GOVERNMENT OF RAS AL KHAIMAH
RAK PORTS

MARINE POLLUTION RESPONSE PLAN

RAK PORTS INTEGRATED MANAGEMENT SYSTEM

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QUALITY ASSURANCE

Version Control

1. Document Control

Version No.	Date	Revisions
V1.0	08-05-2024	Initial release.

Retention	@ Office	@ Archives
	0-2 years	3-5 years

GENERAL INTRODUCTION

The 'Marine Pollution Response Plan' forms part of the overall RAK Ports' Marine Safety Management System. This plan has been envisaged and prepared by the Group Harbour Master of RAK Ports to detail the manner in which any marine pollution incident under RAK Ports is to be managed.

This plan outlines the operational arrangements of the Marine Pollution Response Action between RAK Ports members. In doing so, it describes the first-strike response and handover arrangements for oil spills and other pollution incidents within the port and surrounding the RAK Ports coastline, identify available resources, and provides key contact information.

RAK Ports encourages all personnel to identify potential improvements to this document and to forward them to the Group Harbour Master.

CONTACT INFORMATION

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Saqr Port – Marine Department

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WEBSITE OF THE PORT

https://www.rakports.ae

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INTRODUCTION

DISTRIBUTION

The 'Marine Pollution Response Plan' will be distributed as follows:

One copy will be posted on the company website and a notice will be circulated to inform relevant stakeholders. Any amendments to the plan will not be notified unless a new edition is posted.

One PDF copy shall be filed in the Integrated Management System as an Internal Document.

AMENDMENTS

Proposed amendments are to be sent to the Document Owner, Harbour Master, who will maintain a record of changes in accordance with the RASCI 133 – Process Management process.

DOCUMENTS

The definition of documents is defined below:

Documents may be in any form or type of medium such as paper, magnetic, electronic, photos and templates. They are designed to capture information on activities or results.

RECORDS

The definition of records is defined below:

Records provide evidence that activities have been performed or results have been achieved. They always record the past.

REFERENCE DOCUMENTS

	Document Title
1	International Ship & Port Facility Security Code (ISPS)
2	International Safety Management Code (ISM)
3	The UK Port Marine Safety Code (PMSC)
4	Guide to Good Practice on Port Marine Operations
5	MARPOL and SOLAS Regulations/Conventions
6	OPRC-HNS Protocol & IMO Manuals
7	ITOPF Technical Information & IPIECA Guide
8	UNEP & EEA Publications
9	MEMAC Publications
10	RAK Ports Regulations
11	RAK Ports Marine Publications

Foreword

RAK Ports is committed to the management of the environment and environmental resources in and around RAK Ports. Marine pollution incidents present a risk to people, the marine environment, the economy of Ras Al Khaimah and the region, and can adversely affect social amenity.

The Marine Pollution Response Plan has been developed to manage the impact of a marine pollution emergency by providing a response framework, based on the risk of a marine pollution incident, an alert and activation procedure and integration with the local and national plans.

Port Authority – RAK Ports will implement this plan in the event of a marine pollution incident to manage the process of response and minimise the effect on the environment and economy. To ensure the effectiveness of the plan, the Port Authority will ensure that necessary training and exercises are undertaken, so that staff and stakeholders are familiar with and able to successfully work with this plan.

The plan is prepared in accordance with International and Regional best practice and United Arab Emirates' Federal Law on the Protection and Development of the Environment. It will be reviewed and tested to ensure that it meets the functional requirements of marine pollution management at RAK Ports. The plan is subject to updates and amendments as required.

I urge all stakeholders to be vigilant to the threat and impact of marine pollution, and take all necessary steps to ensure the environment is protected.

Sincerely

Capt. Michael Magee
Group Harbour Master, RAK Ports

Consultation Process

The Plan draws on International best practices and was developed in consultation with the Environmental Protection and Development Authority - EPDA RAK.

We would like to thank the Director General of the EPDA, Dr. Saif Al Ghais, for his support and guidance. We would also like to thank Dr Amrita Giles Desoyza (Director of Environmental Monitoring Department) for his input and reviews.

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EPDA Approval

حكومة رأس الخيمة
Government of Ras Al Khaimah

الإمارات
THE EMIRATES

هيئة حماية البيئة والتنمية
Environment Protection & Development Authority

Ref: EPDA/839/00/24

April 16, 2024

Captain Michael Magee
Group Harbour Master
RAK Ports

Subject: RAK Ports Marine Pollution Response Plan

Dear Captain Michael,

In reference to your letter dated 21/02/2024 regarding the above-mentioned subject along with the attached plan. We would like to inform you that we have reviewed the plan, and we found it satisfactory.

Thanking You,

Yours sincerely,

هيئة حماية البيئة والتنمية * حكومة رأس الخيمة * Environment Protection & Development Authority-RAK * EPDA

Dr. Saif M. AlGhais
Director General

CC: Environmental Monitoring Department
Environmental Sustainability Department

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Deputy Harbour Master

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Marine Services Manager

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Email: jadams@rakports.ae

RAK Ports VTS Centre

All marine pollution incidents within RAK Ports area shall be reported as soon as practicable to RAK Ports VTS Centre.

Contact:

Tel.: +971 (07)7 205 6161 / 162 /163.

Email: vtscentre@rakports.ae

Reporting via VHF Channels:

Call Sign	VHF Frequency
Saqr Port	Ch 16 and 14
RAK Maritime City / Stevin Rock	Ch 16 and 69
Ras Al Khaimah Port	Ch 16 and 71
Al Jazeera Port	Ch 16 and 68
Al Jeer Port	Ch 16 and 14 / 69

Glossary of Terms

Bioremediation is the process of using living organisms to break down the molecular structure of oil into less complex substances that is not hazardous or regulated. This is often undertaken using hydrocarbon-eating microbes introduced to a contaminated site in large numbers. Nutrients are often added to speed up the organisms' digestion of the oil, and reproduction.

Bunker means a heavy fuel oil, intermediate fuel oil, blended distillate or diesel used as a vessel's fuel.

Chief Incident Commander (CIC) will only be activated at times of large spills that require a Tier 2 responder. The CIC will be responsible for the strategic response and management of all marine pollution response in RAK Ports waters. The CIC is normally the Group Harbour Master.

Clean-up / Pollution Response means actions taken to confirm the presence of an oil spill, stop the oil's flow from the source, contain the oil, collect it, protect areas from damage by it, mitigate its effects on the environment, and clean up wildlife and areas contaminated by it.

Control means the overall direction of emergency management activities during an emergency. Authority for control is established in legislation or administratively and carries with it responsibility for tasking organisations in accordance with the needs of the situation.

Control Agency means the agency or company assigned by legislation, administrative arrangements or within the relevant contingency plan, to control response activities to a maritime environmental emergency. The legislative or administrative mandate should be specified in the relevant contingency plan. The Control Agency will have responsibility for appointing the On-Scene Commander.

Coordination means the bringing together of organisations and other resources to support an emergency response.

Dispersant is a chemical formulation containing non-ionic surface-active agents that lower the surface tension between oil and water and enable oil film to break up more easily and disperse within the water with natural or mechanical agitation.

Emergency means an event, actual or imminent, which endangers or threatens to endanger life, property, or the environment, and which requires a significant and coordinated response. The term emergency and disaster are used interchangeably within the Emergency Management System.

Environment means the complex of physical, chemical, and biological agents and factors which may impact on a person or a community, and may also include social, physical, and built elements, which surround and interact with a community.

First Strike means a prompt initial response to protect the environment that is intended to limit the effect of an incident until such time as other resources can be deployed in support. This capability may vary from location to location.

Habitat means the natural home or environment of an animal, plant, or other organism.

Hazardous and Noxious Substance means any substance which, if introduced into the marine environment, is likely to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea.

Incident means an event involving the actual or probable discharge into the sea of a harmful substance, or effluents containing such a substance.

Incident Commander: The individual responsible for all incident activities, including the development of strategies and tactics and the ordering and release of resources. The Incident Commander has overall authority and responsibility for conducting incident operations and is responsible for the management of all incident operations at the incident site.

Incident Management Team is the group of incident management personnel comprised of the Chief Incident Commander and personnel appointed by RAK Ports and/or Control Agencies, to be responsible for the overall control of the response to an incident. It also may include other advisors and technical experts.

Incident Response Team means a group of responders who receive basic training to respond to oil spill and emergency incidents within RAK Ports.

Industry, unless already specified or defined in a particular context, means a business or commercial group or sector, or other socially valuable activity, such as fisheries, tourism, infrastructure, transport, etc. and their representative groups.

Mangrove means salt tolerant trees represented by single species.

Marine Environment means the marine waters and their contents of natural resources, plants, fish, other marine creatures, and the above atmosphere, as well as projects established in the marine environment. The boundaries of the Marine Environment for the purpose of this plan extent to the economic zone of the State.

Marine pollution refers to any occurrence or series of events with the same origin, including fire and explosion, which results or may result in discharge, release or emission of oil or a hazardous and noxious substance, which poses or may pose a threat to the marine environment, the coastline, animals or other resource, and which requires an emergency action or immediate response.

Maritime casualty means a collision of vessels, stranding or other incident of navigation, or other occurrence on board a vessel or external to it resulting in material damage or imminent threat of material damage to a vessel or cargo.

MARPOL Convention 73/78: The MARPOL Convention was adopted on the 2nd November, 1973 as an important IMO Convention and covered pollution by the main and key sources of oil, chemicals, and also harmful substances in packaged form, sewage and garbage. The protocol of 1978 related to the 1973 International Convention for the Prevention of Marine Pollution from Ships was adopted in a convention on tanker safety and pollution prevention on February, 1978. The main purpose of this Convention is preventing and minimising marine pollution from ships, both accidental pollution and daily operations; it includes six Annexes to address the key areas given above and Annex I is prepared for "the regulations for the prevention of pollution by oil", entered into force on 2 October in 1983 (IMO, 2002).

MEMAC (The Marine Emergency Mutual Aid Centre): a regional Intergovernmental Organisation, established in 1982 for the regional cooperation in combating marine pollution and other substances. The permanent headquarters of MEMAC are located in the Kingdom of Bahrain, and the Member States are: Kingdom of Bahrain, Sultanate of Oman, Kingdom of Saudi Arabia, United Arab Emirates, State of Kuwait, State of Qatar, Islamic Republic of Iran and Republic of Iraq.

More details are available at their website: http://www.memac-rsa.org/en

Offshore petroleum facility means a fixed or floating offshore installation or structure engaged in gas or oil exploration, exploitation, or production activities, or loading or unloading of oil and operating in accordance with the provisions of relevant Emirate/UAE legislation.

Oil means hydrocarbons in any liquid form including crude oil, fuel oil, sludge, oil refuse, refined products, and condensates. Also including dissolved or dispersed hydrocarbons, whether obtained from plants or animals, mineral deposits, or by synthesis.

Oil industry means producers, refiners and marketers of oil, and associated carriers and service contractors.

Oil pollution means the actual or probable release, discharge, or escape of oil into the internal waters of UAE, or UAE marine waters.

On-Scene Commander means the person appointed either by RAK Ports for controlling and managing a marine pollution clean-up. NCEMA / MOCCAE / EPDA may also have an On-Scene Commander to work with or oversee the RAK Ports OSC.

Petroleum includes oil and other substances extracted in the recovery of such substances, including LNG and LPG.

Place of refuge means a location, such as a port, anchorage, or other suitable place, where a maritime casualty can be placed to stabilise its condition, minimise impact on the community and environment, and reduce the hazards to navigation.

Polluter – The owner of a vessel or oil handling facility that is the source of a discharge of a pollutant into UAE Waters. The term “polluter” is largely interchangeable with the term “Responsible Party” and may be used by other agencies.

Port Authority means RAK Ports.

Port Limits / Port waters means all areas of water within the jurisdiction of RAK Ports in terms of the applicable legislation

Response means the actions taken immediately before, during, or directly after an incident to save or protect lives and property and to bring the consequences of the incident to a point of stability to enable recovery.

Response Coordinator means the person appointed by EPDA to manage the major pollution incident at the front line and works closely with the Chief Incident Commander and On-Scene Commander.

Shipboard Oil Pollution Emergency Plan (SOPEP): a plan required to be carried onboard certain ships by MARPOL 73/78.

Shoreline Response Centre means a centre established in a local setting (at the response front) to coordinate response functions.

Tier 1 Oil Spill means a spill that is site specific and responded to and resolved by the Port Authority. Oil spill response capability is based on risk. The level of response is expected to consist of a timely ‘first-strike’ and includes the capacity to assist if there is an escalation to a tier 2 or tier 3 response.

Tier 2 Oil Spill means a spill that is generally beyond the capability of the Port Authority acting alone, so the Port Authority seeks assistance from additional sources such as a Tier 2 Response Provider.

Tier 3 Oil Spill means a spill that is generally more complex, of longer duration and impact, and beyond the response capability of the RAK Ports and Tier 2 Response Provider. The response is nationally-led and coordinated by NCEMA or MOCCAE, which manages the National Oil Spill Contingency Plan.

Acronyms

CIC	Chief Incident Commander
EEA	European Environment Agency
EPDA	Environmental Protection Development Authority, RAK
EWE	Etihad Water & Electricity
HFO	Heavy Fuel Oil
IC	Incident Commander
IFO	Intermediate Fuel Oil
IMDG Code	International Maritime Dangerous Goods Code
IMO	International Maritime Organisation
IMT	Incident Management Team
IPIECA	The International Petroleum Industry Environmental Conservation Association
IRT	RAK Ports Incident Response Team
ITOPF	International Tanker Owners Pollution Federation Limited
MARPOL	International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978
MEMAC	Marine Emergency Mutual Aid Centre
MGO	Marine Gas Oil
MOEI	Ministry of Energy and Infrastructure
MOCCAE	UAE Ministry of Climate Change and Environment
MSDS	Material Safety Data Sheet
NCEMA	National Emergency Crisis and Disaster Management Authority
NG	National Guard – Coastal Protection Authority
NOSRP	UAE National Oil spill Response Plan

OPRC-HNS	IMO Protocol on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances
OSC	On-Scene Commander
POLREP	Marine Pollution Report Form
RAK PDS	RAK Public Service Department
ROPME	Regional Organisation for the Protection of Marine Environment
RPNS	RAK Ports Navigation Service
SOLAS	Safety of Life at Sea
SOPEP	The Shipboard Oil Pollution Emergency Plan
UNEP	United Nations Environment Programme
VTS	Vessel Traffic Service

SECTION ONE

AIM AND SCOPE

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SECTION ONE

Aim and Scope

1.1 Purpose of Plan

RAK Ports aims at controlling marine pollution through measures and rules applicable to vessels, equipment and marine facilities, is under an obligation to honour and implement the same through adopting means, practices and rules in accordance with Article I of the Convention 73 and Protocol 78 i.e. MARPOL 73/78.

This Marine Pollution Response Plan (hereafter termed the Plan) is designed to provide a framework to enable RAK Ports to protect, or where this is not possible, minimise the impact on the marine environment from any marine pollution incident within the port and its associated waters, through the initiation of a rapid, effective, and appropriate incident response.

The Plan aims to:

- Provide an effective system for reporting, assessing and responding to incidents of marine pollution in the waters under jurisdiction of the port facility.
- Minimise extent of movement of released oil/pollution from the source by timely containment.
- Minimise environmental impact by timely containment and recovery response.
- Maximise effectiveness of recovery actions through selection of appropriate equipment and techniques.
- Maximise response effectiveness through trained and competent, operational and response teams.
- Enlist the co-operation and support of all relevant agencies and authorities within the region.
- Ensure a seamless integration between all member ports - RAK Ports, for effective counter-pollution measures.
- Ensure that RAK Ports responds according to the priorities and procedures outlined within this document.
- Encourage and support research in marine pollution response, especially in relation to prevention, containment and mitigation methods, including mechanical and chemical means.
- Encourage and promote regional and international cooperation in the area of oil and chemical pollution preparedness and response.
- Ensure the processes and response structures are consistent with NOSRP and other relevant plans used in the industry.
- Establish record-keeping procedures to facilitate recovery of costs.

1.2 Scope of Plan

The Plan identifies realistic Tier 1 and Tier 2 scenarios, and the capability to deal with these. It also describes the escalation to Tier 3 and the interface with the National Oil Spill Response Plan (NOSRP) [See “Geographical Scope”].

The Plan shall apply to all counter-pollution activities undertaken within the Port Jurisdiction. This Plan has implications to all RAK Ports employees and contractors that may be required to respond to spillage or loss of containment of liquids or solids at RAK Ports controlled areas and covers the following activities:

- Clean-up of spilt oil and fuel.
- Clean-up of chemicals.
- Clean-up of any other liquid or solid waste.

If a spill occurs in the approaches or channel or anchorage or within RAK Ports jurisdiction, RAK Ports will offer assistance with use of marine craft and available oil-spill response resources.

The Plan has been compiled to cover the response to any spillage caused by or during operations associated with safe passage to, from or within RAK Ports. It will also be effective if water borne oil enters jurisdiction from an unknown source.

The Plan shall not apply to any beach or foreshore within the port except that, subject to the availability of manpower and equipment, the Port will, on request, undertake to render assistance as they are able to the Local Authority, where such areas under their jurisdiction adjoin the port. Once seawater pollution comes ashore, there is an expectation that local authorities will be involved in the response. Shoreline clean-up and disposal would primarily be the responsibility of the RAK PDS (RAK Public Service Department).

It is recognised that an oil spill that originates within RAK Ports area may spread beyond port limits. Should this be the case, the roles and responsibilities designated within the scope of this Plan shall remain in place throughout the response as will co-operation and consultation with relevant organisations in the affected area.

Chemical Spills: Chemical spill incidents may require the assistance of ‘specialists’.

1.3 Geographical Scope

The geographical area covered by this plan is RAK Ports limits.

Since, the fallouts of any accident being addressed by any Response Plan cannot be confined and limited to geographical boundaries within the area of jurisdiction and are likely to have an impact on areas beyond the area of addressal, it is desirable to have a knowledge of the area.

However, where an oil or chemical pollution has the potential to overspread beyond territorial waters and has impact on national interests, the NOSRP (see “UAE National Oil Spill Response Plan”) shall be activated in accordance with national regulations and international conventions as guided by the Ministry of Climate Change and Environment (MOCCAE) / National Emergency Crisis and Disaster

Management Authority (NCEMA) / EPDA RAK, and other national and international Control Agencies.

The limits of jurisdiction of RAK Ports are as defined in the RAK Ports Regulations 2008 as amended.

1.4 Area Covered by the Plan

The area covered by this Plan includes vessels alongside, harbours, designated anchorages and the area within the limits of following RAK Ports members:

- Al Jazeera Port
- Ras Al Khaimah Port
- RAK Maritime City
- Saqr Port
- Al Jeer Port
- Stevin Rock Harbour (a separate entity), adjacent to RAK Maritime City and has the same harbour entrance.

In the event of a pollution incident the following **must be** carried out:

a. All pollution incidents occurring in the Harbour are to be first notified to the Control Tower or relevant supervisor of the Incident Response Team such as Shore-bosun. It should also be notified to the Group Harbour Master and/or relevant Marine/Operations Managers or Deputy Harbour Master/Marine Services Manager.

b. **Under no circumstances** may any vessel causing pollution, be moved or brought into the Harbour without the specific authority of the Group Harbour Master who will designate the route to be taken and the berth or area to be taken to. The Group Harbour Master will inform NG (National Guard – Coastal Protection Authority), EPDA RAK, NCEMA and MOEI as required.

c. Vessels in any danger of sinking will not enter or use the fairway for approaching the port unless directed to do so by the Group Harbour Master.

1.5 Use of the Plan

This Plan is specifically for Marine Operations within RAK Ports, designed to initiate an appropriate marine pollution response in the event of an incident. It details a tiered response strategy (*see section Six*) that is in accordance with UAE legislative requirements and considers the spill risk associated with the operation, the prevailing meteorological and hydrographic conditions and the environmental sensitivity of the surrounding areas.

1.6 Tiered Approach

This Plan is based on internationally accepted standards of Tier classification and response concept to describe different categories of marine pollution/oil spill events based on their severity and availability of response resources.

Tier classifications are determined in consideration of spill volume, sensitivity of threatened resources and other factors that can only be determined at the time of the incident.

This approach identifies resources for responding to these incidents.

The responsibility of escalating an incident from Tier 1 to Tier 2 lies with the Group Harbour Master. See s*ection Eleven* (Categories of Incidents) for more details.

1.7 UAE National Oil Spill Response Plan (NOSRP)

The NOSRP comes under the purview of the Ministry of Climate Change and Environment (MOCCAE) and is administered by the National Emergency Crisis and Disaster Management Authority (NCEMA). The EPDA RAK is the 'Appropriate Authority' for regulating marine pollution incidents in Ras Al Khaimah. EPDA RAK seeks to prevent or reduce the risk of marine pollution and to ensure that marine pollution incidents are combated as quickly as possible.

1.8 Implementation of NOSRP and Tier 3 Response

In the event of a major pollution incident, which calls for a Tier 3 response, NOSRP will be implemented. In most cases, an ad hoc committee would be appointed and designate an On-Scene Commander (OSC).

The committee would comprise members of both Federal and Emirate governmental agencies, as well as RAK Ports representatives and Tier 3 Response Provider involved. In addition, a Shoreline Response Centre (SRC) would be established and would exercise overall coordination of shoreline clean up in accordance with the procedures and guidance given in the NOSRP. In this event, NG (National Guard – Coastal Protection Authority) will work in coordination with RAK Ports Group Harbour Master (the CIC) and On-Scene Commander (OSC) to counter pollution at-sea. RAK Ports Incident Response Team (IRT) and first-strike equipment would be made available to SRC and or NG (National Guard – Coastal Protection Authority) as required.

1.9 Implementation of the Plan

First-strike response: Implementation of the Plan will be the responsibility of Port Authority for first-strike response. NCEMA and EPDA will be notified of all pollution incidents, including where a first strike response is required.

RAK Ports maintains Tier 1 response equipment and resources at strategic points in their stockpiles, for a first-strike response relevant to risk through normal operations and a mechanism to call the Tier 2 Response Provider (ADNOC) in the event of an abnormal event.

Tier 2 response: The Tier 2 response will be the responsibility of Port Authority and EPDA and appointed Tier 2 Responder jointly or separately by agreed coordination arrangements involving Chief Incident Commander (CIC), Incident Commander (IC), EPDA's Response Coordinator and Tier 2 Response Provider. All Tier 2 pollution incidents will be reported to NCEMA.

EPDA will provide necessary guidance for protection of shoreline and beaches, advice on environmental sensitivities and possible clean up priorities and techniques.

Tier 3 response: In a major spill (Tier 3) affecting the area inside and outside harbour limits, a multi-agency response will be initiated with NCEMA as Control Agency. Lead organisations in a major spill may include:

- NG (National Guard – Coastal Protection Authority) for response support.
- RAK Public Services Department for clean-up of beaches.
- EPDA to authorise any use of dispersants, response coordination during an incident escalates beyond the capacity of the Port Authority and/or Tier 2 response provider, and to provide advice on protecting habitats and other marine environmental activities.
- EWE RAK for shutdown of water desalination plant.

Major pollution incidents may require assistance from Police, Fire and Rescue Service, Ambulance Service, NG (National Guard – Coastal Protection Authority) to sufficiently cope with the situation.

NCEMA and EPDA will do this in consultation between Chief Incident Commander (Group Harbour Master) and OSC/Tier 3 Responder who will be appointed.

1.10 Strategic Coordination of Emergencies of National Consequence

Major or catastrophic maritime environmental emergencies have the potential to significantly impact on the national interests of UAE and may require extraordinary strategic coordination across Government and stakeholders for their effective management. Such incidents will generally be of a large scale and require the coordination of national and international level interests, and may include circumstances where:

- There is a significant threat to socio-economic and/or ecological resources.
- The incident impacts across an international boundary.
- There is significant national and international media attention impacting across the interests of multiple parties.

1.11 Strategic Leadership

A nationally significant incident will create additional pressures on the Port, to manage the legitimate interests of the Government and Port Authority, and private sector stakeholders involved in the incident.

In the event of an incident of national significance, NCEMA/MOCCAE will take overall charge for the spill response under the guidance of the Ministry of Climate Change and Environment. In such a case, they will appoint an On Scene Commander (OSC) to set up a committee.

EPDA will take precedence in the strategic communications to ensure cooperation between all parties and facilitate national and international assistance through Government emergency

management arrangements in the event of incidents escalating beyond the response capabilities of the Port Authority and Tier 2 response provider.

1.12 Place of Refuge

It is rarely possible to deal expeditiously and satisfactorily with a casualty in open sea conditions, and the longer a damaged ship is forced to remain at the mercy of the open sea, the higher the risk of its condition deteriorating and thereby becoming a greater pollution hazard.
Under certain circumstances the need may arise when a vessel, due to defect, malfunction, stress of weather or similar unplanned event seeks refuge at the Port. In such circumstances, it is likely that the risk of pollution would be increased.

The decision to grant entry would be solely at the discretion of the Harbour Master in consultation with relevant authorities and in accordance with national regulations. It would also be dependent upon a dynamic risk assessment, taking into account (but not limited to) the following factors:

- The paramount need to preserve life.
- The preservation of property, the vessel and that of the port.
- The possible disruption, which may be caused to the port, including any liability.
- Risk to the environment.

1.13 Sub-Plan: First-Strike Oil Spill Response Plan

This plan deals with the actions and mobilisation in response to reported oil spills from ships and other sources within RAK Ports and is an integral part of Marine Pollution Response Plan.

1.14 Interfacing Response Plans

A marine pollution incident or situation may be one of the emergencies arising out of an incident or a number of incidents. Such incidents could be natural or man-made leading to emergencies like fire, gas leak, threat/sabotage or chemical spills.

In the event of an incident involving emergency services, such as an accident, fire or collision, the Marine Emergency Response Plan may be invoked at the discretion of the Group Harbour Master. If such an incident involves risk of or actual oil spillage, this Marine Pollution Response Plan will be implemented in conjunction with the Marine Emergency Response Plan.

In the event, a spill has or is likely to impact upon the foreshore or spread beyond the capacity of RAK Ports and the Plan, the response action will be escalated, according to the size and extent of the spill and, as appropriate, Tier 2/3 responder(s) will be assigned to control response activities. Such event may call for a regional or national level response, then NOSRP will take precedence and NCEMA/MOCCAE, EPDA, NG (National Guard – Coastal Protection Authority) and other local agencies and authorities will be involved accordingly in addition to interfacing other relevant plans.

In the event of a Tier 3 oil spill incident, the NCEMA/MOCCAE will take control from RAK Ports. If the NCEMA/MOCCAE formally take over the response and clean-up operation, then RAK Ports oil

spill response resources and facilities and Tier 2 Respond Provider's (ADNOC Oil Spill & HNS Response) response resources and equipment will be made available to the NCEMA.

As appropriate, this plan interfaces with other applicable oil spill response plans in the industry such as the RAK Gas Oil Spill Response Plan or the RMC Tenants' Oil Spill Response Plan.

1.15 Environmental and Commercial Priorities

The surrounding coastal areas of RAK Ports are environmentally and strategically sensitive due to habitats, mangroves, birds, marine fisheries, coral and other local importance. The creek around Ras Al Khaimah Port is ecologically sensitive and has thick mangrove vegetation along the banks that stretches into some distance inside the city area.

1.16 Economic Sensitivities

The RAK Ports includes the largest bulk export port (Saqr Port) in MENA region. Saqr Port is critical to the continued success of the Ras Al Khaimah Emirate economy.

1.17 Costs

The overriding principle for all Marine Pollution Response operations is that the polluter is liable for all costs associated with the Pollution.

1.18 Revision

Every five years or whenever substantive changes to the Plan occur, this document will be reviewed and amended to include more effective response strategies and procedures, if applicable. The contact directory, due to the highly important nature of the information, and its likelihood to change more frequently, will be updated as and when changes occur.

SECTION TWO

COMMUNICATION & REPORTING PROCEDURES

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SECTION TWO

Communication & Reporting Procedures

2.1 Communication

Good communications between Port Authority, vessels, tenants, Tier 2/3 Response Provider, EPDA NG (National Guard – Coastal Authority) and NCEMA are essential before, during and after the event, as required for the discharge of responsibilities effectively and efficiently and to the satisfaction of each other.

2.2 Reporting Regulations

Under the Federal Law 24 of 1999, the owner, captain or any person in charge of the marine means of transportation, the persons responsible for the transportation of oil located within seaports or the marine environment of the United Arab Emirates and the officials of parties involved in oil extraction are required to report immediately any marine pollution/oil spillage incident to Port Authority or NG (National Guard – Coastal Authority).

2.3 Reporting and Co-ordination

It is important to report all marine pollution incidents and circumstances of accident caused, the nature of leaking substance and action taken to stop or control leakage by vessels calling RAK Ports without delay to enable immediate and appropriate action to be taken.

The most efficient method of ensuring that reports are dealt with promptly is by reporting to RAK Ports VTS Centre, which operate twenty-four (24) hours a day and is equipped with radio facilities, telephone and email facilities. Any pollution or spills occurring within the RAK Ports area of jurisdiction, RAK Ports berths, RAK Maritime City private berths or vessels alongside or at anchorage must be reported at once either by VHF radio or phone to RAK Ports VTS Centre.

RAK Ports VTS Centre will report the incident to the CIC and IC for determination of further action.

All marine pollution incidents shall be reported as soon as practicable to the RAK Ports VTS Centre on VHF channel or via telephone (see Annex-1 for contact details for Port communication). The following details shall be provided;

- Vessel name
- Location of pollution
- Nature/type of Pollution
- Estimated volume of pollution
- Has the discharge ceased
- Any casualties
- Resources being deployed and actions being taken to stop and respond to the spill.

More details of the incident to be submitted to the Group Harbour Master by using POLREP (Annex 12). Download POLREP from: https://rakports.ae/marine/

2.4 Observer of the Incident Reporting

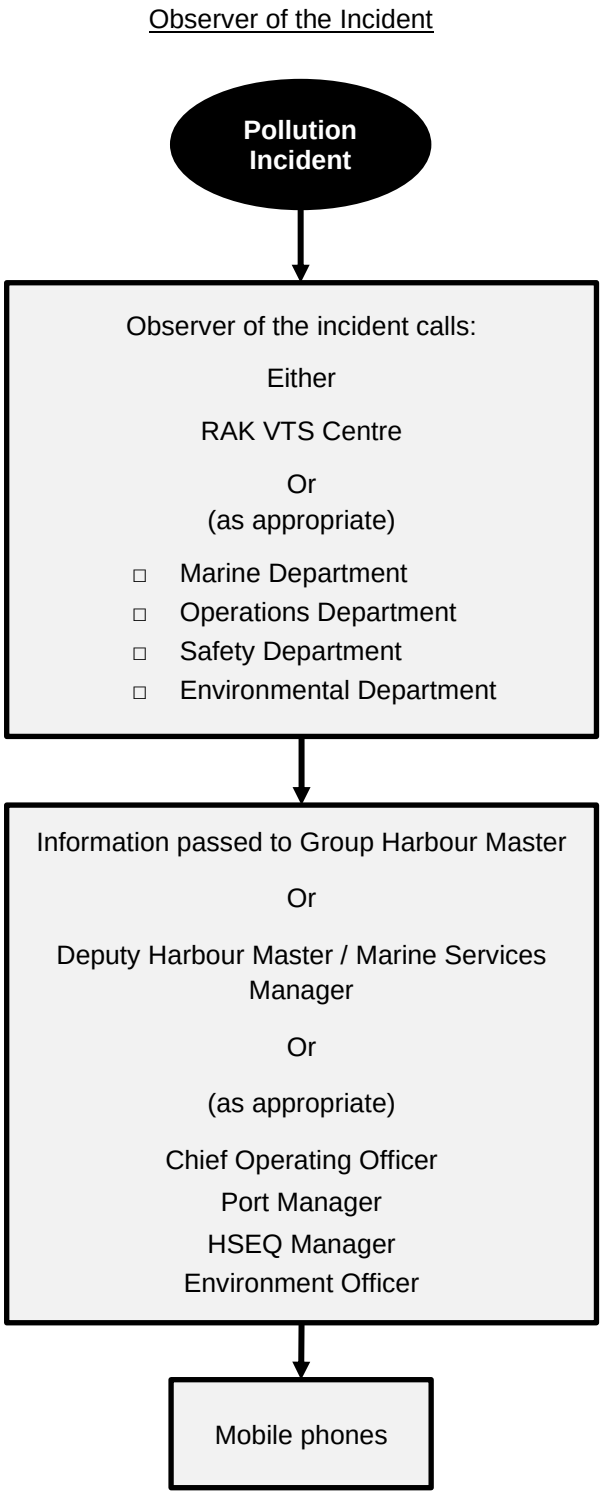

Figure 1: Observer of the incident reporting

Retention	@ Office	@ Archives
	0-2 years	3-5 years

2.5 Internal Alerting and Call Out Procedure

Internal alerting and call out are controlled by the Marine Department via RAK Ports VTS Centre.

In the first instance, the Duty VTS Officer will inform the VTS Supervisor and accordingly the VTS Supervisor or VTS Officer will inform the Deputy Harbour Master / Marine Services Manager / Port Manager / Group Harbour Master. Subsequently, depending on the level of the incident, the Group Harbour Master (CIC) or relevant Port Manager will decide who else to contact and alert to initiate appropriate response action.

The Duty VTS Officer on receiving a report of pollution is also charged with alerting the RAK Ports Incident Response Team (IRT). The VTS Supervisor / Duty VTS Officer shall alert the NG (National Guard – Coastal Protection Authority) and Other Emergency Services as necessary, including Environmental Protection and Development Authority (EPDA), RAK.

See Annex-1 to this document for contact details.

See also Emergency Contact Directory at:
https://rakports.ae/wp-content/uploads/2019/12/Emergency-Contact-Directory.pdf

2.6 Investigation and Confirmation

Where possible during daylight, the Duty VTS Officer shall gain confirmation of the extent of the incident from nearby vessels or the port tug/pilot boat or relevant party. This will confirm the report and will assist with the determination of the scale of the incident and provide more detail relating to, the extent and direction of travel of a potential oil slick/pollution. Information obtained to be recorded using Initial Spill/Pollution Report (See Annex 11).

2.7 Scale of the Response

Based on the initial report and subsequent confirmation the CIC/IC shall determine the required response.

2.8 Reporting Procedure

Having made an initial assessment of the incident and determining the Tier as Figure 2 (see *Reporting and Tier Determination* on the next page), the reporting requirements will escalate as necessary.

Reporting and Tier Determination

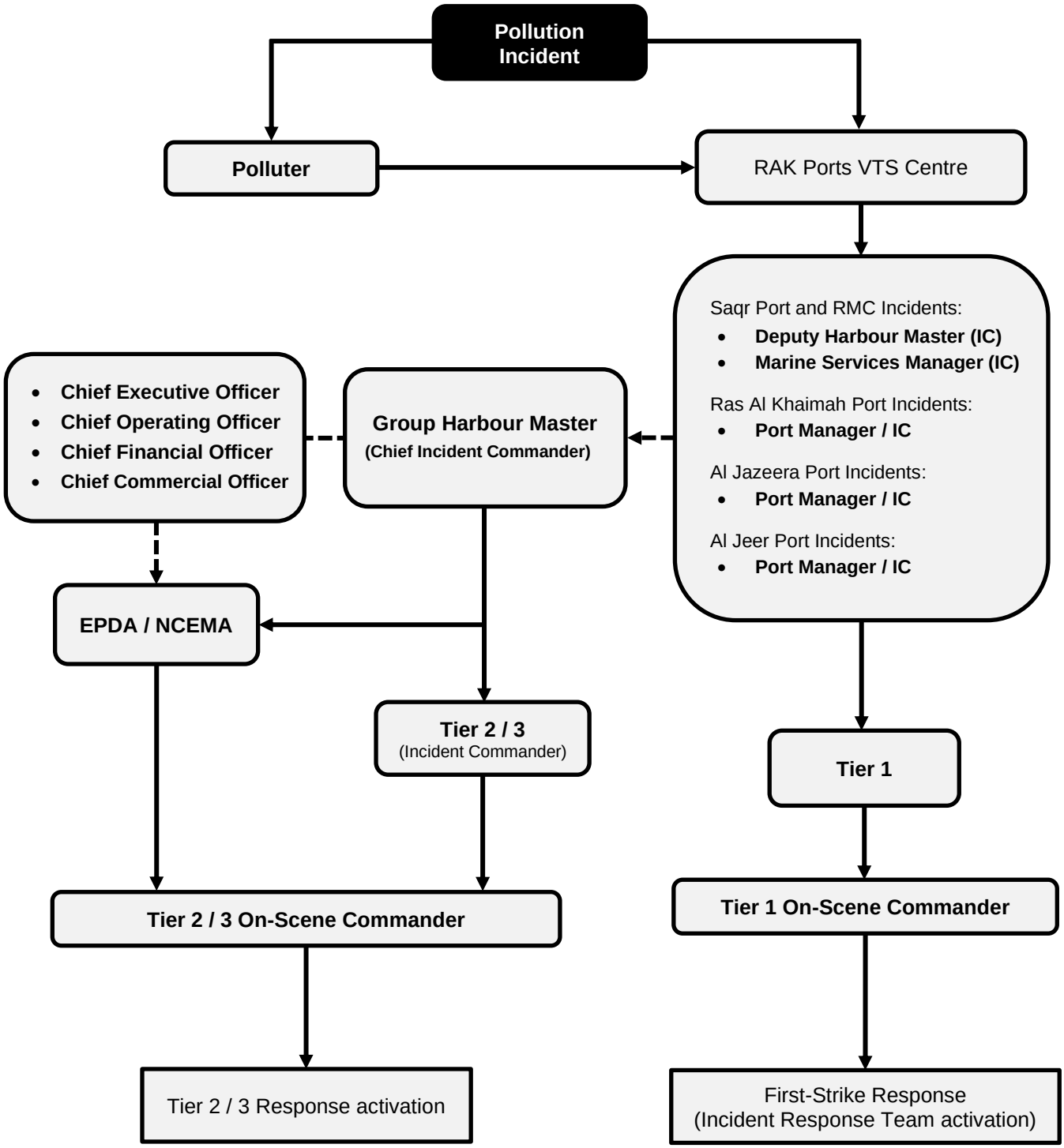

Figure 2: Reporting and tier determination

Retention	@ Office	@ Archives
	0-2 years	3-5 years

2.9 Incident Response Team Activation (First-Strike)

The Group Harbour Master (CIC) or the Deputy Harbour Master (IC) / Marine Services Manager (IC) will activate the first strike response as appropriate. RAK Ports VTS Centre will initiate the callout procedure to activate the RAK Ports Incident Response Team (IRT) in accordance with the instructions of the CIC or IC.

