated to demonstrate best practice. It may not be necessary to conduct a full-scale IIA in this case.
- The project manager and IIA Core team will agree for all non-VAR projects, project requirements, timing, input and deliverables.

IIA Deliverables

The IIA process delivers two products – the IIA report and recommendation Impact Management and Monitoring Plan (IMMP). The IIA process must make input into ORP/VAR at each phase and delivers some reports. Figure 2 shows the reports to be delivered at each phase of the IIA/VAR process.

VAR 1 - Project Initiation Review, prior to approval of entry commitment delivers an Initial Impact Evaluation Report

VAR 2 - Feasibility Review, prior to concept selection- delivers a Preliminary Impact Assessment Report

VAR 3 - Field Development Plan (Concept Selection) Review, prior to project definition delivers - Draft IIA/Final Report

VAR 4 - Pre-Final Investment Decision Review/Pre-start audit, prior to release of funds for execution - Engineering Design & Construction. Delivers IMMP Report.

VAR 5 – Post investment review. Implement IMMP. Delivers IMMP Report.



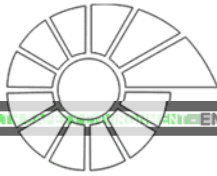
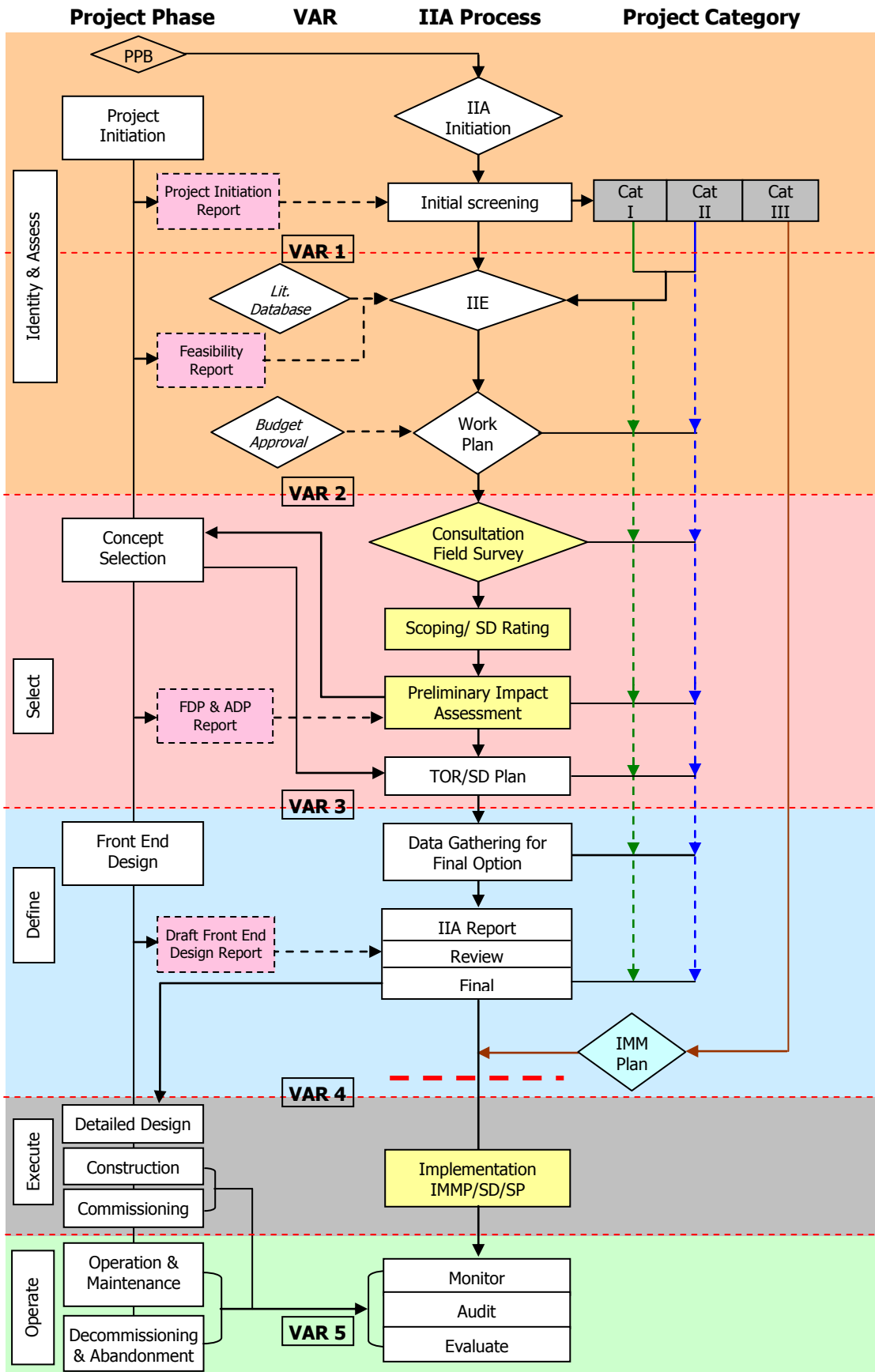
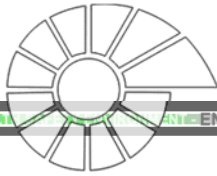
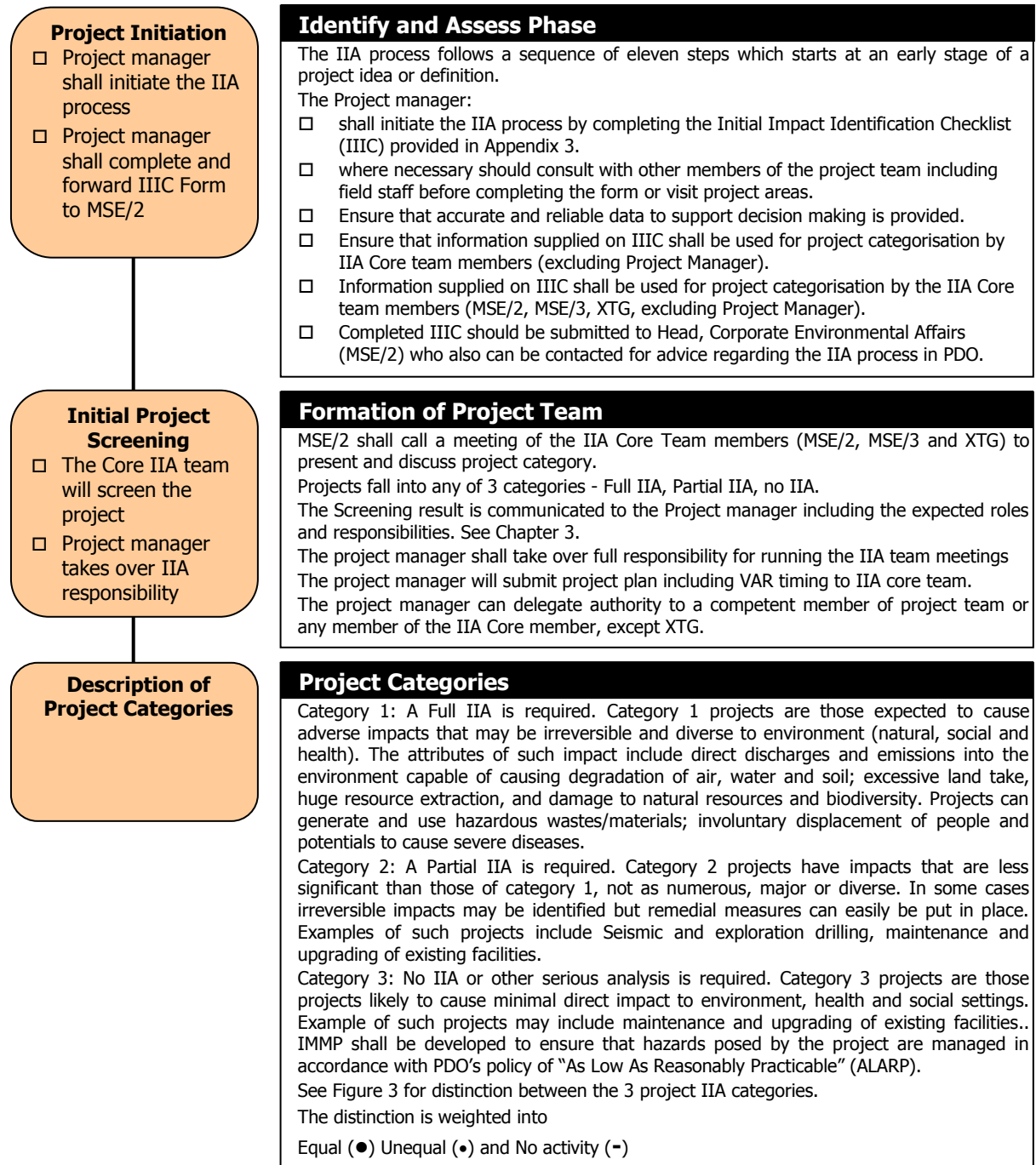


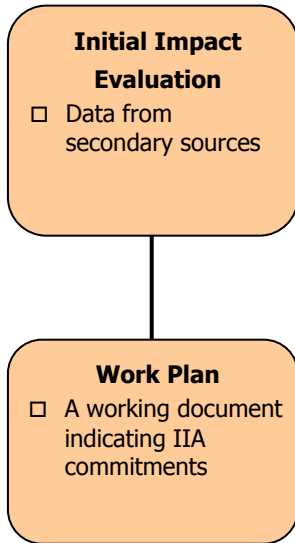
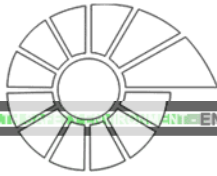
Figure 1: IIA Process Flowchart





2.2 Identify and Assess Phase





Initial Impact Evaluation

Each member of the IIA Core team shall gather appropriate secondary data/information for a detailed impact evaluation

The data should be detailed to present a picture on project impact on the environment, social and health settings.