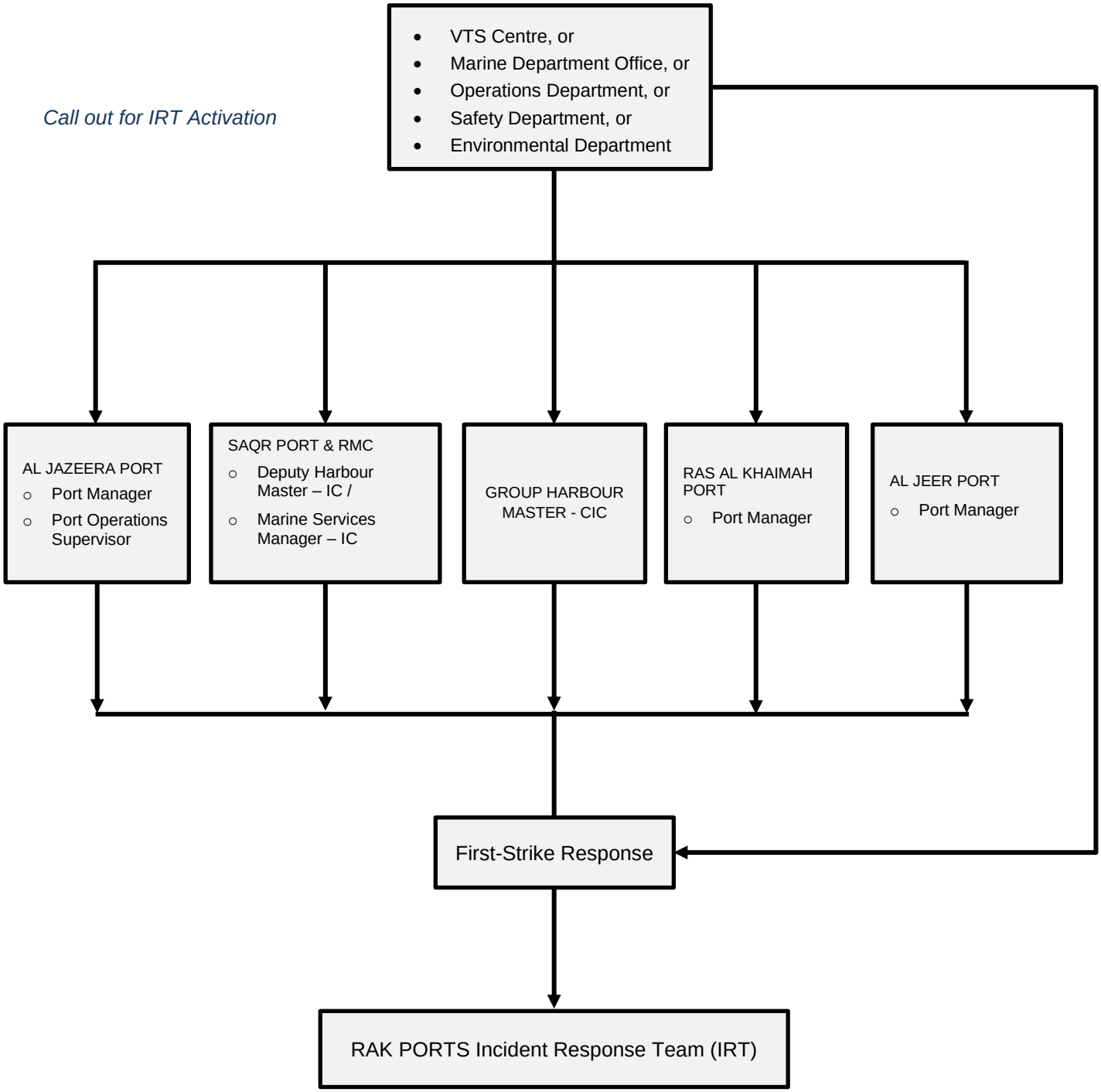

Figure 3: Reporting & First-strike Incident Response activation

2.10 Operations Planning and Notification

An assessment of the type of spill will indicate the response personnel and agencies that need to be called out/informed:

Notification Matrix					
Personnel / Organisation	**Tier 1**	**Tier 2**	**Tier 3**	**Method**	**Remarks**
RAK Ports VTS Centre / VTS Supervisor	√	√	√	Telephone / VHF Radio	Polluter / Observer to report to VTS Centre.
RAK Ports Incident Response Team (IRT)	√	√	√	Telephone	VTS Centre to notify
Duty Pilot	√	√	√	Telephone / VHF Radio	VTS Centre to notify
Tug Masters	√	√	√	Telephone / VHF Radio	VTS Centre to notify
Deputy Harbour Master (IC) / Marine Services Manager (IC)	√	√	√	Telephone	VTS Centre / VTS Supervisor / Shore-bosun / Duty Pilot to notify.
Group Harbour Master (CIC)	√	√	√	Telephone	VTS Centre / VTS Supervisor / Shore-bosun / Duty Pilot / DHM / MSM, and Port Managers (RAKP, AJZP, AJRP) to notify.
Chief Operating Officer	√	√	√	Telephone	Group Harbour Master to notify
Chief Financial Officer		√	√	Telephone	Group Harbour Master to notify
Chief Commercial Officer		√	√	Telephone	Group Harbour Master to notify
Chief Executive Officer		√	√	Telephone	Group Harbour Master to notify
Port Manager – Al Jazeera Port	√	√	√	Telephone	All pollution incidents within Al Jazeera Port to be notified.
Port Manager – Ras Al Khaimah Port	√	√	√	Telephone	All pollution incidents within Ras Al Khaimah Port to be notified.
Port Manager – Al Jeer Port	√	√	√	Telephone	All pollution incidents within Al Jeer Port to be notified.
Port Manager, Saqr Port	√	√	√	Telephone	All pollution incidents within Saqr Port to be notified.
HSEQ Manager	√	√	√	Telephone	
Port Security Manager	√	√	√	Telephone	
Marine Safety Coordinator	√	√	√	Telephone	For marine risk assessment and coordination.
Asst. H&S Manager	√	√	√	Telephone	For H&S related risk assessment.
Environment Officer	√	√	√	Telephone	
NG (National Guard – Coastal Protection Authority) 2nd Squadron		√	√	Telephone	Tel. 07 207 1222
EPDA		√	√	Telephone	Tel. 800 3732 & 07-233 3371
NCEMA		√	√	Telephone	Tel. 02 417 7000
RAK PDS		√	√	Telephone	Tel. 07 233 2422
Tenants	√	√	√	Telephone	For incident within their facility/operations.
Tier 2 Response Provider (ADNOC Logistics & Services - Oil Spill & HNS Response)		√	√	Telephone	**PRIMARY: 800 Spill** **SECONDARY: 80077455**
Salvors		√	√	Telephone	For Salvage operations (to be notified and arranged by owners / operators / agent in consultation with CIC.

Table 1: Operations Planning Notification Table

SECTION THREE

INCIDENT AND RESPONSE ORGANISATION

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SECTION THREE

Incident and Response Organisation

3.1 General

The person discovering the spillage should immediately report to the VTS Centre, or other appropriate responsible person and it will be verified. Thereafter a response will be initiated as deemed necessary.

Discretion should be used according to the incident and resources available as to the composition of the teams. Some teams may not be necessary in each incident while others may need to be increased or duplicated.

In all cases, RAK Ports VTS Centre would act as central coordination centre, being the hub of radio/telephone communications, in a position to direct/inform shipping/other craft (those involved in the response, or otherwise) and escalate response, as required, and document all action taken.

3.2 Initial Assessment

The initial assessment of the incident will be based on limited and in some cases uncollaborated information. This needs verification to allow a proper assessment of the size and scale of the incident to be determined.

3.3 Situational Awareness

The CIC and IMT needs to quickly gain situational awareness to determine:

- The scale of the incident
- The risk to environmental sensitivities
- The potential for a shoreline impact
- The need for resources

Once situational awareness is initially gained, it needs to be maintained through regular observation. Visual observation will be extremely limited at night except possibly within proximity of the jetties.

3.4 Determining Level of Response

In determining the level of the response, the following shall be considered:

- The volume and type of pollution
- The location of the pollution and the proximity of protection priorities
- The extent of predicted/potential shoreline impact
- The requirement for resources beyond the RAK Ports inventory
- The likely duration of the response effort
- The requirement for specialist skills

When making the initial assessment of level, the CIC must consider the lag time for resources of Tier 2/3 Responder or other external resources to arrive and to scale up early.

3.5 Determining Response Action

If the spill originates on land within the port, the person responsible (polluter), must report to relevant department (Safety/Environment/Operations/Marine), and the relevant department will initiate action to stop leakage, contain the spillage and initiate clean-up action.

If the spill originates at berths or vessel alongside, they will initiate action to stop the leakage, contain the oil/pollution and will endeavour to prevent oil entering the water.

If the spill is likely to enter the water, the relevant department will inform RAK Ports VTS Centre or Shore-bosun (Team Leader of RAK Ports Incident Response Team - IRT) requesting appropriate marine support.

After receiving instructions from IC, Shore-Bosun will organise IRT members and Oil Spill Response Resources (Tier 1 Capability) to take necessary action to prevent oil from entering the water and continue the clean-up operations as directed by IC.

Appropriate VHF channel will be selected and used for all communications between Marine craft and shore.

All spills with the potential to enter the water must be reported to RAK Ports VTS Centre.

The duty VTS Officer will at once send Shore-bosun or relevant person to the reported location for assessment of the spill.

The Incident Response Team (Tier 1) will, in conjunction with designated personnel (such as Port Pilot) and Private Jetty / Terminal Operator (as applicable) make an early assessment of the size of the spillage and the resources required to deal with it and advise relevant Port Manager / Deputy Harbour Master or Marine Services Manager or Group Harbour Master.

This early joint assessment will enable the Port Authority to decide whether assistance from Tier 2/3 Responder is required. Activating the Tier 2 responder must be approved by Group Harbour Master or nominated deputy in consultation with COO/CEO.

Should assistance of Tier 2/3 Responder be necessary the Port Authority will initiate action and inform EPDA and NCEMA (as per pre-agreed protocols).

RAK Ports Incident Response Team (IRT) will keep the Group Harbour Master informed at suitable intervals of their action.

3.6 Organisation

While, any response activity is envisaged to be undertaken by qualified team members on the ground, the larger issues of management of operations are to be handled by a core team of senior persons related to port operations.

3.7 Tier 1 (Small Local Spills)

For small operational spills where the spill has NOT gone into the harbour, it is envisaged one team would conduct operations as per table 2.

Personnel (Alternative)	Duties/Roles
Berth Operators / Tenants and Ship Masters and crew.	Contain spill, Inform RAK Ports VTS Centre / Marine Department Office / Port Operations / HSE Department, follow port authority instructions and assist in clean up.
Shore Staff / Crew / H& S Team.	Contain spill, coordinate and organise clean-up operations.

Table 2

For small operational spills where the spill HAS gone into the harbour and sea water, one or more teams would carry out operations as necessary, see table 3:

Personnel (Alternative)	Duties/Roles
Berth Operators / Tenants and Ship Masters	Contain spill, Inform RAK Ports VTS Centre / Marine Department Office / Port Operations, obey as port authority instructions and assist in clean up
Relevant Supervisor / Incident Response Team / Shore Staff / Crew	Contain spill, coordinate and organise clean-up operations. Deploy absorbents.

Table 3

For vessel response see table 4 below

Personnel (Alternative)	Duties/Roles
Launch / Tug / Multicat / Other vessel Master and crew.	Checking situation, reporting progress, relaying information to RAK Ports VTS Centre and IRT, deploying booms.

Table 4

NB: Depending on the nature of a Tier 1 spill, activation of an Incident Commander may not be necessary.

3.8 Tier 2 (Medium Spills Involving mobilisation of the Tier 2 responder)

For medium spills involving mobilisation of the Tier 2 responder, an oil spill management team would be formed consisting of representatives of RAK Ports Senior Management and relevant external parties. See tables below detailing the relevant personnel and actions for spill management.

See table 5, Tier 2 Incident Management Team.

Personnel (Alternative)	Duties/Roles
Chief Incident Commander (Group Harbour Master or nominated deputy)	• Establish Incident status from Incident Commander • Authorises Tier 2 responder • Ensure the IC has sufficient resources to deal with the incident • Chair planning meeting as soon as feasible. • Initiate interactions with RAK Ports Senior Management / IDO / Palace • Liaise with ship-owners, Control Agencies and other concerned parties as required. • If necessary, prepare press statements & attend press briefing sessions/news conferences as requested. Press release will only be made in accordance with NCEMA's approval.

Incident Commander (Deputy Harbour Master or Marine Services Manager)	• Evaluate characteristics and behavior.
	• Evaluate spill location and predict movement according to weather wave and current conditions
	• Appoint On Scene Commander
	• Estimate volume of spill and if the source has been stopped
	• Determine clean-up priorities and methods.
	• Assess clean-up resources and requirements.
	• Organise Tier 2 Response.
	• Determine places for the storage and disposal of recovered oil and debris according to applicable environmental regulations.
	• Notification of spills to EPDA and NG (National Guard – Coastal Protection Authority) on the following Telephone numbers:
	  ○ EPDA: 800 3732 & 07 233 3371
	  ○ NG: 07 244 6477
	  ○ NCEMA
	  ○ Other Authorities as required
	• The following information to be provided to EPDA:
	  ○ Date & Time the spill occurred
	  ○ Type of the product alleged spilled
	  ○ Estimate of total volume spilled
	  ○ Is more spillage possible, and if so, estimate the amount and duration?
	  ○ What resources are at risk
	• Location of spill

RAK Ports VTS Centre	• Traffic control and initial response. • Communication and coordination with vessel and IRT. • Keep Incident Log and Report. • Prepare to call out further personnel as required.

Table 5

See table 6 below, Incident Response Coordination during Tier 2 spillage.

Personnel	Duties/Roles
Port Security Officer	• Organise emergency services response and operations staff.

Table 6

See table 7 below, Incident Response Support (Marine craft and crew) during Tier 2 spillage.

Personnel (Alternative)	Duties/Roles
Tug Master / Coxswain	• On scene checking situation, reporting progress, relaying information to port operations, deploying booms.
Tug / Launch Crew	
Marine Patrol boats	• Assistance to collect sample, gather evidence.

Table 7

See table 8 below, Incident Response Support (Non-Marine Support).

Personnel (Alternative)	Duties/Roles
Berth Staff (H&S, Environment, Port Operations)	• Lend support, have vehicle / forklift trucks etc as required, conduct clean-up operations
RAK Public Services Department	• As required, general labourers provide special vehicles such as bulldozers, skips, tankers etc.

Table 8

3.9 Tier 3 (Most Major Pollution Incidents)

(Most major pollution incidents begin with pollution of offshore waters. Pollutants may be moved by the wind and tide towards the shoreline and may exceed national boundaries).

For major spills/pollution invoking the National Oil Spill Response Plan (NOSRP), a similar structure to tier 2 above would be in place with extra clean up teams as necessary and other teams.

As further response staff from National Government, NCEMA/MOCCAE, EPDA, ADNOC (Official Tier 2 Response Provider), RAK PDS, EWE, etc arrive on scene, structures may alter slightly to allow liaison between different groups and input from the organisations. Some key staff may have roles in more than one group.

The Group Harbour Master, in accordance with the guidance of NCEMA, EPDA, NG (National Guard – Coastal Protection Authority) and RAK PDS will distribute key staff for roles in more than one group.

3.10 Tier 3 Incident: Local Authority Responsibility

A Tier three incident will overwhelm the resources of RAK Ports and will require the deployment of national resources. When the threat of pollution exceeds the capabilities of Port Authority, in coordination with EPDA, the Port Authority will initiate national response and request local authorities a Shoreline Response Centre *(venue to be determined)* be established to supervise clean-up operations.

3.11 Shoreline Response Centre (SRC) Overview

A Shoreline Response Centre will be set up (as per pre-agreed protocols) to co-ordinate and lead the onshore response following a major coastal pollution incident. It is the control centre for the clean-up operation ashore at which the strategy and priorities of action are determined. Responsibilities include:

- Determining the extent of the incident.
- Devising a strategy for dealing with it.
- Organising actions within that strategy (including the disposal of waste arising from any clean-up operation).
- Monitoring progress and effectiveness.
- Liaising with other response units involved in the same incident.

See table 9, Shoreline Response Centre (Venue to be determined)

Personnel (Alternative)	Duties/Roles
EPDA Designated Official	• Advice and liaison with Environmental group and Coordinate response from other organisations.
NCEMA Designated Official	• Advice and overall management, official reporting, and national coordination of resources.
NG (National Guard – Coastal Protection Authority)	• Coordinating response action at sea.
Municipality Designated Official	• As required, coordination, providing RAK PDS labourers, equipment, vehicles such as bulldozers, skips, tankers etc.
Port Authority Official (One or more attendees (as applicable): • Chief Operating Officer • Marine Services Manager • Deputy Harbour Master • Port Manager • HSEQ Manager • Security Manager • Saqr Port Security Officer • Saqr Port Environment Officer • Appropriate Supervisor.	• Advice and liaison purposes. • Providing port assistance for response action (if required).

Table 9

See table 10 below, Marine and Port Operations during Tier 3 spillage.

Personnel (Alternative)	Duties/Roles
Group Harbour Master	• Chief Incident Commander.
Deputy Harbour Master (IC). Marine Services Manager (IC)	• Marine Operations Management.
Port Manager. Deputy Operations Manager.	• Port Operations Management. • Arrange suitable equipment.
RAK Ports VTS Centre Marine Department Supervisors.	• Traffic control and response, keep incident log, communication, prepare to call out further personnel as required, general coordination and providing support.
Saqr Port Environmental Officer	• Liaison and staff operations
Port Operations / RAK PDS	• As required, general labourers provide special vehicles such as bulldozers, skips, tankers etc

Table 10

See table 11, Other Activities and Services

Personnel	Duties/Roles
Emergency Services	• Coordinating emergency services response and operations staff, liaison with port staff
Security Manager / Security Officer	• Managing emergency services response and operations staff.
HSEQ Manager	• Advice on Health and Safety related matters and operations.
Saqr Port Environmental Officer	• Liaison and staff operations
RAK Public Services Department	• As required, general labourers provide special vehicles such as bulldozers, skips, tankers etc, and provide support services.

Table 11

See table 12, Incident Response Support (Marine craft and crew) during Tier 3 spillage

Personnel (Alternative)	Duties/Roles
Tug Master / Coxswain	• On scene checking situation, reporting progress, relaying information to marine operations, and providing support services to Tier 2/3 response provider.
Tug / Launch Crew	
Marine Patrol boats	• Assistance to collect sample, gather evidence.

Table 12

3.12 Clean-Up Teams - At Scene

Teams would be made up as staff become available. One or more teams of clean up staff can be constituted as necessary from port, Tier 2 responder, and local authority staff, with the person in charge having received training in response/clean up procedures.

SECTION FOUR

ROLES AND RESPONSIBILITIES

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SECTION FOUR

Roles and Responsibilities

4.1 Port Authority

The Port Authority executes its power to effectively deal with any marine pollution. For pollution that falls within the definition of Tier 1 and Tier 2 resources will be from ports own response capability and those of a Tier 2 responder.

In the event of a major pollution incident that falls under or is likely to fall under, the category of Tier 3, the Port Authority will discuss with the relevant authorities EPDA/NCEMA regarding implementation of the NOSRP.

It is likely that, Port Authority will use a Contracted Service to provide equipment, protective clothing and dispersant needed to carry out its responsibilities under the plan, as it does not have the equipment or capacity to deal with a larger Tier 2 or Tier 3 incidents.

4.2 Group Harbour Master

Group Harbour Master has a key role to play including the implementation of pollution prevention measures and responses to oil spills, dealing with the immediate effects of the oil spill and aiming to minimise the impact on marine environment and navigational safety. He is also responsible for introducing necessary guidelines to ensure that all calling vessels are adhering to applicable IMO regulations such as MARPOL, to minimise/eliminate impact of marine pollution.

The Group Harbour Master will be the Chief Incident Commander (CIC) for Tier 1 and Tier 2 response and will retain this position for Tier 3 magnitude unless a change is agreed with any Government Agencies involved.

The responsibility for escalating an incident from a Tier 1 to Tier 2 response lies with the Group Harbour Master or his nominated deputies (Depending on the type and quantity of product spilled in the water, the Tier 2 Responder will be called as soon as possible if deemed necessary).

The Group Harbour Master, who chairs the Incident Management Team - IMT (Please *see Section Nine* – Incident Management System) will be supported in his role by IMT, Incident Management Support Team (IMST), Incident Response Team (IRT) and other Marine Department personnel.

4.3 Deputy Harbour Master & Marine Services Manager

In the absence of Group Harbour Master, the Deputy Harbour Master or Marine Services Manager will assume the role of Chief Incident Commander. They will be supported in their role by IMT, IMST, IRT and other Marine Department personnel.

4.4 RAK Ports VTS Centre

In the event of marine pollution incident, RAK Ports VTS Centre is responsible for managing navigation in accordance with the instructions of Group Harbour Master or Deputy Harbour Master or Marine Services Manager. Incident response arrangements are coordinated in conjunction with the VTS Centre, which is manned on a 24-hour system.

Responsibilities and incident control arrangements are clearly laid down in the 'Marine Emergency Response Plan' to cover all marine based emergencies including:

- Fire
- Grounding, collision and sinking
- Casualties
- Pollution initial response

Response Priorities:

- Protect human health and safety
- Minimise environmental impacts
- Restore the environment, as near as practicable, to pre-spill / pollution conditions

  Refer to RAK Ports Marine Emergency Response Plan at https://rakports.ae/wp-content/uploads/2021/07/merp.pdf

4.5 Team Leader - IRT

The Team Leader of IRT is responsible for managing IRT and mobilising the Port's response equipment for Tier 1 category incident.

4.6 Tier 2 Responder - ADNOC Oil Spill & HNS Response

In the event a response escalates beyond the capacity of Port Authority, the Tier 2 Responder (ADNOC Oil Spill & HNS Response) will be contacted to mobilise additional resources from their stockpile and deploy trained personnel for combating the pollution incident. Apart from these services, as agreed with Port Authority they can also do risk analysis, contingency planning, organising and facilitating drills and exercises.

4.7 Roles and Responsibilities – Other Organisations

In the event of a marine pollution incident, following organisations, as appropriate will be involved:

- MOCCAE
- EPDA
- NG (National Guard – Coastal Protection Authority)
- RAK Police
- RAK PDS
- Civil Defence
- EWE - Ethihad Water & Electricity

- Health Services
- Police
- Ambulance Services

4.8 Environmental Protection and Development Authority (EPDA), RAK

EPDA, where appropriate will provide guidance and advice on environmental matters concerning marine pollution incidents. EPDA will also provide approvals for the usage of dispersants.

During major pollution incidents, the EPDA will act as a Control Agency to effectively assist response activities to a maritime environmental emergency.

The functions of the Control Agency include:

a. Appraising response plans developed by Port Authority and provide guidance to manage major pollution incidents.
b. Reporting to NCEMA/Government on the status of response preparedness.
c. Making recommendations to NCEMA/Government on when the response is complete.
d. Follow-up the incident.
e. Monitor the speed and direction of the spill movement.

4.9 Ministry of Climate Change and Environment (MOCCAE)

In the event of a major pollution incident that seriously affects more than one Emirate, or when required substantial further resources or a higher level of expertise during Tier 2 response or when Tier 2 response is escalated to Tier 3 level, the MOCCAE would take overall charge of the pollution. In such cases, they would appoint OSC and committee members which will be managed by the NCEMA.

4.10 NCEMA

To enable national response to oil pollution at sea, the NCEMA will:

- Support port authority / local authorities with providing onshore-offshore response resources.
- Ensure timely availability of national stockpiles at-sea and on-shore to combat pollution incidents.
- Provide technical / scientific advice, guidance and support to port authority / local authorities.
- Arrange training courses for local authority personnel.

4.11 NG (National Guard – Coastal Protection Authority)

As well as monitoring pollution incidents at sea, the Coastguard could be involved in combating pollution incident at sea that affects the RAK Ports waters as well as territorial waters, as appropriate.

4.12 RAK Police

During major oil spills, assistance from RAK Ports will be sought to undertake aerial surveillance to help detect and combat oil-spills at sea effectively. RAK Police's helicopters will be used for this purpose.

4.13 RAK Public Services Department (RAK PDS)

The RAK PDS will be responsible for the shoreline clean up and disposal of all waste generated during clean-up operations.

4.14 Offshore Petroleum Activities

The offshore petroleum sector has a responsibility to prepare and be able to respond to marine pollution from their activities. This requires operators to have appropriate emergency response arrangements that guarantee access to response capability commensurate with the risks from their activities which include subsea pipelines.

4.15 Civil Defence

Arrange for specialist advice, personnel, and equipment to identify substances, and provide information on appropriate action to protect health, property and the environment.

Once the immediate hazards have been controlled, hand the incident over to the responsible person, or where this is not practical, and then help to recover or otherwise contain the substance.

4.16 Ministry of Health and Prevention / Emirates Health Services (EHS)

Health Services will provide advice and response to all health-related incidents and should be notified when there is a risk to the health of the public arising from a pollution incident.

4.17 Vessels approaching Harbour Areas or in Transit

The statutory duty for reporting and dealing with pollution from any vessel enroute to the Port prior to entering the port area lies with the Master and vessel owners. After entering the designated area of jurisdiction covered by this plan, reporting and response to any pollution incident will be coordinated via the RAK Ports' Marine Pollution Response Plan.

4.18 Responsibility of the Ship Owner

The ship owner and shipmaster are responsible for undertaking prompt and effective action to ensure the safety of their crew, vessel and cargo, including the engagement of commercial assets where necessary and available.

These actions include:

a. The engagement of emergency towage services.
b. The engagement of salvage contractors.
c. Effective communication with Port, agents, Governmental agencies on the actions being taken

to manage the situation.

d. Training crew to international standards.

4.19 Oil and Petroleum Companies

Oil and Petroleum companies operating in the surrounding of RAK Ports should have an Environment Management Plan (EMP), including an Oil Spill Contingency Plan (OSCP), accepted by the relevant authority.

All plans must identify the environmental risks of an oil and petroleum activity, including those risks associated with any emergency or pollution response, and demonstrate to the regulator that the impacts and risks from the activity have been reduced to As Low as Reasonably Practicable (ALARP), and that any residual impacts and risk is of an acceptable level.

Under the regime, each operator has a duty to establish, maintain and implement a marine pollution response capability, which may be in partnership with other parties. This response capability must be commensurate with the risks presented by the activity. Where the response activities rely on, or may affect relevant stakeholders, the operator is required to demonstrate appropriate consultation and that relevant agreements are in place.

4.20 RAK Maritime City Tenants and Berth Operators

Apart from spills that could occur from collision or grounding due to vessel traffic, there are multiple facilities in RMC with vessels at long term lay-up. There are also oil storage facilities with attending vessels transferring liquid cargoes.

To address the fallout of incidents and accidents that could lead to pollution of marine environment, all berth operators are required to have response capabilities and set up means that could handle the pollution response activity in case of any small scale spill at their facility.

In addition to notifying RAK Ports VTS Centre, the RAK Maritime City tenants and Berth operators must activate their own Pollution Response Plan in conjunction with RAK Ports Marine Pollution Response Plan for Tier 1 Pollution Response.

It is essential that mutual understanding and teamwork be maintained by frequent consultation between Port Authority and the tenants/jetty operators. In addition, it is necessary to have clear lines of communication and frank debriefing sessions at the earliest opportunity following an incident.

The tenants are responsible for the maintenance of oil spill clean-up equipment and materials reaching the water and land spill within the Jetty/Terminal and pipeline.
The tenants have to maintain a trained team ready to perform the physical duties of clean-up.
The tenant must also submit POLREP and a pollution investigation report post-pollution incident.

4.21 The Polluter

The polluter is responsible for reimbursing all costs associated with the response and clean-up operation, in practice this will usually be through their marine agent/insurer.

4.22 Bunkering in RAK Ports

Vessels intending to receive fuel bunkers within RAK Ports must follow RAK Ports Bunkering Guidelines & Regulations and should give at least 24 hours' notice or as much notice as possible in other cases.

a. Bunkering by Road Tanker:

   A vessel's agent must comply with the requirements of RAK Ports 'Procedure for Bunkering of Vessels from Road Tankers' (see section Eight of RAK Ports Bunkering Guidelines & Regulations) when a vessel intends to receive bunker from an approved third-party bunker company.

b. Bunkering by Barge:

   The Group Harbour Master / Deputy Harbour Master / Marine Services Manager or a designated deputy will examine risk assessments and method statements in advance of the operation. If necessary, further conditions will be imposed to minimise the risk of spillage.

   RAK Ports Bunkering Guidelines & Regulations, and STS Bunkering Procedure to be complied with by all vessels taking bunkers prior to commencement of bunkering operations.

All notifications should be made to RAK Ports VTS Centre through relevant VHF radio channels or email.

4.23 Occupational Health and Safety

Response Team and Response Contractor and managers should be always aware that human life, health and safety is paramount. The degree of risk associated with cleanup operations will depend on the:

a. Type of pollution.

b. Size of the pollution.

c. Location of the pollution.

d. Circumstances of the pollution.

e. Weather and tidal conditions.

At all times Response Team, Response Contractor and managers should be aware of the limitations and safe operating procedures for all equipment used throughout the phases of the cleanup operation.

This should, where necessary, include a risk assessment and the development of a formal site-specific management plan, including details for induction and briefing procedures.

Fresh crude oil and refined petroleum products can give off flammable gases.
Therefore, fire and explosion remain a real danger to personnel and equipment, particularly when fresh crude oil and certain refined products are situated in confined locations.

4.24 RAK Ports Towage Capability

RAK Ports has adequate emergency towage arrangements within its area of jurisdiction to manage its local risks in support of the national capability and Tier 2/3 Response Contractor.

This includes ensuring there are no processes that would preclude or hinder the effective use of harbour tugs or hiring of a dedicated pollution-combating vessel if required to respond to a maritime emergency.

SECTION FIVE

INCIDENT MANAGEMENT SYSTEM

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SECTION FIVE

Incident Management System

5.1 General

In responding to marine pollution incidents, RAK Ports will adopt the Incident Management System (IMS) to ensure interoperability with all response agencies that suit the response requirements. The IMS for pollution response is based on the five fundamental principles of:

a. **Flexibility** – the system can be applied across the full spectrum of incidents and agencies.

b. **Functional Management** – the response organisation should be structured in accordance with the actual work to be performed during the incident or different phases of the incident.

c. **Management by Objectives** – the process whereby the Incident Commander sets desired outcomes for the incident for the purpose of ensuring all responders understand the direction being taken during the response.

d. **Unity of Command** – the response organisation should work to one set of common objectives and each individual should report to only one supervisor.

e. **Span of Control** – refers to the number of individuals or functions that can be successfully managed by one person.

Figure 4 shows a typical structure of an Incident Management System (IMS).

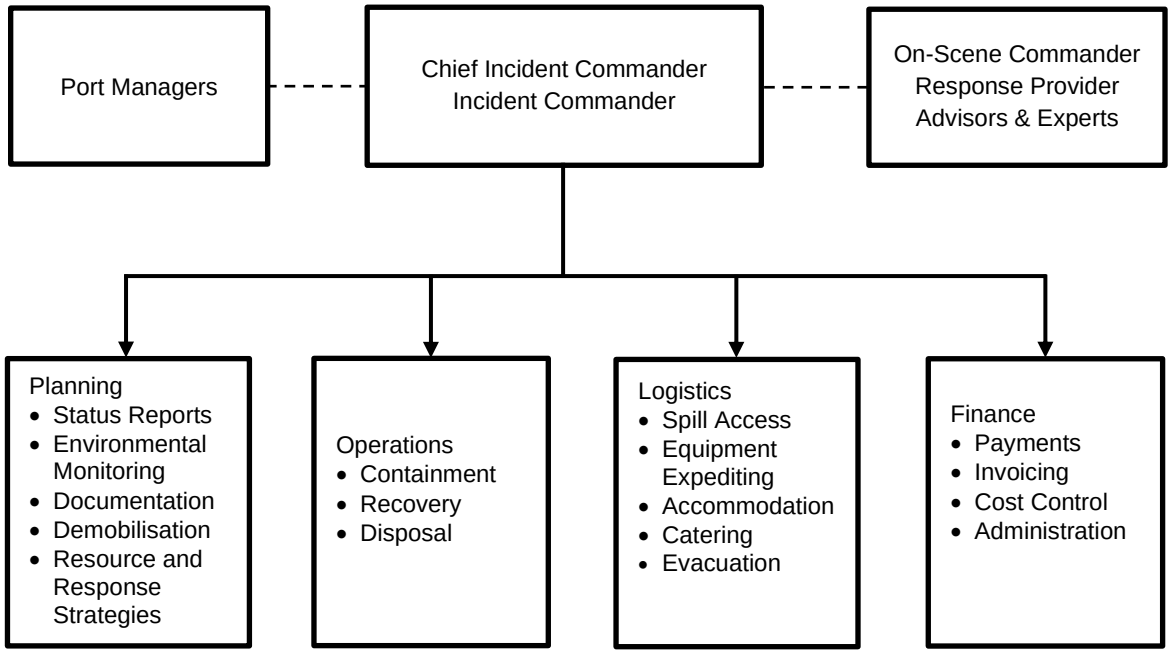

Figure 4: A Typical IMS structure for Tier 3 Incident

5.2 Incident Management Team (IMT)

An Incident Management Team (IMT) will, in general, be established at Saqr Port Marine Department, under the chairmanship of the Group Harbour Master for Tier 2 and Tier 3 incidents.

The IMT will provide the command-and-control structure to co-ordinate and direct the marine response to the incident.

The IMT will typically consist senior management staff from RAK Ports and, as required, representatives from the following organisations and authorities.

Management Team	Organisations / Authorities
Group Harbour Master (Chief Incident Commander)	Ministry of Climate Change and Environment (MOCCAE)
Deputy Harbour Master (IC)	National Emergency Crisis and Disaster Management Authority (NCEMA)
Marine Services Manager (IC)	Environment Protection and Development Authority (EPDA RAK)
Port Manager, Saqr Port	NG (National Guard – Coastal Protection Authority)
Port Manager, Ras Al Khaimah Port	Civil Defence
Port Manager, Al Jazeera Port	RAK Police
Port Manager, Al Jeer Port	RAK Public Services Department
Security Manager	P&I Club
HSEQ Manager	Tier 2 Response Team
Relevant Supervisors	Etihad Water & Electricity

Table 13: Incident Management Team

5.3 Chief Incident Commander (CIC)

The Group Harbour Master is the nominated permanent Chief Incident Commander (CIC) irrespective of the magnitude of spill. While, in the event of a large pollution incident, major decisions and duties are expected of him to be discharged along with IMT.

In the event of spillage/pollution escalating beyond the 'first strike oil spill response capability' of RAK ports, Tier 2 responders will be engaged, and they will be required to designate On Scene Commander (OSC) for effective response operations.

However, the CIC is to keep account of the operation and ensure to be kept informed. The CIC will normally be in overall charge of operations and will chair the IMT.

5.4 On Scene Commander (OSC)

As per requirement of this Plan:

- There is no need to appoint an OSC in event of a First-strike pollution incident if the IC (Deputy Harbour Master / Marine Services Manager) or Team Leader of IRT (RAK Ports Incident Response Team) acts as OSC.
- In major pollution incident, Control Agencies and the Group Harbour Master (CIC) should identify appropriate individuals to act as an OSC. In a scenario which is 'extraordinary', it is recommended that an experienced OSC should always be appointed at a very early stage, to allow as much as time as possible for preparation.
- The OSC has the overall responsibility for the response operations and must assemble the Incident Response Team (including specialists if required) at the scene of a pollution incident to achieve the most cost effective and least environmentally damaging resolution to the problem.
- A major pollution that seriously affects more than one Emirate, the Ministry of Climate Change and Environment / NCEMA would take overall charge of the pollution, in such cases, the OSC will normally be designated by Ministry of Climate Change and Environment / NCEMA.
- In any cases, the OSC should report to the Group Harbour Master (CIC) or the designate, as the OSC is responsible for discharge of all response activity.
- In a Tier 3 response, the CIC has to delegate all incident management functions to focus on strategic leadership to avail national resources.

5.5 Incident Commander

The Deputy Harbour Master or Marine Services Manager will be the IC. During a major incident, the IC will deal with CIC for the operational aspects of the response. During minor incidents, the IC shall have overall responsibility for managing the response. During a major incident, the IC will assist the CIC (Group Harbour Master) for strategic management.