MSE/2 should ensure that data on social issues is fully represented as stakeholder identification start at this phase.

Source of data/information should be recognised and quoted in the Initial Impact Evaluation Report

Project Manager should provide a Feasibility Report to IIA Core team.

The report will be produced "Desktop" from secondary data as no field work is required. Data/information at this stage are gathered mainly from regulations & standards as applicable

Work Plan

The Plan indicates requirements, commitments, roles and responsibilities, timing and deliverables to execute an IIA study.

Each IIA core team member will ensure that component of the IIA, environment, health; social/sustainable development is fully covered.

Financial resources from Social Investment budget allocated to the study should be sited in the report.

The document shall be presented to both MSE/2 and Project Manager for endorsement before approval by PDO Management

The IIA team will be responsible for producing the report.

Figure 3 show the differences between the 3 project categories.



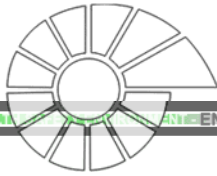
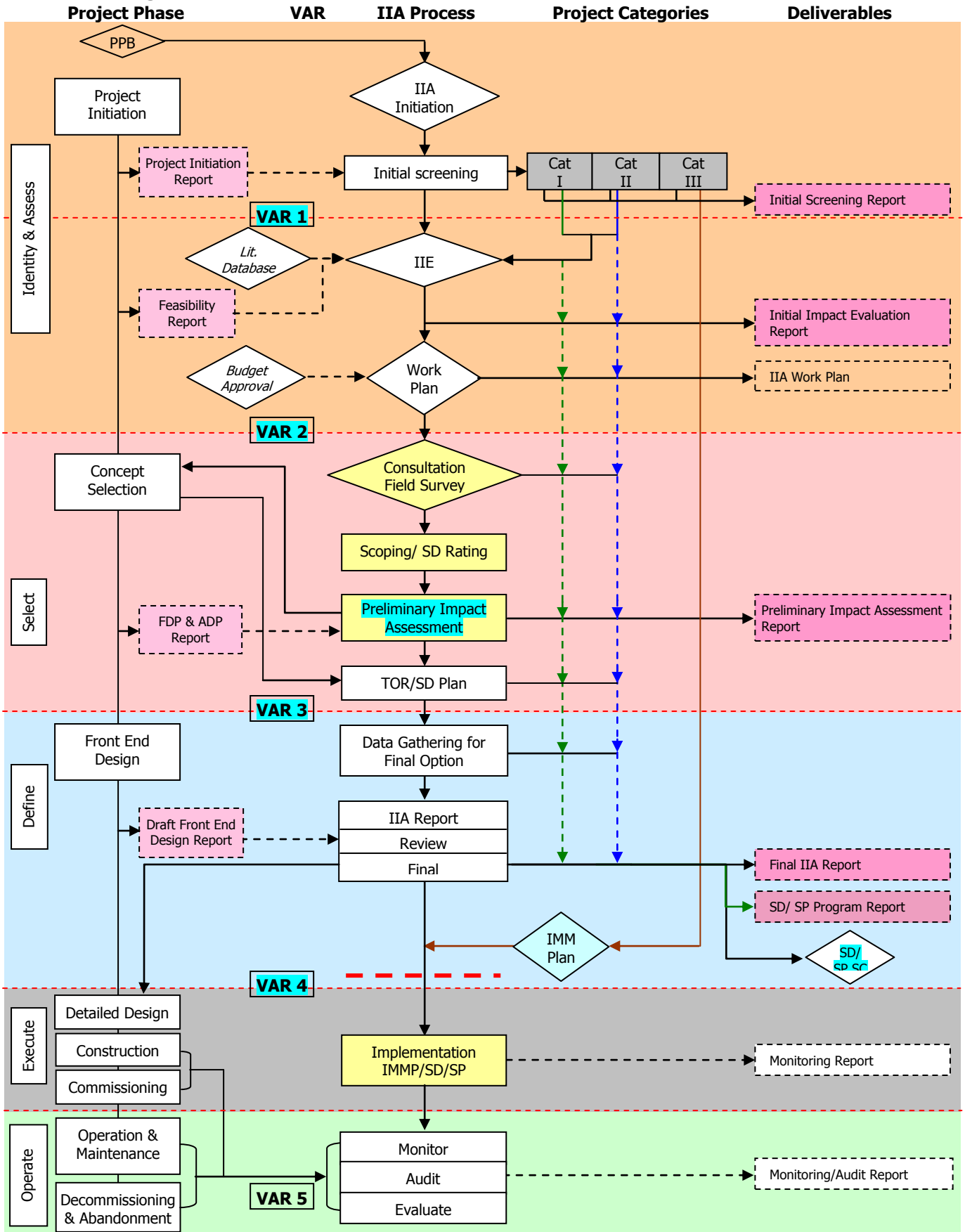


Figure 2: IIA Process Flowchart/Deliverables



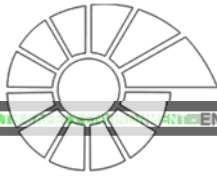
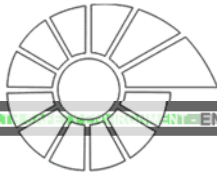


Figure 3: Distinction between IIA Project Categories

Process	Cat I Full IIA	Cat II Partial IIA	Cat III No IIA	Comments
IIA Initiation	●	●	●	Applicable to all Categories
Initial Screening	●	●	●	Applicable to all Categories
Initial Evaluation	●	●	-	Applicable to Cat - I and Cat - II only. Produce Report Desktop
Work Plan	●	●	-	Applicable to Cat - I and Cat - II only
Consultation/ Field Work	●	●	-	Scale down level of consultation for Cat - II projects. Field visit is required
Scoping/ SD Rating	●	●	-	Produce Scoping Report only for Cat - I projects. No field visit is required.
TOR/ SD Plan	●	●	-	No IIA Planning report for Cat - II projects. Produce report Desktop
Baseline Data Gathering	●	●	-	No detailed baseline data gathering for Cat - II projects
Impact Assessment	●	●	-	No SD Business Plan and no Quantitative Analysis of impacts for Cat - II projects
IIA Report	●	●	-	No draft report for Cat - II projects. Seek management appraisal for SD/SP
IMMP	●	●	●	Equal weight





2.3 Select Phase

Stakeholder Consultation

- Early identification of all stakeholders is necessary

Scoping

- An important aspect of license to operate
- Set limits for IIA study

Select Phase

Stakeholders are individuals, group and/or organisation who are likely to be impacted during the course of project development or are interested in the project. (Appendix 4 shows list of PDO stakeholders).

Consultation is a systematic process of meeting with and/or communicating issues and concerns

Consultation may take place at all stages of the IIA process but it is important during Scoping, field data gathering (on social) and project implementation.

Why Stakeholder Consultation?

- To gather information relevant to the project
- To build good relationship
- To sustain partnership
- To encourage transparency, and
- To build trust between various stakeholders.

IIA Core team and HXM shall determine consultation strategy (Interactive participation for communities - See Appendix 5).

Meetings with stakeholders, especially community should be documented and signed by all parties for inclusion in the report.

Stakeholder concerns of likely impact should receive outmost attention. Ensure every sector of community is identified.

Where necessary extend consultation beyond project boundary

Carry out a Rural participatory Appraisal Study for SD matters, where necessary.

Organise a Scoping Workshop

Scoping sets limits for what is included or excluded in the IIA study.

It is mandatory for all Category 1 projects

A scoping workshop should be organised early to define the terms of reference and when project alternatives are still available.

It provides the opportunity for stakeholders to understand, and discuss potential impacts arising from the project.

At the workshop define boundary of study area, nature and component of baseline study and methodology to be used in the study.

Invite Participants from local communities, local government, relevant government ministries, IIA consultant and other partners/stakeholders (See Appendix 4 for PDO stakeholders)

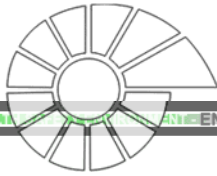
Discuss PDO policy to use potential impact as mitigation measure for SD projects.

Issues and decisions reached at scoping workshop should be documented and written in a Scoping report.

- The report will form an important part of the IIA report.
- Project Manager should provide Field Development Plan as input into the Scoping workshop.

The consultant on behalf of IIA core team will develop a Preliminary Impact Assessment





2.4 Define Phase

Terms of Reference (ToR)
□ A detail document for execution of IIA study

Baseline data gathering
□ Data should be quantitative and qualitative

Define Phase

Scoping report is the main input into the TOR.
It is a Planning Report which include the following:-

- aspects of field work on environment, social and health, and likely SD programs.
- type of samples, number of samples, sampling locations, sampling strategies, methodology and analysis to be carried out by the contractor.
- QA/QC including chain of custody for samples should be established.
- the techniques and methods of gathering data on social and health baseline conditions, and strategy for dealing with various stakeholders.

All questionnaires to be issued and analytical methods should be stated and should receive approval from the respective IIA Core Team members.
A comprehensive plan to execute the study, timing and deliverables as well as cost estimate for the entire study should be submitted to the IIA Core team for consideration.
MSE/2 will arrange a challenge session for members to challenge the report before approval.

Collection of Field Data for IIA Reporting

The scope of Baseline is wide and diverse and can not be covered in a single study (See Appendix 6). Attention to be focused on elements most likely to be affected for monitoring. Only elements/parameters already identified during scoping should be considered.

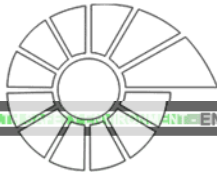
It is essential to gather qualitative and quantitative data on aspects of environment, social and health of people that are likely to be affected during course of project development.
The data should form the basis toward establishing short term and long term development priorities

Before embarking on field data gathering, consider the following:-

- certain amount of information available at the start of the project should be filled as data gaps during the period.
- all sampling points must be geo-referenced on a map - involve Geomatics department.
- type and number of samples listed in the TOR should be collected
- involve community representatives while collecting social data

At the end of the field investigation, field report will be produced by contractor.





Impact Assessment

Identify/Assess/ Predict magnitude/ Interpret Significance

Impact Assessment

Impact in this guideline refers to an element of PDO activity which can have beneficial or adverse effect on environment, people and their health during a project life cycle. A list of impacts and definitions is shown in Appendix 7). It is one of cause and effect which can take place during

PDO Project Activity

Construction and commissioning
Normal operations
Maintenance and shut down operations
Waste generation and transportation
Decommissioning and abandonment

Likely impact

Beneficial or adverse
Chronic or acute
Direct or indirect
Temporary or permanent
Local or strategic

See Appendix 8 for possible project hazards/impacts and their effects. The use of appropriate methodology and techniques is very vital in impact assessment.

There are numerous methods and techniques available to predict the magnitude of impacts and they vary in sophistication and precision. See Appendix 9.

Any technique should show potential significance of the projected disturbance.

Prediction of the magnitude of impact relies on the techniques and varies between disciplines. For example modelling could be used to determine dispersion of pollutants, whereas prediction of health impact requires qualitative approach.

The following steps may be appropriate:

- Gather and include detailed project information on all aspects of IIA including social and health issues and concerns.
- Use appropriate methodology to predict magnitude of impacts.
- Where possible apply modelling technique to predict impact magnitude and significance.
- Where modelling is not applicable, e.g. social and health, apply a more qualitative approach but with expert judgement and interpretation.
- Estimate the quality of available data, data gaps and uncertainties associated with impact prediction.
- Where technique is not available, benchmark predicted impact against available standards – regulatory, international, SIEP.
- Show how significant potential impact can be avoided or trade-offs.
- Enhance project designs through consideration of alternatives- location, timing, technology, quality and quantity of wastes, facility lay out, land acquisition and development.
- Quantify the economics of selected option.
- Include Draft Front-end report in impact assessment process.

Produce a non-technical report

IIA Report

An IIA report is the document which records the processes of assessment, discusses the results obtained and the decision made.

The document should be concise and capable of being understood by non-experts. An outline of IIA is shown in Appendix 10.

Report should be submitted to IIA Core team following production of the draft report.

Each team member will review aspects and sections of the report to ensure issues are adequately covered as contained in the TOR (A checklist is placed in Attachment 11).

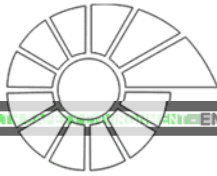
MSE/2 will arrange a challenge session between members of IIA Core team and the IIA Contractor.

The final report will reflect all the comments from IIA Core team and approved details of the final designs.

Use key project impact as basis for SD projects/programmes.

Following approval of the Final report, MSE/2 will extract all SD commitments into an SD/SP Report. Resources including cost will be allocated and presented to SD/SP steering committee for approval.





2.5 Execute Phase

IIA Report and Project Design

Execute Phase

In some instances, the Draft report will form part of Detail Design, 'Design Freeze Hazop' that focuses on the significance of any potential effect in the light of the more detailed information that is available at this stage of the project. It is intended that any required design changes are incorporated into revised design document, and then the design is frozen.

Once the final report is accepted and endorsed by all parties, the report is frozen. Any change in project scope or design, the project manager will communicate such to the IIA Core team. An addendum report to the final report will either be published or the whole report will be revised pending changes in project workshop.

Note: IIA recommendations in the final IIA Report should be incorporated in project designs.

IIA recommendation shall be followed up during construction phase – IMMP.

2.6 Operate Phase

IMMP as a standalone report

Implement IMMP Recommendations

Impact Management and Monitoring Plan (IMMP)

The IMMP shall be a stand-alone chapter in the final IIA report which details how the management as well as monitoring plan of the project will be carried out.

It is a tool for managing negative impacts, sustain project benefits and ensure compliance with Omani legislation and PDO HSE standards.

It is an integral part of the HSE-Management System which takes into account measures to be taken during implementation and operation to eliminate or reduce impacts to acceptable levels.

In IMMP shall cover or include the following:-

- List requirements for effective mitigation of environmental, social and health impacts.
- Provide work programmes and schedules that will ensure impact assessment actions are in line with project activities auditing.
- Specify the type of monitoring programme, roles and responsibilities, cost and training requirements.
- Show implementation plan for Community Sustainable Development projects similar to those for of impact monitoring.

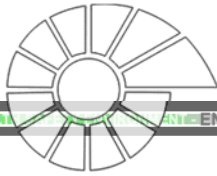
The Project manager is responsible for implementing IMMP recommendations and SD projects. The project manager will draw up a comprehensive plan and present same to the IIA Core team as well as MSE/4(for HSE impact tracking).

The project manager shall sign the IMMP Transmittal form (Attachment 12) to ensure acceptance and commitment to implement the recommendations.

MSE/4 together with MSE/2 will draw up a comprehensive plan to monitor, audit and evaluate performance. Local community representatives and officials from appropriate government ministries may be invited to participate as members of the monitoring team.

The Project manager will keep track of documented evidence of compliance and shall from time to time forward such to MSE/4.



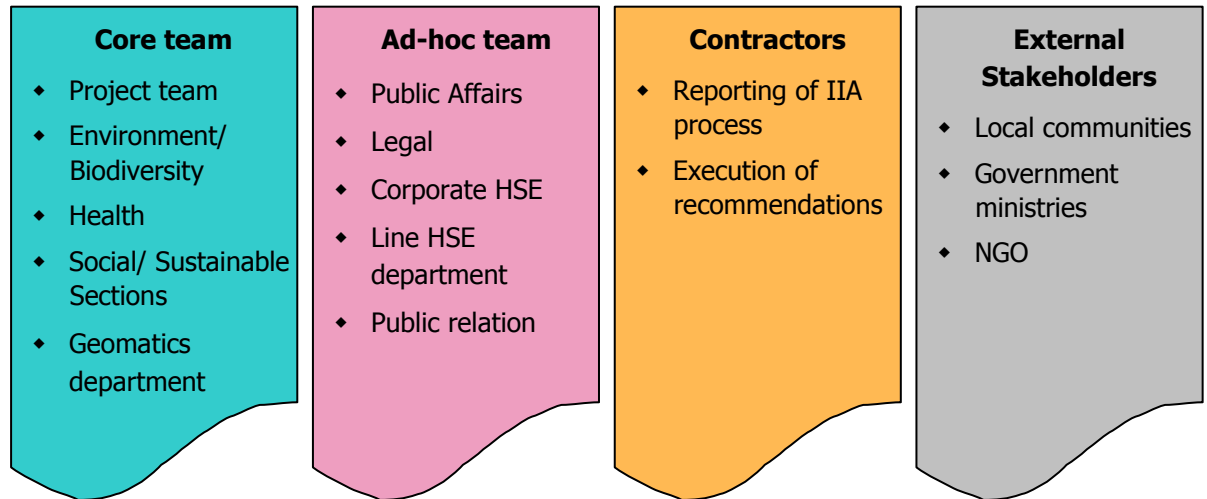


3.0 Roles and Responsibilities

3.1 Introduction

In PDO the IIA team will be made of a multi-functional/discipline team managed as a single integrated process.