5.6 Port Managers

In all tiered responses, as appropriate, relevant Port Managers, will participate in incident management and planning, operations, logistics and finance activities along with Group Harbour Master (CIC).

5.7 RAK Ports Marine Incident Response Team (IRT)

RAK Ports Incident Response Team (IRT) will be nominated by CIC (Please see Annex 20 to this document). The IRT, which will be a group of trained and experienced oil pollution response personnel from each port that is available to respond on first-strike pollution incidents within Ports. The nominated members are the marine department staff or any department in addition to nomination to response team.

The IRT is to include:

- A Team Leader (Usually Shore-Bosun).
- Responders.

- The team and additional resource composition is:
  - Pollution Vessel
  - Tugs
  - RAK Ports small vessels
  - Tug Masters / Coxswain and crew.

Note: Additional responders or additional teams could be assembled during response operation as the requirement demands. This team will also provide support across all response disciplines under the guidance of Group Harbour Master in the event of a major oil pollution incident.

5.8 Incident Management Support Team (IMST)

In the event of a major pollution incident, the Incident Management Team (IMT) headed by Chief Incident Commander (CIC), is also supported by Incident Management Support Team (IMST) is required to discharge the below mentioned responsibilities or part thereof as the situation may demand.

The responsibilities are not exhaustive or all-inclusive and could be amended or added to as the situation may demand.

Any of these responsibilities or part can be assigned by CIC or IMT members to any member of IMST as the situation may require. Considering the operational demands, the CIC may nominate any members to be part of a team to carry out any of the IMS functions mentioned below.

All actions undertaken by the members of the IMST are authorised by this Plan.

The responsibilities required to be discharged by IMST include:

(See Annex 19 – Incident Management Support Team)

a. Ensuring availability of mechanism in terms of manpower, equipment, and infrastructure at all times to receive reports of spill/pollution.
b. Receive details of incident from RAK Ports VTS Centre / VTS Supervisor / Incident Commander.
c. Aid response team, CIC / IC / OSC as necessary.
d. Ensure detailed recording of events.
e. Mobilise additional response team members and equipment as may be required by OSC / IC.
f. Provide support to operations in terms of manpower, equipment, vehicles.
g. Decide on mobilisation of shore cleanup operations in consultation with IC / CIC.

5.9 The Role of Planning

The planning functional area is responsible for producing the ‘Incident Action Plan (IAP)’ for the short and long term, considering the nature of the pollution and the potential impact on the safety of life, the environment, social amenity and the potential economic consequences. Planning is responsible for the following:

- Gaining and maintaining situational awareness
- Developing the IAP in accordance with the CIC's instructions
- Working closely with Operations and Logistics to ensure the plan is realistic and valid for the conditions and availability of resources
- Determining and re-evaluating the protection priorities

5.10 The Role of Operations

The operations functional area is responsible for carrying out the physical response to the marine pollution incident. This will involve working closely with planning to ensure the IAP is feasible and that situational awareness is maintained.

5.11 The Role of Logistics

The logistics functional area provides support for the control of the incident through obtaining and maintaining Human and physical resources, Facilities, Services and Materials.

5.12 The Role of Finance

The finance functional area provides support for the control of the incident through the management of Contracts and procurement for account payment, compensation, and insurance claims.

5.13 Salvage and Casualty Coordination

In the event of maritime casualty, that involves actual or potential marine pollution; careful management of the salvage effort is required. The vessel owners/operators/agents will engage a salvor/salvage operator to render the casualty to a safe state and deliver the vessel to a specified location. The owners/operators/agents must ensure it is effective and does not result in further risk to the marine environment or the operations of the port. All salvage efforts must be undertaken in accordance with the permission of the Port Authority, and directives of MEMAC and P&I clubs.

5.14 Overall Protection Priorities

Protection priorities to be employed during a response to a pollution incident are, in order of descending priority:

a. Human health and safety.

b. Habitat and cultural resources.

c. Rare and/or endangered flora and fauna.

d. Commercial resources.

e. Amenities.

However, in assessing protection priorities, it is necessary to maintain a balanced view of the potential success of particular response strategies.

5.15 Response Management Responsibility

Area Source	Inside RAK Ports Limits / Port Waters	RAK Maritime City Private Berths	Stevin Rock Harbour	Offshore Petroleum Facilities
First Strike – Tier 1	Port Authority	Berth Operators/ Tenants (in coordination with Port Authority)	Stevin Rock	Operator
Tier 2 and 3	Port Authority / Tier 2/3 Responder (in coordination with EPDA / NCEMA)	Berth Operator/Port Authority/Tier 2/3 Responder (in coordination with EPDA)	Stevin Rock/Port Authority/Tier 2/3 Responder (in coordination with EPDA)	Operator/Tier 2/3 Responder (in coordination with NG (National Guard – Coastal Protection Authority)/ EPDA / NCEMA / Port Authority)

Table 14: Response Management Responsibility

Definitions for Table 14 Only (Response Management Responsibility)

a. **First strike** means a prompt initial response to protect the environment that is intended to limit the effect of an incident until such time as other resources can be deployed in support. This capability may vary from location to location.

b. **RAK Ports Limits / Port waters** means all areas of water within the jurisdiction of RAK Ports in terms of the applicable legislation.

c. **RAK Maritime City Private Berths** means a quay/berth owned/occupied or operated by a tenant where vessels berth as per their schedules and requirements.

d. **Stevin Rock Harbour Berths:** means a berth owned and operated by a Stevin Rock Harbour where vessels berth as per their schedules and requirements.

5.16 Wildlife Response

RAK Ports will respond in accordance with any guidelines from EPDA, with the objective of providing guidance for the immediate and effective protection, rescue, cleaning and rehabilitation of birds, marine mammals, their habitat, and other wildlife resources that are harmed or potentially harmed by a marine oil pollution.

5.17 Waste Management

Waste management is an integral component of pollution clean-up that should be initiated as soon as the pollution is detected.

Oil clean-up operations can generate substantial quantities of oily debris. In the event of an oil spill, provisions for the storage and disposal of oily waste including absorbent materials, overalls, gloves and recovered oils are required. Depending on the location of recovery, it is necessary to arrange temporary storage facilities, skips and drums. All oily wastes such as absorbent materials and personal protective equipment must be handled, stored, transported, and disposed of in accordance with government disposal approvals. This will usually be facilitated by RAK PDS and EPDA. Handling of large quantities of recovered oil and oily waste requires consultation with EPDA, RAK PDS and Tier 2 Responder.

RAK Ports Waste Management Plan should contain information on the disposal of oily waste. This should include any pre-designated arrangements for disposal sites and approved contractors. A guideline on the management and disposal of oil pollution debris should be developed in terms of this plan.

5.18 Special Rules for Certain/Hazardous Waste

Hazardous waste including oil and gas waste is mandated to be disposed of in accordance with the respective legislation dealing with those materials.

5.19 Health and Safety

The safety of all people (responders and the community) in all activities is the highest priority. This includes training, exercising, procuring equipment, or conducting an operational response activity under RAK Ports Marine Pollution Response Plan.

5.20 Response Termination

The Control Agency and the Group Harbour Master (CIC) are responsible for the decision to terminate response operations.

5.21 Post Incident Response Analysis

Post incident analysis, incorporating a review and reporting on the operational response to a maritime environmental emergency to assist with continuous improvement of both people and organisations will be conducted with the cooperation of EPDA and NG (National Guard – Coastal Protection Authority) and other relevant stakeholders.

SECTION SIX

RESPONSE STRATEGY

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SECTION SIX

Response Strategy

6.1 General

RAK Ports Marine Pollution Response Plan will adapt the internationally recognised three-tier classification system form the basis of the response strategy. Tier 1 is the primary and first step of responses, to be mounted by the facility where the spill takes place.

Pollution occurring within RAK Ports will be dealt with using Tier 1 materials held in the stock by the Port Authority/Tenants/Stevin Rock/RAK Gas or by appropriate response provider. See Annexes for Resources Directory:

- Annex 17 – RAK Ports Resources Directory
- Annex 22 – Tier 2 Response Provider

If a response escalates to Tier 2/3 level, sufficient personnel must be mobilised to establish an incident centre and a room must be made available to meet with personnel from external agencies. The Group Harbour Master (CIC) will also retain the position of IC or delegate Deputy Harbour Master or Marine Services Manager to act as IC unless any change is agreed with the Government Agencies involved.

6.2 Tier One Spill

An oil spill incident will be declared Tier 1 if the amount of oil spilled on land, onboard a vessel, or which has the potential to spill (or have spilled) to the marine environment can be dealt with by a local response capability.

- Depending on assessment, if Tier 1 spill which can be responded to with port resources, the response will be initiated and managed under RAK Ports First-strike Oil Spill Response Plan in conjunction with RAK Ports Marine Pollution Response Plan (MPRP) and Marine Emergency Response Plan (MERP).
- There will be equipment and resources at hand to deal with the spill, and facilities to dispose of the waste.
- Whenever fueling operations take place at RAK Ports berths, the Port's Safety / Marine department should be notified in order to be aware of the activity.
- Spills beyond the response capability of RAK Ports will require a response escalation to Tier 2. In the event it is observed that an oil spill cannot be combated by using Tier One resources alone, Tier 2 Responder will be alerted to the event with an assessment of the magnitude of oil involved.
- If the situation should deteriorate and go beyond the capabilities of immediately available resources, the Group Harbour Master will determine a full Tier 2 activation.

6.3 Tier Two Spill

A Tier 2 oil spill will be declared if:

- An incident occurs in the port area and cannot be contained within the port area using the resources of the RAK Ports and outside assistance is required. Immediate assistance would come from the resources of the Response Provider and backed up if necessary, by the NOSCP and mutual aid organisations e.g. MEMAC - ROPME.
- An incident occurs within or beyond port area needing large-scale response but within the capability of the Tier 2 Responder.

Tier 2 response will be informed to EPDA / NCEMA and/or NG (National Guard – Coastal Protection Authority) as appropriate.

6.4 Tier Three Spill

A major spill within or beyond port jurisdiction may constitute a Tier 3 spill and will likely be a National Emergency if the incident is of a magnitude beyond the response provider's (Tier 2) capability or requires the assistance of out of country mutual aid organisations including equipment and skilled manpower. Global resources may be necessary for spills that require a substantial additional response due to incident scale, complexity, and/or impact potential.

It is essential that Port and governmental organisations and the oil industry work in **partnership** to establish integrated response arrangements and capability, thereby ensuring that together they are able to respond effectively to pollution incident of any magnitude.

The tiered approach represents the best opportunity to structure and build these preparedness and response arrangements in a consistent and effective manner that facilitates the integration of global response resources.

6.5 Dispersants Use

The port holds a stock of MEMAC approved dispersants. The application of dispersants must be carefully considered and controlled. In a situation of priority response, where the spill is likely to hit a sensitive area, adequate use of dispersants should be considered in discussion with the EPDA.

RAK Ports will first consider other response methods before the use of dispersants is undertaken and must obtain approval from the Harbour Master before any such use, especially for the use of any items like loose absorbent granules, gels, chips, moss, saw dust or chemicals which would be classified as substances rather than equipment if there is a possibility of these substances entering the marine environment.

Should this approval be forthcoming, consultation with representatives of EPDA and possibly RAK PDS will take place, to seek their agreement.

Dispersant is normally ineffective in treating spills of petrol, diesel, gas oil, or other light oil types which normally disperse readily by evaporation.

Approval to treat “Heavy” oils, which have a viscosity beyond the maximum specified by the manufacturers of a particular dispersant, must also be sought from Group Harbour Master. The environmental sensitivities areas, in particular the habitats, mangroves, marine fisheries would be severely affected if dispersants were to be used in the vicinity. Similarly, this proviso would apply to any migratory fish shoaling.

The use of dispersants would only be considered if all previous response strategies were not feasible or proved to be ineffective and the environmental impacts associated with chemical dispersion be not greater than those occurring without.

6.6 Sensitive Areas

There are certain coastal surrounding areas in RAK Ports which warrant protection due to their environmental sensitivities.

If a spill occurred which was likely to threaten an area identified for protection, RAK Ports, in conjunction with the EPDA and RAK PDS and if necessary, the Tier Two responder, would endeavour to protect the area by whatever means available.

Image 1 & 2 – E.g:- Environmental and Socio-economic sensitivities

6.7 Sampling

In the event of a spill where a pollution incident has occurred either from an illegal discharge, or an accident, it will be necessary to take a sample of the pollutant and if possible, from the suspect or identified ship for comparison. Such samples would be used in any subsequent legal proceedings.

6.8 Physical Changes in the Condition of Oil

The physical changes of an oil spill will depend on the type of oil spilled and the weather conditions at the time. It is necessary to understand the likely changes to effectively plan the response strategy for each particular type of oil and weather condition.

6.9 Disposal

In the event of a spill where it is deemed necessary to recover the oil either using absorbents or mechanical recovery, both temporary and final disposal arrangements are required. Consultation must take place with the EPDA, and RAK PDS as enforcing authorities for waste regulation.

Disposal of oily wastes from either the temporary holding sites, or direct from the water, will be carried out by a reputable licensed waste company/carrier in the area.

Every measure will be taken to ensure against secondary spills to prevent contamination of land and drainage systems when the material is brought ashore or being transferred to tankers etc.

Compliance with the RAK Ports Environmental Policy will be strictly followed.

In the event of a spill and subsequent disposal, the disposal route will be checked and audited, to ensure that the waste has been disposed of correctly.

6.10 Operational Priorities

Early hours of a spill/pollution incident being crucial and important for operations, all personnel involved with response, cargo operations, port or terminal must be aware of the priorities to be followed. While some of these actions are to be initiated and undertaken by responders, some actions would need to be initiated by personnel involved in cargo operations or persons ashore in case of cleanup operations.

6.11 Limiting and Adverse Conditions

Weather, sea conditions and time factor play an important role in pollution response operations. While operations could continue at berth most of the time, operations at sea would be largely restricted during poor sea conditions and night hours.

6.12 Response Strategy

Within the scope of this Plan, a response action required to be mounted could be at any of these locations:

- Sea or channel, incident due to grounding, collision etc during passage.
- Close shore due to grounding or stranding.
- Alongside at jetty or at the terminal during cargo operations.

It is feasible that a casualty occurring at sea like a collision or mechanical failure could lead to a situation where the consequences would be felt in some other location due to movement of pollutants from the site of incident under the influence of weather and currents.

The factors that would dictate immediate and long-term strategies to deal with the spill are:

- Location of discharge.
- Spill movement and likely fate of spilled oil and substances.
- Time window available for response before hitting the coastline.
- Nature of shoreline and priority for protection.

6.13 On Water Response

A spill at sea could occur at anchorage or channel due to any eventuality or accident. A pollution incident occurring due to damage to vessel is a point source pollution/spill which would need to be addressed earliest. Considering the fact that a multiple response may be required, the vessel and responders will have to mount a rapid reaction.

6.14 Vessel Response

While the first action is expected of the vessel/operator in containing the Spill by way of stopping further leakage, the first action of the response team is to be to contain the spill by placing booms attached to isolate the damaged area. Recovery of spilled oil/substance may also be required to be undertaken simultaneously.

6.15 Response Team

The response team stationed afloat with equipment placed on response vessel, would deploy the equipment to contain the spill. In the event of the spill originating from the shipside, the containment will be handled by placing booms along the shipside. While containment and recovery would be the preferred option, the other alternatives like dispersion could also be put to use subject to local restrictions/ permission required.

6.16 Coastal and Shoreline Cleanup

The coastal stretches off RAK are varied in terms of ecological sensitivity; with large stretches of mangroves inter spread with sandy beaches around Ras Al Khaimah Port. While, the first priority would be to stop the ingress of oil onto the coast, still the requirement of coastal or beach cleaning operations cannot be ruled out.

The relevant local administration responsible for shore cleaning activity is to be notified in time about the movement of spill and advised about the strategy to be adopted. While the response is expected to be taken by the local administrative authority, there may be reasons and requirements that the same may be required to be undertaken by the port or facility. In such an event, the team or teams as required is/are to be nominated by CIC under the supervision of shoreline clean up advisor.

The members of Incident Management Support Team (IMST) will be responsible for providing support, equipment, advise and resources for these operations.

6.17 Pollution Incident

The response strategies for dealing with various pollution incidents within the port, do vary, not all pollution incidents can be responded to in the same way.

For example, dispersants cannot be used on distillate oil types such as diesel, gas oil, or other light oil types, which would normally disperse, readily by evaporation, nor to treat oils, which have a viscosity beyond the maximum specified by the manufacturers of the dispersant. A range of factors will affect the response to a pollution incident. The quantity, type, location, weather, and tide conditions, will all play a part in determining the best response.

The overall generic response to a spill within RAK Ports jurisdiction is:

- Natural Dispersion
- Containment and Mechanical Recovery
- Chemical Dispersion

- Figure 5 shows the overall response strategy (see section 6.18).
- Figure 6 shows the generic response to a spill impacting the water (see section 6.19).
- Figures 7 and 8 detail the response actions to a diesel and heavy fuel oil spill respectively (see sections 6.20 and 6.21).

(It must be noted that the response strategies merely provide a guide, they are not definitive as every spill has the potential to provide a different set of factors, therefore the most effective response will be determined on the day).

6.18 Overall Response Strategy

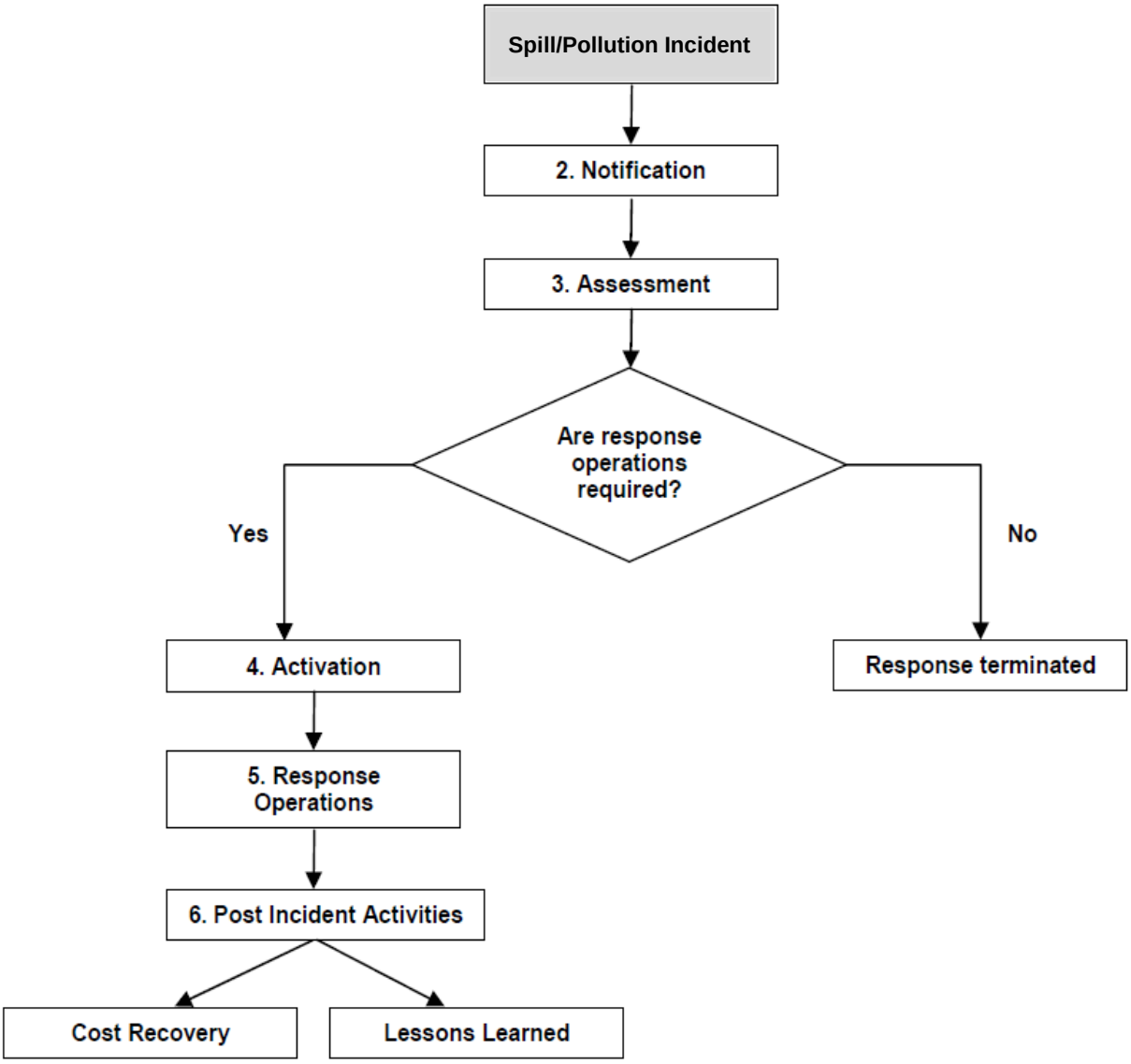

Figure 5: shows Overall Response Strategy

Retention	@ Office	@ Archives
	0-2 years	3-5 years

6.19 Generic Response to an Oil Spill in the Water

Strategy: Notify HM, DHM and MSM

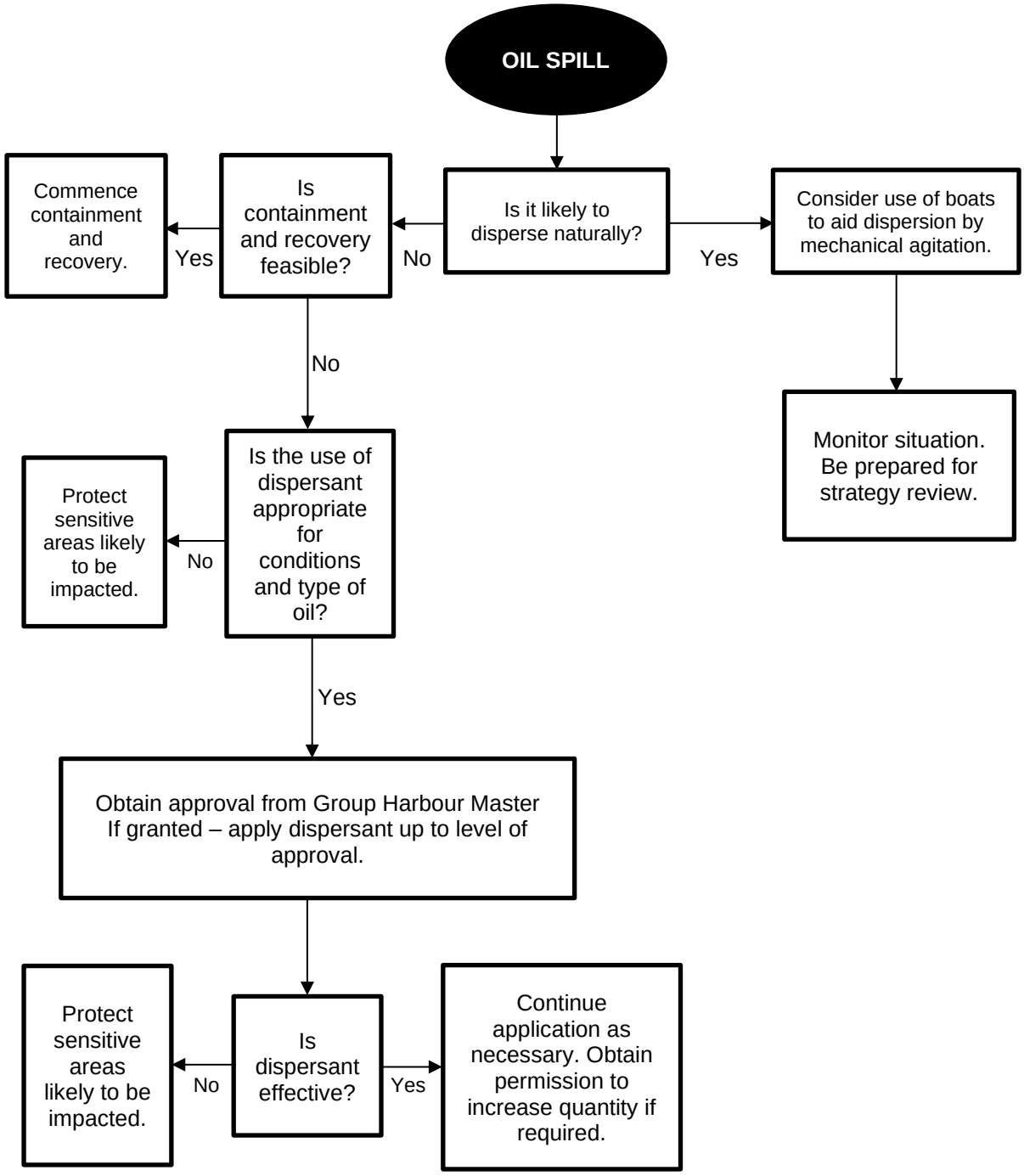

Figure 6: shows the generic response to a spill impacting the water.

6.20 Response Strategy to a Diesel Spill

Strategy: Notify HM, DHM and MSM

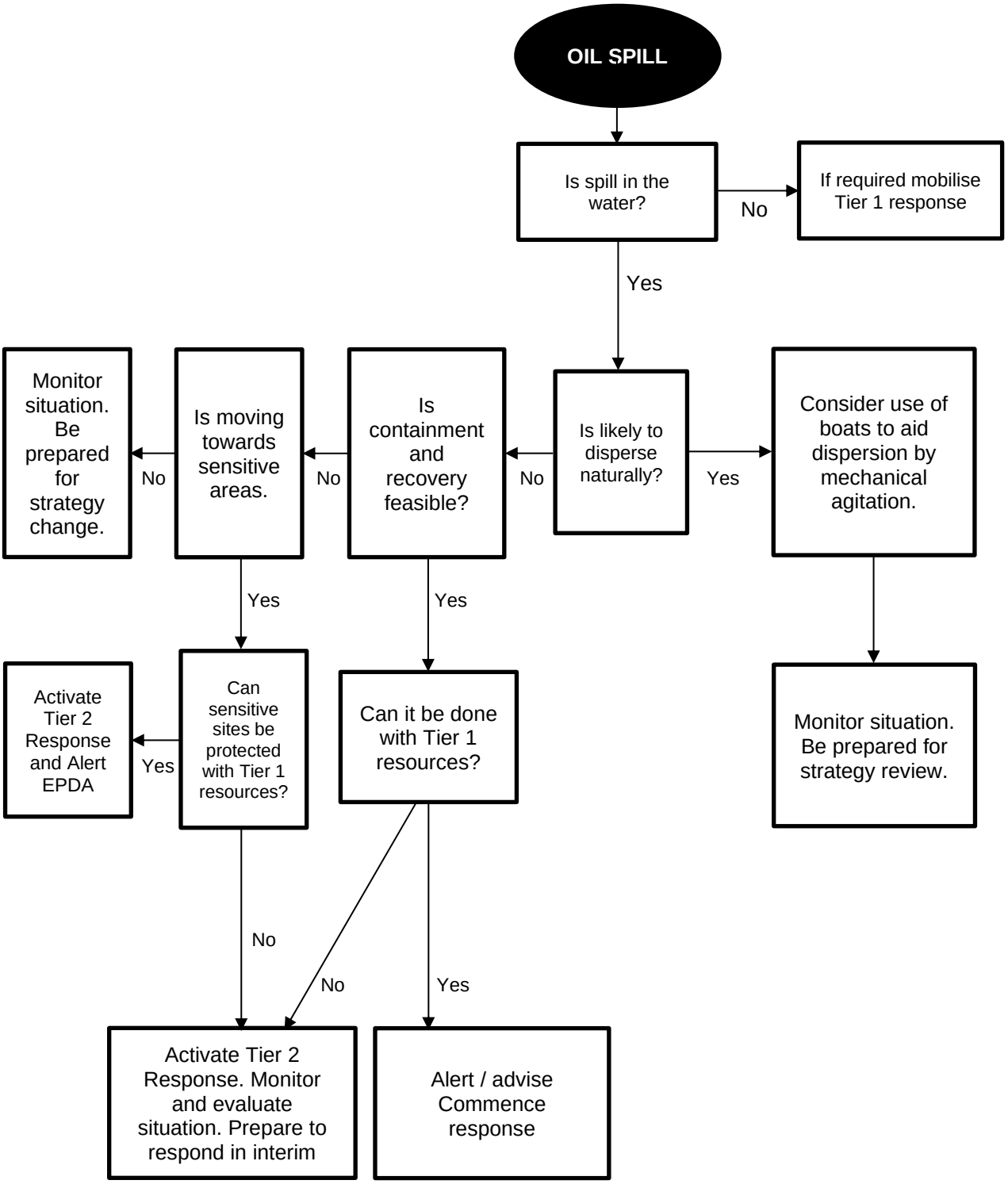

Figure 7: shows response action to Diesel Spill

Retention	@ Office	@ Archives
	0-2 years	3-5 years

6.21 Response Strategy to a Heavy Fuel Oil Spill

Strategy: Notify HM, DHM and MSM

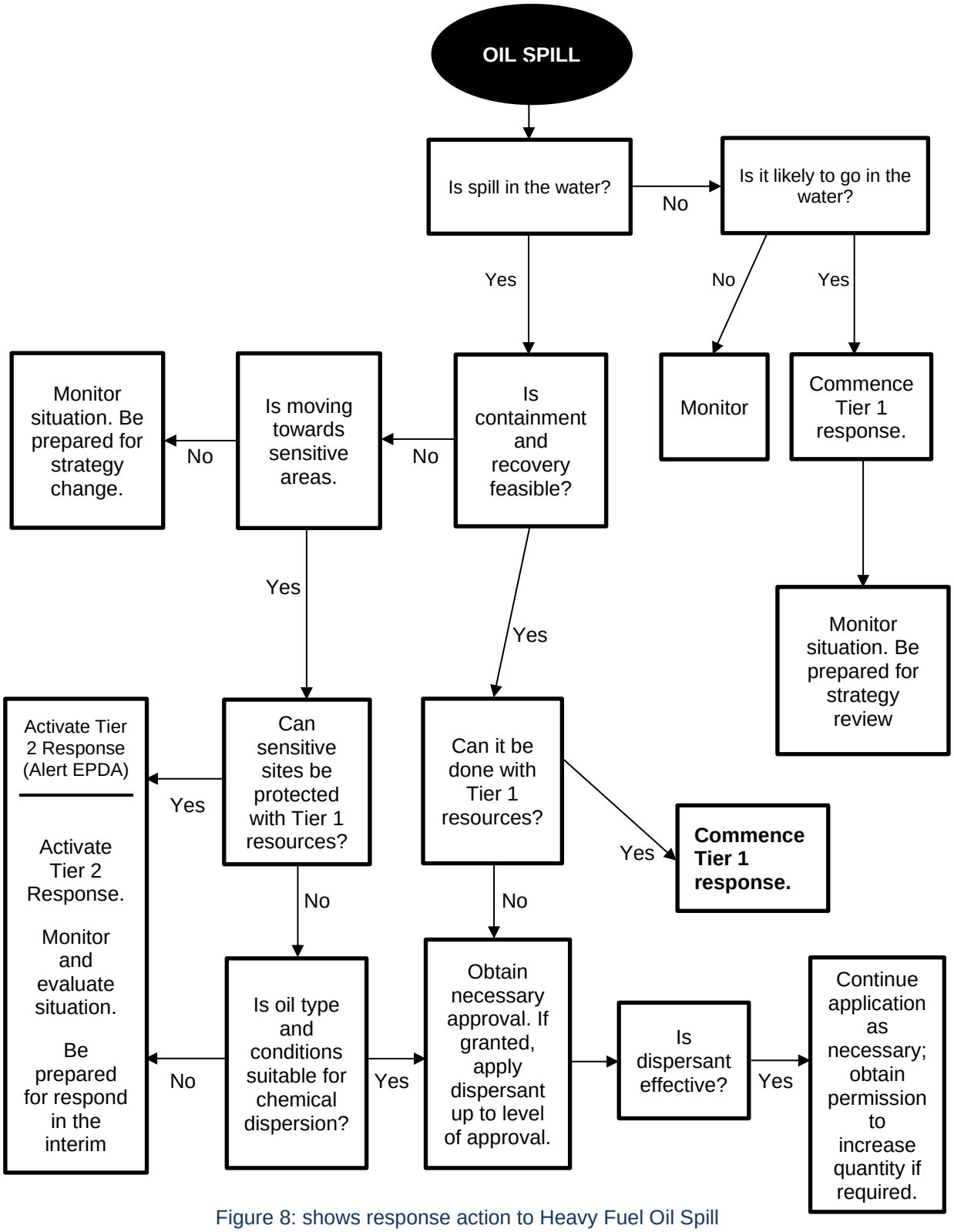

Figure 8: shows response action to Heavy Fuel Oil Spill

Retention	@ Office	@ Archives
	0-2 years	3-5 years

6.22 Examples of factors influencing the response capability needed and where the boundaries between tiers are set.

Operational	• Probability and frequency of an oil spill occurring • Spill volume • Oil type • Impact of the spill on business operations • Feasibility to mount a safe, credible response	Despite all preventive steps being taken, an oil spill risk will always remain. This risk needs to be catered for by designing and building oil spill preparedness. However, some operations carry with them inherent restrictions on feasible response options. For example, onboard a vessel preparedness may entail principally the notification of an incident to relevant authorities. In contrast, a port, a network of offshore production facilities or a single refinery, would each potentially have different levels of capability in place.
Setting	• Proximity of the spill to operations • Climate, weather or operating conditions altering fate and behaviour of oil or impeding response operations • Proximity to sensitive environments • Proximity to socio-economic resources	Prevailing conditions that determine the behaviour/fate of oil and along with the type of environmental and socio-economic sensitivities at potential risk, will strongly influence the type and capability of onsite resources. Thus in areas where potentially severe consequences could arise, the response capabilities at Tier 1 or Tier 2 levels could be significantly greater than for similar geographic areas that have a much lower risk attached to them.
Response capability	• Tier 1 resources influenced by • Budgetary commitments, provision of personnel and logistics • Availability and capability of regional Tier 2 options • Access to Tier 3 support	The presence or absence of, for example, an appropriate Tier 2 arrangement will strongly influence the capability required at the local Tier 1 level and the need to have ready access to Tier 3 resources. Thus, a Tier 1 capability may need to be built in one locality that would more closely resemble a Tier 2 capability elsewhere. Similarly for example, in particularly remote settings, where assistance from outside the area is extremely difficult to facilitate, or would take significant time to arrive, a Tier 1 capability may be needed that more commonly resembles Tier 3 resources elsewhere.
Legislative	• Political stability and culture of host country • Governmental requirements for specific response actions or performance criteria • Influences of national, provincial or local government authorities • Stipulated subscription to designated Tier 2 or Tier 3 Support	Legislative and regulatory controls may dictate Tier 1 capabilities and Tier 2 and Tier 3 arrangements. In some cases, these requirements may not match the risk-based approach underlying Tiered Preparedness and Response.

Table 15: Examples of factors influencing the response capability

SECTION SEVEN

MARINE ENVIRONMENT OVERVIEW

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SECTION SEVEN

Marine Environment Overview

7.1 The Arabian Gulf from a Historical Point of View

The Arabian Gulf has always been a strategic location with respect to international trade, from the times of the ancient spice route it has always seen trade between the Middle East, Europe, Africa, India and China.

The Arabian Gulf area was well known by early local navigators and from the beginning of the 16th century by Portuguese, British, and Dutch traders. Useful bathymetric charts and sailing instructions appeared when the British commenced collection of hydrographic, meteorological, and oceanographic data at the end of the 18th century.

Soon after the industrial revolution and particularly after the discovery of oil and gas, and its rapid development, the Arabian Gulf has become one of the most important, more strategic areas of the world and it plays an essential role in the field of the international oil industry.

As a result of this importance and development of petroleum related activities, the Arabian Gulf region is filled with tanker traffic along oil export ports and other related marine based events. This results in the potential negative impacts to the sensitive marine and ecological ocean system.

There are eight countries that share the coasts of the Arabian Gulf region: Saudi Arabia, United Arab Emirates, Oman, Qatar, Bahrain, Kuwait, Iran and Iraq (See Figure 9).

The Arabian Gulf sits in a strategic location given the proximity to international networks. All countries that are part of the Arabian Gulf have huge crude oil reserves and are renowned exporters of petroleum products.

The Arabian Gulf is an inland sea of an area of about 93,000 square miles (241,000 square km) and has a water volume of about 8,630 km^3 (Le Quesne et al., 2018). Its length is some 615 miles (990 km), and its width varies from a maximum of about 210 miles (340 km) to a minimum of 35 miles (55 km) in the Strait of Hormuz. The Arabian Gulf is connected to the Indian Ocean and the Sea of Oman through the Strait of Hormuz.

The Gulf is generally a shallow water body, where its maximum depth is 94m and its average depth is less than 50m. The depth in the offshore zone of the Arabian side does not exceed 40 m. The deepest region is very close to the Iranian side, with a maximum depth of about 80 m. The coastal regions of the Arabian countries are also shallow, and they range from 5 to 15 m. The shallowest coastal zone is observed in Bahrain, where the island is surrounded by water of less than 5 m depth. The entrance of the Gulf is deeper than 80 m near the Musandam Peninsula of Oman (See Figure 10).

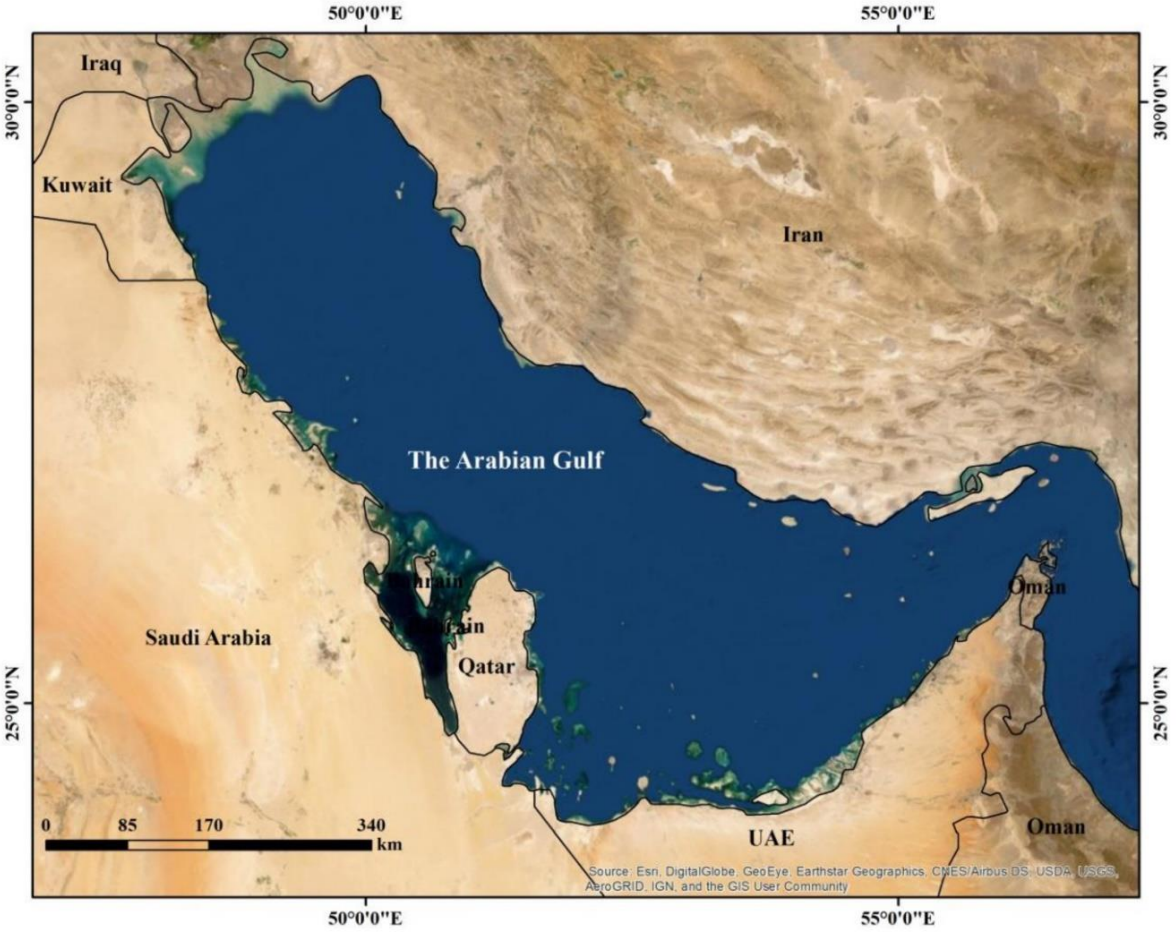

Figure 9 - Showing the Arabian Gulf Region

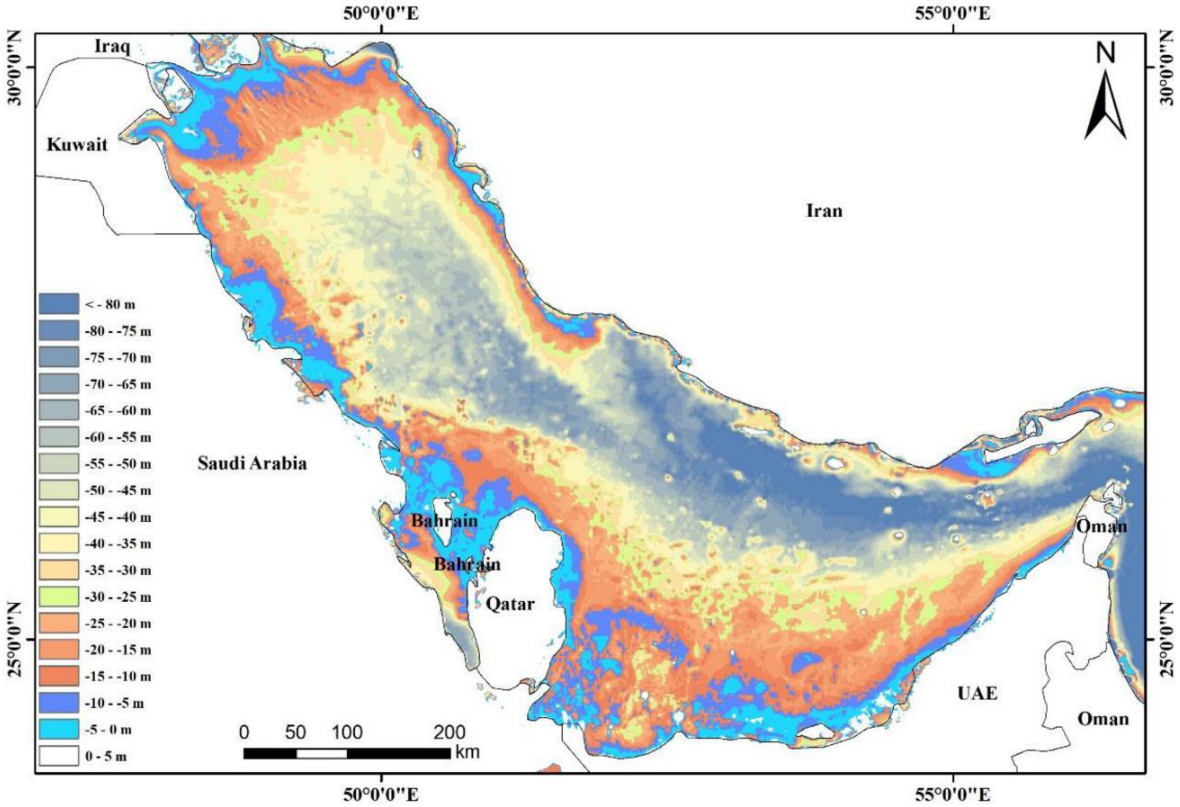

Figure 10 – A bathymetry map of the Arabian Gulf. Note the shallow water depths for the Gulf.

Retention	@ Office	@ Archives
	0-2 years	3-5 years

7.2 Arabian Gulf Marine Environment Features

The Arabian Gulf is home to sensitive and unique marine wildlife. For instance, the region has a number of unique fish species supported by an extensive coral reef (Issa & Vempatti, 2018). Other species include migratory birds, mangroves, and Green and Hawksbill Turtles.

Figure 11 shows the distribution of the coral reefs within the Arabian Gulf. According to the Global Information System for Coral Reefs (http://www.reefbase.org), coral reefs could be observed in seven assemblages, mostly along the shallow waters of the Arabian Gulf.

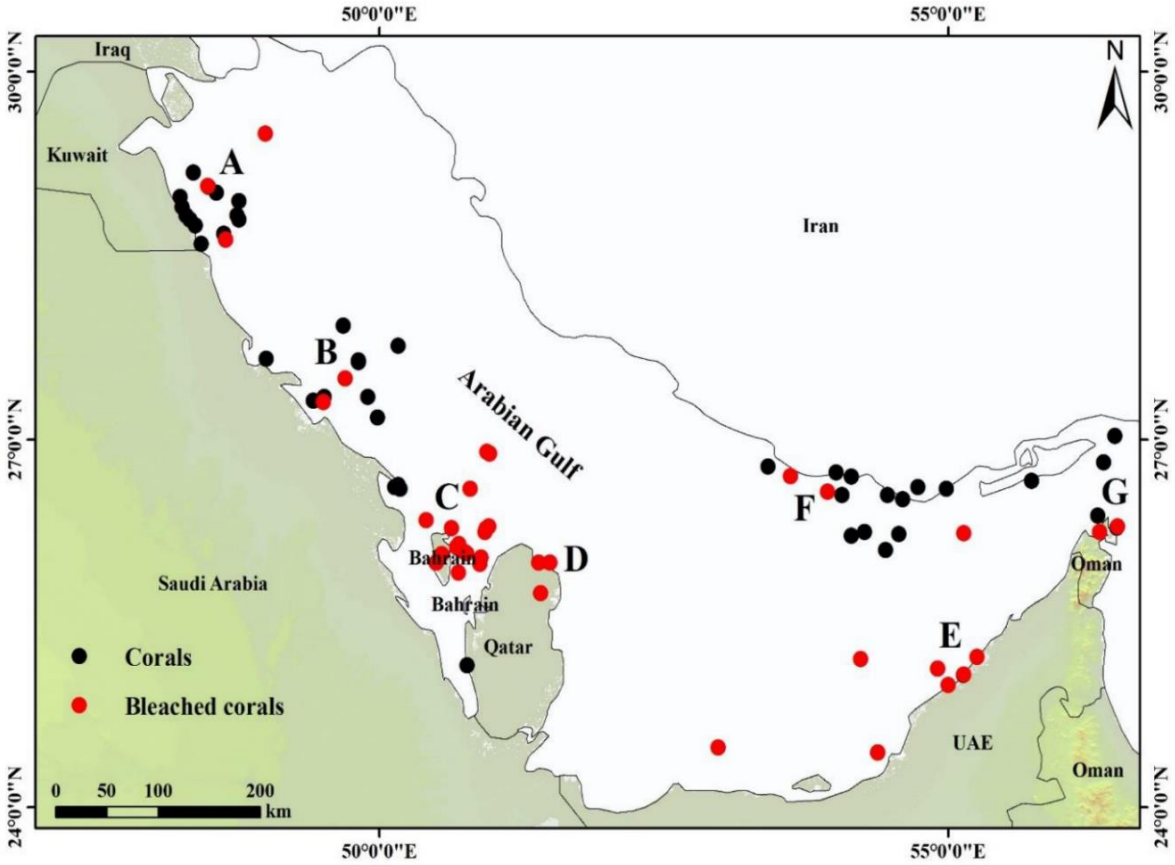

Figure 11 – The distribution of corals and bleached corals in the Arabian Gulf. Note that there are seven coral assemblages mostly occurring along the southern side of the Arabian Gulf. Source: http://www.reefbase.org

According to the First International Aquatic Ecosystem Health and Management Society (AEHMS) Conference of the State of the Gulf Ecosystem: Future and Threats (*UAE University, 2006*), the clear shallow waters, warm temperatures and an inflow of nutrients make marine productivity in larger scales.

Many kinds of marine organisms of the Gulf are contributing to its high productivity values. Especially, the coral reefs (E.g:- Image 3) on the offshore islands are most vital as the substrate to these sub tidal ecosystems provide shelter and feeding grounds for various kinds of marine invertebrates and fishes.

Although this area is a relatively small regional sea, it is highly productive with at least four species of sea grasses commonly distributed in shallow areas forming the base of many food chains and webs. Naturally grown mangroves (E.g:- Image 4) are found in the tidal zone and are characterised by a single species.

Image 3 - Species of coral reefs that protect the coastline from erosion and inundation. (Image Credit: Courtesy: Environment Agency — Abu Dhabi)

Image 4 – Mangrove forests prevent the coastline erosion caused by waves and ocean currents and play an important role in reducing carbon emissions, thereby contributing to lessening the impacts of climate change. It also provides shelter to birds and supports other biodiversity such as fish, shells, sponges, shrimps, echinoderms, and crabs. (Image Credit: Courtesy: Environment Agency — Abu Dhabi)

People of the Arabian Gulf relate to the marine ecosystem both culturally and economically. Features such as sea grass, mangroves, and coral reefs have a significant influence on the marine resources in the Arabian Gulf (Shraim et al., 2017).

Owing to the shallow, restricted nature of the Gulf and its limited freshwater input, the Gulf waters are characterised by extreme thermal variability and high salinity, and as a result, many marine organisms in this region are living near the margins of their physiological limits.

7.3 ROPME Sea Area (RSA)

The ROPME Sea Area (RSA) in the northern Indian Ocean, which comprises the Gulf, the Gulf of Oman and the northern Arabian Sea, already experiences naturally extreme environmental conditions and incorporates one of the world's warmest seas. The RSA is surrounded by eight member states: Saudi Arabia, Bahrain, United Arab Emirates, Kuwait, Oman, Qatar, Iraq, and Iran. The main objective of ROPME is to coordinate efforts of the eight Member States towards protection of the marine and coastal environment and ecosystems in the ROPME Sea Area against marine pollution and stressors that might be induced from developmental activities or / and other drivers of change.

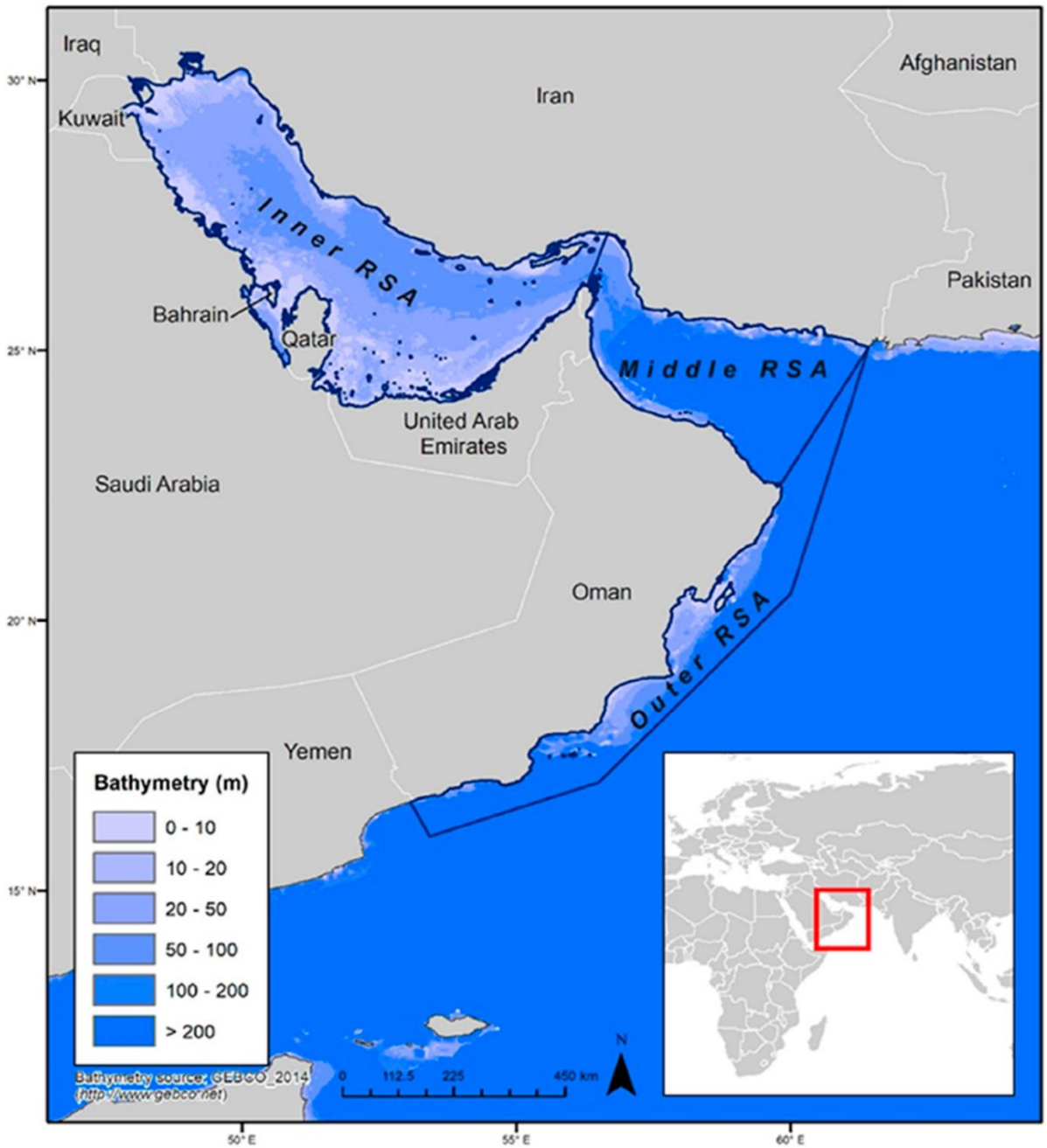

Figure 12 – ROPME Sea Area (RSA). The RSA extends for approximately 465,00 kms^2, and is separated into the following three distinct subregions: The Inner RSA, also Gulf, the Middle RSA, also known as the Gulf of Oman and the Outer RSA, along the northern part of the Arabian Sea.

Retention	@ Office	@ Archives
	0-2 years	3-5 years

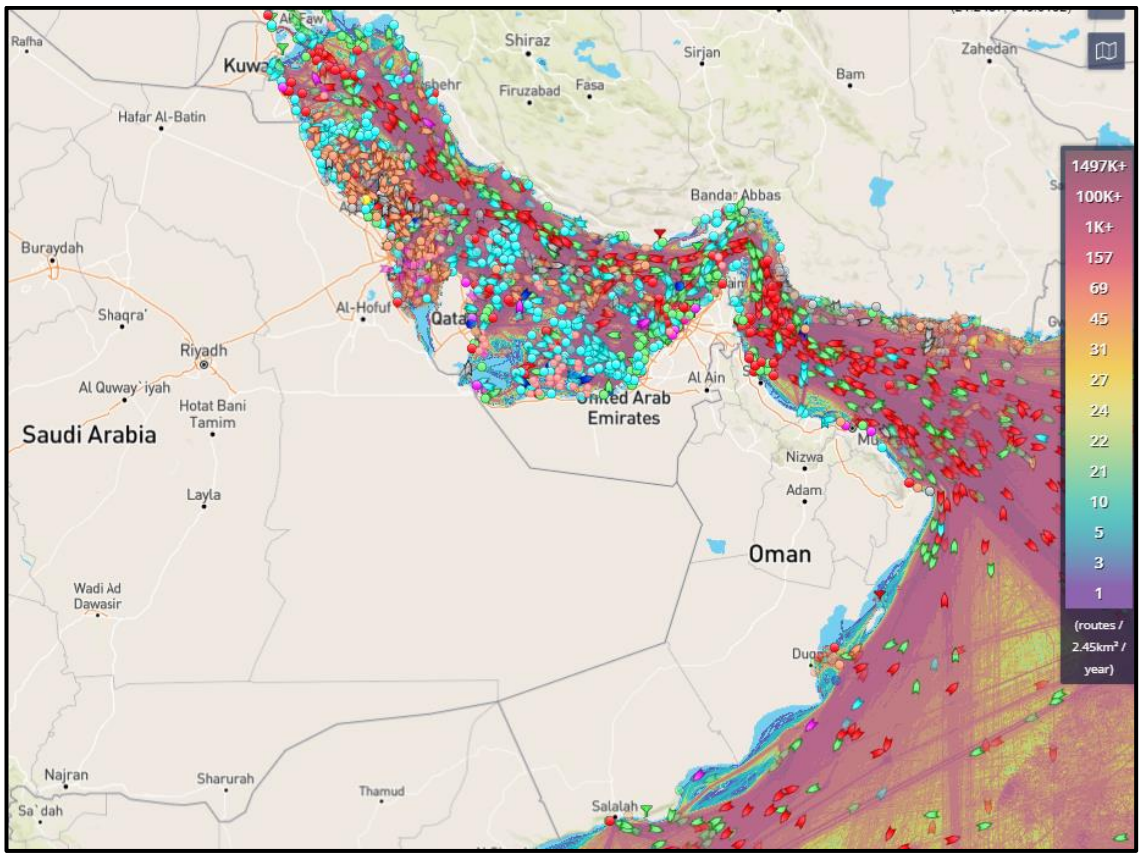

Figure 13 – Vessel traffic density within the ROPME Sea Area (RSA). Source: AIS data for identified vessels from https://www.marinetraffic.com/ (accessed on 21.08.2023).

7.4 Marine Environmental Pollution in the Arabian Gulf

Oil is the world's most important strategic resource, and oil transportation via maritime shipping has increased over the past several decades, which bears prominent economic advantages compared with other transport types for long-distance mass good delivery.

The Arabian Gulf holds an estimated 57–66% of the world's known reserves of oil and 45% of natural gas reserves, which is a semi-enclosed sea located in the Middle East and is connected to oceans through the narrow 55-km Strait of Hormuz.

Arabian Gulf has been the major waterway for oil transport in the past four to five decades and during this period has suffered from frequent oil spills to its marine environment.

Coastal and marine environments in the Arabian Gulf are under permanent threat from oil spills due to oil exploitation, production, and transportation (Naser 2013). Main sources of oil spills in the Arabian Gulf include offshore oil wells, underwater pipelines, oil tanker incidents, oil terminals, weathered oil and tar balls, illegal dumping of ballast water, and military activities (Sale et al. 2010). The Arabian Gulf has been the scene for major oil spill incidents that associated with significant environmental impacts. In the last three decades, more than 140 medium to major oil spill incidents occurred in the Arabian Gulf (Elhakeem et al. 2007).

The Arabian Gulf has about 800 offshore oil and gas platforms and 25 major oil terminals. The Arabian Gulf is also extremely busy shipping line for oil transports, with accidental spilling being unavoidable. About 25,000 tanker movements sail in and out of the Strait of Hormuz annually and transport about 60% of all the oil carried by ships.

For decades, the most common form of pollution in the Arabian Gulf has been a mix of intentional and unintentional oil pollution.

About 2 million barrels of this oil are spilled in the ROPME Sea Area every year from the discharge of ballast water (UNEP and EEA 1999). Naturally, some oil related activities produce greater amounts of pollution in the region's marine environments than others.

The highest inputs of oil originate from, tanker accidents, the discharge of dirty ballast water and other oily water, and shipping traffic. Oil from terrestrial sources, which include refineries and factories, also pollutes the coastal environment.

The ever-increasing dependence of today's world on oil and natural gas and coastal development all have complicated the management of coastal areas in the Gulf region.
The Arabian Gulf ecosystem is highly vulnerable to oil pollution, mainly because the system is flushed very slowly through the narrow Strait of Hormuz.

7.5 Marine Environment in UAE

The United Arab Emirates (UAE) is a federation of seven emirates located in the Arabian Peninsula in Southwest Asia. It's bordered by Oman and Saudi Arabia and shares maritime borders with Iran and Qatar.

The UAE has about a 675 km coastline. Approximately 90% (610 km's) borders the Arabian Gulf, with the remainder found on the east coast, bordering the Gulf of Oman. The UAE's waters extend in the Arabian Gulf and the Gulf of Oman.

The UAE water are characterised by extreme environmental conditions, such as high temperature, salinity, and turbidity due to its arid geographic location and shallow bathymetry (Vaughan et al., 2019). Despite the harsh conditions, these coastal waters host a diverse set of ecological components such as corals, seagrasses, mangroves, sea turtles and bird nesting areas (Vaughan et al., 2019; Burt, 2014). The extreme conditions and the adaptation of those habitats and species serve as a natural laboratory for studying the potential effects of elevated ocean temperatures on various marine ecosystems (Vaughan and Burt, 2016) and species (Pilcher et al., 2014a, 2014b, 2015, 2020). Seagrasses, mangroves, coral reefs, oyster beds, saltmarshes and other coastal habitats contribute to support local and regional biodiversity and provide numerous essential ecosystem services such as carbon sequestration, coastal protection, recreation, human well-being and sustainable economic growth (Burt, 2014; Friis and Burt, 2020; Sale et al., 2011; Vaughan et al., 2019). Furthermore, small, shallow seas such as the Arabian Gulf are especially vulnerable to

anthropogenic threats that exacerbate the challenges already faced by biota ranging from corals to sharks (Jabado et al., 2018; Fine et al., 2019; Lawson et al., 2019). Therefore, monitoring and management of these key ecological features is valuable, not only on a local context, but also on a global scale.

In the sub-tidal areas of the UAE coast, coral reefs support a diverse array of fish, benthic invertebrates, sponges and algae.

Mangroves, usually found on sheltered shores and in estuaries, are highly productive areas and provide habitats for a large variety of organisms as well as serving as a nursery ground for many fish and species of crustacean (many of which have commercial value). Mangroves are an integral part of the ecosystems. They play an effective role in reducing carbon emissions, protect coastal areas minimising the impacts of marine natural disasters and erosion. They serve as nursery and feeding ground for organisms, help maintain the ecological balance, protecting species from the risk of extinction, serve as a natural incubator for living aquatic resources in the intertidal arears and promote ecotourism.

UAE is home to more than 60 million mangroves with the additional 100 million mangroves planted, the UAE's mangrove forests will sequester nearly 115,000 tons of CO2 per year Million mangrove.

Sea grasses are also important nursery grounds for fish and a food source for dugong and green sea turtles.

Additionally, the coastal environment is the primary source of water within the UAE for both industrial applications as well as drinking water. Desalinated seawater provides the majority of the freshwater needs of the country.

In recent years, the region has become a popular tourist destination, with the development of the associated infrastructure to support the tourist industry. This includes large hotels, amenity beaches and associated water sport activities.

Subsistence fishing, while still of some local importance, has declined in significance in recent years.

7.6 Marine Protected Areas

In the Arabian Gulf, the designation and implementation of Marine Protected Areas (MPAs) is a key spatial management tool being used for the protection of vulnerable coastal and marine ecosystems (Naser 2014). In the United Arab Emirates (UAE), 16 MPAs have been established by the authorities. In 2020, the UAE became the first MENA country to join the UK-initiated Global Ocean Alliance, an international alliance of countries aiming to protect at least 30 percent of the world's oceans by 2030 through marine protected areas.

7.7 Marine Pollution Sources in UAE

The UAE's petroleum companies produce about 3 million barrels per day of total oil liquids. Over half of this oil is produced offshore. Marine Pollution/Oil spills present a significant risk to the United Arab Emirates (UAE).

7.8 Prevention of Sea Dumping and Pollution in UAE

The UAE has enacted laws banning throwing waste and oil sludge into the water by the hundreds of tankers operating in the region. The UAE Federal Law No. 24 of 1999 on the Protection and Development of the Environment prohibits the following:

- Any intentional disposal of pollutants or wastes from ships, aircraft or any other means into the marine environment.
- Any deliberate dumping from ships or industrial installations or other means into the marine environment.

In addition, Federal Law No. 23 of 1999 and its Ministerial Decree No. 302 of 2001 were issued to address exploitation, conservation and development of living aquatic resources in the UAE.

7.9 Fisheries Conservation in UAE

Fishing is a key component of the UAE's heritage, but overfishing has caused a decline of key fish stocks beyond sustainable levels. At least 13 species of fish have been harvested beyond sustainable levels and key species of fish like hamour (orange-spotted grouper), shaari (spangled emperor), farsh (painted sweetlips) and kanaad (Spanish mackerel) have been overexploited up to five times the sustainable limit.

In 1999, Federal Law No.23 concerning the Exploitation, Protection and Development of the Living Aquatic Resources in the Waters of UAE was issued. It was amended by Federal Law No.7 of 2016 to keep pace with contemporary challenges that the marine life faced. Several other ministerial resolutions were also issued to control fishing practices and the depletion of fish stock. Read about the UAE's efforts to regulate fishing practices and restore fish stocks.

Ministry of Climate Change and Environment launched the 'UAE's Sustainable Fisheries Programme' in partnership with Environment Agency - Abu Dhabi to ensure sustainable fishing. The programme was implemented from 2016 to 2018 and achieved several results including the completion of a Fisheries Resources Assessment Survey, which assessed the status of key demersal fish stocks in the UAE's waters, and the launch of UAE's National Framework Statement for Sustainable Fisheries 2019-2030.

To protect the biodiversity of the marine environment in the UAE, the 'National Plan of Action for the Conservation and Management of Sharks 2018 - 2021' and the 'National Plan of Action for the Conservation of Marine Turtles 2019 - 2021 were launched.

7.10 Ras Al Khaimah Coastline - Overview

Ras Al Khaimah's shoreline is 64 kms long with a mix of Harbour areas and open coastline, including amenity beaches, NG (National Guard – Coastal Protection Authority) stations and fishermen jetties.

Ras Al Khaimah contains a wide variety of habitats, including 'Coral reefs', 'Mangroves', 'Seagrass', 'Algal mats' and 'Sabkha'. All five habitats are concentrated within and around coastal lagoons (locally known as 'Khors'): Khor Al-Muzahmi, Khor Ras al Khaimah, Khor Julfar and Khor Hulaylah. Seagrass beds in the Emirate grow in extreme conditions, at depths between 0 and 2 m. They colonise mudflats and tolerate being completely exposed to the sun at low tide. They also form sparse seagrass beds at their deeper distribution (7–10 m).

Khor Al-Muzahmi is a protected area in the Emirate under the management of the EPDA according to Amiri Decree No. 16 of 2018. Khor Al-Muzahmi coastal protected area is 14 kms south of Ras Al Khaimah and extends over 3 km and is the habitat for many species of high environmental importance, including flamingo and fish eagle.

Mangroves and salt flats form a large part of the coastal area are home to a variety of wildlife, including flamingoes, extends right into the Centre of Ras Al Khaimah.

Mangroves in Ras Al Khaimah are home to pastel pink flamingoes who spend their days with their heads upturned, feasting on shrimp, plankton, algae and crustaceans. The mangroves are also home to the western reef heron, Kalba collared kingfisher and the greater spotted eagle. Ras Al Khaimah is a pit stop for many migratory birds that travel from the cold Baltic seas to North Africa each year.

There are a few power plants and water desalination plants within the proximity of RAK Ports. These plants can be affected by oil/chemical spill due to seawater intake. In the event of a spillage within the area, it is vital to stop seawater intake in a timely manner to avoid costly contamination or unnecessary plant shutdown.

There are sprawling sandy beaches in Ras Al Khaimah, and coral reefs adorn the extensive shoreline.

The shoreline spreads from the Sh'am area (the first point at the entrance of the Arabian Gulf near the Strait of Hormuz), to the borders it shares with the emirate of Umm Al Quwain.

Ras Al Kahimah City situated on the coastal areas is divided into West and East by a creek (Khor Ras Al Khaimah) that grows mangrove all over the creek extends from Ras Al Khaimah Port.

The beaches of the Al Rams area, which are to the North of the emirate, are famous for their abundance of fisheries. Al Rams is also home to an extensive Mangrove area and a thriving cultured oyster industry.

Important corals are located at Ghalilah which borders Saqr Port to the north.

Sha'am which is located 30 kilometres to the north-east of Ras Al Khaimah city and Al Jeer which stretches to the Omani borders (Musandam Governorate) are also significant for fisheries and leisure activities.

The emirate's many fisheries make for vast bodies of water for fish incubation.

Over 3,500 species of birds live in this environment, some of them are migratory birds like 'great cormorant', from species "Phalacrocorax carbo" and mostly spot during the winter migration period.

The coastal area stretches for five kilometres on Al Jazirah Al Hamra and includes mudflats and bodies of sand.

Al Marjan, is a series of four connected man-made islands located to the south of Ras Al Khaimah. The island extends a vast 4.5 kilometres into the sea and hosts numerous hotels and beaches.

Image 5

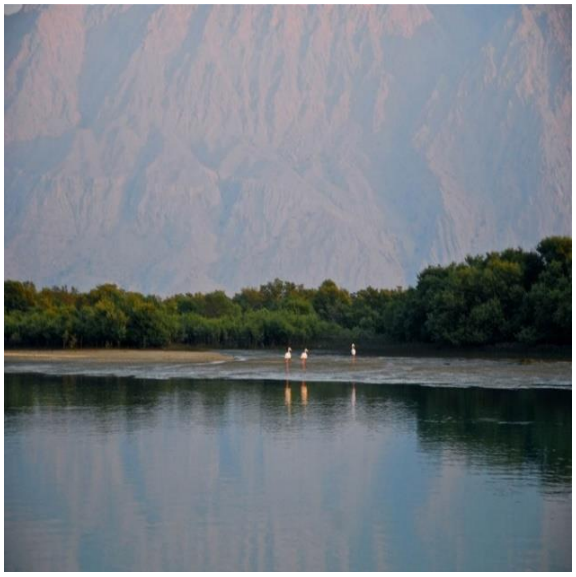

Image 6

Image 5 – Mangroves form a large part of the coastal area are home to a variety of wildlife, including flamingos, extends right into the centre of Ras Al Khaimah city.

Image 6: Flamingos near Mangroves in Ras al Khaimah coastal area.

7.11 Ras Al Khaimah Environmental and Socio-Economic Sensitivity Map

The Ras Al Khaimah Environmental and Socio-Economic Sensitivity Map produced by EPDA provides situational awareness to responders and decision makers during an incident, making it an important tool in oil spill preparedness and response. During the production of this map, EPDA has carefully considered various factors, including mapping of coastal and marine habitats including wildlife habitats, sea grasses, corals, mangroves, public beaches, tourist sites, as well as desalination plants and other important sites that need to be protected in the event of an oil spill. This map depicts five areas that provide a comprehensive overview of Ras Al Khaimah's coastal and sensitive areas and is an effective operational tool for those responding to oil spill incidents by identifying sites (*see Figures 14, 15, 16, 17, 18 and 19*).