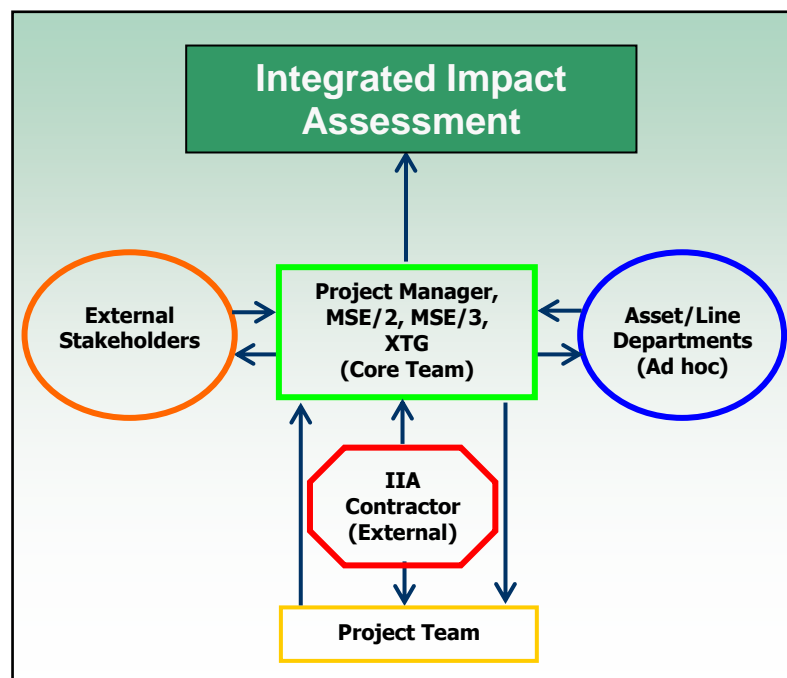
The IIA team members is drawn from within and outside PDO as shown below.

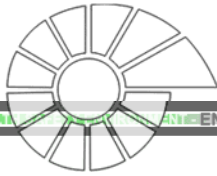


The **Project Manager** is fully responsible for initiation of the IIA process and implementation of IIA recommendation of the IIA process.

The main responsibility to deliver the IIA process lies with the IIA Core team. The team has a desired characteristic. The structure of the IIA team is shown in Figure 4.

Figure 4: Structure of IIA Team

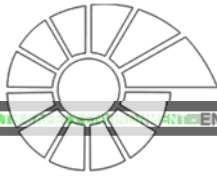




3.3 Individual and Team Responsibilities

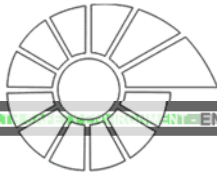
Team	Who	Responsibility
<p>Core Team</p> <ul style="list-style-type: none"> ☞ Ensure best practise ☞ Execute the IIA on behalf of the Project Manager ☞ Review available literature and classify the project into IIA category ☞ Ensure timely production of good quality report ☞ Ensure appropriate consultation with stakeholders and IIA contractor(s) ☞ Ensure adequate and balanced coverage of all components of IIA in the report. ☞ Carry out Quality Assurance and Quality Control checks (QA/QC) ☞ Ensure timely completion and submission of reports ☞ Ensure production of a stand-alone IMMP ☞ Allocate and manage budget approved for IIA ☞ Ensure appropriate IIA methodologies are applied ☞ Ensure distribution of IIA reports to internal and external stakeholders. ☞ Follow up implementation of recommendations ☞ Ensure consultant competency ☞ Ensure IIA reports are handed over during job change 	<p>Project Manager</p>	<ul style="list-style-type: none"> ☞ Head, IIA Core team ☞ Act as owner of the project on behalf of Line managers ☞ Co-ordinate all IIA meetings and challenge sessions ☞ Ensure that IIAs are carried out for all projects in compliance with PDO HSE Policy ☞ Initiate the IIA process by completing the Initial Impact Identification Checklist ☞ Allocate 0.5 to 1.0% of project cost to IIA in compliance with PDO SD/SP Policy ☞ Coordinate technical information/data at all project phases/VAR for input into the IIA ☞ Contribute to IIA terms of reference and scoping ☞ Provide other technical documents such as CDPs, QRA, PEP, HSE-Case for review and integration into the IIA process ☞ Participate in the review of draft and final IIA reports ☞ Obtain Line manager's approval and participate in IMMP and SD/SP implementation. ☞ Ensure proper handover of IIA materials/reports in case of Job change ☞ Ensure close out of IMMP and SD/SP Plan Project phases.
	<p>MSE/2</p>	<ul style="list-style-type: none"> ☞ Core IIA team member ☞ Advise IIA team on potential environmental issues at all project phases including scoping stage ☞ Initiate and maintain discussions with all IIA team members ☞ Participate and offer advice at all stages of project development ☞ Coordinate all IIA fieldwork and Quality assurance, and quality control checks on field data ☞ Liaise with MRMEWR and environment specialist ☞ Co-ordinate all IIA meetings and review sessions ☞ Co-ordinate IIA input and participates in studies such as HAZID, HAZOP, QRA, FEED, etc. ☞ Keep inventory of available baseline data and update data base ☞ Coordinate IIA report writing and ensure good quality ☞ Ensure environmental and biodiversity inputs into the IIA ☞ Co-ordinate IIA contracting process and CTRs ☞ In collaboration of IIA team members ensure competency and qualification of IIA contractor staff ☞ Advice Area/Asset Teams and ensure IMMP and SD/SP implementation plan is signed off.
	<p>MSE/3</p>	<ul style="list-style-type: none"> ☞ IIA Core team member ☞ Advise IIA team on potential health issues at all project phases including scoping stage ☞ Provide information on HRA for input into HIA preparation ☞ Liaise with Health ministry, agencies and specialists ☞ Formulate sustainable health initiatives/ minimum health standards for input ☞ Provide input to IIA scope and TOR ☞ Assist in the selection and supervision of IIA consultant in relation to HIA aspects ☞ Review the IIA report to ascertain adequate coverage of the HIA aspects
	<p>MSE/2</p>	<ul style="list-style-type: none"> ☞ IIA Core Team member ☞ Focal point for all social and SP/SP issues ☞ Assist in the selection and supervision of IIA consultants, especially the member(s) for social development specialities ☞ When necessary carry out social studies, supervise and submit report to IIA team ☞ Advise on scoping, consultation and stakeholder engagement ☞ Review IIA report to ascertain adequate coverage of social and SD issues ☞ Advise and develop SD plans for the individual communities ☞ Identify and participate in the meetings with the communities ☞ Support collection and dissemination of SD/SP reports and baseline studies ☞ Liaise between communities and PDO ☞ Lead in stakeholder identification and stakeholder consultation plan
	<p>XTG</p>	<ul style="list-style-type: none"> ☞ IIA Core team member ☞ Provide existing topographical maps and other data of project area ☞ Quality check all maps in IIA report ☞ Provide positional services ☞ Provide baseline maps for IIA baseline reporting ☞ Populate IIA database with co-ordinates of sampling points ☞ Provide RS/GIS access and services to IIA Core team members