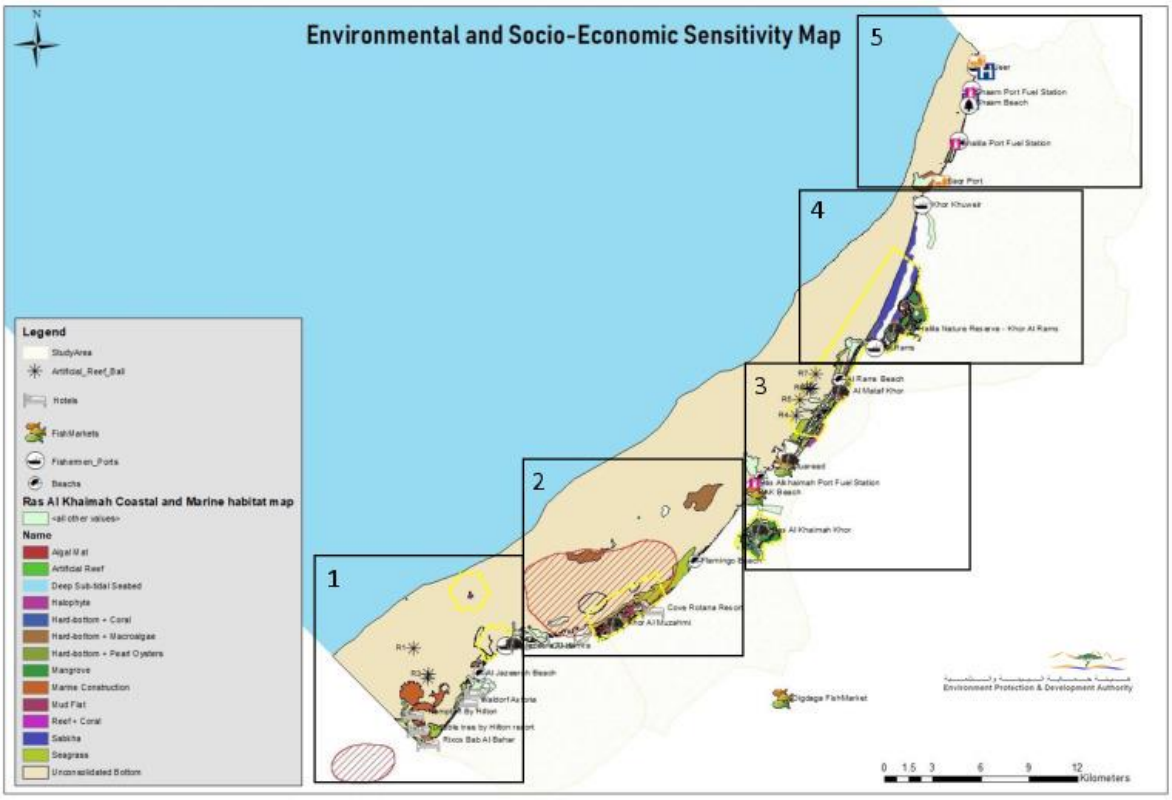

Figure 14 – Environmental and Socio-Economic Sensitivity Map – produced by EDPA (Courtesy: EPDA)

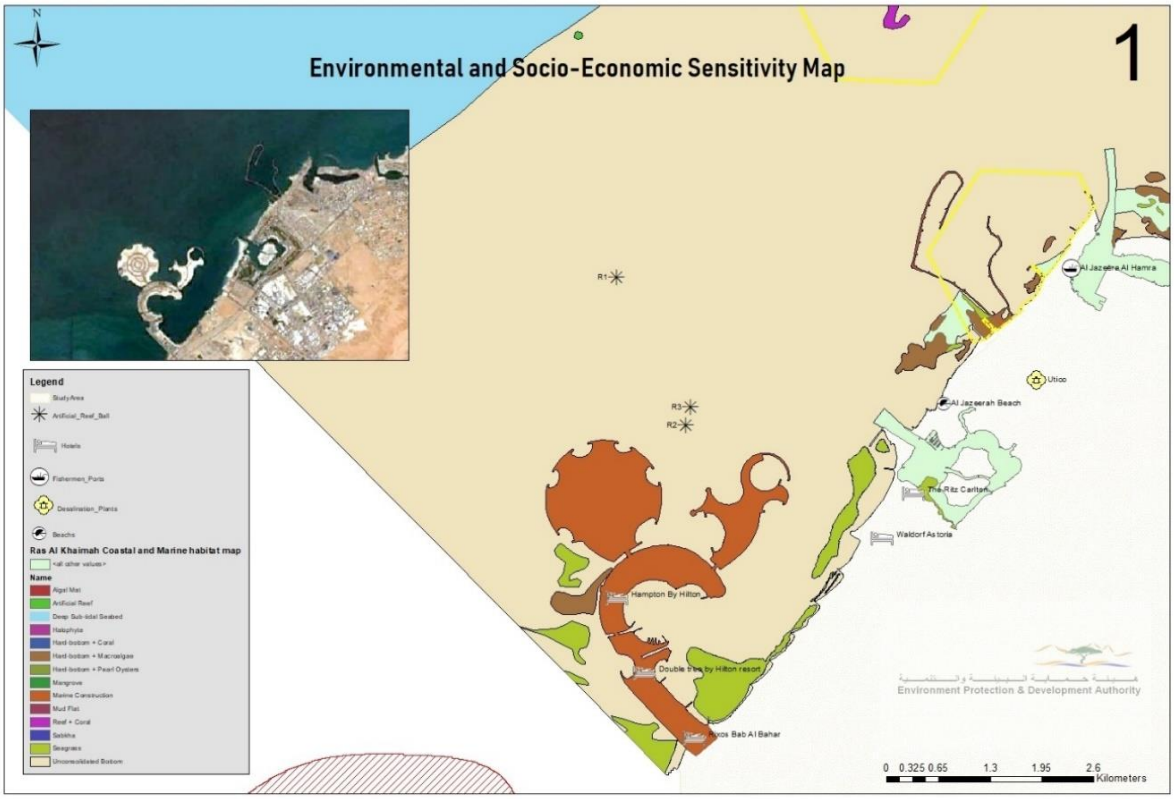

Figure 15 – Environmental and Socio-Economic Sensitivity Map, Area 1 – produced by EDPA (Courtesy: EPDA)

Retention	@ Office	@ Archives
	0-2 years	3-5 years

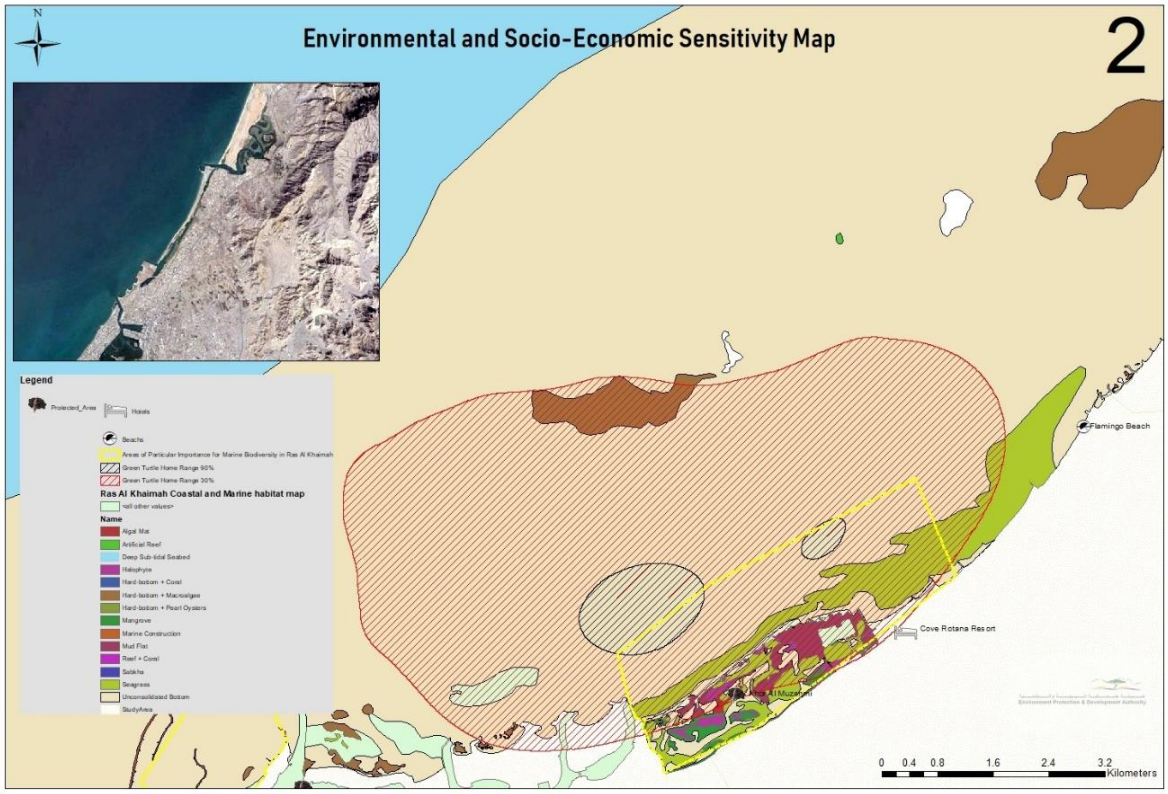

Figure 16 – Environmental and Socio-Economic Sensitivity Map, Area 2 – produced by EDPA (Courtesy: EPDA)

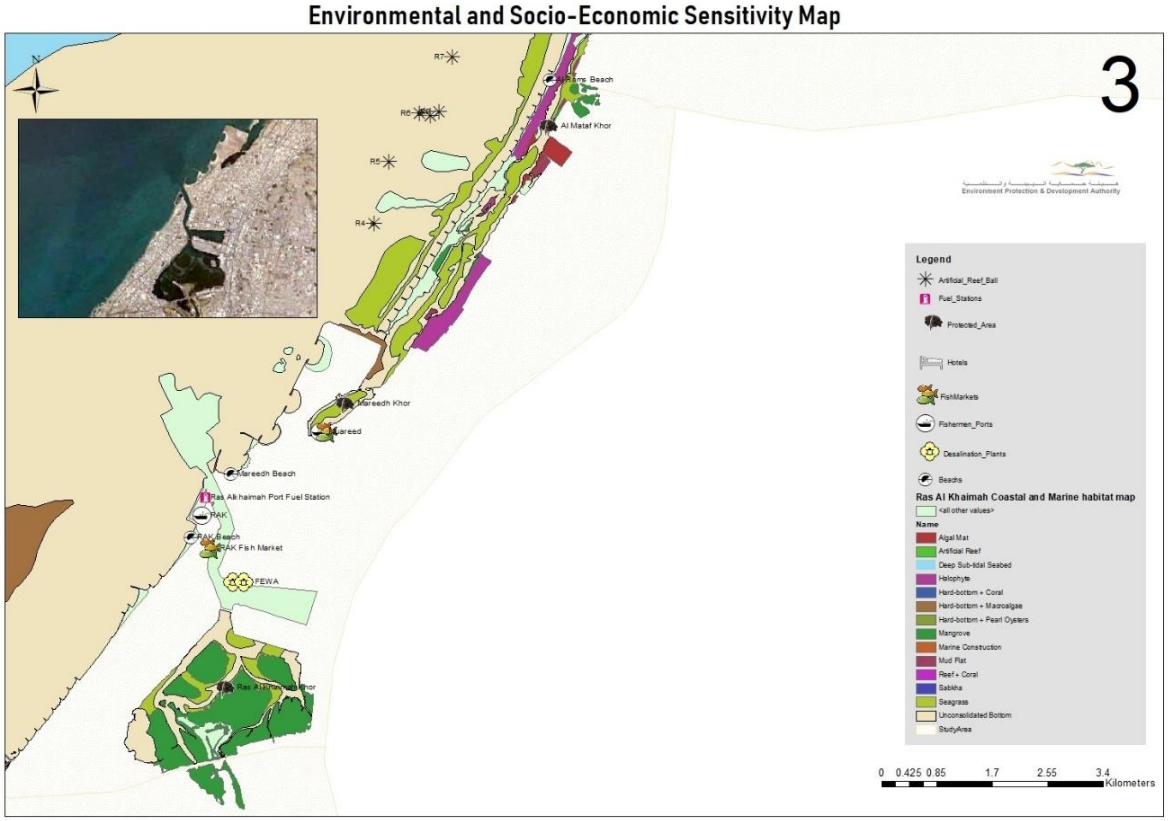

Figure 17 – Environmental and Socio-Economic Sensitivity Map, Area 3 – produced by EDPA (Courtesy: EPDA)

Retention	@ Office	@ Archives
	0-2 years	3-5 years

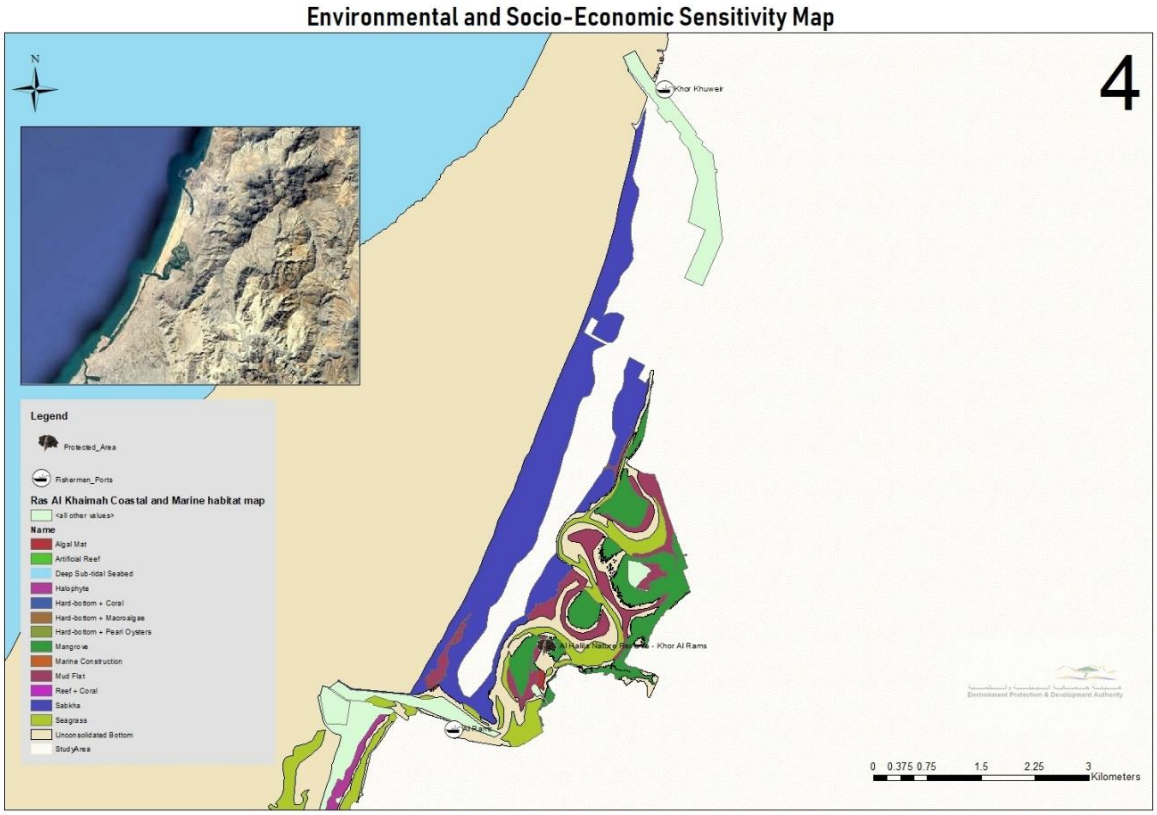

Figure 18 – Environmental and Socio-Economic Sensitivity Map, Area 4 – produced by EDPA (Courtesy: EPDA)

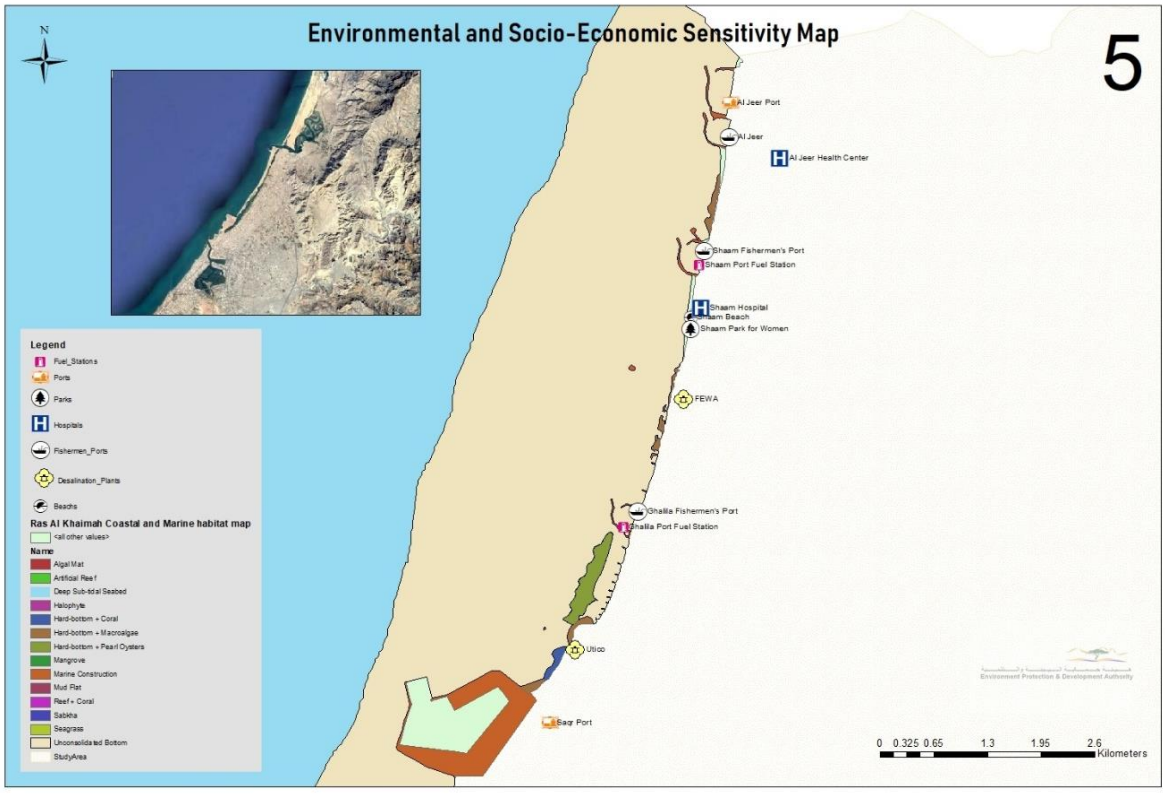

Figure 19 – Environmental and Socio-Economic Sensitivity Map, Area 5 – produced by EDPA (Courtesy: EPDA)

Retention	@ Office	@ Archives
	0-2 years	3-5 years

7.12 RAK Ports – Strategic Location

RAK Ports have traditionally been a central contributor to the economy of the Ras Al Khaimah, acting as key maritime gateways for import and export activities, to and from Ras Al Khaimah all over the world.

The expansion and diversification of services offered across the five individual ports of Ras Al Khaimah consolidates their importance to the growing economic success of the Emirate, and to the overall profile of Ras Al Khaimah as a top-class location for doing business in a wide range of industrial sectors.

Over decades, RAK Ports has undergone tremendous expansion, with addition of berths and enhancement of existing berthing.

RAK Ports' expanding growth has led to the creation of additional deep-water berths at Saqr Port, which facilitates deep draft vessels up to capsize.

RAK Ports is strategically located on the approach to the Strait of Hormuz (SoH). A fifth of the world's petroleum liquids and a quarter of the world's liquefied natural gas are transported through the strait on a daily basis. The SoH connects the Gulf north of it with the Gulf of Oman to the south and the Arabian Sea beyond. It is 21 miles (33 km) wide at its narrowest point. The SoH consists of 2-mile-wide navigable channels (3 km) for inbound and outbound shipping as well as a 2-mile-wide buffer zone.

Offshore at Saqr Port are extensive anchorages for deep draft vessels. Located just north of the anchorages is the Inchcape buoy, in position 26º 10'N 55º53'E which is a rendezvous position for vessels entering and departing the Gulf for provisions, crew change, technical teams and repair squads.

7.13 RAK Ports - Operations

RAK Ports, strategically located in the northmost emirate of Ras Al Khaimah, UAE, is a collective name for a multi-purpose port network of five modern and dynamic ports. Home to five ports with diversified activities, RAK Ports can handle the most diversified range of cargo in the region including bulk, liquid bulk, breakbulk, project cargo, general cargo and container as well as livestock.

RAK Ports encompasses:

- Saqr Port - the largest bulk handling port in the middle east.
- RAK Maritime City FZA - the only free zone in the region to have direct quayside access. RMC also incorporates Stevin Rock Harbour, which lies at the entrance to the port.
- Ras Al Khaimah (Khor) Port - the city port with a dedicated cruise terminal facility.
- Al Jazeera Port – port and shipyard facilities, handing a range of cargo operations and ship repairs and dry-docking.
- Al Jeer Port – handles livestock and provides lay-by facilities.

A range of vessels arrive at and depart from RAK Ports include bulk, cargo, container, cruise ships, bulk-liquid carriers, car carriers, livestock carriers, supply ships, heavy-lift/project cargo ships, combination of tug and barges, other vessels for ancillary services and dhows.

RAK Ports provides a wide range of marine services including pilotage, harbour towage, vessel mooring, vessel traffic control, hydrographic surveying, emergency response, aids-to-navigation (A to N) and lay-up at anchorage for vessels.

Saqr Port:

(The Port consists of two operational areas - Inner Harbour and Deep-Water Bulk Terminal).

The Inner Harbour: With 12 berths (includes the container terminal with 3 berths), the Inner Harbour is capable of receiving ships up to 294m and beam up to 45m. Depths alongside are 12m with vessels being offered the ability to load dynamically by utilising the DUKC® System. The port handles dry-bulk cargoes, general and project cargoes, containers, break bulk, Ro-Ro cargo and petroleum products (see *"Pollution Risk at RAK Ports owing to Petroleum Products Operations", Section Twelve – The Risk*).

Deep-Water Bulk Terminal: The terminal is the largest bulk terminal in the Gulf region and can handle two Capesize or three Panamax vessels simultaneously. Depth alongside is 18m.

RAK Maritime City:

With 5.0 km of quay frontage and the benefits of a free zone environment, RAK Maritime City offers tenants private berths with their own facilities and common user berth facilities. The common user berth at Quay No. 5 generally handles bulk liquid dangerous cargo including base oil and heavy grade oils (HGO) such as bitumen (see *"Bitumen" Section Nine – Fate of Spilled Oil*).

Stevin Rock Harbour:

Situated adjacent to the harbour entrance of RAK Maritime City is Stevin Rock Harbour with quaysides dedicated to handling bulk cargo transportable by barge.

Ras Al Khaimah Port:

Located at the centre of Ras Al Khaimah city, the port comprises a free zone area and harbour with direct waterfront access to eight berths up to eight metres deep. The port has a dedicated cruise terminal and handles boutique size cruise ships and dhows and provides marine layby facilities for ships.

Al Jazeera Port:

Located at the southern end of Ras Al Khaimah Emirate, the port handles dry bulk, bulk and project cargoes and provides ship repair services on its 12 dry berths with synchronized ship lifting facility.

Al Jeer Port:

Located on Ras Al Khaimah's border with Oman, Al Jeer Port offers marine layby berths and facilities for handling smaller vessels, dhows and live-stock vessels.

Future - Saqr Port 2.0:

RAK Ports has embarked on a port expansion project called Saqr Port 2.0 adjacent to RAK Maritime City FZA, which is currently in progress. Saqr Port 2.0, which will create 1.1 million square metres of port area in a few years, aims to create much needed space for continued industrial expansion. The scope of this expansion project includes reconstruction, construction of a new seawall and breakwater, and capital dredging works to provide access to berths and landside facilities.

7.14 Vessel and Cargo Statistics

The ports, terminals and facilities handle approximately 80m tonnes per year, mostly dry bulk. Total vessel calls are in the region of 3,000 per year across all ports.

7.15 RAK Ports Area Layout

See Figure 20 on the next page - shown on BA Chart 3174

Retention	@ Office	@ Archives
	0-2 years	3-5 years

Figure 20: RAK Ports Area Layout

SOURCES
Iranian Government Charts of 2005-2010 based on surveys:
a 2002-07 1:25 000–1:50 000
b 2004 1:100 000
c 1994-96 1:25 000
British Government Surveys
d 1972-76 1:25 000–1:50 000
e 1960-61 1:75 000
United States Government Surveys
f 1960-61 1:100 000
RAK Port Authority
g 2017 Part of sea floor coverage
Commercial Surveys
h 1988 1:10 000

Tidal Levels referred to Datum of Soundings

Place	Lat N	Long E	Heights in metres above datum MHHW	MLHW	MHLW	MLLW	Datum and remarks
Bukhā	26°09'	56°09'	2·2	2·0	1·0	0·6	
Saqr Port (Mina' Saqr)	25 58	56 03	2·1	1·9	1·0	0·6	
Ra's al Khaymah	25 49	55 57	2·0	1·8	1·0	0·7	Data approximate
Al Jazeera Port	25 43	55 47	1·8	1·6	–	–	
Jazīreh-ye Hengām	26 41	55 54	2·2	2·1	1·0	0·4	

For additional details see Co-Tidal Atlas NP214 and ADMIRALTY Tide Tables Vol 3.

Adjoining Chart 3173

I R A N

JAZĪREH-YE QESHM

JAZĪREH-YE HENGĀM

Khalīj-e Deyrestān

Khalīj-e Hengām

Patrick Stewart Bank

Mound Shoal

Mitre Hill

Ra's-e Kharga

Ra's-e Tarbat

Kuh Kūk

Kowd

THE FLAT

STRAIT OF HORMUZ

TSS Tunb-Farur
(Greater Tunb to Jazīreh-ye Forūr)

Saleh Oilfield
(see Note)
Restricted Area
(see 86 Note)

Bukha Oilfield
(see Note)

Saqr Port Port Limits
(see Note)

Saqr Port Port Limit
(see Note)

Ra's Al Khaimah Port Limits
(see Note)

Al Jazeera Port Limit

Shoals
(see Note)

Saqr Port - Small Vessels

Ra's Al Khaimah Port

Al Jazeera Port

Halaylah Oil Loading Terminal

Deepwater Dub Terminal

Gas lines Note - PIPELINES

Oil lines Note - PIPELINES

Inshore Traffic Zone

OMAN

Ra's ash Sha'm

Al Jeer Port

Ash Sha'm

Saqr Port

RAK Maritime City

UNITED ARAB EMIRATES

Ra's AL KHAYMAH

Ras Al Khaimah Port

Al Jazeera Port

AR RAMS

Adjoining Chart 2441

Adjoining Chart 3172

Adjoining Chart 3175

INTERNATIONAL

CHART SERIES

OMAN, IRAN AND THE UNITED ARAB EMIRATES

WESTERN APPROACHES TO THE STRAIT OF HORMUZ

DEPTHS IN METRES
SCALE 1 : 125 000 at lat 25°30′

Depths are in metres and are reduced to Chart Datum, which is approximately the level of Lowest Astronomical Tide.
Heights are in metres. Underlined figures are drying heights above Chart Datum; all other heights are above Mean Higher High Water.
Positions are referred to WGS84 Datum.
Navigational marks: IALA Maritime Buoyage System – Region A (Red to port).
Projection: Mercator.
Sources: See Source Diagram. Later information has also been included.

OIL AND GAS FIELDS
Production platforms and associated structures, including tanker moorings, storage tankers and platforms on pipelines, generally exhibit Mo(U) lights, aircraft obstruction lights, and audible fog signals. Unauthorized navigation is prohibited within 500 metres of all such structures. Other uncharted structures, both lit and unlit, and submerged installations, some marked by buoys, may exist.

OIL AND GAS ACTIVITY
Numerous structures, surface and submerged, sometimes marked by buoys, exist within the area of this chart. These features are not all charted due to their complexity and frequent change.

SHOALS
Westward from Ra's al Khaymah (25°47′N 55°56′E), there are numerous banks within the 10 metre depth contour, some of which are thought to move under the influence of the Shamals (North-west winds).

MARINE FARMS
Marine farms exist within the area of this chart. They may not all be shown individually and their positions may change frequently. Marine farms may be marked by lit or unlit buoys or beacons. Mariners are advised to avoid these structures and their associated moorings.

SUBMARINE CABLES AND PIPELINES
Mariners are advised not to anchor or trawl in the vicinity of submarine cables and pipelines. Pipelines are not always buried and their presence may significantly reduce the charted depth. They may also span seabed undulations and cause fishing gear to become irrecoverably snagged, putting a vessel in severe danger.

RESTRICTED AREA
(26°10′N 55°43′E)
Only authorised vessels should enter the restricted area shown on this chart. For further information, consult the local authority.

AUTOMATIC IDENTIFICATION SYSTEMS
AIS transmitters on aids to navigation are not shown on this chart. V-AIS will be shown. For details, see ADMIRALTY List of Radio Signals.

SAQR PORT PORT LIMITS
For full details of Saqr Port Port Limits and Regulations, see www.rakports.ae/Marine/.

Customer Information
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7.16 Major Regional/National/International Organisations/Plans for Marine Protection in the Arab Gulf

There are several regional/national/International organisations/Plans that are concerned with the protection of the marine environment of the Gulf Sea region, as follows:

a. Regional Organisation for the Protection of the Marine Environment (ROPME)

ROPME situated in Kuwait, is an intergovernmental body assigned for the protection and monitoring of activities of the coastal and marine environment in the Gulf sea region. The main intention of the organisation is to protect and develop the marine environment of the coastal belts of the region.

ROPME Sea Area (referred to as the Kuwait Action Plan Region in the past) is the sea area surrounded by the eight Member States of ROPME: Bahrain, I.R. Iran, Iraq, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates. The term "ROPME Sea Area" was coined by Plenipotentiaries of the Member States to achieve unanimity in denoting the area covered by the Kuwait Regional Convention of 1978. It in fact reflects the goodwill of the Member States to cooperate in protecting their common marine environment despite the existing geopolitical boundaries.

According to Article II of the Kuwait Regional Convention, the ROPME Sea Area (RSA) is defined as extending between the following geographic latitudes and longitudes, respectively: 16°39'N, 53°3'30''E; 16°00'N, 53°25'E; 17°00'N, 56°30'E; 20°30'N, 60°00'E; 25°04'N, 61°25'E.

For more information, please check the link: https://ropme.org/

b. MEMAC/RESCO

MEMAC, the Marine Emergency Mutual Aid Centre (Headquartered in Bahrain), and the Dubai-based Regional Clean Sea Organisation (RECSO), are regional environmental management and pollution control initiatives, primarily linked to the oil industry.

Please see the link to view ‘ROPME Sea Area Regional Oil Spill Contingency Plan’ published by MEMAC: https://memac-rsa.org/assets/fileManager/RCP-_Jan_2012.pdf

c. Regional Clean Sea Organisation (RECSO)

RECSOs operations, centred in Dubai (UAE), is an oil industry co-operative organisation established with its objective to protect the Gulf's marine resources from oil pollution (UNEP, 2013). The prime responsibility of RECSO is to protect the regional seas and environment from oil pollution emanating from operations, shipping and other related activities of its members in the region. Each member oil company shares the responsibility of ensuring a long-term commitment to the "Clean Gulf" concept. For more information, please check the link: https://www.recso.org

d. **Kuwait Action Plan**

Under the Kuwait Regional Convention for Cooperation on the Protection of the Marine Environment from Pollution, the associated Kuwait Action Plan (KAP) is a regional initiative for the Arabian Gulf (see MARPOL below). All AGCC countries are party to the convention which aims to reduce pollution, establish national standards and develop research and monitoring programmes relating to all types of pollution. KAP operates through ROPME, as well as with many national organisations and other institutions.

e. ***MARPOL***

The Arabian Gulf and Gulf of Oman are declared Special Areas under Annex 1 and V of the MARPOL (Marine Pollution) treaty, Convention for Cooperation on the Protection of the Marine Environment from Pollution.

7.17 Non-Governmental Organisations (NGOs) in UAE

Various non-governmental organisations (NGOs) working towards the fulfillment of environment-related goals in the country play a pivotal role in adjusting the void in the society by educating them about the sustainable lifestyle practices. A few major NGOs in the UAE which are engaged in safeguarding the various aspects of environmental protection laws in the country have been mentioned below:

a. The Emirates Marine Environmental Group (EMEG) is a non-profit organisation based in the United Arab Emirates (UAE). Established in 1996 is specialised in dealing with various environmental issues. EMEG provides services and solutions for a variety of projects focusing on a range of marine and terrestrial environmental issues from around the country. Please check: https://www.ecomatcher.com/emeg/

b. Environment Friends Society is an Abu Dhabi based organisation which works towards creating a public awareness regarding environment-related predicaments (Tel. +971 2 665 5113).

c. Emirates Environment Group is a Dubai-based organisation that is devoted to protecting the environment by educating the society about the need of the hour to protect the environment. Please check: https://www.eeg-uae.org/?lang=en

SECTION EIGHT

ORIGINS OF MARINE POLLUTION

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SECTION EIGHT

Origins of Marine Pollution

8.1 Marine Pollution Activities

Ship operations are one of the many sources of maritime pollution. Oil spills from tankers are by far the biggest source of marine oil pollution. In many instances, oil tankers are known to illegally discharge wastes into Oceans. Oil discharged from tankers can spread into wide territories and cause damage to the natural habitat of species such as coral reefs and algae (Cormack, 1999).

Oil spills can have devastating effects on waterways and oceans. Contained within many oils are polycyclic aromatic hydrocarbons (PAHs) that cause most of the toxicity but the physical nature of oil, i.e. the stickiness is a major problem for a number of organisms such as birds. Spills of oil have numerous negative impacts both short and long term, resulting in economic and financial losses. Also, the recovering and clean-up processes are very costly.

8.2 Main Sources of Oil Pollution of the Marine Environment

Following are the major sources of marine pollution:

- **Oil Spills**

  Oil spills include releases of oils from tanker ships, directly from accidents and indirect from ship operations, offshore platforms, drilling rigs and wells, as well as spills of refined petroleum products, such as gasoline, chemicals, diesel and their by-products and heavier fuels such as bunker fuel used by large ships, or the spill of any oily white substance refuse or waste oil.

- **Bunker Fuels**

  Bunker fuel is technically any type of fuel oil used aboard ships. Number 5 fuel oil and Number 6 fuel oil are called residual fuel oils (RFO) or heavy fuel oils. More Number 6 oil is produced compared to Number 5 oil, the terms heavy fuel oil and residual fuel oil are sometimes used as names for Number 6.

- **Land based spills**

  Spills that originate into the water from landward sources. This could be purposefully disposed of oil directly to sea or via rivers and drains. Or from activities on quaysides such as a crane hydraulic failure and a multitude of other possibilities.

8.3 Causes

The following are the main causes of marine pollution emergencies:

- Collision between vessels.
- Allision with a navigation aid or wharf.

- Grounding.
- Ship distress/sinking
- Illegal or accidental discharge.
- Lack of proper controls during bunkering or cargo transfer.
- Pipeline ruptures /accidental spills from quayside infrastructure, sub-sea/over the sea/shore approach pipelines.

The risk of a marine pollution incident is increased by:

- Seaworthiness of vessels.
- Negligence and/ or competence of the owner/operator, master or crew.
- Age of the fleet.
- Size/type of vessel.
- Stowage and control of cargoes.
- Type/amount of chemical(s) and oil carried.
- Proximity of navigation hazards.
- Traffic density.
- Illegal activity
- Environmental factors including tidal flow and weather, etc.

Over 75% of marine oil pollution/spill incidents that have occurred worldwide have been within port or harbour area during routine ship operations such as loading, discharge of cargo and bunkering. Most of these are small in nature and less than a few tons.

Marine pollution risks in RAK Ports are mainly associated with shipping activities and notably bunkering operations. There are small tanker operations, which as of 2023 accounted for less than 250,000T within Saqr Port and RAK Maritime City oil terminals. Vessels discharge petrol and diesel in bulk at Saqr Port and load/discharge Bitumen and base oils in RAK Maritime City.

The main threat to RAK Ports Harbour and adjacent waters is:

- Fuel Oil (FO).
- Marine Grade Oil (MGO).
- Automotive diesel fuel.
- Bitumen
- Base Oils
- Lubricant Oil.
- Hydraulic oils

FO is present in significant quantities as bunker fuel on ships calling RAK Ports. MGO is also used as bunker fuel within the Port. Noxious chemicals are not currently handled in bulk at RAK Ports.

8.4 Location

Location of marine pollution within the scope of this Plan: Based on the location of vessel at the time of incident within the area of operation, the likely spill/pollution could occur at any of the following locations:

a. Sea or in channel due collision etc during passage.
b. Close to shore due to grounding.
c. Alongside at jetty or at the terminal during cargo operations.

Notwithstanding the above locations, it is possible that an eventuality occurring at sea like a collision or mechanical failure, or illegal discharge could lead to a situation where the source is not known and possibly originated beyond port limits. The consequences of any spill at sea could spread into or beyond port limits, to other Emirates or neighbouring states.

8.5 Classification of Oil

Oils are generally classified by the **American Petroleum Institute gravity scale** into groups. Table 16 (below) outlines the grouping of oils based on specific gravity. Oils within each group will generally have similar viscosity, spreading rates and pour points. Oils within each group will have a similar fate in the marine environment, *See Section Nine* (Fate of Spilled Oil).

GROUP	SPECIFIC GRAVITY	API GRAVITY	VISCOSITY (CST AT 15°C)	% BOILING < 200°C	% BOILING > 370°
I	< 0.8	>45	0.5 – 2/0	50 - 100	0
II	0.8 – 0.85	35 – 45	4 – solid	10 – 48	0 – 40
III	0.85 – 0.95	17.5 – 35	8 – solid	14 – 34	28 – 60
IV	0.95 – 1.0	< 17.5	1500 - solid	3 - 34	33 - 92

Table 16: Oil Groups and Properties

8.6 Other non-oil sources of pollution are detailed below for information

- **Garbage**

  MARPOL Annex V bans all overboard disposal of plastics and limits other discharges based on the form of the material and the vessel's location and distance from shore. The regulated garbage includes solid wastes (other than sewage) generated during normal operations at sea.

  Vessel garbage management must be viewed as a system that includes port reception facilities, and this system needs to be combined with the integrated solid waste management system for land generated Waste. There is a need for new and improved on-board garbage treatment

technologies, a problem that may be resolved in part by adapting commercial equipment used in homes, retail establishments, and industry.

- **Sewage**

  The discharge of raw sewage into the sea can create a health hazard and, in costal sea areas, can also lead to a depletion of oxygen in the water and visual pollution.

  The revised MARPOL Annex IV apply to new and existing ships of 400 gross tonnage and above or ships which are certified to carry more than 15 persons, engaged in international voyages.

- **Cargo Residues and Lost Containers**

  Discharge of cargo residues from bulk carriers can pollute ports, waterways and oceans.

- **Air Pollution Exhaust Emission**

  Exhaust emissions from ships are considered to be a significant source of air pollution, with 18-30% of all nitrogen oxide and 9% of sulphur oxide pollution. Sulphur in the air creates acid rain, which damages crops and buildings.

  - **Ballast Tanks**

    Compartments at the bottom of a ship that are filled with liquids for stability and to make the ship seaworthy.

    Ballast water taken up at sea and released in port is a major source of unwanted exotic marine life. (Invasive Species). Can spread human pathogens and other harmful diseases and toxins.

Image 7 – Ballast Water

  - **Bildge Water**

    The bilge is the lowest compartment on a ship and in the Engine room collects oily residues from the machinery above. The water that collects in the bilge must be pumped out to prevent it from becoming too full and overflowing. Depending on the ship's design and function, bilge water may contain water, oil, urine, detergents, solvents, chemicals, pitch, particles, and so forth.

SECTION NINE

FATE OF SPILLED OIL

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SECTION NINE

Fate of Spilled Oil

9.1 General

The physical and chemical characteristics of spilled oil change almost immediately when spilled in the marine environment due to evaporation, dispersion, emulsification, dissolution, oxidation, sedimentation, and biodegradation. All these processes that set in together are collectively referred to as oil weathering and decide the final fate of spilled oil and quantities that would need to be removed physically. An uncertainty in a trajectory forecast builds over time due to these processes that the spilled oil goes through.

If the oil is persistent and does not vaporize immediately or disperses and comes ashore, then the costs in terms of cleanup, damages and economic loses can be considerable.

Table 17 below outlines the general fate of the oil in the marine environment.

WEATHERING PROCESS	GROUP I	GROUP II	GROUP III	GROUP IV
Spreading	Rapid	Rapid	Rapid	None
Evaporation	High	Moderate	Moderate	None
Emulsification	Little or no tendency	Low to Moderate	Moderate to High	High
Physical dispersion	Rapid	Moderate to Rapid	Moderate to Slow	Slow
Dissolution	Little	Low	Little	Little or none
Photo – oxidation	Not significant	Not significant	Not significant	Not significant
Sedimentation	Very low probability	Very low probability	Low Probability	Low probability unless in contact with sediment

Table 17: Fate of all Oil Groups in the Marine Environment

Table 18 below outlines the Fate of oil once spilt.

Fate of Oil	Remarks	Distillates	Heavy oil/Lube oil
Spreading	During the early stages of most spills the oil will spread out to a thin film. Viscosity, pour point, wax content, and weather conditions affect the spreading rate	Likely to spread easily at all ambient temperatures.	Will spread easily in summer, less so in colder water.
Evaporation	The rate of evaporation is determined primarily by the volatility of the oil. The rate of evaporation also depends on spreading rate and weather conditions.	Expected to evaporate quickly. Be aware of explosion risk from low flash point products on hot days.	Will evaporate but less quickly. Lube oils will tend not to evaporate to a great extent.
Dispersion	The rate of natural dispersion is dependent upon the nature of the oil and sea state. Slick thickness related to the amount spilt and the degree of spreading is an important factor since smaller droplets are produced form thin films	Remains fluid and likely to disperse completely in a few days.	Likely to remain fluid and to disperse completely in a few days. In extremely cold weather may emulsify.
Emulsification	Oils tend to absorb water to form emulsions, which can increase the volume of the pollutant by a factor of between 3 & 4. The rate at which emulsification takes place is a function of sea state although viscous oils tend to absorb water more slowly.	High viscosity oils take longer to form emulsions, and these will not exceed 40% water content.	High viscosity oils take longer to form emulsions, and these will not exceed 40% water content
Dissolution	Rate and extent to which an oil dissolves depends upon its composition, external spreading, water temperature and turbulence	Not a significant factor in clean-up process.	Not a significant factor in clean-up process.
Biodegradation	Seawater contains marine bacteria, moulds and yeast, which can utilise oil as a source of carbon and energy. Factors affecting biodegradation are temperature, oxygen availability and nutrients	Beached oil breaks down more slowly than oil in water.	Not a significant factor in clean-up process.
Sedimentation	Sinking is usually brought about by adhesion of particles of sediment or organic matter to the oil. This is less likely to happen in the open sea, but shallow waters are often laden with suspended solids.	This is less likely to happen in the open sea but shallow waters are often laden With suspended	This is less likely to happen in the open sea, but shallow waters are often laden With suspended
Combined processes	The process of spreading, evaporation, dispersion, emulsification, and dissolution are most important during early stages of a slick whilst sedimentation and biodegradation are long term processes.		

Table 18: Fate of Oil Once Split

9.2 Diesel (MGO)

Diesel is a refined product, light petroleum distillate which is a Group II oil with a relatively low specific gravity and low pour point (-17 to -30°C).

Diesel is a light persistent oil which will weather and evaporate rapidly. However when present in large quantities, diesel will present a significant risk to the marine environment.

Diesel, once in the water will spread rapidly with potentially small quantities covering large areas. In summer conditions, the oil will evaporate rapidly and with wave action and mixing the slick will rapidly weather and dissipate.

In summer conditions potentially up to 80% of the volume will be lost through evaporation in the first hour.

In winter conditions, diesel will be more persistent. The oil will rapidly spread but will not lose as much volume through evaporation.

Wave action and mixing will still allow for weathering and dissipation of the oil. Diesel is unlikely to emulsify in the conditions at Ras al Khaimah.

9.3 Intermediate Fuel Oil and Heavy Fuel Oils

IFO and HFO are residual refined products with a higher specific density and high viscosity.

IFO and HFO are of variable composition with a high specific gravity. IFO 180 is a Group III oil and IFO 360 is a Group IV oil. Both are highly persistent.

Once in the water IFO and HFO will emulsify with a water content of up to 80 percent. The light ends or volatile aromatic components will evaporate leaving heavier residuals. This means the specific gravity will increase with time.

IFO and HFO will not readily spread and can be expected to fragment and form patches. IFO and HFO will show little tendency to disperse or dissolve.

As IFO emulsifies it will be less reactive to Oil Spill Control Agents (OSCA). HFO has too high a viscosity to be treatable with OSCA.

9.4 Light Petroleum Products (ULP)

Other light petroleum products such as ULP are extremely volatile. These oils will spread rapidly with high physical dispersions and evaporation. These products will weather rapidly and dissipate unless they are present in large volumes.

Careful assessment of the safety aspects is required when responding to these light petroleum products as they are potentially highly flammable and potentially very toxic.

9.5 Bitumen

9.5.1 General Description

Bitumen, dense, highly viscous, petroleum-based hydrocarbon that is found in deposits such as oil sands and pitch lakes (natural bitumen) or is obtained as a residue of the distillation of crude oil (refined bitumen). In some areas, particularly in the United States, bitumen is often called asphalt, though that name is almost universally used for the road-paving material made from a mixture of gravel, sand, and other fillers in a bituminous binder.

Bitumen is defined by the U.S. Geological Survey as an extra-heavy oil with an API gravity less than 10° and a viscosity greater than 10,000 centipoise. At the temperatures normally encountered in natural deposits, bitumen will not flow; in order to be moved through a pipe, it must be heated and, in some cases, diluted with a lighter oil. It owes its density and viscosity to its chemical composition—mainly large hydrocarbon molecules known as asphaltenes and resins, which are present in lighter oils but are highly concentrated in bitumen. Depending on the use to which bitumen is put, these elements may be contaminants that have to be removed from the finished product. By far most refined bitumen is used in paving asphalt and roofing tiles, as is a large amount of natural bitumen.

9.5.2 Bitumen Handled at RAK Maritime City

The bitumen handled at RAK Maritime City is "hot liquid bulk bitumen" and is transported in a special bitumen tanker, which is pumped from the tanker to the storage tank (or vice-versa) via pipeline at an elevated temperature, typically above 120°C. Bitumen is very viscous or near solid at ambient temperature, it gradually softens when heated, but becomes very viscous and solid when it loses heat. Unlike other liquid petroleum products, the rapid heat loss in spilled bitumen disrupts the flow and makes it insoluble and heavier than water, so if spills in water, it will sink (see 9.6.4).

9.5.3 Physical and Chemical Properties of Bitumen handled in RAK Maritime City

Physical state at normal bulk handling temperature of 120 to 175° C	Liquid
Physical state at normal ambient temperature	Solid
Colour	Brown to black
Odour	Characteristic
Flash point	>220°C (428°F) (COC)
Vapour pressure	Negligible at ambient temperature
Density	0.99 to 1.1g/cm^3 (25°C)
Solubility	Insoluble in water. Soluble in most organic solvents

Table 19: Physical and chemical properties of bitumen

9.5.4 Bitumen Spillage

Spillage of bitumens to ground is relatively harmless. The bitumen will cool down and become solid. The affected area can be cleaned up using ordinary equipment such as spades, rakes, wheel-mounted loaders and similar. In water, bitumen will normally sink into the sediment at the bottom although in some circumstances it may float.

The main effect of a spill of bitumen in water or on soil is adsorption to sediment causing physical contamination. The water solubility of bitumen is so low that it could be considered to be negligible. Bitumens are not thought to present any significant hazard to the aquatic environment.

For more information, click the link: nynas--safe-handling-of-bitumen2.pdf

9.6 Natural Weathering Processes Acting on Spilled Oil

When the oil spilled into the seawater, it will start a series of processes together known as weathering, which will change characteristics and behaviour.

Figure 21 depicts the processes and Figure 22 shows how the relative importance of the processes varies with time (ITOPF, 2002 – “International Tanker Owners Pollution Federation Limited”).

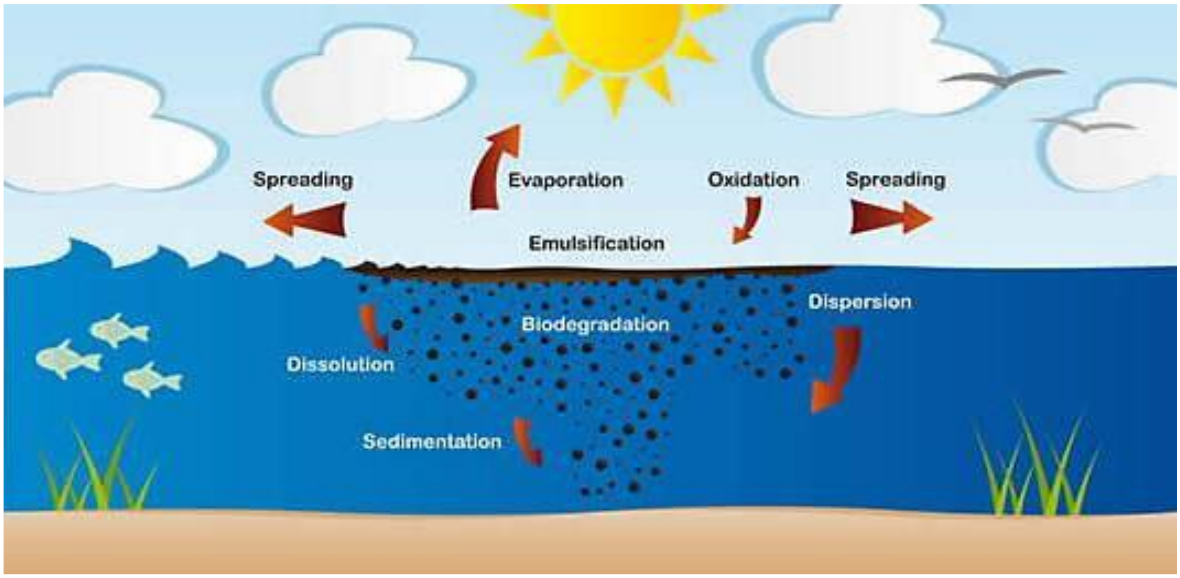

Figure 21: Processes taking place after oil spill
Source: ITOPF Handbook, 2002, p. 4

Retention	@ Office	@ Archives
	0-2 years	3-5 years

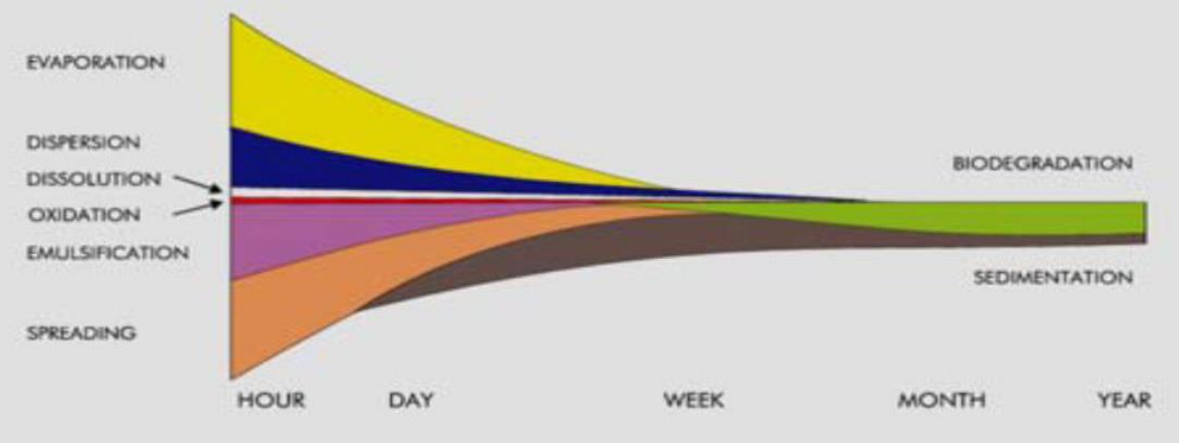

Figure 22: Time span and relative importance of processes acting in oil spill

Source: ITOPF Handbook, 2002, p.5

Retention	@ Office	@ Archives
	0-2 years	3-5 years

SECTION TEN

IMPACT OF MARINE POLLUTION

TABLE CONTENTS

SECTION TEN

Impact of Marine Pollution

10.1 General

Marine pollution/spills can have a serious impact on marine life, as well as on the economic coastal activities and the communities that exploit the resources of the sea. The effects of marine pollution to coastal resources are extensive, impacting on the flora, fauna and entire ecology of the coastal environment and depend on a multitude of factors such as the physical features of the affected region, weather conditions and season, the nature and the efficiency of the clean-up operations, the biological and economical characteristics of the area and the area's vulnerability to marine pollution.

Areas such as mangroves, fish nursery areas, bird-breeding areas are ecologically important. At times these areas are also socio-economically important. Other areas such as beaches and other facilities being recreational areas are also important.

10.2 Impact of Marine Pollution on Marine Organisms

Ultimately, the impact of marine pollution on marine organisms depends on the fate of the oil. As previously described in section Five, when oil is present in the environment, it is either dispersed in the top layer of the water (littoral zone) or remains on the surface and, consequently, on the coastal areas. If the oil is not dispersed, it remains on the surface. In this case, currents bring the oil towards coastal areas which harms coastal organisms like invertebrates, mammals and birds.

Many organisms that live on the bottom of the sea or waterway such as adult mussels and barnacles, feed by sifting food particles out of the water through delicate filtering apparatus. Oil can coat both their feeding apparatus and gills eventually killing them.

Commercially harvested fish and shellfish that are contaminated with oil or Highly Noxious Substances (HNS) will have a tainted flavour and show increased incidence of fin rot and skin lesions.

Oil dispersants, which are a common tool used after oil spills, are also toxic and threaten pelagic and benthic organisms, as well as fish.

10.3 Marine Plant and Animals Life

Some kinds of **plants and marine animals** such as adult fish, squid, and shrimps seldom suffer long-term damage from oil spill exposure. The greatest oil impacts occur on shorelines where animals and plants may be physically coated and smothered by oil or exposed directly to toxic components in the oil. Soils and vegetation e.g. the mangroves will be affected by oil spills**.**

Macro-fauna such as the benthic fauna in offshore sediments are very sensitive to polluted material attached to particles.

10.4 Fish and Shellfish

Oil pollution can affect **Fish and shellfish** in three ways: direct lethal or sub-lethal effect on the fish itself; direct effect on fisheries, and indirect effect via ecosystem disturbance (IMO, 2005).

Shellfish are more affected by oil spills than fish because of their habitat. When exposed to oil, adult fish may experience reduced growth, enlarged livers, and changes in heart and respiration rates, fin erosion, and reproduction impairment. Oil also adversely affects eggs and larval survival.

10.5 Marine Mammals and Turtles

With respect to **sea mammals** in the open sea, there are no significant impacts from oil spills to whales, dolphins and seals, but when the sea mammals are breeding on the shorelines, they are more prone to be affected by oil pollution.

Turtles are vulnerable to oil, eggs laid in sandy beaches and juveniles swimming in surface waters being their most sensitive stages.

Depending on the season and circumstances, dispersants will not be allowed close to known turtle nesting beaches because of the increased likelihood of oil being incorporated in sediments.

10.6 Sea and Shore Birds

Sea and Shore birds such as shags, fulmars, kittiwakes, razorbills and guillemots are easily more affected by marine pollution because they dive under water for their food. In the event of an oil spill/pollution, they may be unable to fly and could hence drown and may also starve to death because the food sources at sea or on shorelines are covered with oil. Without the ability to repel water and insulate from the cold water, birds can die from hypothermia.

10.7 Sea-grass Beds

Sea-grass beds are important nursery areas for reef fish and shrimps and are also feeding grounds for many fish. Sea-grass beds have not been mapped systematically in the region.
The Arabian Gulf is very stressful habitat for seagrass growth (IUCN/UNEP 1985), charecterised by large seasonal temperature variations, fluctuating nutrient levels and high salinities.

There is a possibility that dispersed oil in the water column could affect submerged sea-grasses more than oil slicks floating on the surface above. Dispersants will not be allowed in the vicinity of sea-grass beds in shallow water.

10.8 Harbour

Sea conditions in harbours are generally calm. Conditions are therefore relatively good for containment and physical removal of the oil. Furthermore, most oil spills in port areas deriving from normal shipping activities will be of marine diesel (gas/oil), heavy fuel oil (e.g. bunker) or intermediates.

Lighter products spillage, such as gasoil (commonly used in new vessels) will evaporate or disperse naturally without the use of dispersants; heavy fuel oils cannot be dispersed; and intermediate products will either evaporate or are not amenable to dispersion.

Limited use of dispersants will only be allowed within the confines of port areas. Consideration will be given to the use of dispersants in anchorage areas on a case-by-case basis.

10.9 Human Health

There are serious impacts on human **health,** when an oil spill includes significant atmospheric pollution and subsequent pollution of inland waters**.** Furthermore**,** regarding human health, when individuals are exposed to constituents of oil such as polycyclic aromatic hydrocarbons (PAH), these may be harmful because they have been identified as carcinogenic to humans.

10.10 Social and Economic Assets Tourism

A pollution incident could have serious detrimental effect on the local economy; the seafront is a very popular destination in Ras al Khaimah enjoyed by visitors and residents.

SECTION ELEVEN

CATEGORIES OF INCIDENT

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SECTION ELEVEN

Categories of Incident

11.1 Overview

This Plan recognises that the majority of incidents are managed locally. However, there is a need to ensure that as an incident increases in size and/or complexity, the management system can adapt to meet these additional demands. Consistent with international practice, this Plan classifies incidents to provide direction on the potential consequence and impact of the incident and to provide guidance for agency readiness levels, incident notifications, response actions and potential response escalation. The Marine Pollution Response Plan identifies three levels of incidents as shown in Table 20 below:

11.2 Tier Classification System

Tier	Definition
Tier 1 (Minor Spills)	❖ Tier 1 incidents are small pollution incidents occurring during routine operations such as bunkering, which can be recovered through the application of RAK Ports initial resources only (first-strike capacity). ❖ The level at which a response operation could be carried out successfully using individual resources available at each Port or with the support of equipment and resources transportable from Saqr Port – Marine Departments stockpiles. ❖ Facilities such as oil terminals, oil storage installations, offshore installations, and all related vessels are required to have an Oil Spill Contingency plan. The individual operator is expected to respond with their own resources. ❖ Oil Spill scenarios with a high probability to occur but with a small impact are deemed as a Tier 1. ❖ In the event it is observed that a Tier 1 spill cannot be combated with using Tier 1 resources alone, the response will be managed under the agreed plan of Tier 2 Responder.
Tier 2 (Major Spills)	❖ Tier 2 spills require additional equipment resources beyond those of the port and possibly be larger in size where additional resources are needed from a variety of potential sources, involvement of Tier 2 responder, and a broader range of stakeholders may be involved in the response. ❖ Tier 2 incidents usually result from large fuel losses, loading hose failure or small to medium pipe failures (hole size up to 50mm). Control Agencies including EPDA, NCEMA and other relevant Government bodies including NG (National Guard – Coastal Protection Authority) are expected to plan for and respond to such oil spills within the Territorial Sea (up to 12 nautical miles), where the spills exceed the clean-up capability of Tier 1, or for which no responsible party can be identified. ❖ A spill event that, having a moderate probability and a potential major impact, is categorized as a Tier 2. Larger spills may be beyond the response capability of Tier 2 Responder may escalate to Tier 3.

Tier 3 (Crisis Event)	❖ Tier 3 spills are those that, due to their scale and likelihood to cause major impacts, call for substantial further resources from a range of national and international sources. ❖ Such incidents are expected to be rare and may occur because of events such as full diameter pipe rupture or an uncontrolled tank failure or a major shipping incident. ❖ Despite having a potentially major impact, the probability of Tier 3 spill events is exceptionally low which requires national assistance through the implementation of the National Oil Spill Response Plan (NOSRP) and will be subject to Government control, where Ministry of Climate Change and Environment (MOCCAE) / NCEMA and EPDA (Control Agency) and/or other Local / National Government Agencies may be required to be involved. ❖ However, NCEMA, which manages the National Oil Spill Response Plan (NOSRP) will take precedence in the management of a spill event having Tier 3 magnitude.

Table 20: Tier Classification System

11.3 Conventional Definition of Tiered Response

11.3.1 See Figure 23 and information below.

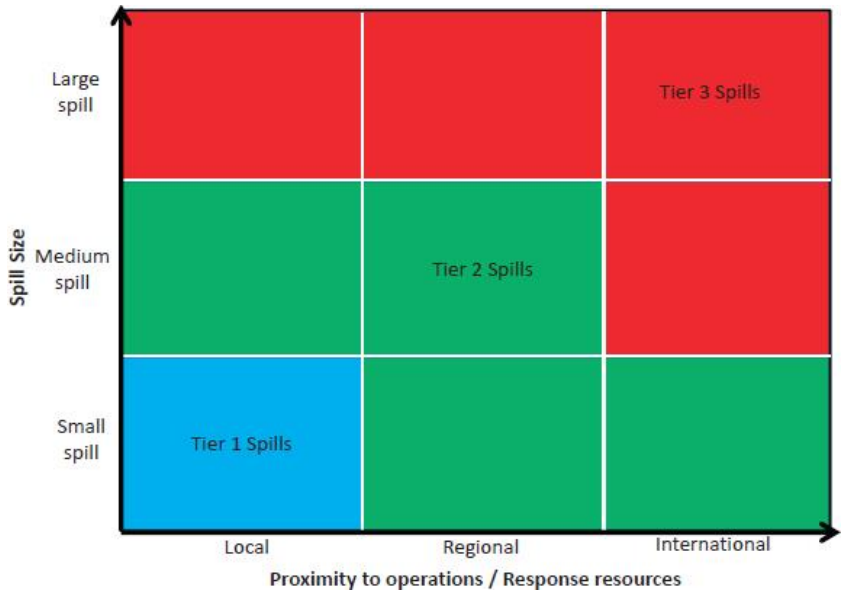

Figure 23: The conventional definition of Tiered Response

The three tiers should only be used to define the resources available to respond to the incident, not the scale of the incident itself.

Removing the artificial volumetric thresholds between tiers opens access to the resources provided by all three tiers according to the needs of the incident and not as a function of a predetermined spill volume.

Table 21 on the next page, provides a non-exhaustive list of the general characteristics of each of the three tiers. These characteristics can be used to develop criteria to be considered when evaluating the need to escalate response arrangements. These criteria should be embedded within the relevant contingency plan or adapted to the specifics of an individual incident. Not all characteristics need to apply in all cases, or to all incidents.

11.3.2 Guidance for incident classification.

See Table 21.

Characteristics	Tier 1	Tier 2	Tier 3
Jurisdiction	Single	Multiple	Multiple including international
Delegation	Incident Commander responsible for all functions	Some functions delegated or Sections created	All functions delegated and/or divisions created
Incident Action Plan	Simple/outline	Outline	Detailed
Resources	Resources from within one area	Requires inter-port/Tier 2/3 resources	Requires Tier 2/3 or national or international resources
Type of Incident			
Type of response	First strike	Escalated	Campaign
Duration	Single / multiple shifts	Multiple shifts	Extended response
Hazards	Single hazard	Single hazard	Multiple hazards
Resources at risk			
Environment	Isolated impacts or with natural recovery expected within days/weeks	Significant impacts and recovery may take months. Remediation required	Significant area and recovery may take months. Remediation required
Economy	Minor disruption	Business level disruption. Potential local / regional disruption	Disruption to a sector. Potential national disruption
Social	Reduced services.	Ongoing reduced services.	Reduced quality of life.
Infrastructure	Short term failure	Medium term failure	Severe impairment
Public affairs	No media coverage	Local/National media coverage	National / Int'l media coverage

Table 21: Guidance for incident classification

SECTION TWELVE

THE RISK

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SECTION TWELVE

The Risk

12.1 General

Oil spill accidents, which cause serious socio-economic, health, and environmental risks in coastal and marine areas, are a global concern. Energy-sector based organisations, marine traffic, especially oil tankers; large cruise-liners and cargo vessels in transit through coastal waters, present the risk of major oil pollution from collision, fire, explosion and grounding. Lesser, but nevertheless serious, pollution is caused by vessels pumping out their bilges or otherwise illegally discharging oil. Pipelines, refineries, and oil handling facilities also pose a threat to both marine and inland environments.

12.2 Pollution Risk at RAK Ports - General

Apart from ship-related pollution risk (e.g.:- bunkering activities, discharge of garbage and oily wastes), pollution can be caused by collisions between vessels, grounding, as well as fire on-board ships or 'illegal' discharge often due to negligence (release of bilge water for instance).

The area of relatively high oil spill risk within RAK Ports is at Saqr Port and RAK Maritime City (see "Pollution Risk at RAK Ports owing to Petroleum Products Operations").

12.3 Pollution Risk at RAK Ports owing to Petroleum Products Operations

Oil and petroleum products are being handled within RAK Ports from two geographical locations, i.e. at Saqr Port Harbour and RAK Maritime City FZA's Quay 5.

The products being handled at RAK Ports include gasoil, gasoline, base oils, fuel oil and heavy products like bitumen. Oil handling berths, pipelines, storage tank farms adjacent to berths and the transfer process of liquid crude oil materials are the major potentials for leaks, accidental release from tanks, pipes, hoses, and pumps during loading and discharging operations.

The quantity is less than 350,000 tons per annum (2022), through pipeline connections situated at Saqr Port and RAK Maritime City. Bunker fuels are also transferred by road vehicle and ship to ship transfer.

Features of oil and petroleum products cargo operations in Saqr Port Inner Harbour:
Saqr Port Inner Harbour caters for a range of petroleum products that are being handled by ADNOC and EMARAT.

The ADNOC Manifold is located at Berth 11 and the products being handled are mostly unleaded gasoline (ULG) and motor gasoline (MOGAS).

The EMARAT Manifold is located at Berth 6 and the products being handled are mostly gasoil.

The bulk liquid dangerous cargo operations at both terminals involve discharging or loading by means of pipelines. Once the tanker is ready for operation whilst alongside the berth, the discharging or loading operation begin i.e. from tanker to pipeline or pipeline onto tanker. The liquid cargo flows from the tanker through the pipeline to the storage facilities some distance away from the berth and outside the port premises, or vice versa.

Features of oil and petroleum products cargo operations in RAK Maritime City:

RMC is a mix of common user berths and tenants' berths and their facilities and services.

The majority of bulk liquid dangerous cargoes i.e. a range of HGO (heavy grade oil) carried by tankers to the berth are discharged from tanker via flexible pipeline to storage facilities, or otherwise, loaded onto tanker via the flexible pipeline from the storage facilities. The storage tank facilities are in close proximity to RMC Quay No. 5 (common user berth).

The length of Common user Berth is 293 metres and can accommodate tanker up to 180m LOA (subject to approval from the Port Authority).

The facilities and discharging and loading activities are operated and handled by the following oil terminal operators:

- Richmond: handles mostly bitumen/asphalt.
- Panol Industries: handles mostly base oils.
- Petro Addichem: handles mostly bitumen/asphalt.

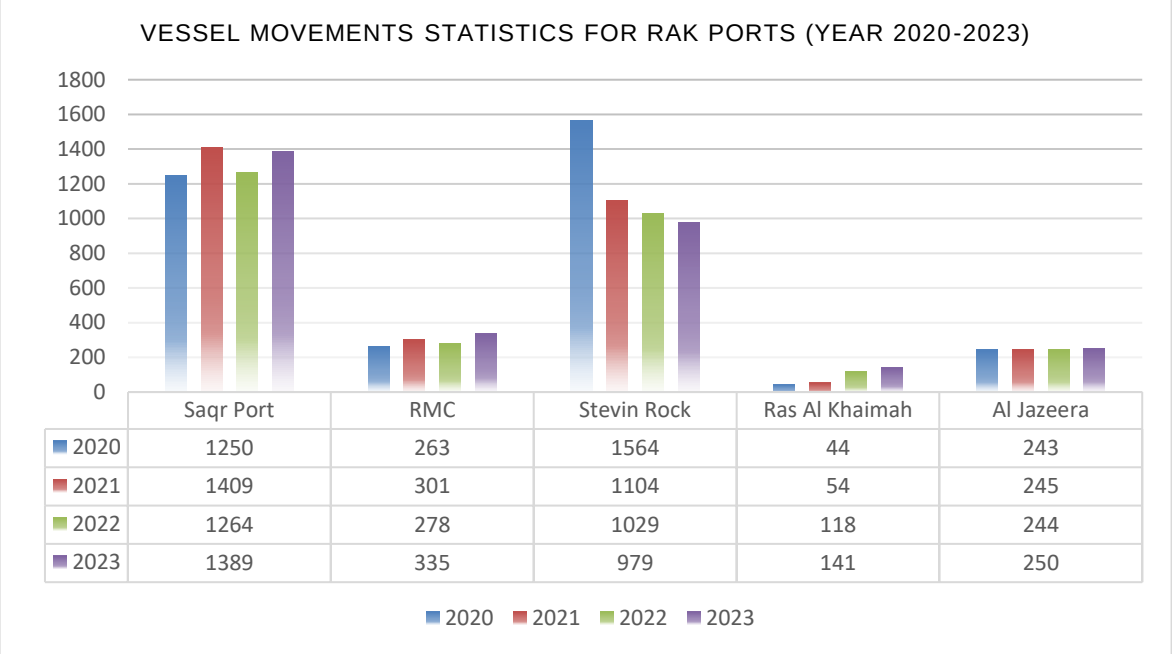
The flexible oil pipelines connected to adjacent storage tank facilities can proliferate the risk of oil spills owing to unprofessional handling or transfer mishaps of cargo by the vessels and infrastructures (storage facilities, pipes etc.).

The storage and transfer of these materials also poses a risk of fire and explosion due to the flammable and combustible nature of the materials stored. In addition, any accident involving tankers together with discharge from unloading operations constitute a continual and serious pollution risk.

Bunkering: Bunkering services at RAK Ports are undertaken through road tankers of registered bunker companies. Bunkering at berth or anchorage through bunker barges are subject to compliance with RAK Ports STS Bunkering Procedure / Approval.

12.4 Vessel Movements

The amount of vessel movements into and out of each port vary. The risk will be determined by the amount of vessel moves and the quantity and type of hydrocarbon liquids on board e.g. tanker cargo, and bunker fuel. See Table 22 detailing vessel movement statistics at RAK Ports (includes ships, tug and barge combinations and dhows).



	Saqr Port	RMC	Stevin Rock	Ras Al Khaimah	Al Jazeera
2020	1250	263	1564	44	243
2021	1409	301	1104	54	245
2022	1264	278	1029	118	244
2023	1389	335	979	141	250

Table 22: Vessel Movement Statistics at RAK Ports

12.5 Residential Vessel Fleets

Apart from commercial vessels, a threat of an oil spill can come from supply vessels, fishing vessels, recreational and charter vessels that operate within the port limits. These vessels typically range in size up to 50m. Oil spills from these sources occur during fuel transfer operations, bilge pumping, or as a result of a collision or grounding, and as a result of accidental or illegal discharges of fuel, lube oil, or hydraulic oil. Quantities will normally be small.

12.6 Land-Based Bulk Fuel Storage

Land-based bulk fuel storage facilities near harbour and coastal areas are likely to increase oil pollution threat in the RAK Ports region.

12.7 Risk Management

The process of defining the tiers of capability and the boundaries between them is part of a wider risk management strategy; ensuring that all potential risks are as low as practicable and taking measures to mitigate the residual consequences.

12.8 Hazard Identification

While it is impossible to know when a marine pollution incident is going to happen and how much oil is likely to be spilled, it is possible however to identify where oil/chemical is stored, the corridors through which it travels and the industries that use large quantities of oil and substances. Since, different situations can affect the ability of response personnel to contain and clean up an oil spill, such as weather and geographic conditions and spill size, this Plan has attempted to address actions and activities to be undertaken under different conditions.

12.9 Marine Pollution Incident Risk Assessment

The prevention of pollution should always be a high priority, although it is recognised that despite rigid enforcement of good working practices, oil spills and other marine pollution do occasionally occur. A range of factors will affect the response to an oil spill, namely the quantity and type of oil involved, location, prevailing weather and tides, organisational structure within the port and availability of equipment and trained personnel to deal with an incident.
In making risk assessments, the following factors are to be considered along with an investigation of past oil pollution incidents:

- Geographic location, coastline, area sensitivity.
- Type of oil/product, volume of traffic, quantities of cargo handled, frequency of handling.
- Types of operation, berth/terminal design, condition of facilities.
- Vessel traffic numbers, type and size.
- Weather, sea conditions, time of day, navigation hazards.
- Response strategies, training programmes.

The main risks of pollution incident occurring now come from bunkering procedures, land-based storage facilities and inappropriate actions by variety of crafts and vessels, regularly use RAK Ports.

- **Tier 1 - Risk Assessment**
    - **Tier One Spills** are generally oil spills where in-house response capability is adequate. Impacts are low and in-house clean-up response is mandated. Tier 1 is site-specific and includes all vessels calling the port from which a spill of oil is possible. Commercial ships are required to have a shipboard oil pollution emergency plan (SOPEP).
    - The largest possible **small spill or pollution** would be likely to be caused during fuel bunkering operations. The maximum amount would be less than 2 tonnes of diesel/marine gas oil, and this would only be when a fuel bunkering hose parted or came adrift whilst bunkering a vessel alongside berth or from a road tanker and the operators were not paying attention to the bunkering operation.

- **Tier 2 - Risk Assessment**
    - The largest possible **medium sized spill or pollution** would likely be caused by a grounding or collision in the Harbour or anchorage where a bunker tank ruptured.
    - The ships on passage to and from RAK Ports berths carry quantities that vary from 20 tonnes to 500 tonnes with fuel being stored in several tanks. A road tanker is also a potential for large spillage should it rupture its tanks.

- **Tier 3 - Risk Assessment**
    - **Tier Three Spills** are normally large spills requiring substantial resources and support from national level by implementing NOSRP to mitigate effects perceived to be wide-reaching, i.e., of national or international significance. Oil and Gas operators that are in the business

of oil and gas production/distribution and shipping shall be required to obtain membership with a suitable spill equipment cooperative that can quickly mobilise spill response equipment worldwide.

- A Tier 3 spill or pollution is unlikely to occur within the confirms of a harbour.
- A Tier 3 spill or pollution would be a **major oil spill or pollution** at sea possibly affecting the coastline and the harbour. The resources of Tier 3 Responder would be made available to assist in combatting the effects of a Tier 3 spill in the Harbour.

12.10 Oil Spill – Historic Data

Historic data, oil properties, climate, local meteorology and environmental sensitivities are important factors in assessing the risk, behavior, fate and potential consequences of spilled oil. Historic data being secondary data available in public domain is a good measure of causes, probabilities and averages of the happening of any scenario. Historic data is of great help to responders and Contingency Planners since the study of this data helps in identifying trends and causes of spills, which in turn help in identifying and implementing remedial approaches as per the gravity and frequency of incidents and plan appropriate response.

12.11 Risk Factors for Oil Spills – Saqr Port / RAK Maritime City FZA

The estimation of vessel fleet size and density of vessel traffic show that Saqr Port and RAK Maritime City carries the highest risk of the RAK Ports. Risk factors considered are:

- Oil tankers load and discharge
- Vessels with large bunker capacity
- Vessels using heavy oils as bunker fuel
- STS Bunkering
- Supply vessels
- Tugboats
- Land-Based Storage Facilities
- Container storage facility of Bunker Supplier

The marine traffic in Saqr Port / RAK Maritime City and surrounding area is growing and this trend can be illustrated by the ship passage statistics from port to anchorage and offshore areas.

12.12 Risk Associated with STS Bunkering

RAK Ports permits ship to ship bunkering activity for licenced companies. Licences will only be issued after strict quality checks. The major source of oil spill is either collision between the receiving and supplying vessel followed by spill due to overflow or pipe rupture.

The probability of spills resulting from STS Bunkering operations varies greatly across RAK Ports. Most STS bunkering volume takes place in Saqr Port.

When mitigation measures are implemented the level of risk associated with ship-to-ship bunkering operations remain will be reduced to ALARP.

STS Bunkering Safety:

In order to ensure safety prior to, during after STS bunkering and promote safe bunkering operations, RAK Ports has published "STS Bunkering Procedure" – Link: https://rakports.ae/wp-content/uploads/2021/06/sts-bunkering-procedure.pdf

Risk Assessment:

Before committing to an STS transfer operation, the parties involved must comply with strict procedures and have completed the required Risk Assessments.

Regulations:

The United Arab Emirates has acceded to the International Convention on Civil Liability for Bunker Oil Pollution Damage, 2001. Implementation and enforcement of Annex I of MARPOL through PSC may reduce the risk of intentional and unintentional discharge to more acceptable levels.

12.13 Risk Factors for Oil Spills – Terminal / Pipeline Operations

Despite best intentions to conduct cargo work under best practices, a spill could still occur at a port or terminal during cargo work because of the failure of pipelines, loading arms, flanges or equipment.

The potential accidents associated with a plant, port, terminal or pipeline can be divided into two categories in terms of **Generic** and **Specific** operating failures.

- **Generic failures** are associated with mechanical component of the facility or terminal like vessels, pipelines, pumps or compressors. The failures under this category could be caused by factors as corrosion, vibration or external impact. A small event like a leak may escalate into a bigger event by itself causing a bigger failure.
- The prime cause of **Specific operating failures** is human errors but they can also include accidents. Every significant mechanical component that could fail with its operating conditions, contents and inventory, is a contributor to failure identification. The study of Generic failures requires consideration of each component under their normal operating conditions. The possible range of failures being large in number are generally considered under the following heads and incidents.

For vessel/ storage tanks/Cranes

- Rupture (Full bore)
- Large leaks (20% equivalent leaks)
- Medium and small leaks (due to corrosion, impact and other such cases)

For Pipelines

- Full bore ruptures
- Large, medium and small leaks

12.14 Failure frequencies - Pipelines

The failure frequency of pipelines is subject to several factors like rate of corrosion, age of pipeline, duration of use, size of damage and length etc. Different value of any of these will give different figures for failure frequency.

12.15 Cargo Operations or Transfer Spill Frequencies

Transfer spill is defined as an event where the oil is released to sea due to failure or error during loading/ unloading of cargo or fuel oil. This includes loading in port and ship-to-ship transfer. Typical causes for this spill include overflow, hose failure, errors in setting valves etc.

12.16 Overall conclusion

All vessel movements within RAK Ports are well managed by RAK Ports VTS Centre located at Saqr Port. Pilotage and Tugs assistance is mandatory except for small vessels. Incidents are rare and only very small quantities. Tier 1 response equipment can be quickly mobilised by well trained and drilled teams. Tier 2 response equipment and personnel (Tier 2 Response Provider: ADNOC) can be mobilised at a short notice. The majority of vessel are non-tanker and the overall risk level is considered low.

SECTION THIRTEEN

EQUIPMENT STORAGE AND MAINTENANCE

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SECTION THIRTEEN

Equipment Storage and Maintenance

13.1 Offshore operations

Apart from the equipment available for a first-strike response at RAK Ports stockpiles, the equipment required in terms of containment, recovery and disposal for an escalated response would be arranged from the stockpiles of Tier 2/3 Responder. The equipment maintained at RAK Ports stockpiles will be the first to be deployed for containment and would be augmented by movement of additional equipment from Tier 2/3 Responder as required by the situation.

13.2 Storage

Marine pollution materials and other items of equipment capable of first-strike response are held in the Pollution Control Centre at Saqr Port (heavier items of equipment are stored in the adjacent area), and the Pollution Response Container at berth 5 in RAK Maritime City. Ras Al Khaimah Port and Al Jazeera Port premises have smaller quantities of equipment.

Tier 2/3 Response Responder's marine pollution materials and equipment will be availed in the event of an escalated response.

13.3 Maintenance

Immediately after use the oil pollution equipment shall be returned to the appropriate store area and cleaned and prepared for storage.

After use pollution/spill clean-up equipment must be drained dry where appropriate, e.g. pumps, hoses, skimmers etc.

In between pollution incidents, maintenance checks shall be carried out at regular intervals. The equipment will be always kept in full working order ready for fast deployment.

13.4 Equipment Audit

Team Leader of IRT or relevant Supervisor must keep a full up-to-date checklist of all the pollution/oil spill items. A list of main items is provided in Annex 17, which may be adjusted in light of experience, subject to approval by Group Harbour Master as appropriate.

As soon as is practicable after the equipment is returned to the base a detailed check is to be made, initiated by the Shore Bosun and/or relevant Supervisor.

All mechanical items are to be in good working order, and all damage and shortages to be made good and all used dispensable items are to be replaced.

Since every endeavour must be made to recover the costs of any clean-up from the Polluter concerned, an accurate and comprehensive record is needed of the costs involved in using the equipment and proper details of costs incurred shall be kept.

Such estimate and accounts will include the cost of all expendable items and services, e.g. dispersants, absorbents, boats and pump fuels, cleaning materials (rags, detergent), manpower, boat and jetty service charges and repair or replacement costs for damaged or destroyed items.

SECTION FOURTEEN

EXERCISES AND TRAINING

TABLE CONTENTS

SECTION FOURTEEN

Exercises and Training

14.1 Exercises/Training

Training and development of response personnel is a core component of the Marine Pollution Response Plan arrangements. Required level of training have been given to IRT members, i.e., those undertaking onsite response and clean-up operations. Additional training to the IRT members with respect to participating Tier 2 level response will be provided by Tier 2/3 Responder, as necessary.

Regular exercise in simulated oil spill incidents are held to familiarise the team members with all of the various techniques that may be employed to combat pollution.

In a major incident, senior personnel involved in managing the operational response, e.g.: incident commanders, their deputies would also undergo training.

RAK Ports Marine Training Institute, Ministry of Energy and Infrastructre (MOEI) and Bureau Veritas (BV) accredited training provider, will conduct/organise training.

14.2 List of Trained Port Employees

	Position	Number	Level
1	Group Harbour Master (CIC)	1	MCA L5, IMO L3
2	Deputy Harbour Master (IC)	1	MCA L5, IMO L3
3	Marine Services Manager (IC)	1	MCA L5, IMO L3
4	VTS Supervisor	1	MCA L5, IMO L3
5	Shore-bosun (Team Leader IRT)	1	IMO L1
6	IRT members / Mooring Hands	12	IMO L1
7	VTS Officers	11	IMO L1
8	Tug Masters	12	IMO L1
9	Coxswains	4	IMO L1
10	Seamen	12	IMO L1

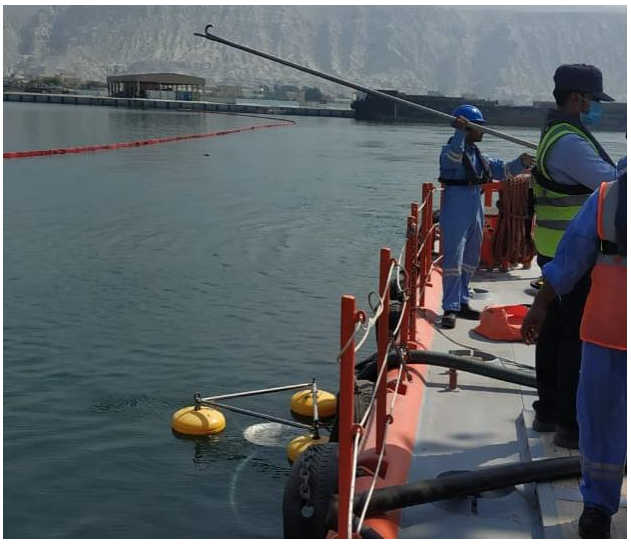
Table 23: List of Trained Port Employees

14.3 Exercise Programme

The programme of exercises will be decided by the Group Harbour Master. As appropriate, participation of relevant stakeholders (such as NG (National Guard – Coastal Protection Authority), EPDA, NCEMA, Police, EWE, RAK PDS, RMC Tenants, Oil Terminal Operators, RAK Gas, Hutchison Ports, as well as Tier 2 Response Provider - ADNOC) will be ensured.

Type of Exercise	Frequency	Description
Tier 1 mobilisation exercise (May incorporate mobilisation and deployment of port response equipment).	Quarterly	• Test the actual mobilisation times of individuals and contracted resources. Ideally without prior notification.
Table-top	Once per year	• Test the emergency management knowledge and capability. • Provides individual and team training, familiarise roles and responsibilities, as well as testing the principles of response strategies.
Tier 2 Incident Management Exercise (will incorporate mobilisation and deployment of resources up to Tier 2 level)	Once every 2 years	• Test the capability of IRT to respond to Tier 1 and 2 type incidents, providing experience of local conditions and spill scenarios, enhancing individual skills and teamwork, integrating the roles of external bodies and organisations.

Table 24: Exercise Table



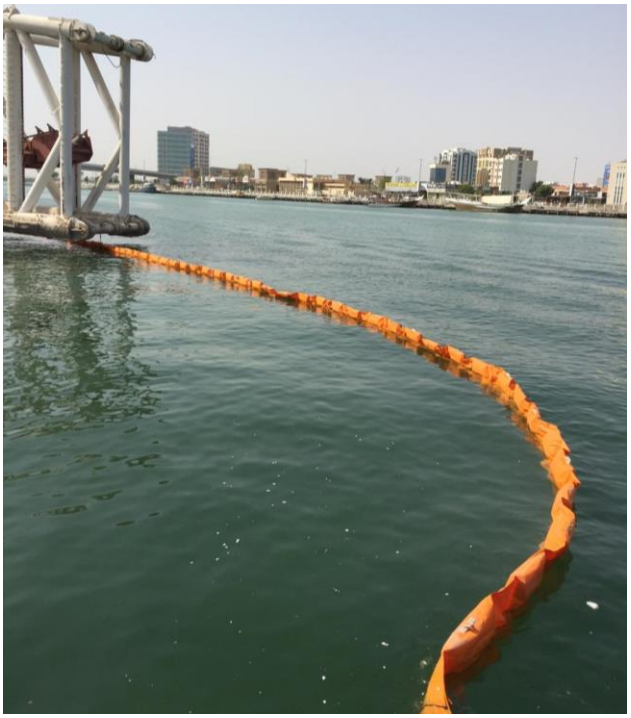


Image 8, 9, 10, 11, 12 & 13 – Anti-pollution exercises (Tier 1) at different locations at RAK Ports

Retention	@ Office	@ Archives
	0-2 years	3-5 years

SECTION FIFTEEN

WASTE MANAGEMENT

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SECTION FIFTEEN

Waste Management

15.1 Strategy

Waste Management will be handled in partnership with EPDA/RAK PDS for handling waste generated through a pollution incident. For Tier One incidents, each member port can individually organise and handle collecting and removing polluted waste from the shoreline in coordination with RAK PDS and EPDA. To facilitate the recovery and removal of bulk oil, contaminated material, and Highly Noxious Substances (HNS) and Inert materials from the environment it is necessary to:

- Ensure that clean-up operations are planned to minimise waste production
- Put in place measures to segregate waste types at the shoreline to facilitate the assessment of the best practicable environmental option for each waste stream
- Estimate and anticipate quantities and types of wastes to be produced
- Identify the capacity of the waste industry to deal with the waste generated
- Plan and develop interim storage and treatment areas
- Identify disposal routes and manage the production, storage and transport of waste to the final treatment or disposal options.

Processes and agreements will be developed with Tier 2 response provider who will have experience of disposing oil from a pollution incident.

15.2 Waste Licensing

It is important to liaise closely with the EPDA or RAK PDS, as appropriate on all matters regarding the licensing of permanent, transfer and temporary sites. The EPDA/RAK PDS recognises that circumstances may arise where temporary sites have not been identified, written plans become outdated, or where such temporary sites are found not to be suitable. In these circumstances, Port Authority should identify suitable temporary sites acceptable to the EPDA and agree appropriate pollution prevention requirements.

15.3 Dealing with Polluted Waste

It is the combined responsibility to collect the polluted waste from the land involving Port, Local Authorities and the Polluter; if the land is not owned by Port Authority or Government entity, the responsibility also extends to the landowner to collect the waste. It will also be required to identify contractors if required to supply suitable plant, transportation and storage facilities such as lined skips to temporarily hold the waste until collection. The Port Authority together with Local Authorities has the responsibility of identifying the location of the waste. Ideally, waste generated during the clean-up process would be removed directly to a treatment and disposal site. This however is only possible in a very small number of cases and the more likely scenario is that waste would be recovered to some form of immediate or primary storage sites, often established behind or close to the areas where the waste is being recovered.

15.4 Final Waste Disposal

The method of final disposal of waste will depend on the type and quantity of waste. The RAK Ports Environmental Officer will discuss appropriate alternatives with the EPDA.

Potential options for final disposal include:

- Composting
- Incineration
- Landfill
- Liquid waste recovery
- Wastewater treatment
- Land farms

All disposal is to be undertaken keeping in view the provisions of different statutes and legal parameters like ‘Federal Law No.24 for The Protection and Development of the Environment.’ Disposal of certain waste like solids and debris etc that cannot be processed by participating oil companies will be required to be undertaken in close consultation with local administrative authority.

In the event, where, spill originates from any unit of the participating oil companies, the custody of waste and recovered oil is to be handed over to the company for transportation, storage and disposal.

SECTION SIXTEEN

HEALTH AND SAFETY IMPLICATIONS

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SECTION SIXTEEN

Health and Safety Implications

16.1 General

RAK Ports Health and Safety procedures should be maintained in RAK Ports premises to ensure that the workplace/response site is safe in the event of any Marine Pollution Incident.

With regards to employing workers, regardless of whether the workers are from Port, Tier 2/3 Responder, sub-contractors, or other organisations, RAK Ports Health and Safety Policy will be implemented.

16.2 Site Safety Assessment

To achieve a Safe Operation, those in charge of the Response must follow those generalised parts of the Marine Pollution Response Plan that apply in all circumstances in addition to following any momentarily implemented Contingency Plan.

The Site Safety Assessment is intended to prevent uncontrolled incidents occurring which may cause further damage to the environment or loss due to damage, injury or illness. The Site Assessment should address the safety of those personnel taking part in the cleanup as well as those members of the public who may also be involved.

The following list indicates a few of those subjects which, should be addressed, assessed and reported in the survey.

The list is by no means exhaustive.

- Communications Requirements
- Exposure to Temperature
- Hazards to the eyes
- Lack of or Shelter from Weather
- Lighting conditions
- Machinery Usage
- Manoeuvrability
- Manual Handling
- Requirement to access Confined Spaces
- Sample collection
- Visibility
- Water Hazards

16.3 Safety Guidance

- Before commencing operations ensure safety and health risk evaluations are carried out
- Until it is established otherwise, assume that the spill is giving off lighter fractions that are flammable and explosive.
- Always approach the spill from upwind as there may be a vapour cloud.
- Close approach to the spill point should not be made unless the area is considered SAFE.
- Eliminate all possible sources of ignition.
- Any spill involving confined airspace in which vapours may accumulate should be treated in the initial stages as a potentially explosive situation.
- Until it is established otherwise, assume that the spill is giving off hydrogen sulphide, a highly toxic, colourless gas with an odour of rotten eggs; as even small concentrations cause olfactory fatigue, the sense of smell should not be relied upon to detect this gas.
- If hydrogen sulphide is detected at hazardous levels the area should be evacuated immediately and the on-site response suspended until personnel can be equipped with suitable PPE, or until levels drop to safe and tolerable levels.

Having surveyed the site and assessed the aspects which are influenced by the terrain, water conditions, and other pertinent factors. The On Scene Commander will assess the way in which the operation is to be conducted.

The intention to use the following facilities should be stated and the reasons for and priorities of each facility established.

- Cranes
- Boats
- Breathing Apparatus
- Forklifts
- Hoses and Pumps
- Motor Vehicles
- Winches

16.4 Site Control

It is essential that those in charge of the Spill Cleanup have control of the site as soon as possible and before any significant part of the cleanup operation begins.

Access to the site must be restricted to those personnel who are essential to the cleanup operation.

16.5 Logistics and Supplies

Specifically with respect to Safety, it should be ensured that the appropriate equipment, materials and substances are available at the required times.

Particular attention should be paid to the availability of the various sizes of protective clothing required. This sometimes cannot be established until the members of the workforce have been detailed and their individual roles and tasks decided.

Consideration must be given for a prolonged clean-up operation possibly stretching to 24 hours operations. In which case shelter, accommodation, feeding, refreshment, rest areas, sanitation and first aid must be available.

16.6 Protective Clothing

If the weather is at all inclement, the protective clothing issued to workers must be warm, water and chemical-proof. It should include coveralls, gloves, boots, eye protection and headgear. If the weather is warm, the use of the same protective clothing may be necessary, but the requirements for ventilation and cooling will be greater.

Workers operating from sea-going vessels should be equipped with harnesses built to BS 1397. They should always wear a self or automatic inflating lifejacket.

16.7 Personal Protective Equipment (PPE):

PPE includes:

- Breathing Apparatus including Respirators
- Gloves / Gauntlets
- Protective Clothing
- Goggles and Safety Glasses
- Hard Hats
- Insulated Clothing
- Reinforced Boots, Shoes and Gloves.

16.8 Safety on the Foreshore

During the execution of a foreshore Site Assessment, access to the area to be cleaned must be carefully assessed. Account needs to be taken of low and high tides and the need for workers to access inlets, cliffs and terrain difficult to navigate. Tide tables should be consulted as well as the taking of advice from those with local knowledge.

Where necessary and appropriate, the use of equipment such as handrails, ropes and ladders should be considered.

Where workers are, by necessity, required to work out of sight of one another, communication between them and the supervisor is essential.

16.9 Safety on the Water

Agreements with the NG (National Guard – Coastal Protection Authority) should be reviewed and complied with. At the very least, they should be informed of the vessels operating in their area together with all necessary detail of vessel capability and people on board (POB).

16.10 Personal Hygiene Practices on the Job

Workers should be instructed on the dangers of ingesting hydrocarbons and chemicals through contact of contaminated equipment or clothing, such as gloves via the mouth and nose. Facilities for removing protective clothing and washing before consuming food or smoking should be made available.

ANNEXES

ANNEX 1

Port Communication

SAQR PORT		
Name	Mobile / Landline VHF Channel	Contacted (tick)
RAK Ports VTS Centre	Tel.: +971 (07)7 205 6161 / 162 /163 Email: vtscentre@rakports.ae **Reporting via VHF Channels:** *Call Sign:* — *VHF Frequency:* Saqr Port — Ch 16 and 14 RAK Maritime City / Stevin Rock — Ch 16 and 69 Ras Al Khaimah Port — Ch 16 and 71 Al Jazeera Port — Ch 16 and 68 Al Jeer Port — Ch 16 and 14/69	
Duty Shore Bosun	050 487 8458 / 07-205 6158	
Duty Pilot	07-205 6203	
VTS Documentation	07-205 6164	
Duty Security Supervisor, SPA	050 199 2620	
Security Control Room (Emergency)	07-205 6111	
Security Control Room, SPA	07-205 6172/199/122	
Security Gate No.01, SPA	07-205 6169	
Cargo Operations Supervisor, SPA	050 487 5017 / 07-205 6149	
Police, SPA	07-266 8092 / 07-266 0314	
RAK MARITIME CITY FZA		
Name	Mobile / Landline VHF Channel	Contacted (tick)
RAK Ports VTS Centre	As above	
Security Office	07-221 5041	
Duty Security Supervisor	050 979 2431	
AL JAZEERA PORT		
Name	Mobile / Landline VHF Channel	Contacted (tick)
RAK Ports VTS Centre	As above	
Security Supervisor	050 273 4087	
Port Police	07-243 2121	
AL JEER PORT		
Name	Mobile / Landline VHF Channel	Contacted (tick)
RAK Ports VTS Centre	As above	
Port Office	07-268 2333	
Security Supervisor	055 563 6290	
Security Office	07-268 1016	
RAS AL KHAIMAH PORT		
Name	Mobile / Landline VHF Channel	Contacted (tick)
RAK Ports VTS Centre	As above	
Security Office	07-228 8270	
Police Operations Room, RAK	07-203 4232 / 07-233 9988	

ANNEX 2

Emergency Contact Numbers

EPDA	Tel. 800 3732 & 07-233 3371
NG (National Guard – Coastal Protection Authority)	996
NG (National Guard – Coastal Protection Authority), HQ	07-244 6477
NG (National Guard – Coastal Protection Authority) - Operations Room	07-207 1264 / 222 / 211, 07-266 2441 & 07-207 1212
NG (National Guard – Coastal Protection Authority) Tower-Al Rams	07-266 3531
Marine Rescue Section, Ras Al Khaimah	07-233 3955
NG (National Guard – Coastal Protection Authority) – Ras Al Khaimah Port	07-207 1300
NG (National Guard – Coastal Protection Authority) - Al Jazeera	07-207 1273
Fire Station, Main Office, Al Nakheel	07-228 8899 & VHF Ch.16 (C/S Tariq-6)
Fire Service (Civil Defence)	997 & 07-266 8880/33
Police Control Room	999 - 998
Al Rams Police Station	07 205 4181
Police, SPA	07-266 8092 / 07-266 0314
Police Operations Room, RAK	07-203 4232 / 07-233 9988
National Ambulance	8004367677
RAK Hospital Ambulance, RAK	07-222 5555
Sha'm Hospital, Sha'm	07-266 6465
Saqr Hospital, RAK	07-222 3666
Saif Hospital, Al Nakheel	07-222 3555
RAK Hospital, RAK	07-207 4444
Federal Water and Electricity Emergency	991 (electricity failure) 992 (water failure)
ADNOC (Logistics & Services)	02-673 0992/02-6730992
EMARAT	050 553 7289 07-266 8410
RAK Gas – Control Room	07-266 8344
StormGeo (Weather Services)	04-367 8257
Commercial Vessel – remains under command of Master	Vessel VHF or Master mobile

ANNEX 3

Action Card 1

VTS Supervisor / Duty VTS Officer		
Responsibilities	• Receive information/report of oil spill/pollution incident • Maintain communication with all vessels in vicinity • Carry out internal notifications	
Step	**Actions**	**Additional Information**
Alert	▪ Appropriate Parties (as relevant) ○ Deputy Harbour Master ○ Marine Services Manager ○ AJZP/RAKP Port Manager ○ Group Harbour Master ○ Team Leader - IRT ○ Emergency Services (if required)	Group Harbour Master / Deputy Harbour Master or Marine Services Manager assumes role of Incident Commander (Action Card 3 – Tier 2 and 3 only)
Initial Actions	▪ Verify incident details ▪ Ensure Log is initiated and maintained. This will be important in post incident inquiries ▪ Issue general warning to all vessels in vicinity	
Further Actions	▪ Brief Incident Commander ▪ Liaise with Team Leader - IRT	
Final Actions	▪ Submit Personal Log to (as appropriate) to DHM/MSM/HM or Port Manager (AJZP / RAKP) ▪ Complete, maintain and when required submit POLREP ▪ Attend debrief (for escalated response only).	

ANNEX 4

Action Card 2

Team Leader, IRT (Marine Incident Response Team) (Tier 1 only)		
Responsibilities	• Initially Assess Situation • Verify classification • Provide accurate situation to relevant Manager or DHM / MSM or HM • Collect evidence and/or statements • Liaise with incident vessel regarding status of pollution incident (if applicable) • Mobilise anti-pollution equipment and materials • Complete POLREP	
Step	**Actions**	**Additional Information**
Initial Actions	▪ Proceed to incident location ▪ Look at cause/source of pollution ▪ Communicate all information to RAK Ports VTS Centre ▪ Take samples of spilled oil (Checklist 3) ▪ Ensure Personal Log is initiated and maintained. This will be important in post incident inquiries ▪ Take photographic evidence ▪ Collect evidence and statements	
Further Actions	▪ Track the leading edge of slick ▪ Provide detailed situation reports to the Incident Commander ▪ Mobilise anti-pollution equipment and materials form appropriate RAK Ports stockpiles as instructed CIC, IC	
Final Actions	▪ Submit Personal Log to (as appropriate) to DHM/MSM/HM or Port Manager (AJZP / RAKP) ▪ Submit POLREP ▪ Attend debrief (for escalated response only)	

ANNEX 5

Action Card 3

Incident Commander (For Tier 2 / 3 only)		
Responsibilities	• Assume overall control of Tier Two/Three incidents • Approve Port closure if appropriate (CIC) • Ensure Tier 2 responder has been mobilised • Record all decisions made at the Incident Management Team meetings • Record and keep precise account of the use of resources, which have a financial implication – in conjunction with CFO / support.	
Step	**Actions**	**Additional Information**
Alert	▪ CEO, EPDA, NCEMA, NG (National Guard – Coastal Protection Authority), RAK PDS, Tier 2/3 Responder, On-Scene Commander, if required Ministry of Climate Change and Environment.	Coordinate with EPDA / NCEMA and Tier 2/3 Responder to appoint On-Scene Commander
Initial Actions	▪ Set up meeting Incident Management Team meeting ▪ Set up meeting with EPDA / NCEMA / Tier 2 & 3 Responder and On-Scene Commander to initiate appropriate tactical response plan ▪ Engage RAK Ports IRT ▪ Initiate RAK Ports Emergency Response Plan if appropriate ▪ Close port if required ▪ Ensure Personal Log is initiated and maintained. This will be important in post incident inquiries	
Further Actions	▪ Constantly review strategy in use and recommend/change as appropriate ▪ Liaise with EPDA/NCEMA, NG (National Guard – Coastal Protection Authority), RAK PDS and Tier 2/3 Responder ▪ Authorise dispersant spraying in line with EPDA/RAK PDS approval	
Final Actions	▪ Authroise termination of Tier 2 clean up ▪ Approve re-opening of the Port if appropriate ▪ Collate Personal Logs ▪ Prepare the Incident Report ▪ Hold full debrief involving all members	

ANNEX 6

Action Card 4

On Scene Commander (For Tier 2 / 3 only)		
Responsibilities	• Overall responsibility for optimum method for clean-up of the spill for the conditions that exist • Confirm/amend initial classification and continuous onsite assessment • Mobilise anti-pollution equipment and materials and vehicle as appropriate • Complete POLREP • Close liaison with CIC, 2 IC, Incident Management Team • Record and keep precise account of the use of resources, which have a financial implication – in conjunction with CFO / support	
Step	**Actions**	**Additional Information**
Alert	▪ NG (National Guard – Coastal Protection Authority) ▪ Tier 2/3 Provider for additional equipment and materials (if required)	
Initial Actions	▪ Test and establish communications ▪ Verify/amend spill classification ▪ Establish operational plan ▪ Initial personal Log ▪ Develop a site safety plan ▪ Ensure machinery pre-start checks carried out operators ▪ Commence cleanup operation	
Further Actions	▪ Constantly review the strategy being employed and advise of changes where necessary ▪ Provide regular briefs to CIC, IC, RC and ▪ 2 IC ▪ Oversea the dispersant spraying (if appropriate), ensuring it is in line with EPDA/RAK PDS approval.	
Final Actions	▪ Authorise/recommend termination cleanup. ▪ Submit Personal Log and Incident Report to CIC.	

ANNEX 7

Oil Spill Assessment Checklist

General	This checklist is designed to assist those personnel who have the responsibility of initially assessing and subsequently assessing the pollution incident. These personnel are likely to be: • Incident Commander (Tier 1, 2 and 3) • On-Scene Commander (Tier 2/3)

Step / Actions	Additional Information
Assess Safety Hazards	Until otherwise established, assume oil spill is giving of potentially dangerous hydrocarbon vapours. **Eliminate ignition sources** Approach oil spill from upwind to reduce effects of vapours **Approach only if considered safe to do so**
Determine pollution/oil spill source	If source unknown, investigate with care, instigate actions to stop spillage at source **Only considered safe to do so**
Estimate quantity of oil released	Estimate if exact quantity unknown
Assess weather conditions	Determine the: **Wind speed and direction** **State of tide and current speed** **Sea state**
Can the spill be contained	Consider options available
Predict of oi fate	Determine direction and speed of oil movement. Consider weather forecast.

ANNEX 8

Personal Log Guidance

This guidance is designed to facilitate and provide consistency in the response teams log keeping, thereby providing accurate information in the final incident report (see Personal Log – Annex 9)	
Safety Hazards	Record all accidents/near miss incidents regardless of how serious.
Initial Notification	Record time of notification of pollution/oil spill incident and the name of the person informing you.
Daily Activities	Keep a daily record of all response activities undertaken, including time and location. Also include: meeting attended, instructions received/given, site visits and movements, and contacts with outside agencies.
Personal Contacts	Generate a list of relevant contacts made, including contact details.
Photographic/Video records	Note time and location of any photographs/video taken
Oil Distribution	Make sketch of oiled area with notes.
Site Supervision	Keep a record of all staff under supervision, including hours of work etc. List all equipment utilised.
Expenditure Incurred	Record all expenditure and keep receipts (as applicable)

ANNEX 9

Personal Log

Incident Name			
Date		**Page Number**	
Time	**Comment / Action / Details** (Refer to Personal Log Guidance – Annex 8)		
Singed: _____			

Retention	@ Office	@ Archives
	0-2 years	3-5 years

ANNEX 10

Health and Safety Checklist

Marine Pollution – Health and Safety Checklist

This guide should be applied to each shoreline site where clean-up is proposed. This checklist serves as a general guide for the preparation of a Health & Safety plan covering clean-up operations on the shoreline.

A Safety Adviser will operate within the Emergency Response Centre and/or the Shoreline Response Centre to co-ordinate the health and safety management during the incident.

Approach Roads	
□	Establish traffic controls
□	Liaise with Security and Police regarding intended road use
□	Clear with Police one-way routing or diversions that are required
□	Inform public and residents of activities to be undertaken and of public safety requirements, if required.
Site Management	
□	Personnel - establish hierarchy of control and ensure everyone understands
□	Visibility - provide high visibility clothing, amber lights for vehicles
□	Segregation - arrange separate areas for personnel and equipment
□	Access - delineate access and egress routes to and from the site
□	Operation of equipment - ensure only qualified operatives are used and follow safe working practice
□	Loading/unloading - see that safe working practice is followed, whether on beach or at transit station
Tide and Weather	
□	Information - make one person responsible for tidal and weather information
Manual Handling	
□	Back problems - ensure personnel aware of safe lifting procedures
□	Bags - should contain only as much as can comfortably be carried in the circumstances. On no account should this exceed 25kg
□	Loading - where possible use bucket of front-end loader for loading to vehicles
□	Shifts - maintain safe working practice with short periods of working.

Welfare
□ Ensure availability of: • appropriate waste disposal arrangements • washing, showers and decontamination facilities • shelter • food and drink suitable for the working environment and conditions (e.g. sufficient liquids in hot weather) and the same issue for all workers • personal protective equipment (PPE) suitable for the incident, to be worn at all times • ear defenders, respiratory and other safety gear for specific • aspects of the work e.g. lifejackets for boats and in ports
Supervision
□ Contractors - ensure they comply with H & S and site safety plan
□ Log - record actions taken at all levels, giving reasons
□ Risk assessments - record details and monitoring processes, and review when changes occur
□ Accidents - all accidents and incidents to be recorded and advised to the Emergency Response Centre
□ Contact numbers - for casualty reporting, emergencies, supervision
Daily Briefings
□ Toolbox talks - H & S briefings after each change of shift
Technical and Mechanical Operations
□ Safety procedures - for trenching, temporary pits and other
□ Constructions, e.g. shoring, covering, fencing and signing
□ Latent hazards - consider possibility of fire or explosion
□ Security - overnight and when site not worked. Fence oiled waste sites
Information
Media - be fully instructed by the Emergency Response Centre or Port Authority on procedures to avoid unsafe intrusions
□ Publicity - warning signs to keep the public away

ANNEX 11

Initial Spill / Pollution Report (To be used by VTS Supervisor / Duty VTS Officer)							
Date_____				Time_____			
Sl. No.	**Details / Remarks**						
	Name of person reporting incident :						
	Job Title :						
	Details of Company/organisation :						
	Call back number :						
	Reporting Vessel / Tug Name :						
	Location of the Incident :						
	Incident Coordinates - Latitude Longitude						
	Extent of spill (m^2/km^2) :						
	Estimated quantity of spill : litres / tonnes						
	Type of oil / substance spilled	☐ Crude	☐ FO	☐ Gasoil	☐ Bitumen	☐ Diesel	☐ Bilge
		☐ Lubrication oil	☐ Hydraulic oil	☐ Unknown/Other (details):			
	If bulk chemicals, UN Number, if known :						
	Source of spill (if known) :						
	Reason for spill :						
	Action taken to prevent further spillage :						
	Is the spill continuous? ☐ No ☐ Yes (If yes, give details):						
	Has NG (National Guard – Coastal Protection Authority)/EPDA been informed? :						
	Weather conditions at the spill site :						
	Other relevant information :						
Prepared by: Click here to enter text.				Sign▶ _____			
Designation: Click here to enter text.							

Table 24: Initial Spill / Pollution Report

ANNEX 12

RAK PORTS

RAK PORTS
Marine Pollution Report Form (POLREP)

RAK PORTS
Doc. No. RP ISP 011-90
Rev. Orig., Issue Date: 27-07-2020

PORT NAME	SP ☐	AJZP ☐	RAKP ☐	AJRP ☐	RMCFZA ☐

Purpose of POLREP	This form is used to record the initial details of a reported/sighted marine pollution incident. The form should be sent to port authority once an initial assessment of incident has been completed. Such report will enable port authority to further assess and categorise the incident to respond appropriately. Where necessary, further investigation may be undertaken via the Marine Investigation Form (MIF).
BEFORE completing this form, please report the marine pollution incident to the relevant port authority (24hrs). Immediate reporting will enable a rapid response.	• Saqr Port (Control Tower): VHF Ch.16/14 - Tel.: +971 (7) 205 61 61 – Email: spatower@rakports.ae • RMC/Stevin Rock (Control Tower): VHF Ch.16/69 - Tel.: +971 (7) 205 61 62 – Email: rmctower@rakports.ae • Ras Al Khaimah Port (Control Tower): VHF Ch.16/71 - Tel.: +971 (7) 228 11 90 – Email: khrtower@rakports.ae • Al Jazeera Port (Control Tower): VHF Ch.16/68 - Tel.: +971 (7) 244 66 27– Email: ajzpt@rakports.ae • Al Jeer Port – Report the incident to Saqr Port Control Tower & Al Jeer Port Office at: Tel.: +971 (7) 268 23 33

Official Use ►	POLREP No.		Does require recording via Marine Investigation Form (MIF)?	☐ Yes	☐ No

Date & Time of Pollution Incident	Date of pollution		Time of pollution occurred		
Incident Coordinates (Lat & Long)	Latitude of spill		Longitude of spill		
Location Name/Description	Click here to enter exact Location / Description				
Pollution Source	☐ Vessel	☐ Land (specify):	☐ Other (specify):	☐ Unknown	
Vessel Type (if known)	☐ Oil Tanker	☐ Container	☐ Bulk Carrier	☐ Recreational	
	☐ Tug /Port	☐ Supply Boat	☐ Other (specify) :		
Vessel Details	Name	Name of Vessel			
	IMO No.	IMO / Official No.	Flag	Flag of the Vessel	
Pollutant	☐ Sheen	☐ Diesel	☐ Bilge	☐ HFO Bunker	☐ Crude	☐ Sewage
	☐ Unknown	☐ Chemical – MARPOL cat / UN Nos:			
	☐ Other (specify):				
Extent	Size of Spill (length & width in metres)				
	Amount of pollutant, if known (litres)				
Report Details	Has the discharge stopped?		☐ Yes	☐ No	☐ Unknown
	Weather conditions at site (tide and wind)				
	Photo taken?	☐ Yes ☐ No	Video taken?	☐ Yes	☐ No
	Sample taken?	☐ Yes ☐ No	Sample held by:		
Original Report Source	Click here to enter text				
Additional Information	Initial response action undertaken?		☐ Yes	☐ No	
	Initial response brief	Click here to enter text			
Sender Details	Name:		Position/company:		
	Phone:		Email:		
I verify that, to the best of my knowledge, the details given above are accurate.	Signature :		Date :		

Note: This report, and any attachments, is intended for the use of the Port Authority. However, the Port Authority may give some or all of this information to relevant government bodies, non-governmental organizations who have responsibilities under the National Plan, and law enforcement agencies.

Once you have completed the form, please check that all relevant fields have been filled with accurate data.

Email: marine.reports@rakports.ae

Page 1 of 1

Retention	@ Office	@ Archives
	0-2 years	3-5 years

ANNEX 13

Oil Spill Situation Report (SITREP)			
SITREP No.			
Incident	Click here to enter text.		
Date:		Time:	
Summary of Incident Response Operations	Click here to enter text.		
Summary of Incident Response Resource Utilisation			
Dispersant used: litres		Length of Booms in Use: metres	
Number of Recovery Devices:		Number of Storage Devices:	
Sorbent Used: kg		Number of Tugs: Name of Tugs:	
Number of Personnel:		Number of Vehicles: Vehicle Details:	
Special Equipment	Click here to enter text.		
Oil Spill Balance Sheet			
Total amount oil spilled: litres / tonnes			
Total amount oil recovered: litres / tonnes			
Total amount oil spilled: litres / tonnes			
Mass Balance			
Estimated natural weathering: litres / tonnes		Mechanically agitated: litres / tonnes	
Chemically dispersed: litres / tonnes		Skimmer recovered: litres / tonnes	
Sorbent recovered: litres / tonnes		Manually recovered: litres / tonnes	
Other…….		litres / tonnes	
Additional Remarks			
Prepared by: Click here to enter text.		Sign► _____	
Designation: Click here to enter text.			

Table 25: Oil Spill Progress Report

ANNEX 14

Legal Basis

International Conventions

Below table shows list of international conventions in which United Arab Emirates is a signatory since joining the International Maritime Organisation in 1980.

Convention	Objective
CLC PROT 1992 / Protocol of 1992 to amend International Convention on Civil Liability for Oil Pollution Damaged,1969.	❖ This convention provides for compensation for damaged, or response cost incurred, due to spills of persistent oils within a member nation's territorial sea or EEZ. Claims are made against the vessel owner and insurers. ❖ CLC is based on the principle of "strict liability", i.e., the vessel which spilled the oil will pay regardless of fault.
OPRC 1990, International Convention on Oil Pollution Prevention, response and Cooperation.	❖ This convention makes provision for contingency plans for ships, offshore platforms, coastal terminals and ports, and for the development of national response plan. ❖ Its also encourages the development of international cooperation in spill preparedness and response.
MARPOL 73/78, International Convention for the Protection of Pollution from Ships 1973 as modified by the Protocol 1978.	❖ It sets out a wide range of procedures and ships design and operating requirements aimed at reducing pollution of the sea from ships.
London Convention 1972, Convention on the Prevention of Marine Pollution by Dumping of Waste and other Matter, 1972, as Amended.	❖ This convention regulates the discharge of waste, including oily waste, at sea.
Intervention 1969, International Convention relating to the intervention on the high seas in cases of oil pollution casualties, 1969.	❖ This Convention affirms the right of a coastal State to take such measure on the high seas as may be necessary to prevent, mitigate, or eliminate danger to its coastline or related interest from pollution by oil or the threat thereof, following a maritime casualty.

Regional Conventions / Protocols

Kuwait Regional Convention for Co – operation on the Protection of the Marine Environment from Pollution / Kuwait Convention 1978,

a. Aims to provide protection of the marine environment from all sources of pollution and to promote regional cooperation in marine environmental protection and emergency response management.
b. Established the Regional Organisation for the Protection of the Marine Environment (ROPME), which developed protocols addressing the critical areas of environmental management.
c. Below table shows list of regional protocols that United Arab Emirates has ratified.

Protocol	Objective
Protocol concerning Marine Pollution resulting from Exploration and Exploitation of the Continental Shelf (1999).	To take all appropriate measures to prevent, abate and combat pollution in the Sea Area resulting from exploration and exploitation of the bed of the territorial sea and its sub-soil and the continental shelf.
Protocol for the Protection of the Marine Environment against Pollution from Land-Based Sources (1990).	To take all appropriate measures to prevent, abate and combat pollution by discharges from land reaching the Sea Area whether water-borne, airborne, or directly from the coast including outfalls and pipelines.
Protocol concerning Regional Cooperation in Combating Pollution by Oil and Other Harmful Substances in Cases of Emergency (1978).	Is to provide cooperative and effective preventive and response measures to deal with marine emergencies caused by oil and other harmful substances.

Federal/Local Environmental Legislation

1. Numerous federal and local laws have been enacted in the UAE to protect the integrity of the country's environmental laws and regulations.
2. Federal Law Number 24 of 1999 for the Protection and Development of Environment (the Environmental Law) is the primary legislation for environmental protection in the UAE. Chapter 2 of this law deals with the protection of marine environment and it's living and non – living natural resources including coast, beach and seaports by prevention, reduction and control from all kinds and forms of pollution regardless of its source.
3. UAE has been keen to develop a set of legislations that have had a clear impact in promoting the march of environmental action in the country, including:
    a. Federal Law No. 19 of 1993 on Delimitation of Maritime Zones.
    b. Federal Law No. (23) of 1999 concerning the Exploitation, Protection and Development of Living Aquatic Resources.
    c. Federal Law No. (11) of 2002 concerning Regulation and Control of International Trade in Endangered Species of Wild Fauna and Flora.
    d. Federal Law No. (17) of 2009 on the Protection of New Plant Varieties.

e. Federal Law No. (5) of 2009 on Organic Inputs and Products.

5. Cabinet Decree:
   a. Decree No. (23) of 2001 on the Protection of Ports and Coasts of the country and Its Territorial Sea Against Marine Oil Pollution Incidents.
   b. Decree No. (37) of 2001 on the Regulations of the By-laws of Federal Law No. (24) of 1999 regarding the Protection and Development of Environment.
   c. Decree No. (29) of 2006 on the Use of Ships and Offshore Units as Floating Warehouses in Transporting or Storing Oil Substance or any of its Derivatives.
   d. Decree No. (39) of 2006 on Banning Importation, Exportation and Use of Asbestos Sheets.
   e. Decree No. (137) of 2012 on the Guidelines to Regulate the Activities of Facilities Operating in the Cement Industry.
   f. Decree No. (26) of 2014 on the National System on Ozone-Depleting Substances.
6. Further, the following legislations have been enacted by their respective Emirates in pursuant to their local environmental strategies:
   a. The Emirate of Abu Dhabi has implemented Law Number 21 of 2005 for Waste Management and Law Number 16 of 2005 restructuring the Environment Agency. Besides, the Emirate of Abu Dhabi has also enacted the ingenious Decree Number 42 of 2009, concerning the Comprehensive Environment Health and Safety Management System (EHSMS).
   b. The Emirate of Dubai has issued numerous orders and regulations for protection of health and environment just as, Local Order Number 61 of 1991 on the Environment Protection Regulations.
   c. The Emirate of Sharjah has enacted Law Number 6 of 1998 for incorporating Environment and Natural Resources Authority.
   d. The Emirate of Ras Al Khaimah has implemented Law Number 2 of 2007 for Environment Protection and Development Authority.
7. Emirates have also established the following local regulatory agencies to look into sector-specific environmental issues:
   a. Ministry of Climate Change and Environment provides statistical studies, policy settings and regulates the water sector in the UAE; provides research on environmental matters.
   b. The Ministry of Agriculture and Fisheries deals with environment related issues regarding marine and terrestrial matters.
   c. The Environment Agency – Abu Dhabi (the ***EAD***) is the principal regulator of the environmental issue in Abu Dhabi. Further, Environmental Research and Wildlife Development Agency (the ***ERDWA***) operates various research centers that deal with both marine and wildlife development. Please click below link to view EAD Strategic Plan 2016-2020: https://www.ead.ae/Publications/EAD%20Strategy%202016%20-%202020/EAD%20STRATEGY%20ENG.pdf
8. RAK Ports Regulations - Act No. (9) of 2008 with respect to RAK Ports

Ministry of Climate Change and Environment

The Ministry of Climate Change and Environment (MOCCAE) is the federal umbrella of environmental action in UAE. The Ministry is entrusted with environmental action at the federal level, there is a competent authority of environment in each emirate, namely:

- Environment Agency – Abu Dhabi
- Dubai Municipality
- Environment & Protected Areas Authority - Sharjah
- Environment Protection and Development Authority - Ras Al Khaimah
- Ajman Municipality
- Umm Al Quwain Municipality
- Fujairah Municipality

International and Regional Environmental Conventions signed by UAE

United Arab Emirates join the world in recognizing environmental problems by signing and ratifying environmental agreements such as:

a. Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on Substances that Deplete the Ozone Layer.
b. Basel Convention on the Control of Trans boundary Movements of Hazardous Wastes and Their Disposal.
c. Rotterdam Convention on Hazardous Pesticides and Hazardous Chemicals in International Trade.
d. Convention on Biological Diversity.
e. Stockholm Convention on Persistent Organic Pollutants.
f. United Nations Framework Convention on Climate Change and the Kyoto Protocol.
g. Convention on International Trade in Endangered Species of Wild Fauna and Flora – CITES.
h. Convention on Wetlands of International Importance – Ramsar.
i. International Convention for the Protection of New Varieties of Plants.
j. Kuwait Regional Convention for Cooperation and Protection of Marine Environment from Pollution and its Protocols.
k. International Convention for the Prevention of Pollution from Ships (1973G.) as amended by Protocol MARPOL (1978G.).

Other guidelines relevant to this Plan

<u>The UK Port Marine Safety Code:</u>

The UK Port Marine Safety Code proposes that all the functions of a harbour authority in relation to marine operations should be regulated through a safety management system, based on a formal risk assessment of the hazards facing their port and appropriate measures to prevent them.

The Code aims to improve safety for those who use or work in ports, their ships, passengers and cargoes, and the environment.

ANNEX 15

Characteristics of Different Class of Oils

Oil Type	Density (kg/1) At 15C	Viscosity mPas at 20C	Pour Point C	Flash Point C
Crude oil	0.8 - 0.95	1 - 100	+10 to - 35	Variable
Gasoline	0.70 – 0.78	0.5	Na	Less than 0
Kerosene	0.8	2	Less than - 40	38 – 60
Jet fuel	0.8	1.5 - 2	Less than - 40	38 - 60
Diesel oil	0.85	5	- 5 to - 30	More than 55
Light FO IFO 060	0.9	60 at 50 C	+50 to - 20	More than 60
Medium FO IFO 180	0.9	180 at 50 C	+30 to - 20	More than 60
Heavy FO IFO 380	0.99	380 at 50 C	+30 to - 20	More than 60

ANNEX 16

Hazards with Spills

Hazards Associated with the Spill Material: This information relates particularly to crude and refined oil and because of the wide formulation of transported crude and refined products should be taken as a general guide. Hazards for crude and refined oil products include both acute and chronic effects. Whilst the major concern continues to be exposure to benzene there are a number of other components such as naphtha that may also be present. Principle risks exist through the inhalation of vapours or contact with skin and soft tissue. Conditions, which may result, include respiratory and dermatological reactions. Exposure to petroleum components such as benzene may also be as a direct result of equipment used, and it may be impracticable to isolate the cause of any exposure.

Weathering Effects: Existing information indicates that most volatiles are driven off from refined products within the first few hours of the spill, and from crude products within 8 hours or so. This period may be extended where there are particularly calm cool conditions, and the spill is contained such that it is unable to spread to a thin film. Even so evidence is available that most if not all benzene has been volatilised and lost within a 24-hour period. As a consequence, inhalation risks are usually considered to be negligible after the first 24 hours or so, leaving skin and soft tissue contact as the major hazard of concern.

Personal Protective Equipment: When dealing with material in the early stages of a spill, e.g. the first day, it will be necessary to provide PPE and appropriate respiratory protective equipment. In addition there should be effective segregation of any affected areas so that only those staff with an operational reason to do so, e.g. beach assessment, is exposed to any potential risk.

Monitoring issues: There may arise situations where monitoring of Benzene or Volatile Organic Compounds (VOC) levels in air may be required. Where this is specifically required for occupational reasons then a personal monitoring device such as a portable photo ionisation detector (PID) monitor should be employed to give both the Short-Term Exposure Level and the Time Weighted Average Exposure. Most types will provide up to 10 hours monitoring time and the ability to record period maxima and averages and are intrinsically safe. PIDs would be particularly applicable in the earliest stages of spill response, or where elevated levels may be suspected. The change in any risk after 24 hours elapsed time from the spill indicates that the wider routine use of PIDs in subsequent stages of a clean-up operation is not required. If required, a more cost-effective option for routine monitoring would be to use 8-hour Draeger tubes and personal monitors. This could be backed up by spot readings taken with more sensitive and accurate equipment.

Health surveillance: Chronic exposure to many components of crude and refined products results in known or assumed carcinogenic effects. However, given the likely exposure levels during most clean-up operations, where exposure would be negligible, health surveillance is not warranted. The exception to this would be where exposures are non-negligible which may include the first 24 hours after the spill, or where the oil has been confined and volatilisation has been delayed. In these circumstances, depending on exposure levels, health surveillance of staff may be warranted. In any event it is a sensible precaution to exclude any staff with a history of skin or respiratory disorders, including asthma, from working on contaminated beaches or directly with recovered oil, oiled beach material, or other contaminated material.

ANNEX 17

Resources Directory – RAK Ports

SAQR PORT STOCKPILE

The following **first-strike oil spill response resources (Tier 1)**, situated at Saqr Port Marine Department Pollution Response Centre and, are directly controlled by RAK Ports Incident Response Team (IRT) and available for immediate use:

Skimming Equipment			
Sl. No.	Item	Quantity	Remarks
1	Mini Foilex Skimmer	1	Used for removing oil from the surface of the water.
2	Pump PD 75 Capacity 31.8 m^3/h (143 Gln / Min.)	1	Unit used with the mini skimmer for automatic self-priming flow pumping.

Booms			
Sl. No.	Item	Quantity	Remarks
1	Oil containment floating boom 300m length in fifteen bags	1	Used for oil containment and prevention from spreading.
2	Oil absorbent boom (3m length)	4 Nos	Oil absorbent booms can be used to handle all types of hydrocarbon spills, such as fuel oils, hydraulic oil, gasoline, diesel, motor oil, jet fuel oil and kerosene. Not to be used for acids, aggressive fluids or water-based chemicals.
3	Oil absorbent booms (2m length)	4 pcs	
4	Oil absorbent booms (1m length)	12 pcs	
5	Oil absorbent pillows	8 pcs	
6	Pads	7 Nos	

Tools / Miscellaneous			
Sl. No.	Item	Quantity	Remarks
1	Tank (FASTANK)	1	Assemble at site.
2	Fast response oil spill kits	2 trolleys	
3	Shovel	2 pcs	
4	Trolley	1 pc	
5	Anchor with buoys	3 pcs	
6	Plastic bags	10 pcs	

Chemicals			
Sl. No.	Item	Quantity	Remarks
1	OSD Silicon chemical type 1	6 drums (Each 200 litres)	Used to reduce interfacial tension between oil and water enabling waves to break an oil slick into tiny droplets.
2	Sea Care OSD chemical type 2/3	21 small drums	

Others (safety)			
Sl. No.	Item	Quantity	Remarks
1	Helmet	12	--
2	Safety Shoes	12	Size (40, 41 & 42)
3	Coverall (Orange)	12	Size (XL, L & M)
4	Gloves	24	--
5	Cover all (White)	2	--
6	Safety Ropes (10mm X 40 yard)	5 bundles	Fireproof
7	Life jackets with light	12	--
8	Life buoy 2.5 kg	12	--
9	Glasses	2	--

Pollution Fighting Vessels		
Sl.No.	Item	Remarks
1	Tug Kestrel	Rigging dispersants booms on both sides of tug. Tank capacity: 2725 tons Foam tank capacity: 7.4 tons
2	Vulture	Mechanical oil collector mop. Waste oil tanks capacity: 1.674 tons.

Tier 2 Oil Spill Response Resources: Tier 2 Response Resources will be mobilised by the Tier 2 Responder in accordance with the arrangements organised by the Harbour Master during Tier 2 pollution incident. As a minimum the Tier 2 Responder will have 24/7 mobilisation of a fully equipped rapid response vehicle, equipment and materials available at the pollution site within 6 hours of a call.

Tier 3 Oil Spill Response Resources: Tier 3 Response resources are to be detailed in the event of occurrence and in accordance with the directives of MOCCAE / NCEMA / EPDA.

- Tier 3 response will be in accordance with the NOSRP.

RAK MARITIME CITY

RAK MARTIME CITY FZA STOCKPILE

The following **first-strike oil spill response resources (Tier 1)**, situated at RAK Maritime City Quay No. 5 stockpile, are directly controlled by RAK Ports Incident Response Team (IRT) and available for immediate use:

Booms			
Sl.No.	Item	Quantity	Remarks
1	Oil containment floating boom 300m length mounted on a quick deployment reel	1	Used for oil containment and prevention from spreading.
2	Oil absorbent boom (3m length)	4 Nos	Oil absorbent booms can be used to handle all types of hydrocarbon spills, such as fuel oils, hydraulic oil, gasoline, diesel, motor oil, jet fuel oil and kerosene. Not to be used for acids, aggressive fluids or water-based chemicals.
3	Oil absorbent booms (2m length)	4 pcs	
4	Oil absorbent booms (1m length)	12 pcs	
5	Oil absorbent pillows	8 pcs	
6	Pads	7 Nos	

Tools / Miscellaneous			
Sl.No.	Item	Quantity	Remarks
1	Tank (FASTANK)	1	Assemble at site.
2	Fast response oil spill kits	2 trolleys	--
3	Shovel	2 pcs	--
4	Trolley	1 pc	--
5	Anchor with buoys	3 pcs	--
6	Plastic bags	10 pcs	--

Others (safety)			
Sl.No.	Item	Quantity	Remarks
1	Helmet	12	--
2	Safety Shoes	12	Size (40, 41 & 42)
3	Coverall (Orange)	12	Size (XL, L & M)
4	Gloves	24	--
5	Cover all (White)	2	--
6	Safety Ropes (10mm X 40 yard)	3 bundles	Fire proof
7	Life jackets with light	12	--
8	Life buoy 2.5 kg	12	--
9	Glasses	2	--

Mobilisation of pollution fighting vessels, skimming equipment, safety tools and transportation of required chemicals along with deployment of Incident Response Team (IRT) will be done in a timely manner.

ANNEX 18

Plant & Equipment List – RAK Ports

Name	Age	Type	Rating	Power	Propulsion	LOA	Beam	Draft	Remarks
Osprey	Jul 2018	Damen ASD Tug 2913	80t Bollard Pull	5050 kW	ASD	29.1m	13.2m	5.5m	
Kestrel	Jun 2013	Damen ASD Tug 2411	69t Bollard Pull	4180 kW	ASD	24.5m	11.3m	5.5m	Fi-fi ½
Falcon	Nov 2012	Damen ASD Tug 2310	48t Bollard Pull	3000 kW	ASD	22.7m	10.4m	4.35m	
Sha'm	Feb 2008	Damen Stan Tug 2608	53.8t Bollard Pull	2850 kW	Twin Screw	26.2m	7.94m	3.91m	Fi-fi ½
Durrah	May 2002	Damen Stan Tug 2207	36.7t Bollard Pull	2028 kW	Twin screw	22.5m	7.25m	3.35m	Fi-fi ½
Hulaylah	Nov 1995	Damen Stan Tug 1906	18.0t Bollard Pull	1044 kW	Twin Screw	19.5m	6.04m	2.5m	Fi-fi ½
Hawk	Nov 2019	Damen Stan Tug 1907	29.7t Bollard Pull	1492 kW	Twin Screw	19.3m	7.34m	2.95m	
Hobby	Feb 2019	Damen Muticat 1908	13.5t Bollard Pull	894 kW	Twin Screw	19.0m	8.06m	2.10m	20t Crane
Masafi	Nov 1995	Damen Stan Tug 1906	18.0t Bollard Pull	1044 kW	Twin Screw	19.5m	6.04m	2.5m	Fi-fi ½
Ghalilah	1976	Damen Stan Tug 1605	9.6t Bollard Pull	720 hp	Twin Screw	15.7m	4.9m	2.25m	Plough can be fitted
Hannah 1	2008	Harbour Patrol		2 x 150 hp	Twin Outboards	8.7m	2.4m	0.44m	Security patrol
Vulture	2014	Pollution response		86 hp	Twin Screw	9.2m	3.8m	1.5m	Garbage/ debris collection
Eagle	2016	Pilot Boat UAE		1200 hp	Twin Screw	15.0m	5.1m	1.1m	
Al Hamra 1		Pilot/Patrol Boat				12.7m			Operated by AJZP
Kite	2017	Catamaran Survey Vessel		700 hp	Twin Screw	13.0m	5.6m	1.2m	Hydrographic survey vessel
Noora 1		Pilot/Patrol Boat		260 kW					Operated by RAKP

ANNEX 19

RAK Ports Incident Management Support Team (IMST)

S. No	Name	Designation / Section / Port	Role
1			
2			
3			
4			
5			
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14			
15			

ANNEX 20

RAK Ports Marine Incident Response Team (IRT)

S. No	Name	Designation / Section / Port	Role
1			
2			
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ANNEX 21

Media Information

Media Information
In the event of a major pollution incident, if it deemed necessary, the Executive Management or Harbour Master will provide information to media in consultation with EPDA.
Initial Press Statement Format
"RAK Port confirm that an incident has occurred *(state where and give brief description)* …… at approximately *(give time)* …… hours today. Emergency response plans have been initiated and relevant authorities *(have been / are being)* advised. All support services are being organised through mutual coordination with EPDA / NCEMA / NG (National Guard – Coastal Protection Authority) / RAK PDS for Tier 2/3 response and every possible effort is being made both to minimise risk to personnel at the scene and to contain and mitigate any effects. Further information will be released as necessary".

Retention	@ Office	@ Archives
	0-2 years	3-5 years

ANNEX 22

Tier 2 Response Provider

1. GENERAL INFORMATION

The following Tier 2 Response Provider may be contracted in the event of a Marine Pollution Incident to either respond or augment the response to a marine pollution incident.

COMPANY NAME	**ADNOC (Logistics & Services)** (Oil Spill & HNS Response)
ADDRESS	PO Box 61, Abu Dhabi, UAE. Tel: +971 2 602 8675 osr.hns.ls@adnoc.ae
SERVICES	**TIER 2 OIL SPILL AND HNS SERVICES** Mobilising trained and experienced spill management team personnel, technical and specialised scientific staff and response ready equipment from their emergency response facilities immediately and management of waste.
SCOPE OF WORK	The SCOPE OF WORK is to facilitate response to any OIL SPILL and HNS incident or spill that occurs within RAK Ports and the Ras Al Khaimah maritime region. This includes incidents involving; marine transportation, import and export facilities (SPMs and terminal facilities) Bunkering and Ship to Ship Transfer.
RESPONSE TIME	Tier 2 operations at Ras Al Khaimah Maritime Area – Maximum of six (6) hours.

2. OIL SPILL AND HNS MOBILIZATION REQUEST FORM

CALL OUT NUMBERS **PRIMARY: 800 Spill** **SECONDARY: 80077455**		
To	**DUTY MANAGER** **OIL SPILL AND HNS RESPONSE** **ADNOC LOGISTICS AND SERVICES**	
E-mail	OSR.HNS.LS@ADNOC.AE	
Subject	☐ **Oil Spill** Response Mobilization ☐ **HNS** Response Mobilization ☐ **Equipment Hire**	
Date		
Position		
Company Name		
Contact Details	**Telephone**	
	Mobile	
	E-mail	
Incident Name / Details		
Invoice Address		

I hereby authorise the mobilisation of Abu Dhabi Marine Operations and Services Company and its Oil Spill AND HNS Response resources in connection with the above incident under the terms of this AGREEMENT.

Name		**ID#**	
Job Title			
Signature		**Date & Time**	

Retention	@ Office	@ Archives
	0-2 years	3-5 years

3. RESPONSE CAPABILITY

	RESPONSE CAPABILITY	RESPONSIBILITY	
1	Surveillance & Modelling (Satellite based Detection, Stochastic Modelling & Aerial Survey) ***		
2	Offshore Surface Dispersants	**X**	
3	Offshore Subsea Dispersants	N/A - Applicable to Tier 3 Response	
4	In-Situ Controlled Burning	N/A - Applicable to Tier 3 Response	
5	Offshore Containment & Recovery	**X**	
6	Protection of Sensitive Resources	**X**	
7	Shoreline Assessment	**X**	
8	Shoreline Clean-up	**X**	
9	Inland Response	N/A Marine Coverage Only	
10	Oiled Wildlife Response*		
11	Waste Management**		
12	Stakeholder Engagement & Communication		
13	Economic Assessment & Compensation		
14	Environmental Impact & Sampling***		
15	Source Control		

* ADNOC may provide assistance and / or resources if requested to do so by the RAK Ports.

** Will follow its internal waste management plan in accordance with ADNOC's standards and may provide assistance and/or resources if requested by RAK Ports.

*** ADNOC may provide the specific service if requested to do so by RAK Ports.

4. TIER 2 RESPONSE RESOURCES

TIER 2 RESPONSE RESOURCES		
RESPONDERS	**EQUIPMENT**	**SUPPORT**
Dedicated, trained OIL SPILL & HNS Response PERSONNEL Access to additional responders	Resources and Response Toolbox based (Amount & type appropriate for potential incidents as per risk) including: ➢ Dedicated OSRVs with min 50m³ on-board recovered oil storage ➢ Dispersant Capabilities (access to min 200m³ stockpile) ➢ Offshore Containment & Recovery EQUIPMENT ➢ Protection Booms (min 1,000m offshore, nearshore and shore sealing) per response BASE ➢ Shoreline Response & clean up VESSELS and EQUIPMENT ➢ Recovered Oily Water Storage Capabilities ➢ HNS Containment & Recovery resources	➢ Access to Dedicated OIL SPILL response Cooperatives ➢ Access to Tier 3 Services ➢ Access to dedicated Spill Response VESSELS (Offshore & Nearshore) ➢ Access to non-Specialized equipment's such as; waste skips, vacuum trucks, heavy plant ➢ Access to additional responders ➢ Established method for cooperation with local / regional government departments ➢ Provision of Satellite based OIL SPILL Detection ➢ Provide Trajectory Modelling ➢ Access to GIS based Services ➢ Access to Aerial Support (Surveillance and Dispersant Application)

5. APPENDIX 1 – OIL SPILL AND HNS RESPONSE EQUIPMENT INVETNRORY Q4/2023

The following tables are based upon the UAE wide current inventory and are therefore subject to change (annually) in relation to the geographical extent of coverage agreed among the PARTIES:

No	EQUIPMENT DESCRIPTION	UOM	NO OF UNITS	TOTAL QTY
OFFSHORE & INSHORE CONTAINMENT BOOM				
	Ro-Boom 200 meters on reel without power pack	200m	25	5,000m
	VIKOMA HI Sprint Containerized System	250m	3	750m
	NOFI Boom Bag System	Bag	4	4
	Harbor Boom	10m	150	1,500m
	Sea Sentinel Boom	20m	450	9,000m
	Sea Sentinel Boom	10m	30	300m
	Shore Guardian Boom	20m	125	2,500m
	Shore Guardian Boom	10m	43	430m
	Nearshore Boom with Reel 200m & power pack	200m	12	2,400m
	Fast Flow Boom	20m	14	290m
	Fast Flow Boom	10m	55	550m
	Fence Boom 1100mm	25m	62	1,550m
	Solid Floatation 1100 mm	30m	16	360m
	Fence Boom 900mm	20m	39	780m
	Troil Boom (Air Inflated)	12.5m	120	1,500m
	Troil Boom (Fence750mm)	25m	16	400m
	VIKOMA Flexi Boom 500mm x 15m	25m	10	250
	Troil Boom (Fence 450mm)	25m	16	400m
	Globe Booms + 2 Lamor hydraulic reels	25m	8	200m
	Beach troil Boom	10m	50	500m
	Current Buster System	System	3	3
	Contractor Boom 15m Section	15m	37	555m
	NOTIL Heavy Oil Trawl Net	Set	16	16
	Boom Tow Bridle	Set	50	50
	12kg Anchor Set	Set	70	70
	15kg Anchor	Unit	97	97
	20kg Anchor Set	Set	146	146
	Polyform Buoy (Various Sizes)	Unit	115	115

DISPERSANT APPLICATION				
No	EQUIPMENT DESCRIPTION	UOM	NO OF UNITS	TOTAL QTY
	Aerial Dispersant Spray System - TC3	Set	3	3
	Aqua Guard Portable Spray System DS-50	Set	3	3
	Back Pack Dispersant Spray - Gloria	Set	6	6
	Dispersant boat spray TS - 100 with AFEDO nozzles	Set	7	7
	Dispersant boat spray TS - 50	Set	7	7
	Dispersant Container IBC	Unit	30	30
	ROPME Area Approved Dispersant	m^3	200	200
SKIMMERS / OIL RECOVERY				
	Komara 12k Disc Skimmer System	Set	6	6
	Komara 20k Disc Skimmer System	Set	7	7
	VIKOMA Komara Duplex	Set	1	1
	VIKOMA Mini Skimmer	Set	1	1
	VIKOMA MOSS Skimmer System	Set	6	6
	Minimax 60 Brush Skimmer System	Set	1	1
	Manta Ray / Delta Head Skimmer	Set	14	14
	Mini Vacuum System - Vikoma	Set	6	6
	Vacuum, Ro-Vac, MKII with Ro-Tank 2000	Set	2	2
	Ro-Boom Side Sweep Weir skimmer	Set	2	2
	Ro-Mop OM260	Set	10	10
	Ro-Mop OM140	Set	1	1
	AQUAGUARD Multi RBS 50 skimmer head system	Set	1	1
	AQUAGUARD RBS 10 Brush Skimmer	Set	1	1
	Sea Devil Skimmer with power pack	Set	2	2
	Weir skimmer w pump, hydraulic power pack and hoses	Set	4	4
	Weir skimmer w Hydraulic Power Pack, Hose Set & Brush Adaptor	Set	1	1

	RO-Clean Desmi DBD 40	Unit	5	5
	RO-Cleam Desmi Helix Skimmer head	Unit	5	5
	Mini CD Drum Skimmer	Unit	1	1
	OIL SPILL Tracking Buoys	Unit	12	12
TRANSFER PUMPS & HOSE SETS				
No	EQUIPMENT DESCRIPTION	UOM	NO OF UNITS	TOTAL QTY
	Diesel Driven Peristaltic Pump - Yanmar	Unit	6	6
	Screw Pump DOP160 - Ro-clean Desmi	Unit	12	12
	Gasoline Driven Transfer Pump – Honda 3”	Set	12	12
	Diesel Driven Spate Pump 3”	Unit	22	22
	Diesel Driven Trash Pump 3”	Unit	5	5
	Ro-Clean Pacer Pump (Honda water pump)	Set	6	6
	Pump, Flushing Pump 170 m^3/hr	Set	4	4
	Robin 2” Trash Pump with Hose Set	Set	7	7
	SALAROLL 2” Pump with power pack	Unit	1	1
	Pump,2” Wilden Stainless Steel	Unit	1	1
VESSELS & WORKBOATS				
	Offshore OIL SPILL Response Vessel 50- 55m with Minimum 50m^3 Onboard Recovered Oil Storage. Transit Speed 16-20knots	Unit	5	5
	Nearshore OIL SPILL Response Workboat 16 – 20m Deck Load Capacity 3,000 – 4,000kg. Transit Speed 25 – 28 knots	Unit	5	5
	Shoreline Workboats 10 – 12m Transit Speed 25 – 30knots	Unit	15	15

NOTE:

A permanent fleet of OSRVs and workboats shall be maintained as per the above table. If required, VESSELS of opportunity shall be used to supplement the Response Provider’s capabilities.

STORAGE EQUIPMENT				
No	EQUIPMENT DESCRIPTION	UOM	NO OF UNITS	TOTAL QTY
	Floating Tank LANCER	5m³	2	2
	Floating Tank LANCER	50 m³	3	3
	Floating Tank LANCER	25 m³	4	4
	Floating Tank	15 m³	4	4
	Fastank - FAST ENG	10m³	39	39
	Fastank - FAST ENG	5m³	20	20
	Pit liner - FAST ENG	Set	10	10
	Markleen UNIBAG	25 m³	4	4
	Lamor Collapsible tank	11.6 m³	8	8
	VIKOMA Pollutank Floating barge	50m³	1	1
	VIKOMA VIKOTANK Neoprene Floating Tank	25m³	4	4
	Canflex Floating Storage FCB-60	25m³	1	1
	Pillow Tank	40m³	2	2
	Pillow Tank	10m³	6	6
	Self erecting Tank - 6 -10T	10m³	6	6

ANCILLARY EQUIPMENT				
No	EQUIPMENT DESCRIPTION	UOM	NO OF UNITS	TOTAL QTY
	Power Washer Trailerised (Hot & Cold)	Set	2	2
	Portable Pressure Washer (Hot & Cold)	Unit	2	2
	KARCHER Pressure Washer (Cold Water)	Unit	2	2
	KARCHER Pressure Washer (Hot & Cold)	Unit	8	8
	Diesel Hydraulic Power Pack GP 10	Unit	8	8
	Diesel Hydraulic Power Pack GP 60	Unit	1	1
	Ro-Clean Diesel Hydraulic Power Pack 15 kW	Unit	0	0
	Ro-Clean Diesel Hydraulic Power Pack 25 kW	Unit	7	7
	Ro-Clean Desmi 28Kw Diesel Hydraulic Power Pack	Unit	2	2
	Ro Clean diesel/hydraulic power pack 50hp (34 kW)	Unit	3	3
	Ro-Clean Diesel Hydraulic Power Pack 50 kW	Unit	6	6
	Lamor LPP 7 diesel hydraulic power pack	Unit	2	2
	Lamor LPP 53 diesel hydraulic power pack	Unit	2	2
	Gasoline Air Blower	Unit	56	56
	2.5 KVA Diesel Electric Generator	Unit	7	7
	Portable Generator 3-5kW	Unit	11	11
	Communication Devices (VHF)	Unit	96	96
	Communication Devices (Thuraya)	Unit	15	15
	Night Vision Goggles	Unit	7	7
	Portable Lighting Set	Unit	7	7
	Command Tent with Air Conditioning	Unit	4	4
	Decon Station 6'x6' (PERSONNEL)	Unit	10	10
	Decon Station 20'x50' (EQUIPMENT)	Unit	10	10
	Anti Chaffing Mats	Each	25	25
	Offshore Container ISO DNV 2.7-1 (10 Foot)	Each	18	18
	Offshore Stillages / Baskets	Each	6	6

ABSORBENT MATERIALS (Stock levels will be updated annually)				
No	EQUIPMENT DESCRIPTION	UOM	NO OF UNITS	TOTAL QTY
	Sorbent Boom 8” x 3m, 4 / Bale	Bale		
	Sorbent Boom 5” x 3m, 4 / Bale	Bale		
	Sorbent Roll 1m x 40m	Roll		
	Sorbent Pads 40 x 52cm 100 / Bale	Bale		
	Sorbent Sweep Pad 100 / Bale	Bale		
	Heavy Oil Snares (Pom Poms)	Each		
	HAZMAT Sorbent Boom 8” x 3m, 4 / Bale	Bale		
	HAZMAT Sorbent Boom 5” x 3m, 4 / Bale	Bale		
	HAZMAT Sorbent Roll 1m x 40m	Roll		
	HAZMAT Sorbent Pads 40 x 52cm 100 / Bale	Bale		
VEHICLES				
	POLARIS ATV	Unit	2	2
	AGROCAT All Terrain Vehicle	Unit	3	3
	Ranger ATV	Unit	4	4
	4x4 SUV	Unit	4	4
	Light Truck (5 Ton)	Unit	6	6
	HIAB Truck	Unit	3	3
	Forklift 3 TON	Unit	4	4
	Forklift 5 TON	Unit	4	4
	Minivan	Unit	2	2
	Pick up double cabin	Unit	12	12
	Flatbed Trailer (2 trailers per OSR BASE)	Unit	10	10
	Boat Trailer	Unit	10	10

HNS EQUIPMENT & MATERIALS				
No	EQUIPMENT DESCRIPTION	UOM	NO OF UNITS	TOTAL QTY
	Chemical protection suits Level A	Unit	24	24
	Chemical Protection suit Level B	Unit	24	24
	Level C Tyvek type suits	Unit	100	100
	Self-Contained Breathing Apparatus	Unit	40	40
	SCBA Cylinders 300 bar	Unit	72	72
	Airline trolley for SCBA for decontamination	Unit	4	4
	Full face Air Purifying Respirators + Filters	Unit	20	20
	Fire Pump, suction hose and skirt	Unit	4	4
	Thermal Image camera	Unit	4	4
	Temperature Gun	Unit	4	4
	Portaflex Decontamination shower	Unit	4	4
	Radiation meter	Unit	4	4
	Portable lighting system Ex type	Unit	4	4
	Portable ventilation fans	Unit	4	4
	Chemical classifier kit	Unit	4	4
	Leak sealing Paste	Unit	4	4
	Non sparking Tool kit	Unit	4	4
	Submersible Acid Pump	Unit	4	4
	Over Pack salvage drums 95 Gal	Unit	4	4
	Leak seal lance	Unit	4	4
	Multi gas detector and Photo ionisation Detector	Unit	8	8
	Vacuum cleaner with HEPA filter	Unit	4	4
	Wind and air barometers	Unit	4	4
	Defibrillator Phillips heart start	Unit	4	4
	Control Cones and barrier tape	Unit	60	60

	Pallet and Barrel lifter	Unit	4	4
	Chemical detection Tubes with pump and bellows	Unit	24	24
	Bauer Junior air Compressor	Unit	4	4
	Chemical resistant boots	Pair	80	80
	Self-Contained Breathing Apparatus Control Board	Unit	1	1
	Earthing and bonding kits	Unit	4	4
	Ratchet Kits	Unit	4	4
	Wheel mounted Foam Extinguishers	Unit	4	4
	Salvage drums	Unit	10	10
	Leak repair pipe patch system	Unit	4	4
	Ultra drain seals	Unit	10	10
	Drain Couplings MDC 75 ,89	Unit	4	4
	Cooling Vests	Unit	12	12
	Sand Bags	Unit	400	400
	Trisodium Phosphate 5%	Unit	4	4
	Sodium Carbonate 5%	Unit	4	4
	Calcium Hypochlorite 10%	Unit	4	4
	Sodium Bisulfate Dry Acid	Unit	4	4
	Portable Eye wash Station	Unit	4	4
	Rescue Stretcher	Unit	4	4
	Electric Barrel pump Tube and Earthing	Unit	4	4
	Decontamination pools	Unit	4	4
	HNS Tool Kits	Unit	4	4
	Medical testing kits	Unit	4	4
	Chemical Resistant Gloves	Unit	4	4
	Inner Nitrile gloves	Unit	60	60
	Tripod And Winch Set	Unit	4	4

ANNEX 23

Risk Assessment Form – To be completed by Port Authority and/or Tier 2/3 Responder

Risk Assessment:

Undertake risk assessment and review for the clean-up operations.

Submit completed risk assessment and reviews to the Emergency Response Centre.

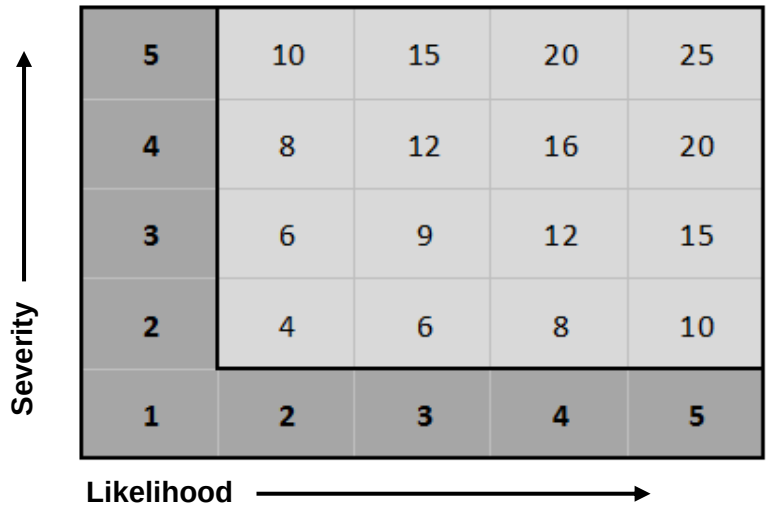
Location:		Reasons for Risk Assessment:	
Section:		New Activity / Process:	
Task/Activity:		Change in Activity / Process:	
Date of Assessment:		Other – Please specify:	
Re-Assessment due:		Date of Review:	

Hazards	Severity of Risk Rating	Persons/ Equipment at Risk	Existing Control	Likelihood of Occurrence Rating	Risk Rating	Possible Actions	Best Practice H&S:
Oil pollution							

Action Plan						
Hazards	**Action Required**	**Priority**	**Completion Due:**	**Action by Whom:**	**Action Checked by:**	**R-assessment Due:**

Guidance Notes						
Severity of Risk	**Definition**	**Point Rating**		**Likelihood of Occurrence**	**Definition**	**Point Rating**
Very High	May cause single or multiple deaths and/or major injuries. Such a risk might include a major fire or explosive risk.	5		Almost certain	If the activity continues, there is almost 100% certainty that an accident will occur.	5
High	May cause serious injury to an individual(s) or major property damage.	4		Very likely	If the activity continues without introducing control measures an accident is likely to happen.	4
Moderate	Any activity which may cause injury or disease resulting in absence from work for more than three days.	3		Likely	An accident may happen if other factors precipitate.	3
Low	May cause minor injury without absence from work or medical attention.	2		Possible	Any accident where the probability is low, and the risk is minimal.	2
Nil	No risk or injury or disease	1		Not likely	There is no risk present. All responsible precautions have been taken so far as is reasonably practicable.	1

Risk Rating:



Risk Rating	Possible Actions	Definition	Priority
20/25	Stop the activity	Change process/task/substance Include new control measures to reduce the level of risk	5 – Immediate
16/19	Issues Warnings/instructions	Introduce new or a higher level on control measures to reduce the level of risk	4 – Very High
12/15	Review Safety measures	Introduce new control measures	3 – High
7/11	Inform, Instruct, and train personnel	Review if necessary	2 – Moderate
2/6	Monitor and review	Consider any necessary measures	1 – Low