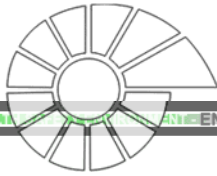
Team	Who	Responsibility
<p>Ad-hoc Team</p> <ul style="list-style-type: none"> ☞ Support IIA Core team as appropriate. ☞ Ensure management approval ☞ Provide information on external issues ☞ Act as linkage between IIA Core team and Ad-hoc team ☞ Ensure stakeholder engagement ☞ Offer expert advise on policies ☞ Review policy issues ☞ Participate in IIA implementation 	<p>MSE</p>	<ul style="list-style-type: none"> ☞ Act as Policy Champion and custodian of IIA process ☞ Act as IIA champion at SD/SP Steering committee ☞ Liaise with National & International environmental organisations ☞ Attend all IIA challenge sessions ☞ Share information with government ministries and other Oil and Gas Partners ☞ Owner of the IIA Process ☞ Undertake audit of IMMP and SD/SP projects.
	<p>Area / HSE</p>	<ul style="list-style-type: none"> ☞ Provide the initial information in project area to project manager ☞ Provide effective leadership in the implementation of IMMP especially after Construction ☞ Co-ordinate HSE-MS in the area/asset team ☞ Supervise and ensure contractor's compliance with IMMP to project life cycle ☞ Report progress of IIA implementation to Project Manager
	<p>HXM</p>	<ul style="list-style-type: none"> ☞ Advise on stakeholders and strategy for consultation/ engagement ☞ Provide forum for interaction with media and communicate IIA and SD performance with external stakeholders. ☞ Participate in budget allocation to all projects and IIA studies ☞ Member SD/SP Steering committee. ☞ Arrange modalities and pay compensation for land take and damages as determined. ☞ Coordinate external stakeholder participation
	<p>HCR/ONH /OSH</p>	<ul style="list-style-type: none"> ☞ Participate in local community stakeholder identification ☞ Introduce IIA consultants to local communities ☞ Liaise between communities and PDO on IIA/SD issues ☞ Participate in Scoping workshop ☞ Participate in the implementation of IMMP and SD/SP project
	<p>FLG</p>	<ul style="list-style-type: none"> ☞ Provide legal advice from the onset of the IIA on company's legal interest ☞ Identify legal issues for consideration ☞ Review legal aspects and statements of the IIA report ☞ Advise on confidentiality issues in the context of corporate disclosures, confidential documents and generated data. ☞ Review the law relating to IIA and specific project requirements to ensure compliance. ☞ Identify areas/commitments in IIA that may lead to future improvement and liabilities





Team	Who	Responsibility
<p>Contractor</p> <ul style="list-style-type: none"> ☞ Support IIA Core Team ☞ Implement IIA recommendation ☞ Provide quality service ☞ Maintain competent team ☞ Deliver timely services 	<p>Consultant</p>	<ul style="list-style-type: none"> ☞ Carry out IIA studies and other relevant studies as advised by IIA Core team ☞ Build and maintain competent multidisciplinary team and ensure coverage of all major components of IIA. ☞ Ensure strict compliance with all contracting requirements. ☞ Maintain all aspects of QA/QC in the IIA process ☞ Carry out field data gathering and literature review ☞ Provide work strategy ☞ Attend meetings with IIA Core team members only on invitation. ☞ Attend Scoping workshop and offer advice and services ☞ Write scoping report and provide work plan ☞ Ensure timely submission and quality of reports ☞ Use appropriate methodologies for impact assessment and quantification. ☞ Make milestone presentation to IIA team as appropriate. ☞ Apply the highest professional ethics in IIA execution.
<p>Stakeholders</p> <ul style="list-style-type: none"> ☞ Support IIA Core Team ☞ Offer expert ministerial advise ☞ Participate effectively during Scoping Workshop ☞ Participate in implementation of recommendations 	<p>Ministries</p>	<ul style="list-style-type: none"> ☞ Offer advise on the role of your ministry ☞ Participate in stakeholder engagement ☞ Advise relevant SD/SP project of each community ☞ Participate in Scoping workshop(s) ☞ Participate in the implementation of SD/SP projects
	<p>Local Communities</p>	<ul style="list-style-type: none"> ☞ Provide information and offer advise on their community ☞ Participate actively in stakeholder consultation and engagement ☞ Participate in Scoping workshop ☞ Suggest SD/SP projects for their communities ☞ Participate in the implementation of SD/SP through local contracting.
	<p>NGOs</p>	<ul style="list-style-type: none"> ☞ Provide and offer technical advise to IIA team ☞ Participate in Scoping workshop ☞ Participate in field data gathering as found necessary ☞ Participate in the implementation of IMMP and SD/SP projects as found necessary





4.0 ADMINISTRATIVE CONTROLS

4.1 Implementation of IIA Findings

Impact Mitigation and Monitoring Plan is an important deliverable from IIA process which ensures that all findings and recommendations from IIA process are complied with. An IMMMP should set arrangements for monitoring impacts and /or mitigation measures.

It guarantees that all commitments are incorporated into an HSE – MS and will be delivered through Impact Safety.

- It is the responsibility of the Project manger to implement all IIA and SD recommendations.
- A monitoring plan should be drawn up with resources to effectively manage them.

4.1.1 Handovers

Project manager or members of IIA Core team must handover IIA documents or its deliverables when changing jobs. It therefore necessary for IIA Core Team members to ensure:

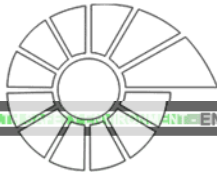
- proper handover of IIA report to Project manager with certificated evidence (See Attachment 2)
- a smooth transfer of IIA documents, reports, records and other deliverables during job change.
- a close out report is prepared for all reports and materials handed over from one team to another or individual.

4.2 Contracts

It is important to regard IIA activities in EPIC contracts such as design and construction contracts.

- The contractor may be required to specify in the tender document for design phase what IIA or impact mitigation issues to be addressed in the designs.
- Where an IIA reports have been completed the recommendations could be handed over to the contractor for incorporation in the design.
- During construction phase, the standalone IMMMP which include environmental, social and health issues will form part of contractor's contract implementation plan/activity.
- For major projects a liaison staff should be sourced to ensure implementation of all recommendations.
- The staff will reside with Project team but report to both the Project manager and MSE and to offer advice and guidance to construction contractor.
- Provide feedback to MSE.





- In some cases the project manager may decide to allow an independent contractor to undertake IMMP for purpose of unbiased assessment and reporting.

4.3 Contracting Process

Contracts for IIA studies will be a standalone process.

- The contract should be integrated in nature by integrating all aspects of environment, social and health under a single contact and flexible for application to other studies. E.g., Biodiversity, PRA, Baseline.
- Contracting should be carried out in line with PDO contracting policy while emphasising IIA requirements and HSE commitments.

4.4 Contracting strategy

Currently, all IIAs will be done through a call of contract with MSE/2 as the contract holder.

- The project manager shall provide the budget for IIA and any other environmentally related studies to MSEM being the custodian of HSE issues in PDO.
- This will allow for a single point responsibility in budgeting, cost, quality, and deliverables and data management.
- The contractor shall be called-off through service order.
- For every IIA study, the core team will develop a scope of work on the IIA for the contractor who will then be requested to submit TOR which will include contract cost (See TOR 2.4).
- To ensure uniformity in IIA consultant management, work scope for every study which includes cost shall be challenged by IIA Core team members, approved and signed off by MSEM.

4.5 The IIA Contractor

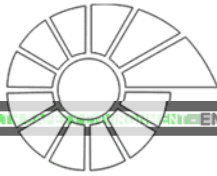
The IIA contractor should comprise of multi-disciplinary team of experts at various level, having a minimum requirement, experience, qualification and qualities in their various fields of specialisation. The number of consultants and competence shall depend on the key impacts identified during Scoping workshop. The IIA consulting team will be led by a Project Manager.

Environmental Impact Assessment: a team of one or more with experts from natural science or engineering background.

Social Impact Assessment: a team of one or more with experts and/or experience in either Social Science.

Health Impact Assessment: a team of one or more with experts in occupational health and industrial hygiene experience.





EIA	HIA	SIA
Ecology/Conservation	Health Risk Assessment	Participatory Planning Proccs
Air quality/Meteorology/Noise	Epidemiology	Participatory Rural Appraisal
Hydrology/Hydrogeology/ Hydrodynamics	Communicable and non-communicable diseases	Sociology
Aquatic/Marine Biology	Medical statistics	Social Profiling
Terrestrial/Soil Science		Archeology
Waste management		Demography
Archaeology		Political science
Flora/Fauna		Population Dynamics/Statistics

Desired Qualities

- All experts should possess the following desired qualities
- Technical experience in providing similar service
- Ability to communicate and share responsibilities
- Ability to work as part of a team
- Familiarisation with project environment
- Ability to work within project schedule
- Understanding of project and operation of E&P activities

4.5.1 Qualifications

Team Leader: The candidate shall possess relevant academic qualification in any area of specialisation or engineering listed above. The candidate shall possess at least 8 years of practical experience in the field and at least 3 years as Team leader in project management including Impact assessment studies.

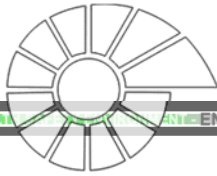
Senior Expert: The Candidate shall specialise in any of the above areas with relevant academic qualification. The candidate shall have at least 8 years in the field as consultant in area of specialisation including participation in Impact assessment studies.

Expert: The candidate shall possess relevant academic qualification with at least five years experience in impact assessment studies.

4.5.2 Contractor Performance

The contractor’s performance is very crucial to the overall achievement of IIA to PDO business. It is therefore the responsibility of Contract Holder to periodically assess contractor performance in meeting target and compliance with contract HSE performance.





4.5.3 Performance Indicators

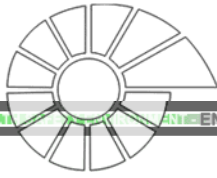
Performance indicators are used to set targets for performance achievement in the company. They are important in identifying both the target and achievements. They fall within low and high indicators and sometimes difficult to measure. Performance indicators include health, social, environment and economics. For the purpose of IIA three performance indicators are considered – cost, duration and quality. They will be used to determine performance of each study as well as compare performance with other studies. Setting targets can be used to provide a focus for the team in pursuing the achievement of the vision. For IIA study the key performance indicators are:

- Timely completion
- Quality of report
- Project cost

4.7 Data management

Data management is an integral part of an efficient project management. Over the life cycle of a project, data is generated which need to be stored and properly maintained. Such data shall serve as source of secondary data for future studies. Standardisation is therefore a prime requirement for technical data, to facilitate effective and efficient, preferably electronic, exchange of data.





Appendix 1: Health, Safety and Environment Policy



شركة تنمية نفط عُمان Petroleum Development Oman Health, Safety and Environment Policy

It is PDO's policy that:

"A HSE Management System be applied which shall:

- deliver compliance with the law of the Sultanate of Oman and internal standards;
- achieve continuous improvement in HSE performance;
- set objectives and targets; measure, appraise and publicly report HSE performance;
- require contractors to manage HSE in line with this policy;
- include HSE performance in the appraisal of all employees, and reward accordingly".

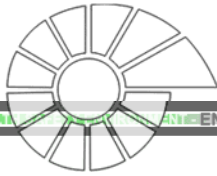
The Impact of this Policy is:

Continuous improvement in the management of the risks to the health and safety of employees, contractors and others affected by our operations and continuous reduction in the impact of operations on the environment, in line with the sustainable development aspirations of the Sultanate of Oman. We aim to achieve a HSE performance that all our stakeholders can be proud of.

The Purpose of this Policy is to:

- protect the health and safety of PDO and contractor employees and others affected by our activities,
- protect the environment and prevent pollution,
- achieve efficient use of material and energy,
- manage HSE as any other critical business activity,
- create a culture in which all PDO and contractor employees share our commitment to HSE at work and home,
- play a leading role in promoting best HSE practice within the oil and gas industry of the Sultanate of Oman, and be recognised as good corporate citizen
- reduce potential long term liabilities
- implement individual accountability to comply with HSE Management System requirements,
- Empower employees to start work ONLY when conditions are safe, and to stop work when it is unsafe.





Appendix 2a: List of Main Environmental Laws and Regulations of Oman

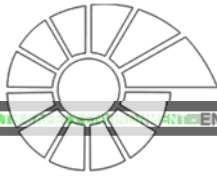
Reference Number	Description
RD 114/2001 (superseding RD 10/82)	Law for the conservation of the environment and prevention of pollution
RD 115/2001	Law on protection of potable water sources from pollution
RD 46/95	Law on handling and use of chemicals
MD 118/2004	Regulations for air pollution control from stationary sources
MD 187/2001 (Superseding MD 300/93)	Regulations for organizing the issuance of Environmental Approvals and Final Environmental Permit
MD 200/2000	Issuing regulations for Crushers, Quarries & transport of sand from Coasts, Beaches and Wadis
MD 248/97	Regulations for the handling of toxic substances
MD 80/94	Regulations for noise pollution in working environment
MD 79/94	Regulations for noise pollution in public environment
MD 18/93	Regulation for the management of hazardous wastes
MD 17/93	Regulations for the management of the solid non-hazardous wastes
OS 8/08	a) Omani standard for drinking water (Issued by the Directorate General of Specifications and Measures, Ministry of Commerce and Industry)
MD 115/2005	Regulation concerning the disposal of liquid effluents to marine environment

Appendix 2b: PDO HSE/SD Specifications

	Specification Title	Specification Number
1	HSE Specification - Emissions to Atmosphere	SP 1005
2	HSE Specification - Aqueous Effluents	SP 1006
3	HSE Specification - Use of Energy, Materials and Resources	SP 1008
		9
		0

- Comprehensive list of environmental law can be accessed through:
<http://sww1.pdo.shell.om/dept/cd/csm/blocks/documentation/hsedocs.htm#omanlaw>

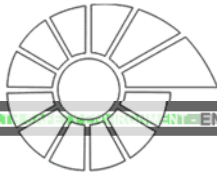




6	HSE Specification - Flora and Fauna	SP 1011
7	HSE Specification - Land Management	SP 1012
8	HSE Specification – Environmental Permitting	SP 1013
9	HSE Specification - Chemical Management	SP 1194
10	HRA Shell HSE July 2003	
11	HSE Specification - Public Health	SP 1232

Appendix 3: Initial Impact Identification Checklist (IIIC)





Initial Impact Identification Checklist (IIIC)

Before filling this form you are advised to familiarise with the project area by visiting the area. Information supplied in this form will help in the Initial Impact Identification to determine the category of your project. Then pass on the checklist to MSE6 team. Click on the next step (summary) to know your project score and category.

A General

Project Title:

Project Location:

Project Start Date: End Date:

Project Manager: Ref. Indicator: Telephone:

Project Focal Point: Ref. Indicator: Telephone:

B Project Category

Minor Project
 Major Project
 VAR
 NON-VAR
 Green Field
 Brown Field

Proposed Project Life Span (years) Years Project have been in existence

Project Scope

Surface :	1.
	2.
	3.
Subsurface :	1.
	2.
	3.

Estimated Cost of Project

< \$10 million
 > \$50 million
 > \$150 million
 > \$10 million
 > \$100 million

Total Potential allocation for SD: [0.5 – 1%] =

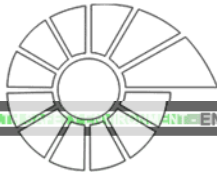
C Nature of Project (please tick as appropriate)

Exploration Well(s) Oil / Gas
 1
 2
 > 2
 Seismic Requisition
 2D
 3D
 Gas / Oil Pipeline / Flow lines
 0 - 50 Kms
 51 - 100 Kms
 > 100 Kms
 * Oil/ Gas Production/ Injection
 0 - 50
 51 - 100
 > 100
 Wells/ Appraisal Wells/ Water Wells
 Specify well type and number
 Number of People utilizing the site
 During Construction
 During Operation

Facility (Please Tick as appropriate Existing(E) and Proposed(P))

	E	P		E	P
Production station	<input type="checkbox"/>	<input type="checkbox"/>	Power station	<input type="checkbox"/>	<input type="checkbox"/>
Power transmission lines	<input type="checkbox"/>	<input type="checkbox"/>	Tank farm	<input type="checkbox"/>	<input type="checkbox"/>
Gathering Station	<input type="checkbox"/>	<input type="checkbox"/>			
Non-oil and Gas facilities					
Road	<input type="checkbox"/>	<input type="checkbox"/>	Air Strip	<input type="checkbox"/>	<input type="checkbox"/>
Sewage treatment plant	<input type="checkbox"/>	<input type="checkbox"/>	Permanent camp	<input type="checkbox"/>	<input type="checkbox"/>
Reverse Osmosis	<input type="checkbox"/>	<input type="checkbox"/>	Temporary camp	<input type="checkbox"/>	<input type="checkbox"/>
Telecom Tower	<input type="checkbox"/>	<input type="checkbox"/>	Waste Management Facility (hazardous/non-hazardous)	<input type="checkbox"/>	<input type="checkbox"/>
Burrow pit	<input type="checkbox"/>	<input type="checkbox"/>			

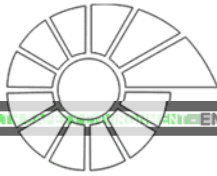




Appendix 4: List of PDO Stakeholders

Non-Government Stakeholders	Government stakeholders
<ol style="list-style-type: none"> 1. Current project managers 2. Local people 3. Local authorities 4. Shaykhs 5. Contractors 6. PDO Managers 7. MDC members not present 8. Extended management team 9. All PDO staff including interior based staff 10. International agencies 11. Local NGOs 12. International NGOs 13. Shell/shareholders 14. Other big business 15. Subject matter experts/technical consultants 16. Media 17. SQU 18. Citizens of Oman 19. Expatriate workers 20. OPAL 21. Embassies 22. Intilaaqah 23. Religious leaders 24. World Wildlife Fund 25. Water Research and Development 26. Bedus 27. World Trade Organisation 28. United Nations 29. IMF/World Bank 30. International Finance Corporation 	<ol style="list-style-type: none"> 1. Ministry of Environment and Climate Affair 2. Ministry for Interior 3. Cabinet 4. Ministry of Oil and Gas 5. Ministry of Social Development 6. Ministry of Manpower 7. Ministry of Regional Municipalities, Water Resources 8. Ministry of Electricity 9. Ministry of Transport 10. Ministry of Finance 11. Ministry of Health 12. Ministry of Education 13. Ministry of Higher Education 14. Ministry of Communications & Transport 15. Royal Omani Police 16. Shura Council 17. State Council 18. Chamber of Commerce 19. SANAAD 20. Governorate of Dhofar 21. Members of the Royal Family 22. Local authorities (Walis) 23. Local government Sustainable Development projects (eg Oryx) 24. Ministry of Commerce and Industry 25. Ministry of Heritage and Culture 26. Ministry of Defence 27. Ministry of Housing, Electricity & Water 28. Ministry of Diwan Affairs 29.



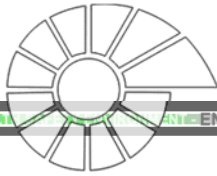


Appendix 5: Stakeholder Consultation Strategy

Typology	Components of Each Type
1. Passive Participation	People participate by being told what is going to happen or has already happened. It is a unilateral announcement by an administration or project management without any listening to people's responses. The information being shared belongs only to external professionals.
2. Participation in Information Giving	People participate by answering questions posed by extractive researchers using questionnaire surveys or similar approaches. People do not have the opportunity to influence proceedings, as the findings of the research are neither shared nor checked for accuracy.
3. Participation by Consultation	People participate by being consulted, and external agents listen to views. These external agents define both problems and solutions, and may modify these in the light of people's responses. Such a consultative process does not concede any share in decision-making, and professionals are under no obligation to take on board people's views.
4. Participation for Material Incentives	People participate by providing resources, for example labour, in return for food, cash or other material incentives. Much on-farm research falls in this category, as farmers provide the fields but are not involved in the experimentation or the process of learning. It is very common to see this called participation, yet people have no stake in prolonging activities when the incentives end.
5. Functional Participation	People participate by forming groups to meet predetermined objectives related to the project, which can involve the development or promotion of externally initiated social organisation. Such involvement does not tend to be at early stages of project cycles or planning, but rather after major decisions have been made. These institutions tend to be dependent on external initiators and facilitators, but may become self-dependent.
6. Interactive Participation	People participate in joint analysis, which leads to action plans and the formation of new local institutions or the strengthening of existing ones. It tends to involve interdisciplinary methodologies that seek multiple perspectives and make use of systematic and structured learning processes. These groups take control over local decisions, and so people have a stake in maintaining structures or practices.
7. Self-mobilization	People participate by taking initiatives independent of external institutions to change systems. Such self-initiated mobilization and collective action may or may not challenge existing inequitable distributions of wealth and power.

From *Alternative Systems of Inquiry for a Sustainable Agriculture*, Jules N. Pretty, IIED, December 1993



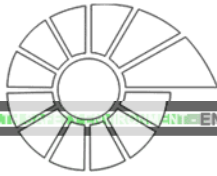


Appendix 6: Generic Components for Baseline Studies

Typical Data Included in Baseline Studies

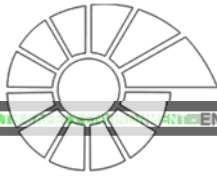
Environment	
Climate	Rainfall (frequency, intensity), temperature
Terrain	Altitude, slope steepness
Geology	Surface geology
Soils	Soil profiles, soil depth, soil productivity
Oceanography	Currents, hydrographic profiles
Surface Waters	Channel widths, flow rates, seasonality, water quality
Ground Waters	Quality, depth of aquifer, volume of aquifers
Biodiversity – Terrestrial	Habitats, flora, fauna
Biodiversity – Marine	Habitats, flora, fauna
Air quality	
People	
Noise	Existing noise levels at potential receptors
Air Quality	Existing SO _x , NO _x , particulates, other air pollutant levels at potential receptors
Infrastructure	Roads (including data on road traffic accidents), railways, pipelines, waterways, power lines
Other social infrastructure	Waste disposal services, sewer facilities, schools, community centres, mosques
Health Status	Morbidity statistics, for affected and reference area; mortality statistics for affected and reference area; special health vulnerabilities in affected area; trends in health status, nutritional status
Health Care Infrastructure	Types of health services accessible to the various population groups in community; diagnostic capabilities; health care centre supplies (water, electricity, functional equipment, adequate drug supplies); health surveillance system
Archaeology and Cultural Heritage	Existing resources
Landscape and Visual	Landscape quality, location of sensitive visual receptors
Land-use	Existing land-use patterns





Demographics	Demographics and population, land ownership, livelihoods, educational levels
Legal context	Legal/regulatory issues, land rights, other
Social organisation	Networks, inter-group relationships, leadership, decision making
Cultural and lifestyle	Traditions, customs, religion, ethnicities and relationships, spiritual needs, values, beliefs, philosophy, sense of self and sense of community, gender issues
Economic Resources	Industry, commerce, employment, savings and debts, livelihoods, including subsistence livelihoods, employment and skills
Natural Resources	Water use, land ownership and use, forestry, hunting and fishing, etc





of a development, impact from operational discharges or emissions). This includes impact that may be *intermittent or repeated* rather than continuous over an extended time period (e.g. repeated seasonal disturbance of species as a result of well operations, impact results from annual maintenance activities).

Non-Normal Impact: impact that results from un-planned events – incidents - within the project (e.g. breakdowns, failures) or in the external environment affecting the project (e.g. floods, seismic activity, landslip). In these cases the assessment should take account of the probability of the event.

Local: impact that affects locally important environmental resources or a single habitat/biotope.

Regional: impact that affects regionally important environmental resources or are felt at a regional scale as determined by administrative boundaries, habitat type.

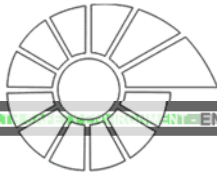
National: impact that affects nationally important environmental resources or affect an area that is nationally important/protected.

International: impact that affects internationally important environmental resources such as areas protected by International Conventions.

Trans-boundary: impact that is experienced in one country as a result of activities in another.

Source: HSE Manual, Environmental Impact Assessment Module, EP 95-0370. Shell International Exploration & Production B.V., 2003.

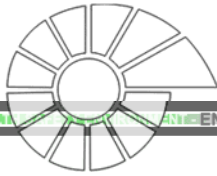




Appendix 8: Environmental Hazards and Possible Effects

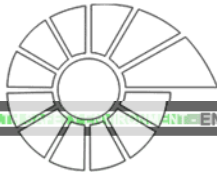
Hazard	Possible Effect
Gaseous emissions of methane (CH ₄)	Global warming/atmospheric ozone increase
Gaseous emissions of sulfur oxides (SO _x)	Acid deposition, water and soil acidification
Gaseous emissions of nitrogen oxides (NO _x)	Atmospheric ozone, acid deposition
Gaseous emissions of nitrous oxide (N ₂ O)	Global warming, stratospheric ozone depletion
Gaseous emissions of carbon dioxide (CO ₂)	Global warming
Gaseous emissions of carbon monoxide (CO)	Human health damage
Gaseous emissions of hydrogen sulfide (H ₂ S)	Human health damage, odor nuisance
Gaseous emissions of volatile organic compounds (VOC)	Atmospheric ozone increase, human health damage
Gaseous emissions of organic toxics (PAH, PCB)	Human health damage, ecological damage
Discharge of fine particulate matter	Human health damage, soot deposition
Discharge of toxic metals	Human health damage, ecological damage
Discharge of odorous compounds	Nuisance
Discharge of radiation	Human health damage, ecological damage
Discharge of heat	Nuisance, ecological damage
Discharge of light	Nuisance
Discharge of noise/vibration	Nuisance
Discharge of chlorofluorocarbons (CFC)	Global warming, stratospheric ozone depletion
Discharge of halons	Global warming, stratospheric ozone depletion
Spills and leaks of crude oil or distillates	Ecological damage, biological damage
Discharge of dissolved organic compounds	Ecological damage, biological damage, tainting of fish
Discharge of soluble heavy metals	Ecological damage, biological damage through accumulation
Discharge of soluble salts	Increased salinity, biological damage
Discharge of drilling mud/cuttings/chemicals	Ecological damage, biological damage





Discharge of organic nutrients (NH ₄ , PO ₄)	Eutrophication
Discharge of suspended solids	Ecological damage
Discharge of oil and grease (O/G)	Ecological damage, biological damage
Discharge of hot/cold effluent	Ecological damage
Discharge of detergents/solvents/cleaners	Eutrophication, ecological damage, biological damage
Discharge of pathogens	Human health damage
Discharge of anoxic effluent	Ecological damage, biological damage
Land disposal of hazardous wastes	Ecological damage, biological damage
Land disposal of domestic wastes	Ecological damage, nuisance
Land take for operations	Habitat loss, ecological damage
Energy use for operations	Loss of resources
Volume of water used	Loss of resources
Volume of raw material use	Loss of resources
Soil compaction from heavy vehicles	Modification of hydrology



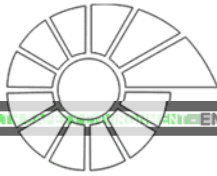


Appendix 9: Tools & Techniques for IIA

<i>Tools</i>	<i>EIA</i>	<i>SIA</i>	<i>HIA</i>
HEMP	√	√	√
Published Literature	√	√	√
Unpublished Reports	√	√	√
Data and surveys from relevant Governmental Institutions	√	√	√
Checklist for brown fields	√		
Satellite Maps	√	√	√
Aerial Photography	√	√	√
Side Scan sonar	√		
Stakeholder Workshops		√	√
Focus Groups		√	√
Questionnaires		√	√
Structured & Semi-structured Interviews		√	√
Participatory Rural Appraisal		√	√
Community Mapping		√	√
Social Network or Institutional Mapping		√	
Matrix	√	√	√
GIS	√		
Modelling	√		

Note: 1 - For full IIAs, use Quantitative assessment methods.
 2 - For partial IIAs, use Qualitative methods.





Appendix 10: Report Writing Format

The Integrated Impact Assessment report shall be in the format as outlined below:

- i. Title page
- ii. Table of contents
- iii. Executive Summary

Executive Summary: A concise discussion of significant findings of the IIA and recommended actions in the project including strategies to implement impact and SD projects.

Chapter One – Introduction: - Discuss background information, policy and legal and administrative framework with which the IIA is prepared.

Chapter Two – Project Justification: - Discuss project background, project objectives, need for the project, value of the project, envisaged sustainability, alternatives considered (including no project alternative), and development options considered.

Chapter Three – Project Description: - A concise description of type of project, scope, location, material input/output and by products, waste generation, technical layout and process, operation and maintenance, and project schedule.

Chapter Four – A description of the physical, biological and social-economic environment. Discuss any anticipated changes in the baseline condition without the development in place, even if not directly connected with the project.

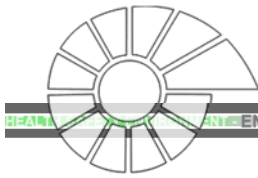
Chapter Five – Consultation: Identification of stakeholders, consultation with regulators, local communities and NGOs during at least two stages of the IIA process – Scoping and draft report preparation or engagement plan during IMMP. Continuous consultation with local community is encouraged where the project will affect community livelihood and involuntary resettlement

Chapter Six, - Impact Assessment: - Identification and assessment of various impacts, the extent and quality of available data, uncertainties associated with predictions should be identified and estimated. Discuss mitigation measures and alternatives, control technology, compensation, alternative site, alternative route or location, compliance with health and safety hazards requirements

Chapter Seven - Impact Mitigating and Monitoring Plan/Sustainable Development Plans – Discuss measures to be taken during implementation and operation to eliminate or reduce impacts to acceptable limits and execute sustainable development projects. The plan should identify emergency response procedures, cost, budget requirements, auditing and inspection procedures, waste handling procedures, training program, roles and responsibilities.

Chapter Eight – Recommendation





Conclusions

Bibliography/references

Appendices

List of Maps, illustrations and Figures

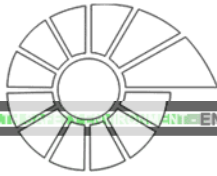
List of Tables

List of acronyms and abbreviations

Acknowledgement

EIA Preparers





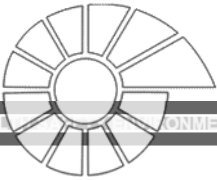
Appendix 11: Checklist for Review of IIA Reports

Reviewers of the Draft Integrated IA should:

1. Check the report's consistency, presentation of data and all the relevant information;
2. Check the report's contents against the Scope of Work provided to the consultant at the beginning of the project, to ensure that all information required has been provided; and
3. Check the report's contents against the requirements in the contract terms and conditions to ensure that all information is provided.

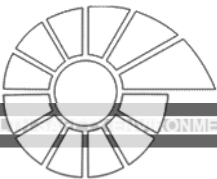
Table 1 below provides a checklist that indicates the minimum information, in addition to the information described above (if not already included), which should be included in an Integrated IA:





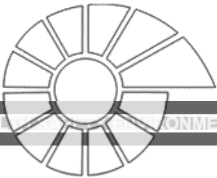
Integrated IA Report Elements		Checklist	Do not Know/Not Relevant	Strongly Disagree	Disagree	Strongly Agree	Agree
			(0)	(1)	(2)	(3)	(4)
1.	General						
	Consistency of report writing and format	Report format in line with the IIA Guidelines					
		The report is consistent on the EIA, SIA, & HIA aspects					
		Readability – all sections of the report are legible					
		A comprehensive non-technical summary is provided					
		All maps, plates and appendices are provided					
		All graphs & tables are provided in a clear format					
		All abbreviations & acronyms are properly listed and explained					
		All cited text is properly referenced in the reference section of the report					
2.	Project Description						
	Purpose and objectives of the project	Objectives & Justification well presented in the report					
	Description of planning, design, construction, operation, maintenance & decommissioning phases and project infrastructure	Project location well demarcated, activities well captured and explained					





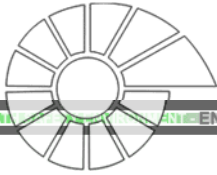
Integrated IA Report Elements		Checklist	Do not Know/Not Relevant	Strongly Disagree	Disagree	Strongly Agree	Agree
			(0)	(1)	(2)	(3)	(4)
	Project Inputs (aspects required for the project) and outputs (aspects produced by the project)						
3. Review of relevant legislation and standards							
	Omani legal requirements	Summary of relevant legislation is provided & explained					
	Applicable international standards and guidelines	Applicable standards reviewed and incorporated where necessary					
4. Environmental, Health and Social Baseline							
	Definition of the study area	Study area fully described					
	Environmental, social and health baseline data related to key issues highlighted during the scoping study	Baseline information well presented and data well analysed					
5. Description of stakeholder consultation activities							
	Stakeholders consulted	Stakeholders actively involved in the IIA process					
	Consultation methods applied	Methodologies for consultation clearly explained					
	Description of issues raised during consultation	Stakeholder concerns have been given due consideration					
	Minutes of meeting (usually contained in an appendix)	Minutes of meeting provided in the appendices					





Integrated IA Report Elements		Checklist	Do not Know/Not Relevant	Strongly Disagree	Disagree	Strongly Agree	Agree
			(0)	(1)	(2)	(3)	(4)
6.	Assessment of Impacts						
	Impacts Identified & Quantified	Impact Assessment methodology well explained					
		Project information properly used in impact identification					
		Environmental, Social & Health impacts are properly identified					
	Evaluated in terms of significance	Impact predication well explained					
		Impact evaluation well explained					
7.	Environmental, Social and Health Management and Monitoring Plan						
	Management and Control Measures	Detailed mitigation plan formulated					
	Mitigation and control measures	Mitigation measures are related to identified impacts					
	Detailed description of actions required to implement each measure	<u>Practical action items identified</u>					
	Responsibility for implementation	Action parties identified					
	Monitoring Measures	Detailed monitoring plan formulated					





Appendix 12: Integrated Impact Assessment Document Transmittal Form

Project Title:

Report Title:

To	Ref:	Tel:
From:	Ref:	Tel:
Copy:		Date :

Following completion of the above IIA study as the Project manager, the following the following reports, documents, items and materials are handed over to you:

S/N	Date	No.	Description

It is your responsibility to comply with the following:

- a) Ensure successful implementation of impact/recommendation as contained in Impact Mitigating and Monitoring Plan (IMMP) report.
- b) Ensure successful execution of Sustainable Development projects as listed in the IMMP report
- c) Handover the IMMP report, documents, reports, items and materials to Asset manager with a closeout report indicating the status of implementation of the IMMP and SD projects.
- d) In event of any job change handover all relevant documents, reports, items and materials, etc including status of IMMP and SD to your successor
- e) Communicate any changes in project workscope to MSE/2 for update of the IIA report where necessary.
- f) Forward all impact monitoring report, audit report, etc to MSE/2 as at when due.

Agreed by:	Project manager
	Name:
	Designation:
	Signature:
	Date:

