THE REPUBLIC OF LEBANON

National Oil Spill Contingency Plan in the Lebanese Waters

VOLUME D

SUPPORTING DOCUMENTS

Version 1

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Abbreviations

CNRS	National Council for Scientific Research
EEZ	Exclusive Economic Zone
IAP	Incident Action Plan
ICAG	Incident Command Advisory Group
ICS	Incident Command System
IMS	Incident Management System
IMO	International Maritime Organization
IOGP	International Association of Oil and Gas Producers
IPIECA	Global Oil and Gas Industry Association for Environmental and Social Issues
ITOPF	International Tanker Owners Pollution Federation
JMOC	Joint Maritime Operations Centre
LAF	Lebanese Armed Forces
LIC	Local Incident Commander
MARPOL	International Convention for the Prevention of Pollution from Ships 73/78
MCA	Maritime Coastguard Agency
MOA	Ministry of Agriculture
MOE	Ministry of Environment
MOI	Ministry of Industry
MOPWT	Ministry of Public Works and Transport
MOPWT-DGLMT	Ministry of Public Works and Transport – Directorate General of Land and Maritime Transport
NCA	National Competent Authority
NEBA	Net Environmental Benefit Analysis
NOSCP	National Oil Spill Contingency Plan
OIM	Offshore Installation Manager
OPRC	Oil Pollution Preparedness Response and Cooperation Convention 1990
PRO	Public Relations Officer
REMPEC	Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea.
SCAT	Shoreline Clean-Up Assessment Technique
SEA	Strategic Environmental Assessment
TIP	Technical Information Paper

Definitions

Activate – To place a unit on an active status, to begin a process or procedure to respond to an incident.

Affected Ministry – Ministry under whose jurisdiction a spill occurs

Alert – to make another party aware.

Contingency – A resource or process put in place as part of a plan to respond to an incident which has not yet occurred.

Dispersant – a product, comprising a surfactant and solvent, designed for the purpose of promoting the dispersion of oil in water and preventing recoalescence.

Exclusive Economic Zone – The exclusive economic zone (EEZ) extends seaward to a distance of no more than 200 nautical miles (370 km) out from its coastal baseline. The exception to this rule occurs when exclusive economic zones would overlap; that is, state coastal baselines are less than 400 nautical miles (740 km) apart. When an overlap occurs, it is up to the states to delineate the actual maritime boundary. In the EEZ, the coastal State has sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources; for the economic exploitation and exploration of the zone, such as the production of energy from the water, currents and winds. It has jurisdiction with regard to the establishment and use of artificial islands, installations and structures; marine scientific research; the protection and preservation of the marine environment;

Flashpoint – the temperature at which oil vapors will ignite, given a source of ignition.

Governorate Shoreline Response Plan – a plan put in place by coastal governorates to support shoreline protection and clean-up activities. These plans will be in support of the Disaster Response Framework, the National Oil Spill Contingency Plan (this plan) and other local facility oil spill response plans. They will focus on logistical support, manpower, transport and waste management resources.

Lead – The entity within a Unit with primary responsibility for the Unit's functions

Lead Agency - The authority within the national government designated under this plan as having responsibility for response to oil spill emergencies within their jurisdiction.

Leak – any release of hydrocarbon products from damage to a vessel, pipeline, valve, tank or another oil handling infrastructure.

Maritime Public Domain of the Republic of Lebanon – this includes all marine waters within Lebanese jurisdiction including the Territorial Sea and the Exclusive Economic Zone (EEZ)

Mobilize – To assemble and move people or resources to a new purpose or location in response to an incident.

Net Environmental Benefit Analysis – the assessment of the advantages and disadvantages of different oil spill clean-up responses, including comparison with each other and with natural clean-up.

National Operations Room – the National Operations Room (NOR) is a response room established at the presidency of the Council of Ministers (COM) to respond to National Disasters and Crisis according to a defined National Response Framework (NRF) for management crisis and disasters.

Oil - means petroleum in any form including crude oil, fuel oil, sludge, oil refuse and refined products.

Oil pollution incident (oil spill) - means an occurrence or series of occurrences having the same origin, which results or may result in a discharge of oil and which poses or may pose a threat to the marine environment, or to the coastline or related interests of one or more States, and which requires emergency action or other immediate response.

Offshore unit - Any fixed or floating offshore installation or structure engaged in gas or oil exploration, exploitation or production activities, or loading or unloading of oil.

Petroleum Activities - The planning, preparation, installation and execution of activities associated with a subsea Reservoir, such as Reconnaissance, Exploration, Production and exploitation, laying pipelines, Development of Facilities, Production from Reservoirs, Transportation, as well as cessation of any such activities and decommissioning of a Facility. Transportation of Petroleum in bulk by vessel and vehicle shall not be included.

Plan Custodian – the agency or ministry with responsibility for implementation and management of the National Oil Spill Contingency Plan.

Preparedness – action taken by a state, or private company to prepare for an oil spill

Public Maritime Domain – shoreline until furthest distance that the waves reach in the winter in addition to sandy and pebbly beaches, streams and lakes that are connected directly to the sea.

Response - Any actions taken to prevent, reduce, monitor or combat oil pollution

Sea ports and oil handling facilities - Those facilities which present a risk of an oil pollution incident and includes, inter alia, sea ports, oil terminals, pipelines and other oil handling facilities.

Sectoral Center – A response center established by the Affected Ministry to support any emergency response including oil spills.

Shall – a requirement of an agency, ministry or other entity to carry out an action or task to support the contingency planning process of response actions.

Ship - A vessel of any type whatsoever operating in the marine environment and includes hydrofoil boats, air-cushion vehicles, submersibles, and floating craft of any type

Support Agency - The entity assigned to provide assistance to the Unit Lead in support of the response

Territorial Sea – The area, also known as territorial waters, includes all waters from the national baseline out to 12 nautical miles from the baseline

Tier – refers to the level of response required to combat a spill.

1 TRAINING AND EXERCISE

A critical part of an effective response is ensuring that personnel have the skills, knowledge and understanding they need to carry out their specific response role. Therefore, a comprehensive training and exercise program will need to be developed in support of this plan. This training program will be under the remit of MOPWT – DGLMT as the oil spill National Competent Authority (NCA). Here some guidance is given on international best practice which will inform the training matrix.

1.1 Training: IMO model courses

1. **IMO Level 1 basic training course:**

The course has been developed to be conducted as an intensive, 5-day course with approximately half of the course time in the form of practical exercises. The course syllabus will cover basic oil spill response principles, utilization of response equipment, health and safety and spill management. The main characteristics of first responders is that they are able to manage and lead a smaller group of responders, having the basic technical and communications skills.

Tier 1, 2 and 3 Training requirements

All members of Tier 1, 2 and 3 response teams, including those at a local and operation level such as company operators, fisheries rangers, and municipal workers who may be involved in oil spill clean up should attend as it forms the basis of oil spill knowledge and equipment deployment. For staff who will form a part of a spill management team at all three tiers it is an essential first course for those who have not attended any equivalent training

2. **IMO Level 2 Supervisor/On Scene Commander:**

This course is designed to be conducted either as an intensive one week course or in modular fashion. The course will describe international spill sources, spill prevention, risk assessment, response strategies, response techniques including practical equipment training, spill management, health and safety, waste management spill compensation and media response. The course concludes with a short table top exercise.

Tier 1 and 2 Training requirements

All members of the oil spill management team at Tier 1 and 2 should attend this course, but only after they have completed the Level 1 course. This would include personnel, such as fisheries rangers and municipality staff who may be involved in management of clean up teams.

Tier 3 training requirements

Selected members of the National Oil Spill Management Team should attend this course. This will include the all personnel designated as NOSIC or Deputy, the NOSIC Command Staff, all potential ICAG members, the Section Heads of Operations, Planning, Logistics and Finance and their various Divisional Heads.

3. **IMO Level 3 Administrators and Senior Managers Seminar:**

This course is designed to ensure senior managers are aware of the principles of oil spill response, such that they can understand and make decisions, if required, on the information provided by the National Oil Spill Incident Commander. It is designed be conducted as an intensive two- day seminar, but understanding that senior staff may find this difficult it can be broken into two one day seminars.

Tier 1, 2 and 3 Training Requirements
Senior managers and supervisors of ports, oil terminals and offshore installations, having supervision over the Tier1 or 2 plan holders, should attend the course. For Tier 3, the Senior Staff of Ministries and Directorates, having oil spill responsibilities should also attend.

1.2 Exercise

1.2.1 Minor training exercises

These will be required initially to teach participants about the Incident Management System and the performance of their roles within the organization. As expertise grows, these exercises will be developed in order to coordinate and refine response efforts for a variety of more complicated spill scenarios. Such training and exercises are critical to a successful preparedness and response effort.

Training and exercise activities include a variety of participants, including spill management teams, field responders, regulators, and local community members. These efforts enable participants to work together as one team in conducting simulated responses to hypothetical incidents in order to demonstrate proficiency and validity of response plans.

1.2.2 Major Exercises

The ultimate test of a contingency plan is measured by performance in a real emergency, and the effectiveness of the plan should be examined in the light of any actual emergency response. It is vital that a program for developing and strengthening the NOSCP should include an annual exercise program to test the national contingency plan through realistic exercises.

Four different types of exercise can be identified namely:

1. **Notification exercises:** Notification exercise test the procedures to alert and call out the response teams. They can be used to test communications systems, check the availability of personnel and the agreed emergency (24 hour) notification arrangements. Such exercises will typically last one hour and may be held at any time of day or night either announced in advance or held unannounced. **For all tiers these should take place every six months**

2. **Table top exercises:** Table top exercise normally consist of interactive discussions based on a simulated exercise scenario amount the members of a response team but do not necessary involve the mobilization of personnel or equipment. These exercises focus on the roles and actions of the individuals with specific tasks as defined in the National Oil Spill Contingency Plan, the interactions between the various parties and the development of response strategies and the suitability or deployment times of equipment. A table top exercise might typically last between half a day and a full day and should be organized in advance in order to ensure the availability of personnel. **For Tiers 1 and 2 these exercises should take place every six months**

3. **Equipment deployment exercises:** Equipment deployment exercise involve the deployment of oil spill response equipment at particular locations in response to an exercise scenario. The aim is to test the response strategies in place for a particular oil spill scenario and test the serviceability of the equipment. These exercises test the capability of a local team to respond to a Tier 1 or Tier 2 type incident. They provide experience of local conditions and of different spill scenarios, and they

enhance individual skills and teamwork. Equipment deployment exercise typically last for a whole day.

For Tiers 1 and 2 these exercise should take place every three months

4. **Incident Management Exercises:** Incident management exercises are more complex in that they simulate several different aspects of an oil spill incident simultaneously and usually involve third parties outside the organization which is being tested. Such an exercise may be of 'limited scope' with organizations using their own personnel to role-play the main external parties. However, it is more beneficial for such exercises to be 'full scope' where outside agencies and organizations are invited to play their own roles within the exercise. Incident management exercises require significant planning in terms of availability of personnel, the development of an appropriate exercise scenario and the physical arrangements for staging such events, especially when combined with an equipment deployment exercise. Incident management exercises usually last one long day. Occasionally however, it is worth carrying on into the second day to enable to full planning process to take place.

   For Tier 3, "full scope" exercises should take place at least once every two years, with a "limited scope" exercise annually.

References:

- IPIECA/IOGP Good Practice Guide: Oil spill exercises (July 2014)
- IPIECA/IOGP Good Practice Guide: Oil spill response training (February 2014)

2 GUIDANCE FOR THE DEVELOPMENT OF TIER 1 PLANS

The following element must be covered in a tier 1 plan:

1. **Risk Analysis:** In line with the process developed for the NOSCP, facilities and operators must assess the oil spill risk from their operations. The risk analysis includes the identification of possible spill sources and the probability and estimated volumes associated with each source (spill scenario). The consequence of each scenario is then assessed to provide an overall picture of an operations oil spill risk. Operators should consult the IPIECA/OGP document 'Contingency Planning for Oil Spills on Water', 2015 for further guidance.

2. **Tier Definitions:** In line with this plan operators and facilities are required to ensure that the response scenarios are defined by tier. Due to the nature of risk in Lebanon national oil spill response resources may be mobilized by a facility at a Tier 2 level, whilst management of an incident remains at a local level.

3. **Incident Reporting:** Timely reporting of an incident is critical to an appropriate response by the owner as well as government officials and other parties with a role to play in oil spill response. Incident reporting requirements in Lebanon are given in Volume A of this plan as part of the response procedures.

4. **Response Time Frames:** Guidance is given for response timeframes in volume A of this plan as part of the response procedures. In general Tier 1 resources, i.e. on site resources should be deployed within 1 hour.

5. **Spill Response Organization:** It is important that oil spill plans for facilities describe the organization or team(s) that will be utilized to implement the tactical activities and manage the response. This will be in line with the Incident Management System used in the NOSCP.

6. **Plan Implementation and Response Strategies:** The national response strategy is detailed in Volume A of this plan and in line with this, facilities should develop a strategy for responding to oil spills both in terms of implementing the plan and developing a response strategy.

7. **Waste Management:** The plan should identify resources to transport any recovered oil and oily debris to collection and disposal locations and identify equipment and temporary storage sites which can be used for collection and reception of recovered oil and oily debris.

8. **Decontamination:** Decontamination of resources used in a response should be considered prior to a response and many decontamination facilities should be mobilized in the early stages of a response.

9. **Demobilization and Termination of Response:** The progress of the clean-up operation should be monitored using inputs from aerial surveillance and site supervisors, to reassess response decisions. Each area will require different standards of cleanliness, for example amenity beaches are normally cleaned to a higher standard than expose rocky headlands that may be cleaned naturally.

10. **Contingency plan testing and update requirements:** After an oil spill contingency plan has been developed it is important that the elements of the plan are tested regularly to ensure that planning assumptions are correct and that the plan works as anticipated.

Further guidance can be found in the IMO Manual on Oil Spill Response Volume II 4th Edition, a model contents list is given in Annex 2 of this Volume (Volume D).

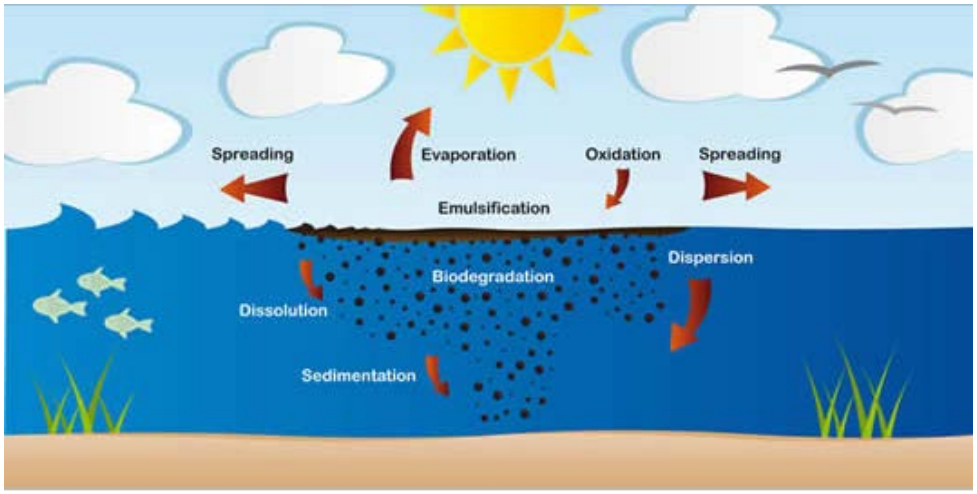
3 BEHAVIOR AND FATE OF OIL

When oils are spilt on the surface of the sea they undergo a series of changes which are collectively known as weathering. Most oils will initially **spread** rapidly. The rate of spread will be determined by the volume of oil spilt and the rate of its release. A large, sudden release of oil will spread more rapidly than a slow seepage. In the longer term, the rate of spread and the thickness of the oil film will be determined by the type of oil. The area of sea affected can be considerable as theoretically the oil will spread until its thickness is about 0.1 mm or less, depending on the pour point and viscosity of the weathered oil. This means that a spill of 1 tonne of oil will eventually result in a slick covering 14,000 m (equivalent to a circle with a diameter of 130 m). In contrast, some oils which are carried in tankers as heated cargoes or waxy crude oils may solidify in contact with the sea and relatively thick layers of oil, or even lumps, may occur. As the oil spreads, the lighter fractions **evaporate**, causing the viscosity of the oil to increase. During the process of evaporation and spreading, many oils will absorb sea water and, through wave action, this forms a viscous water-in-oil **emulsion** known as "chocolate mousse".

Some of the spilt oil will **disperse** naturally and the rate at which this occurs will depend on the oil type and the sea state. For example, light oils in heavy seas may disperse completely in a few days. Conversely, viscous oils, or those which form viscous emulsions when weathered, will not disperse to any great extent and may persist on the sea surface for weeks. Once dispersed the oil will be available in the water column to biodegradation, the rate of biodegradation will depend on a number of factors such as oil types, temperature and the availability of micro-organisms. Once in the water column oil may sink to the sea bed either during to weathering increasing its specific gravity to greater than 1, or due to adhesion to sediment particles within the water which may then fall out in areas of low water movement, this is known as **sedimentation**. In addition, oil may be **oxidized** in sunlight or **dissolve** in the water column although these process account for only a small percentage of the oil. These processes are shown in Figure 3.1 below.

Evaluation of these factors, and in particular the properties of the oil which has been spilled, will all have to be taken into account by the On-Scene Commander or Incident Commander when deciding the most appropriate response action in an individual case.

Figure 3.1: Weathering of Oil on Water



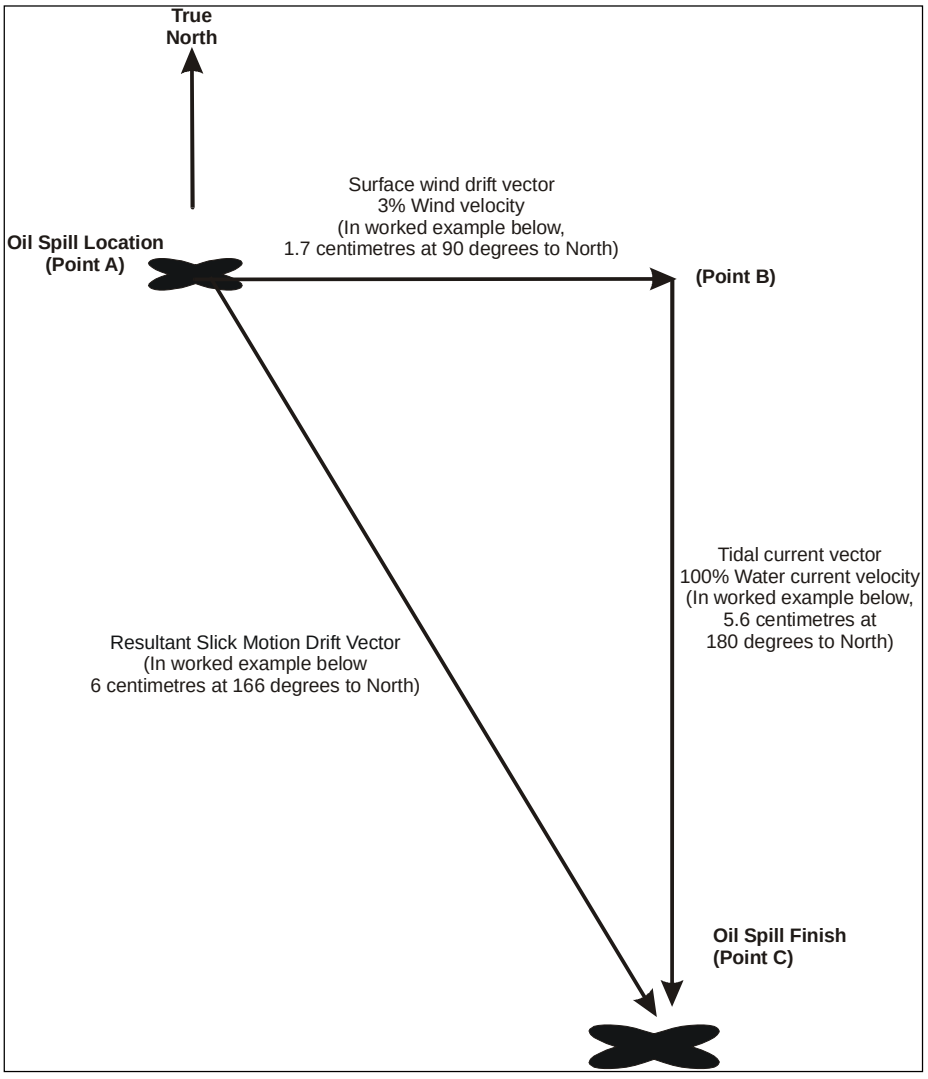
The behavior and fate of the oil for key response scenarios as identified during the risk assessment process has been carried out using the oil spill model, see volume B of this plan on strategy development. Although care should be taken when interpreting oil spill models it does help in broad terms to understand how the oil will behave and therefore the most suitable response strategy to use.

3.1 Movement of Oil

Slick movement can be predicted manually to provide a rough guide to possible direction and speed of slick movement, which may assist in developing an appropriate response strategy. It should not be considered a substitute for visual monitoring of slick movement throughout the oil spill response in the field.

The oil slick will move at approximately 3 percent of the wind speed and 100 percent of the current speed. Estimating slick movement and direction may be done manually by vector addition using an estimate of current speed and wind speed as indicated in Figure 3.2. In addition, oil spill trajectory modelling can be used to make an assessment of oil movement. Both these methods should be used in conjunction with aerial surveillance.

Figure 3.2: Manual prediction of slick movement



References:

- *IMO Manual on Oil Pollution Section IV*
- *ITOPF TIP 2 Fate of Marine Oil Spills*

3.2 Wind and Current in Lebanese Waters

The general wind direction along the Lebanese coastline is southwest (Figure 3.3). Wind speeds are generally low along the coastline (Table 3.1); yet spatial variations are observed (Figure 3.4). Satellite derived offshore wind speed (within 20 km from the Lebanese coastline and at 50 m above ground level) estimates have been generated in the newly released National Wind Atlas of Lebanon (CEDRO, 2011). Average offshore winds were found to be highest in the North with values reaching 7 m/sec. The area stretching between Batroun and Tyre had the lowest offshore winds (Figure 3.4). While recent governmental efforts have increased the spatial distribution on meteorological stations, their data spans a short time period and often lacks rigorous quality control.

Table 3.1: Monthly averaged wind speeds at coastal stations observed at 10m above ground level (m/sec)

Month	Station						
	Beirut Airport	Beirut, Golf	Tripoli	Sour	Klaiaat, Akkar	Abde	Zahrani
January	3.4	3	1.9	3.3	7.2	2.4	4
February	7	3.3	2.4	3.4	6.1	2.9	4.6
March	3.5	3	2.3	3.2	5.1	3	4.3
April	3.1	3.1	2.4	3.1	4.5	2.9	4.1
May	3.2	3	2.2	2.9	3.5	2.5	4.2
June	3.2	3	2.1	3	3.3	2.6	3.7
July	3.4	3.1	2.3	3.1	4.2	2.7	3.7
August	3	2.7	2	2.8	2.5	2.4	3.6
September	2.8	2.5	1.9	2.9	2.8	2.3	3.7
October	3	2.3	1.6	2.6	1.8	2.3	3.9
November	2.7	2.2	1.6	2.8	3.9	2.5	4
December	3.6	2.5	1.8	2.9	5.4	2.4	4.1

Figure 3.3: Wind rose for 2008-2011: Data collected from the CIRRO operated Beirut Golf weather station

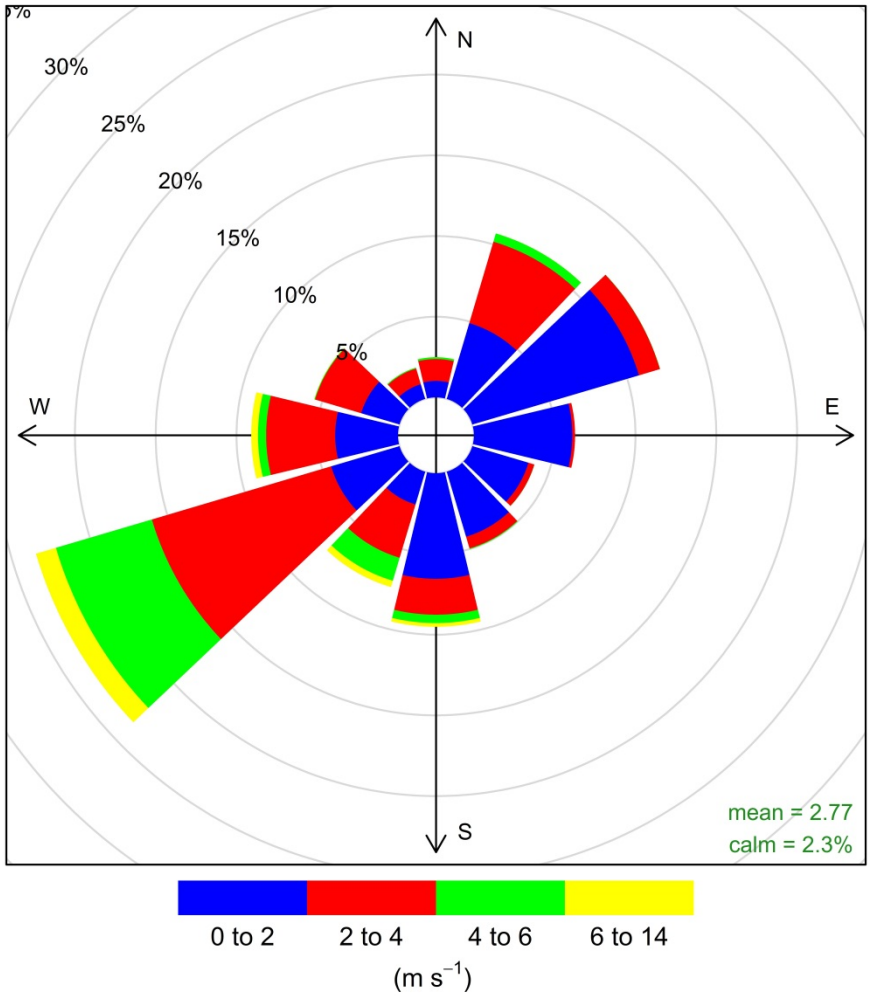
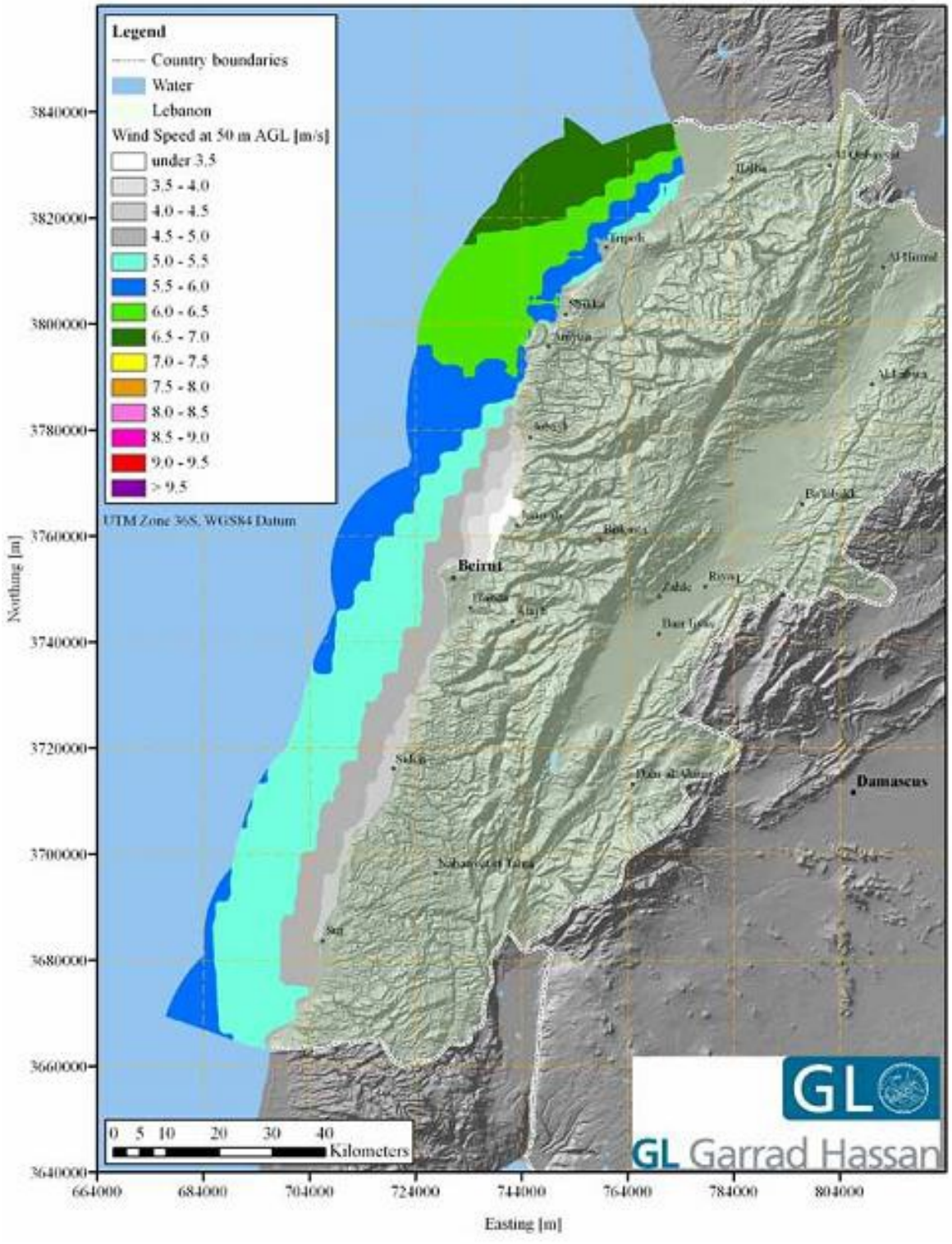
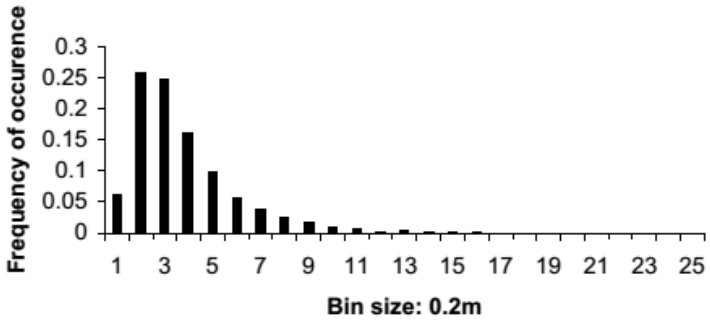


Figure 3.4: Wind speed distribution (CEDRO, 2011)

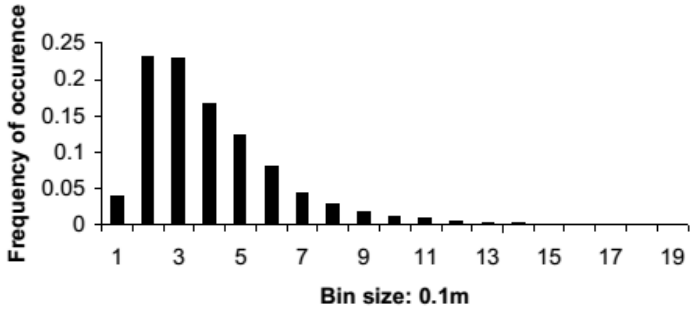


The general circulation along the Lebanese coastline is northward in keeping with the general counter-clockwise gyre of the Eastern Mediterranean. Localized clockwise eddies and small gyres occur as a result of bays, submarine canyons, and headlands (Geodicky, 1974; Lakkis et al., 2014). Vertical stratification occurs in the hot dry summer months. During the summer, surface temperatures can go up to 30°C, with a thermocline developing at a depth between 35 and 75 m. The water column during the rest of the year is homothermic (Lakkis et al., 2014). Mean monthly wave heights vary between 1 and 0.2 meters; yet waves in exceed of 5 meters occur at low frequencies (Figure 3.5) (Kabbara, 2005). The most intense waves are experienced between January and February. In Beirut, waves propagate mostly from 210°-300° sector, with the highest waves propagating from the 240°-270° sector. In Tripoli, waves mainly propagate from the 270° to 360° sector. Spatially detailed local and long-term data on waves and currents are generally missing, although recent monitoring stations have been installed in Tripoli and Beirut ports.

Figure 3.5: Annual histogram of significant wave height (in meters) (Kabbara 2005)



(a) Wave heights measured in Beirut



(b) Wave heights measured in Tripoli

The offshore coastal strip is characterized by a very narrow continental shelf, crossed by deep canyons that go down to depths in excess of 1,000 meters in a short distance from the coast. The seabed topography is the continuation of the inland geomorphology, with steep valleys corresponding largely to active tectonic faults (CNRS, 2009). A bathymetric survey of the Lebanese EEZ was conducted in 2003 by the SHALIMAR survey that used a Simrad EM-300 multibeam echo sounder (Carton et al., 2009), Figure 3.6. The survey showed that the water depth off the coast of Lebanon increases westward, reaching 2000 m in the abyssal plain of the

Levant basin. The continental shelf is relatively wide in the north and south. Between Beirut and Batroun, the shelf is extremely narrow and the margin exhibits its steepest slope, with the water depth dropping from 100 to 1500 m in less than 5 km (Carton et al., 2009). Yet the contours do not extend to shallow waters; the CANA-CNRS research vessel which has been equipped with a Multi- Beam Echo Sounder System is in the process of surveying the bathymetry of the coastal strip between the coast and up to 10 km seaward (0-200 meters depth). Once complete this will connect the inland geomorphology with the seabed relief already mapped during the bathymetric cruise SHALIMAR and Spectrum and PGS (CNRS, 2009). The CANA project has conducted the first coastal bathymetric campaign in November-December 2013 to map the area around Beirut.

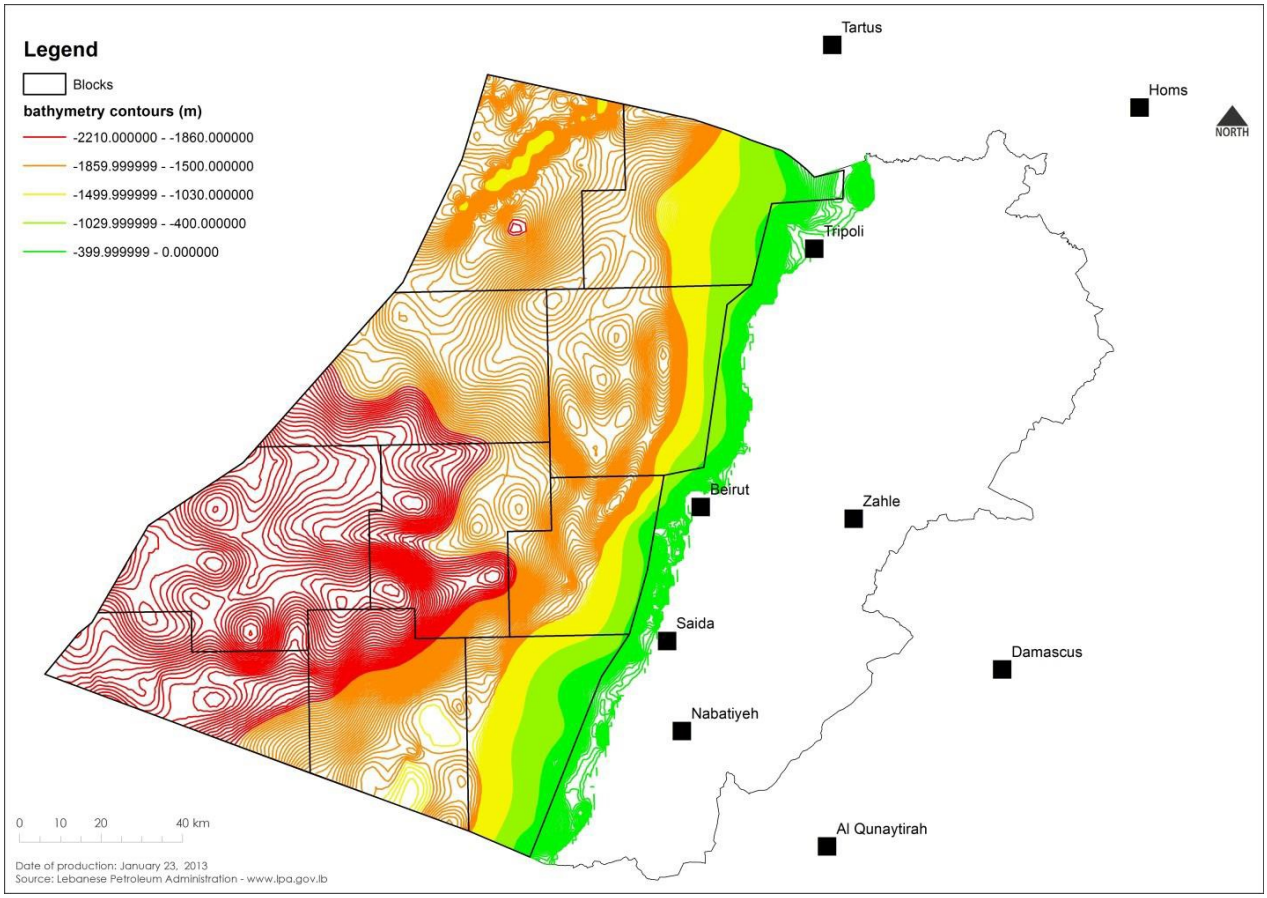


Figure 3.6: Bathymetry of the Lebanese waters as determined by the Spectrum and PGS survey

References:

- ITOPF Tip 2 Fate of Marine Oil Spills
- IMO Manual on Oil Pollution Section 4: Combating Oil Spills.

4 RESPONSE STRATEGY GUIDANCE

4.1 Action to terminate or reduce the outflow of oil from the source

The first priority of a ship's captain, the operator of oil handling facility or the OIM of an offshore installation must be to ensure the safety of personnel and terminate the outflow of oil as quickly as possible. The objective will then be to recover the oil as close to the discharge source as possible in order to prevent widespread dispersal and to ensure maximum recovery.

4.2 Monitoring and Surveillance

Following an oil spill, or reports of an oil slick, the first response must be to assess the severity and potential severity of the incident. A critical part of this process will be to observe the slick if appropriate i.e. a significant quantity offshore or spreading into the marine environment. This is best done via aerial surveillance from either rotatory or fixed wing aircraft. The spill will be assessed in line with recognized methodologies such as the Bonn Agreement Code, Table 4.1

Table 4.1: The BONN Agreement Color Code for Oil Spills (2003)

CODE	APPEARANCE	APPROXIMATE THICKNESS (µM)		LITRES PER KM²
		MINIMUM	MAXIMUM	
1	Sheen (silver/grey)	0.04	0.3	40 – 300
2	Rainbow	0.3	5.0	300 – 5000
3	Metallic	5.0	50	5000 – 50,000
4	Discontinuous true color	50	200	50,000 – 200,000
5	Continuous true color	200	>200	200,000 - > 200,000

The observer will also take note of movement of the oil slick on the water to assess likely impacts, see section 3 movement of oil, of this volume.

If no marine or coastal resources are threatened the decision may be taken to leave the oil to disperse naturally. In this case it is critical that the slick is monitored on a regular basis until it is fully dispersed to ensure that no sensitive resources are threatened.

The planning section of the Incident Command Team will manage surveillance activities by considering information provided from overflights, together with remote sensing data provided by the CNRS Remote Sensing Center, whilst the LAF, through the operations section, will be responsible for carrying out surveillance flights.

References:

- *IMO Manual on Oil Pollution Section IV*
- *REMPEC Guide for combating accidental marine pollution in the Mediterranean*
- *ITOPF TIP 1 Aerial Observation of Oil Spills*
- *ITOPF TIP 2 Fate of Marine Oil Spills*
- *IPIECA/OGP Good Practice Guide: Aerial observation of oil spills at sea*

4.3 Containment and Recovery of Oil and Sea

In principle, containment and recovery of oil at sea and as close to source as possible is a favorable response action. However, operations may be complicated, require large amounts of response equipment and resources and generally have low success rates in terms of the amount of oil recovered. This equipment is generally more effective if conditions are calm or sheltered i.e. within a port or harbor, and booms can be used to contain the oil close to source.

References:

- *IMO Manual on Oil Pollution Section IV*
- *REMPEC Guide for combating accidental marine pollution in the Mediterranean*
- *ITOPF TIP 3 Use of Booms in Oil Pollution Response*
- *ITOPF TIP 5: Use of skimmers in Oil Pollution Response*

4.4 Application of Dispersants

Natural dispersion is a slow process and cannot be relied upon to remove the threat from large oil slicks. The process can, however, be accelerated by the addition of chemical dispersants. For further guidance on the use of dispersants in Lebanon see section 8. Dispersion describes the process by which the oil breaks into droplets and is spread into the water column. Chemical dispersant speed up this process and also prevent any recoalescence.

The effectiveness of dispersant is primarily influenced by oil type. They are unlikely to be effective on medium to heavy crude oils or heavy fuel oils. Similarly, attempts should not be made to use dispersants on light oils or sheens as such slicks will disperse and evaporate rapidly naturally.

In addition, the dispersability of oil will reduce rapidly over time as the lighter fractions evaporate, hence there is generally a 'window of opportunity' for dispersant use, after which they will become less effective. The length of this window will vary depending on oil type and environmental conditions such as temperature, wind, wave energy etc. Prior to starting dispersant operations, a dispersability test must always be done to ensure the best benefit.

References:

- *IMO Manual on Oil Pollution Section IV*
- *REMPEC Guidelines for the use of dispersants for combating oil pollution at sea in the Mediterranean region.*
- *ITOPF TIP 4 Use of dispersants to Treat Oil Spills*
- *ITOPF TIP 2 Fate of Marine Oil Spills*
- *IPIECA/OGP Good Practice Guide: Dispersant: Surface application*
- *IPIECA/OGP Good Practice Guide: Dispersant: Subsea application*
- *IPIECA/OGP Good Practice Guide: At-sea monitoring of surface dispersant effectiveness*

4.5 In-situ Burning

In-situ burning (ISB) is a response technique that combusts vapors from oil slicks and converts the hydrocarbon mixture into predominately carbon dioxide and water with further particulates then released into the atmosphere. All ISB operations require:

- Sufficient fuel to generate an ignitable concentration of vapors, i.e. the oil must be fresh prior to the evaporation of all light ends.
- An ignition source to instigate the burn
- Sufficient thickness of oil, greater than 2-3 mm, to sustain a burn.

For spills on water there are no boundaries to prevent spreading and thinning and therefore specialized booms will be needed to corral the oil to a sufficient thickness. This specialized equipment is available through international response contractors.

The state of the sea can limit the success of any burn and choppy seas may extinguish the fire altogether. Once alight the slick itself needs to reach sufficiently high temperatures to keep the fire burning. The viscous residue that can be left following in-situ burning resembles the consistency of toffee, and can be difficult to recover. Residues also have the potential to sink and therefore may smother or be toxic to bottom dwelling marine species.

References:

- *IMO Manual on Oil Pollution Section IV*
- *IPIECA/OGP Joint Industry Project Finding 5: Guidelines for the selection of in-situ burning equipment.*

4.6 Protection of Sensitive Areas

As part of the oil spill risk assessment process, data on shoreline type as well as environmental and socio-economic sensitivity was brought together into a GIS system. This is a resource that can be built on but will act as a valuable tool in identifying sensitive areas which may be impacted by an oil spill. Strategies for protection can then be developed in Tier 1 and 2 plans. At a national, Tier 3 level, key areas for protection have been identified and in the event of a spill threatening the coastline these areas would be protected as a priority using the resources available.

References:

- *IMO Manual on Oil Pollution Section IV*
- *ITOPF TIP 11 Effects of Oil Pollution on Fisheries and Mariculture*
- *ITOPF TIP 12 Effects of Oil Pollution on Social and Economic Activities*
- *ITOPF TIP 13 Effects of Oil Pollution on the Marine Environment*
- *IPIECA Report Series Volumes 1, 2, 3,4,6,9.*
- *IPIECA/OGP Good Practice Guide: Dispersant: Surface application*
- *IPIECA/OGP Good Practice Guide: Dispersant: Subsea application*
- *IPIECA/OGP Good Practice Guide: At-sea monitoring of surface dispersant effectiveness*

4.7 Shoreline Clean up

The priority in the event of a spill offshore will be to deal with the oil at sea, be that by the use of dispersants or by mechanical means, or more likely by a combination of both. However, it is inevitable that if there is a large spill offshore (particularly of a more persistent oil), or if a spill is from a land based source, that there may be some shoreline impact. This will dramatically increase the time, cost and impact of the spill. The sensitivity mapping should be used to assess which areas are most likely to be affected and how to focus resources. Local Tier 2 plans should include specific shoreline clean-up strategies and identify available resources. See section 2 on the requirements for local planning.

The most appropriate shoreline clean-up strategy will be developed by the Incident Management Planning section with guidance from the Ministry of Environment and other national and local environmental experts. The most appropriate clean-up strategy will depend on many factors such as shoreline type, ecological sensitivity, access and other logistical considerations, see Table 4.2.

Whilst general guidelines for shoreline clean-up are given here it must be remembered that each spill scenario is different. A shoreline clean-up strategy should be developed on a case by case basis. Local area or municipality plans should plan in detail for the logistical elements of shoreline clean-up at a local level.

Guiding principles for shoreline clean up

1. Recognizing that shoreline clean-up is a local issue calling for local support
2. Minimizing the movement of stranded oil
3. Planning comprehensive contingency arrangements in anticipation of potential incidents
4. Building an organizational structure that provides effective support and strong oversight, to ensure both the safety of personnel working on the shoreline and that clean-up techniques are properly executed
5. Adopting a standardized protocol for reporting shoreline oiling (Shoreline Clean-up Assessment Technique—SCAT)
6. Selecting clean-up techniques on the basis of a net environmental benefit assessment (NEBA) taking into account shoreline type, degree of oiling and oil characteristics
7. Agreeing realistic end points, achievable by available clean-up techniques and matched to shoreline ‘use’ or ‘services’ provided
8. Working with the weather and tides
9. Minimizing secondary contamination by maintaining separation between hot (dirty) and cold (clean or treated) zones
10. Managing and minimizing oily waste and, where possible and appropriate, segregating waste streams at the source.

Table 4.2: Shoreline clean-up techniques for shoreline types

Clean up Technique	PASSIVE				ACTIVE											
	Debris Removal	Natural Cleaning	Bioremediation	Sorbents - passive use	Recovery of floating oil	Trenching	Manual recovery of stranded oil	Surf washing	Flushing/ flooding	Sediment washing	Boulder washing	High pressure washing	Use of chemical agents	Sieving	Beach cleaning machinery	Harrowing/ ploughing
Sheltered Rocky Shore	✓				✓		✓		✓							
Exposed Rocky Shore	✓	✓														
Wetlands/ marsh/ mangrove	✓	✓		✓			✓		✓							
Cobble and boulder	✓				✓		✓		✓		✓	✓	✓			
Exposed sandy beach	✓				✓	✓	✓		✓	✓				✓	✓	✓
Sheltered sandy beach	✓				✓	✓	✓		✓	✓				✓	✓	✓
Shingle shoreline	✓				✓		✓	✓	✓	✓				✓	✓	✓
Manmade structures	✓				✓		✓	✓	✓			✓	✓			

References:

- *IMO Manual on Oil Pollution Section IV*
- *REMPEC Mediterranean Oiled Shoreline Assessment Guidelines*
- *ITOPF TIP 7 Clean-up of Oil from Shorelines*
- *IPIECA/OGP Good Practice Guide: A guide to oiled shoreline assessment (SCAT) surveys*
- *IPIECA Report Series Volume 3: Biological Impacts of Oil Pollution Coral Reefs*
- *IPIECA Report Series Volume 4: Biological Impacts of Oil Pollution Mangroves*
- *IPIECA Report Series Volume 6: Biological Impacts of Oil Pollution Saltmarsh*
- *IPIECA Report Series Volume 9: Biological Impacts of Oil Pollution Sedimentary Shores*
- *IPIECA Report Series Volume 7: Biological Impacts of Oil Pollution Rocky Shores*

5 SPILL SAMPLING

Spill sampling should be carried out as soon as possible after a spill. It is likely that the spiller will have their own procedures to take samples of the oil spill in order that they may take responsibility for their oil spill but not for other oil types that may be found to be associated with the spill. However, part of the national oil spill response in Lebanon will be a capacity to take and analysis oil spill samples. CNRS, as the national scientific institute, together with other academic institutions will have the capacity to carry out this analysis and could therefore co-ordinate the response in this area through the ICS structure.

In addition to authenticating the origin of the oil pollution a spill monitoring program may be put in place to:

- Establish the risk of transfer of contaminants to the human food chain
- Ascertain the effects of the pollution on commercial fish and shellfish to support decision-making regarding the need, or otherwise, to impose fishing restrictions.
- Verify the cause and effect, i.e. to establish whether or not any environmental effects observed are directly attributable to elevated oil concentrations arising from a particular pollution event.
- Measure hydrocarbon concentrations in sediment or water to aid decision making over the continuation or termination of the response
- Determine the decline of hydrocarbon concentrations in the marine environment and to monitor recovery.
- Identify conditions appropriate for initiating and sustaining restoration measures.
- Demonstrate that damage caused by a spill has been evaluated, that recovery is underway and that concentrations of oil in the marine environment are returning to background levels.
- Address monitoring requirements set out under applicable national or international regulations such as standards for bathing waters.

Samples should only be taken by well trained personnel after an area risk assessment has been carried out. Immediately following a spill, when the oil is fresh, it will be particularly important to carry out air quality testing to ensure that there is no explosive atmospheres or Hydrogen Sulphide present. As a guide a minimum of 1 sample of the slick should be taken per day offshore (if at all possible) and along the shoreline representative samples of the oil should be taken. Water content in the oil samples should be kept to a minimum and consideration should be given to the weathering of the oil and where necessary multiple samples taken.

Sampling equipment will include:

- **Suitable Containers:** Where possible containers should be glass with a screw cover and a seal which would not be affected by the oil. The use of metal or plastic containers may interfere with the analysis.
- **Tamper Seals:** As proof against unauthorized opening, the sample container should be sealed with wire and a lead or sealing wax seal. Alternatively, adhesive labels with a signature stuck on the bottle top in such a way that they have to be broken to open the bottle are acceptable. The bottle should then be placed inside a plastic bag, which

should be sealed with a further adhesive label in the same way as for the sample bottle to ensure that it is not tampered with.

- **Labels:** Standard labels can help to keep a record of all samples and ensure the transfer of the sample is tracked to ensure the chain of evidence.
- **Containers and equipment for collecting samples:** This equipment may vary depending on the type of samples being taken and the operational area. In most cases it should be possible to collect a sample directly into a storage container.
- **PPE:** As a minimum those carrying out samples should wear overalls, boots, gloves and have access to air monitoring as appropriate.

References:

- *BONN Agreement Counter Pollution Manual Chapters 31-33*
- *IMO Manual on Oil Pollution Section IV*
- *MCA STOp Notice 4/2001*
- *Sampling and monitoring of Marine Oil Spills Technical Information Paper 14 ITOPF.*

6 ENVIRONMENTAL AND SOCIO-ECONOMIC RESOURCES: PRIORITIZING FOR PROTECTION (NEBA)

In the event of an oil spill incident of any magnitude it is likely that, at least in the short to medium term, there will be some degree of environmental impact. The Incident Commander/On Scene Commander will have to decide how the resources available may be best used to reduce overall environmental impact. This assessment of environmental impact, and the priorities for protection, is a responsibility of the Planning Unit and as such the MOE will work with other ministries such as the MOA and CNRS to determine NEBA and to feed this information to the command staff developing the Incident Action Plan (IAP). In the case of tier 1 and 2 spills this process will be carried out by the Local Incident Commander (LIC).

Net Environmental Benefit Analysis (NEBA) is a qualitative process which is used by response managers to establish priorities for protection. Different shoreline types and flora/fauna vary in their sensitivity to oil pollution and this process involves consideration and judgement to compare the likely outcomes of using different oil spill response techniques. The advantages and disadvantages of different response techniques need to be compared with each other and with natural clean-up to determine which approach will result in the least overall harm to the environment and local community. Also it is important that the response technique chosen must not cause more environmental damage that the oil itself.

The extent to which a specific area may be impacted by oil will influenced by a variety of factors namely:

- **Location:** The proximity of the spill to specific environmental resources. For example, typically an oil spill offshore may have less environmental impact as there may be less shoreline oiling.

- **Oil quantity:** Typically the more oil is spilt, particularly if a spill is ongoing, the greater chance there is of shoreline oiling and hence a greater impact.

- **Oil type (persistence and toxicity):** Lighter products evaporate, disperse and biodegrade far more readily in the marine environment, whilst heavier oils are more persistent and likely to require more active clean-up.

- **Season:** The season may affect the fate of the oil, as warmer temperatures will encourage natural removal of the oil, whilst storms and rough seas will also encourage natural dispersion. In addition, the season may affect the sensitivity of an area for example, fish spawning areas, bird breeding grounds, nesting sites etc.

6.1 Sensitivity Mapping

Using sensitivity mapping to collate all available habitat and environmental information offers responders a valuable tool to be used in response planning and assessing NEBA. A GIS mapping software has been used to collate all applicable environmental information collated during the gap assessment process so that it may be used as a contingency planning and response tool. Maps taken from this software are been included in this plan (Annex 1), they include maps showing:

- Shoreline types
- Protected areas
- Specific shoreline sensitivities – environmental and socio-economic.

The sensitivity mapping will be seen as an ongoing project with further information added as research is carried out.

References:

- *IPIECA/IOGP: Sensitivity mapping for oil spill response (April 2012)*

6.2 Protected and High Priority Areas

Following the 2006 spill from Jiyeh Power Plant a project was initiated to assess the status of coastal sensitive areas of interest in Lebanon. A number of sites were selected for evaluation, based on geographical, biological and cultural features, the potential and existing stresses and current conservation status. Following a multi-stage assessment process, 15 sites were selected as high priority for protection, 20 were selected as medium priority, with the rest (46) as low priority. These sites are shown on the GIS and in the sensitivity maps in annex 1.

There are two, legally declared, Marine Protected Areas (MPA), namely the Palm Island Nature Reserve in North Lebanon and the Tyre Coast Nature Reserve in South Lebanon. Both sites are RAMSAR sites and Specially Protected Area of Mediterranean Importance (SPAMI). In addition, there are further sites proposed for protection, Table 6.1. These are:

- Proposed coastal sites at Nakoura, Sidon rocks, Raoucheh cliffs and caves, Beirut port outer platform, Byblos, Medfoun rocky area, Batroun Phoenician wall, Ras El Chekaa cliffs, and Enfeh Peninsula.
- Proposed estuary sites at Litani estuary, Awally estuary, Damour estuary, Nahr Ibrahim estuary, and Arida estuary

All these sites are shown in the supporting sensitivity mapping and should be considered priorities for protection.

Table 6.1: Proposed Marine Protected Areas of Lebanon

Area Name	Location and Details of Sensitivity
Nakoura	Located in south Lebanon governorate, on a beautiful sandy and rocky cape. It is about 90 km south of Beirut and 10 km south of the city of Tyre. The Nakoura site is unique for vermetid platforms of relatively small size; rocks and coralligenous concretions at shallow depths; crevices and overhangs common; soft bottom areas of small sizes occasionally present in patches. The site provides nurseries, spawning and feeding grounds.

Area Name	Location and Details of Sensitivity
Sidon Rocks	Sidon Rocks is located in the marine waters of the city of Saida, located in the governorate of South Lebanon. It consists of islets of rocks and vermetid reefs in the vicinity of Saida. A beach composed of gravel is found nearby as well as the estuary of the Awally River. There is hard bottom in shallow areas, surrounded by a sandy soft bottom. Saida (Sidon) includes an archaeological and historic features site that was nominated (1984) as a UNESCO World Heritage Site. There is very low biodiversity, dominated by introduced species.
Raoucheh Cliffs and Caves	Located at Beirut's western-most tip in the governorate of Beirut. It consists of An area of limestone cliffs with two large standing rock formations (Pigeons' Rocks). It has shallow hard underwater bottoms extending over most of the area, with soft bottoms found at greater depths. It is an archaeological and historic site and a popular tourist destination.
Beirut Port Outer Platform	Located in Beirut city, in the Governorate of Beirut. This is an artificial site composed of a long jetty (>2km) that protects the port of Beirut. Consisting of concrete structures as well as rocks and boulders of various sizes it creates artificial caves and crevices which act as an artificial reef.
Byblos	This site is located in the city of Byblos, in the Governorate of North Lebanon, 40 km N. of Beirut. It consists of large vermetid reefs with significant ponds. A beach composed of gravel is found north of the area and the Byblos historic port lies to the south. Hard bottom is found in shallow areas and soft bottom with a seagrass meadow dominates deeper waters. There are archaeological and historic features.
Medfoun Rocky Area	Located in the North Lebanon Governorate, 50km from Beirut. It consists of a rocky area with moderate cliffs, hard underwater bottoms with occasional soft bottom patches. This area could be considered as partly protected since it lies within a military area.
Batroun Phoenician Wall	Located in the Governorate of North Lebanon, 55km from Beirut. It is a rocky area with important vermetid reefs and hard underwater bottoms. Shallow hard underwater bottoms extend over most of the area. Soft bottoms are found at greater depths. It is an archaeological and historic site and a popular tourist destination. A historic wall is believed to have been erected by the Phoenicians for protection from waves.
Ras Chekaa Cliffs	Located in the North Lebanon Governorate, 60km from Beirut. There is pressure on vermetid platforms, with fishing activities, harvesting activities, spearfishing, blast fishing (capsoon), agricultural runoffs, sewage/industrial runoffs.

Area Name	Location and Details of Sensitivity
Enfeh Peninsula	Located in the North Lebanon Governorate, 63km from Beirut. Consists of Limestone rocks and vermetid reefs forming a peninsula. There are shallow hard underwater bottoms; soft bottom in deeper waters. It is an archaeological and historical site.
Litani Estuary	Located in South Lebanon Governorate. The river rises in the fertile Beqaa Valley, west of Basslbek, and empties into the Mediterranean Sea north of Tyre. The Litani River is an important water resource in southern Lebanon. Exceeding 140 km in length, it is the longest river in Lebanon and provides an average annual flow estimated at 920 million cubic meters. The waters of the Litani both originate and flow entirely within the borders of Lebanon. The site is important for fisheries, and the presence of marine turtles and seagrass meadows. The habitat, a combination of physical features and living organisms that provide food, nesting, resting and shelter for fish and wildlife, has recently experienced significant changes in benthic community structure, possibly as a result of anthropogenic activity. The potential of the site for restoration is therefore apparent. Being a distinct topographic entity, identification of the Litani estuary as a protected area with defined boundaries is relatively straightforward.
Awally Estuary	The Awally is a perennial river flowing in South Lebanon Governorate The Awally is a perennial river lowing in Southern Lebanon. It is 48 kilometers (30 mi) long, originating from the Barouk mountain at a height of 1,492 meters (4,895 ft.) and the Niha mountain. The Awally is supplemented by two tributaries, the Barouk and Aaray rivers. The Awally is also known as the Bisri river in its upper section; it flows through the western face of Mount Lebanon and into the Mediterranean. The Awally river has a discharge of 10.1625 m3/s (358.89 cu ft./s), it forms a watershed with an area of about 294 km2 (114 sq. mi). The Awally river estuary is important in terms of fisheries and seagrass meadows. Habitat is a combination of physical features and living organisms that provide food, nesting and resting areas, and shelter for fish and wildlife.
Damour Estuary	Located in South Lebanon Governorate, in Damour city which is situated 24km south of Beirut. The site is characterized by a sandy bottom area with seagrass meadow in patches. The estuary is a nursery, with spawning and feeding ground for numerous species. The green turtle (Chelomian mydas) has been recorded in this site.

Area Name	Location and Details of Sensitivity
Nahr Ibrahim Estuary	Ibrahim River is a small river in the Mount Lebanon Governorate in Lebanon. It passes through the town of Nahr Ibrahim before emptying into the Mediterranean Sea. The town takes its name from the river. Today, it is one of the tourist attractions in Lebanon. The site is characterized by a sandy bottom, with seagrass meadows in patches. The estuary is a nursery, spawning and feeding ground for numerous species. The green turtle (Chelonia mydas) has been recorded here.
Areeda Estuary	The Areeda River is located in north Lebanon near the boundary with Syria. The site is characterized by a sandy bottom, with seagrass meadow in patches. The estuary is a nursery, spawning and feeding ground for numerous species. The green turtle (Chelonia mydas) has been recorded here.

6.3 Shoreline Types

Sensitivity maps, including those produced for Lebanon, often classify shorelines using a vulnerability or environmental sensitivity index (ESI) with values ranging from 1-10 where 1 is robust and resilient and 10 represents the most vulnerable. The values used to classify the shoreline type in Lebanon can be seen in the sensitivity mapping.

- **Wetlands:** Include tidal flats (ESI 7 and 9), marshes and mangroves (ESI 10). In general oil does not penetrate into the substrate as the sediments are fine preventing percolation into the sediments and the water table is often high enough to provide a barrier against the downwards migration of oil. However, it is possible that oil will become stranded after high tide in areas largely inaccessible by personnel or equipment. Oil may also become associated with marsh vegetation, or become buried following a storm event.

  Clean up is extremely difficult as additional damage to the ecosystem is likely if equipment or personnel trample the area. The best defense is to prevent oil entering the mudflat/marsh system, or to clean up any remobilized oil. Very low pressure flushing down to the shoreline may be attempted in limited areas provided it does not wash sediment away. Evidence suggests that oil may remain in sediment undergoing very slow anaerobic degradation, without causing any significant environmental impact. But it must be considered that these are important feeding areas for seabirds and wading birds. Hazing or bird scaring may be employed to try to keep birds from landing in the oiled areas for a short time, but experience has shown that these do not give long term protection.

- **Sandy Beaches:** Exposed or exposed beaches (ESI 4 and 5). While oil can more easily penetrate into coarse, dry sand finer grained sands form wet hard packed beaches less likely to permit oil penetration. On exposed shorelines, particularly in rough sea conditions, oil may become buried. It is possible that further wave action may

remobilize the oil leading to biodegradation however if oil is likely to remain buried action may be required to bring the oil to the surface for cleaning i.e. through ploughing or harrowing or other physical removal techniques. Oil that is stranded on surface may be manually removed using physical machinery but preferably manual labor which reduces the amount of waste. Other techniques such as flushing and trenching may also be used and sand washing may be effective. Sand washing machines are available but cement mixers can be used.

- **Shingle and Cobbles:** Once again these shorelines may be exposed or sheltered (ESI 3 and 4). They are often among the most difficult shoreline types to clean because oils, particularly lighter oils, will readily penetrate into the substrate. Heavily contaminated shorelines can be flushed to move fluid oil into collection points in the sea for recovery with skimmers, pumps or sorbents. For finer sediments, shingle surf washing can often be successful, however this requires an active shoreline with strong wave action. In extreme cases shingle may be cleaned off or onsite using cement mixers or similar. This must be done under careful supervision of environmental experts.

- **Cliffs and rocky coves (ESI 1 and 2):** Access is often a challenge in these areas and can present an extremely hazardous working environment. In areas with reasonable access, it may be possible to carefully remove oil from the surface of rock pools without disturbing the fauna which may well still be alive. In exposed areas, these are best left to clean naturally unless there is an overriding reason to do otherwise.

- **Ports and harbors/man-made structures (ESI 1):** Bulk oil may be recovered relatively easily from these areas using booms to contain the oil and pumps to recover it. Solid faces of wharfs and piers may be cleaned using high pressure washing and other cleaning techniques. It is possible that oil may be remobilized overtime from under wharfs and other structures, so this may have to be cleaned up gradually.

6.4 Fisheries

An oil spill, particularly if readily dispersed into the water column, will be toxic to fish. However, the toxicity will vary with the life stage of fish, with larvae being by far the most sensitive and adults the least sensitive, largely because they are able to actively avoid oil slicks. Consequently, habitats which provide spawning and nursery grounds for fish or aquaculture sites, i.e. sites where fish are raised in cages or nets (Fyke nets), should be considered priorities for protection. The Ministry of Agriculture, department of Fisheries and Wildlife, have considered a fisheries restricted zone which is all areas within 500 meters of the coastline. This would be of specific sensitivity in the event of an oil spill.

The commercial value of fisheries should also be considered, when an oil spill occurs fishing for subsistence or commercial purposes may be banned, leading to a socio-economic impact. For this reason, fishing ports should be considered sensitive sites in the event of an oil spill. A ban of fishing and fisheries, within the 500m Fisheries Restricted Zone which extends along the entire Lebanese coast, is likely to be put in place until water analysis can prove that the hydrocarbon concentration is at a suitable level. The MOA Department of Fisheries and Wildlife will work with the Syndicate of Fishermen to achieve this.

6.5 Birds

The local bird population should be considered when identifying priorities for protection. There are three types of impacts on birds:

- Effects caused by the sticky nature of oil. Oil on their plumage may destroy the insulating and water repelling property, which may ultimately cause the death of the bird.
- Toxic effects after the ingesting oil during preening, ingestion of oiled prey, inhalation of oil fumes or absorption of oil through skin or eggs.
- Indirect effects resulting from destruction of bird habitats or food sources.

If a species uses the oil water interface for feeding, the impact is likely to be greater. Table 6.2 below assesses the likely impact and resulting vulnerability for different groups of birds to oil.

Table 6.2: Vulnerability of birds to oil

Vulnerability to Oil	Group	Remarks
High	Diving coastal birds Waterfowl	These birds stay on the water most of the time. The risk of contact with oil-slicks is high and the birds do not avoid oiled area.
Moderate	Diving pelagic	These birds do not spend much time on the water surface. Risk of direct mortality due to exposure to oil is therefore smaller. Effects on reproduction from oiling and ingestion of oil has occurred.
	Shorebirds	Shorebirds rarely enter the water. Risk of direct mortality during an oil spill is therefore generally low. Indirect effects from either reduced or contaminated prey are more likely because they feed in intertidal habitats where oil strands.
	Wading birds	Do not fully immerse into the oil. However, wading birds feed in shallow areas which are usually oiled during a spill. Therefore, in addition to some contamination of their lower bodies, indirect effects can occur from ingestion of oiled prey and from loss of food sources.
	Birds of prey	Birds of prey may become oiled via consumption of oiled prey.
Low	Gulls and terns	Gulls and tern are able to readily avoid oil spills.

Local and national contingency planning should take into account areas important for birds. In Lebanon there are two coastal/marine RAMSAR sites, sites important for birds, at Palm Island and Tyre.

6.6 Marine Mammals

Over eight species of whales (sperm whale, fin whale, Cuvier's beaked whale) and dolphins (short-beaked common dolphin, long-finned pilot whale, Risso's dolphin, striped dolphin, bottlenose dolphin) are found in the Lebanese waters, with irregular sightings of the Mediterranean monk seal. CNRS has a program in place, ACCOBAMS, as part of a Mediterranean wide project to monitor cetaceans.

Whales, dolphins and other cetaceans may be at risk from floating oil when surfacing to breathe or breach. Whilst mortalities have been record it has generally been found that death resulted from causes other than oil. It is concluded therefore that they are most likely to avoid the area. Therefore, their protection, except in exceptional circumstances, would not be a priority for protection.

6.7 Turtles

Loggerhead and Green turtles are commonly found in Lebanese waters, with occasional sightings of the Leatherback and Nile soft shelled turtles.

Nesting sites for turtles which would include all sandy beaches but, particularly those around the southern beaches of Tyre, which is known to be a nesting point for the marine turtles (Chelonia mydas and Caretta caretta), should be considered as high priority for protection, as it is when nesting that turtles and hatching for juveniles are at greatest risk. Nesting generally start in May and lasts until late August with a peak around mid-July. The hatching season generally ranges from late June/early July to September.

6.8 Tourism and Cultural sites

The coastline in Lebanon represents a major touristic hub, about 70% or all touristic establishments in Lebanon are located on the coastal zone. A total of 314 hotel and touristic resorts were reported along the Lebanese coast with a high concentration in the area of Jbeil, Keserwan and Beirut.

Other sites of touristic importance include archaeological monuments e.g. at Tripoli, Jbeil, Saida ad Tyre. All these sites are shown on the sensitivity mapping, see annex 1.

6.9 Ports and Marinas

There are four main commercial ports in Lebanon, namely Beirut, Tripoli, Saida and Tyre and a number of small ports along the coastline which are primarily used for fishing and leisure purposes. The Port of Beirut, one of the largest ports on the Eastern Mediterranean coastline occupies a total area of 1.2 km^2.

There are 30 official fishing ports along the coast with 14 other, non-official, landing sites which support more than 2700 fishing vessels. As described in section 6.4 fisheries are an important economic resource and therefore these ports would be considered a priority for protection.

References:

- IPIECA Report Series Volume 8: Biological Impacts of Oil Pollution: Fisheries
- IPIECA Report Series Volume 1: Guidelines on Biological Impacts of Oil Pollution
- IPIECA Report Series Volume 4: Biological Impacts of Oil Pollution Mangroves
- IPIECA Report Series Volume 6: Biological Impacts of Oil Pollution Saltmarshes
- IPIECA Report Series Volume 7: Biological Impacts of Oil Pollution: Rocky Shores
- IPIECA Report Series Volume 8 Biological Impacts of Oil Pollution: Fisheries
- IPIECA Report Series Volume 9 Biological Impact of Oil Pollution: Sedimentary Shores
- IPIECA/IOGP Good Practice Guide: Response strategy development using net environmental benefit analysis (NEBA). (June 2015)
- ITOPF TIP 11 Effects of Oil Pollution on Fisheries and Mariculture
- ITOPF TIP 12 Effects of Oil Pollution on Social and Economic Activities
- ITOPF TIP 13 Effects of Oil Pollution on the Marine Environment

7 WASTE MANAGEMENT

Management of oil spill waste should be considered at the start of the spill response, and form part of the initial Incident Action Plan. Without effective waste management the environmental and financial impact of the spill will increase. In addition, if waste cannot be effectively moved from the spill site then the recovery operation will be compromised and possibly stopped altogether.

In development of an Oil Spill Waste Management Plan the following general waste management principles should be followed:

- **Reduce:** Reduce waste wherever possible. Only contaminated material should be recovered. Waste must be segregated depending on their nature.
- **Re-use:** Consideration should be given to re-use and make best use of waste that is produced i.e. as a fuel or raw material.
- **Recover:** Recover oil from oily waste which may then be reused.
- **Dispose:** Disposal is the least favored option as it generally has the greatest environmental impact.

An oil spill waste management plan must be developed in line with legislative requirements and following international best practice, this will be the responsibility of the MOE as the waste regulator and also head of the planning section, see volume C. The Lebanese Legislative framework for the management of hazardous waste is currently not implemented by decree and therefore the procedures outlined here are in line with international best practice including the Mediterranean Oil Spill Waste Management Guidelines produced by REMPEC. At such time as additional legislation is implemented then it is the intention of this plan that the guidelines will be adhered to.

A spill waste management plan must be approved by the Ministry of Environment. In addition, the Ministry of Environment will, where possible and practical, oversee waste storage and transport and will work with the Affected Ministry to assess options for final disposal.

7.1 Waste Management Procedures

Every spill produces specific waste streams according to:

- The type of oil spilled (characteristics and weathering of the oil spilled)
- The sea and weather conditions
- The substrate and the presence of seaweed and debris
- The recovery and clean-up techniques implemented
- The quantities recovered
- The recovered waste may consist of:
- Oil or emulsified oil recovered at sea
- Oil or emulsified oil recovered during shoreline clean-up operations
- Oiled sand and gravel
- Oiled beach debris (wood, plastic, seaweed)
- Oiled dead birds and mammals
- Tar balls
- Oil contaminated clean-up materials, equipment and protective clothing.
- Contaminated soil from storage sites

- Residues generated by wash-down stations employed to clean response equipment or to clear birds and mammals.

The first characterization of waste will be carried out on site and based on visual observation. Further waste characterization may be carried out prior to disposal.

7.2 Waste Minimization, segregation, temporary storage and transport

7.2.1 Minimization

Waste minimization must be a permanent objective during the clean-up operations and in situ handling of oil spill waste. Expert advice should be obtained for the selection of the best technical choices for clean-up. Emphasis should be put on methodical management of clean-up sites to avoid spreading and secondary contamination of unaffected sites and also by choosing the recycling options for the oiled equipment.

Principles to minimize waste include:

- Use appropriate clean-up techniques to minimize the volume of sediments collected.
- Prefer in situ washing techniques instead of the removal of oiled sediment (e.g. surf washing, sand flushing, etc.).

Avoid additional contamination:

- Prevent soil contamination by using liners under drums, tanks and at bottom of storage pits, and
- Control the accesses to the clean-up sites and protect them using lining and/or geo-textiles.

7.2.2 Sorting

Segregating the waste at the source allows for the selection of the best suited disposal methods for each type of waste, ensuring cost effective and ecologically sound treatment (and diminishes the cost related to pre-treatment). Contaminated material should be segregated into:

- Liquid
- Solid
- Non-biodegradable (e.g. oiled plastic, contaminated clean-up equipment)
- Biodegradable (oiled seaweed and fauna)

The need for the best waste segregation must be emphasized as early as possible with the appropriate management of waste collection and temporary storage. This will require the immediate use of different waste containers for the different types of waste and clear labelling and identification to avoid mixing of containers during the rest of the management process.

It is critical that response personnel be trained and informed about the importance of segregating the waste and about the related consequences and costs of mixing oil spill wastes.

7.2.3 Temporary Intermediate and Long-term Storage

Whilst depending on size and location of a spill it is likely that significant temporary storage will be needed on site. This will optimize oil recovery whilst allowing for careful management of the

oil spill waste. It is difficult to pre-designated areas for emergency storage on working sites. Therefore, it is an issue that needs to be addressed as the need arises, in careful consultation with the Ministry of Environment and other local stakeholders. Pre-designation of storage sites, for Tier 1 and 2 spills will be possible at a local level and should be addressed in local plans. (see section 2.)

Once waste is collected from the shoreline or response site it may be possible for it to be taken directly to a treatment facility. However, using **intermediate storage** sites, located at a reasonable distance from the clean-up site or multiple clean-up sites, may be an efficient and costs-effective option as they allow:

- A buffer between the temporary storage sites and the treatment (or long term storage site). This ensures that oil recovery can continue onsite and gives sufficient time to establish disposal or long term storage options.
- Sorting and repackaging of the waste as required before transferring to the long-term storage/treatment facility.
- Better management and tracking of the waste.

Intermediate storage sites must be located in good strategic locations with good access. It will be critical to assess potential environmental impacts and ensure that these sites are not located close to specific sensitivities.

As there is limited treatment and disposal capability in Lebanon, installations will need to be adapted or built, or internationally available options researched i.e. export of waste in line with the Basel Convention. As a result, it may be necessary to store waste for a number of years.

Long term storage enables:

- The storage of waste for year(s) in a secured and environmentally suitable location, gives time for the treatment and final disposal facilities to be completed, for all the categories of waste collected.
- The further sorting of the waste (once the treatment options are finalized).
- Supplying waste to the treatment installations at a rate matching their treatment capability.

It is preferable for long term storage sites to be pre-identified during the planning process and approved by the Ministry of Environment. In Lebanon this element of planning will be considered in the Tier 1 and 2 plans and in due course the MOPWT - DGLMT and MOE will hope to develop a National Oil Spill Waste Management Plan.

7.2.4 Transport and tracking

The transfer of waste from primary storage sites to intermediate and long term storage or to treatment and disposal facilities should be carried out by suitable vehicles e.g. road tankers for liquid waste and trucks for solid waste. However, it is possible that during an emergency there may be a shortage of suitable vehicles and it is likely that a variety of vehicles, not normally used for oil transport may be required. These could include vacuum trucks, tipper trucks, skips or refuse trucks.

In order to prevent secondary contamination, and ensure accountability for the oil spill waste a system for assessing the suitability and experience of waste carriers should be in place. Waste carriers should avoid spreading pollution by leaching from inappropriate transport means or lack of containment.

In addition, a system to ensure effective tracking of the oil spill waste once it leaves site should be implemented. A consignment of waste should be traced from leaving a response site and arriving at intermediate, long term or final disposal sites.

7.3 Waste Treatment and Final Disposal

Pre-treatment and treatment techniques aim to prepare the waste for final disposal, and to ensure the most effective choice of final disposal option. The choice of oil spill waste treatment method depends on the type and volume of waste and the facilities and treatment techniques available in country.

Pre-treatment techniques, which may take place at intermediate and long term storage sites, include:

- Demulsification of liquid oil
- Decantation: To remove as much water as possible.
- Filtration: To remove solid waste from liquid oil.
- Centrifugation: To remove fine solid particles from liquid.
- Separation/sorting: Physical separation of waste types
- Screening/sieving: Sorting based on grain size.

Other treatment techniques, which may include the re-use or recycling the oil spill waste include:

Thermal: The waste is burnt in an industrial or domestic waste treatment facility. Care should be taken, as facilities will often only take small quantities, or low concentrations of contaminated material. On a larger scale, cement factories and industrial kilns are an effective way of incinerating oily waste, subject to technical constraints, such as the removal of large solids, and problems associated with heavy metals, chlorine or sulphur in the waste. Co-incineration in a cement works is also a cost effective method of disposal, as waste with an adequate calorifc value can be used as a substitute for fuel that would otherwise be needed to fire the kiln. In addition, the ash resulting from waste combustion provides aluminium, silica, clay and other minerals typically added in the raw material feed stream

Biological: Processes encouraging the natural biodegradation of oil spill waste. This may be carried out onsite, or offsite in a specialized facility.

Physico-Chemical: Washing and extraction of the pollutant from sediments using water and/or an organismic solvent. Treatment with lime to stabilize the waste.

A waste treatment plan will need to be developed based on the types and quantities of oil spill waste produced.

Whilst some treatments result in the total destruction of the oil spill waste e.g. incineration often there is a final material produced which must be disposed of. Where possible these

products should be recycled e.g. as an alternative fuel source or as a construction or road building material. Ultimately if there are no other options the material may go to landfill. However, often final landfill sites will have restrictions on the hydrocarbon content permitted or the total quantity of oil spill waste they are able to accept.

Following the 2006 oil spill from the Jiyeh power plant in Lebanon a number of final disposal options were identified, Table 7.1 below. In the event of future spills in Lebanon these should all be considered and assessed for suitability.

Table 7.1: Final disposal options in Lebanon

Final Disposal Option	Existing in Lebanon	Considerations
Return of clean sediments	This was carried out with cleaned sediments following the Jiyeh spill.	• Should be carried out in close consultation with the MOE. • Sediments should always be returned to the same shoreline. • Avoid over cleaning or 'sterilization' of sediments apart from extreme cases.
Discharge of water from clean-up operations.	Water produced from separation techniques i.e. decantation, may be discharged into the natural environment.	• Should be carried out in close consultation with the MOE. • Oil content of water should always be measured and recorded prior to discharge.
Landfill	Suitable landfill sites do exist in Lebanon, however are nearly full and unlikely to be able to accept significant quantities of waste.	
Stabilization with lime for re-use as road work material	This has, to date, not been carried out in Lebanon.	• Could be carried out in the future and should be considered in the waste management plan. • Should be carried out in close consultation with the MOE.
Incineration in cement works	Three cement works in Lebanon could potentially use oily waste as an alternative fuel. Only one currently adequately equipped.	• Should be carried out in close consultation with the MOE • Pre-treatment will be required.

References:

- *REMPEC Mediterranean oil spill waste management guidelines*
- *IMO Manual on Oil Pollution Section IV*
- *IPIECA Report Series Volume 12 Guidelines on Oil Spill Waste Minimisation and Management*
- *IPIECA/OGP Good Practice Guide: Oil spill waste minimisation and management*
- *ITOPF TIP 9 Disposal of Oil and Debris*

8 USE OF DISPERSANTS

As stated in the national response strategy, outlined in Volume A of this plan, the use of chemical dispersants is one of the response strategies available to combat an oil spill. It is designed for offshore situations and should generally not be considered for shoreline situations. Dispersants work by reducing interfacial tension between the water and the oil and thus encouraging dispersion of oil droplets into the water column. These droplets are then readily available for biodegradation. Dispersants also prevent recoalescence of oil droplets and reformation of the oil slick.

8.1 Advantages and Disadvantages

The use of dispersants at sea is intended to reduce the amount of oil which would reach the coast, or environmentally or economically sensitive areas. However, the use of dispersants should be carefully considered, as it is an addition of chemicals into the marine environment and oil is not removed from the water column. The application of dispersant will speed up natural processes of dispersion and biodegradation. The advantages and disadvantages of dispersant use are outline below.

8.1.1 Advantages:

- It can provide a very quick response
- By dispersing the oil, it can reduce the fire hazard around offshore platforms
- Dispersant can be generally used in more difficult situations (wind and sea state) than the other active response options, especially containment and recovery.
- Inhibits formation of emulsions
- Cheaper than mechanical
- Dispersion does not produce wastes for disposal.
- Dispersants help in reducing shoreline contamination, and when dispersed, the pollutant is no longer subject to wind movement. It then only follows the tidal stream. Therefore, when carried out upwind of sensitive areas, dispersion reduces the amount of pollutant which would otherwise drift towards these locations.
- Reduces the volume of floating oil which reduces the impact on birds and marine mammals.
- Chemical dispersion enhances the biodegradation of the oil in the marine environment, because the massive increase of the surface area in the billions of droplets increases its availability to oil eating bacteria.

8.1.2 Disadvantages:

- Dispersants are not efficient at treating oils which have a high viscosity.
- When dispersant is used on an oil that is amenable to dispersion, it may only be applicable for the first hours or days of the operation, before the oil becomes non dispersible, due to the evaporation of the light fractions and also the emulsification of the oil, both of which increase the viscosity to a point where the oil is no longer amenable. This period is known as the “window of opportunity”.
- Dispersion increases temporary and locally the level of toxicity of in the water column, as the billions of oil droplets more readily emit the toxic fractions of the oil into the water column, thus making it more bioavailable for shallow water and seabed

organisms. As a result, dispersant should not be used in shallow waters, without special permission from the MOE

- Dispersion is not appropriate everywhere, particularly where the possibility of dilution and dissemination is reduced.
- On significant pollution, chemical dispersion is not applicable when there is little or no surface wave action. Some wave action is required to break the surface tension of the oil and allow the dispersant to penetrate the oil.
- Pollutant is not removed but only dispersed.

8.2 Factors to Consider

Table 8.1 summarizes the parameters which an incident manager should consider when developing a response strategy. Ultimately the Ministry of Environment will consider all applications for dispersant use on a case by case basis in line with these parameters and according to the decision tree in Figure 8.1.

Table 8.1: Dispersant application considerations

Factor	Considerations
Oil Type	The effectiveness of dispersants depends on the type of oil and the viscosity of the oil at ambient temperatures constitutes one of the most important factors. As a general rule beyond 5000 cSt the chances of success decrease quickly and dispersants should not be considered over 10,000 cSt. Different dispersants are suitable for different oil and an amenability test should always be carried out prior to application. Similarly, light non-persistent oils such as gasoline and diesel will not require the application of dispersant as they would be expected to evaporate and disperse very readily in the marine environment. The viscosity of oil will increase with time as it weathers, see section 3, and therefore there is generally a 'window of opportunity' for dispersant application. For this reason, the viability of dispersion should be considered as soon as possible after the spill so that responders can maximize this window. Oils of Interest: Information specific to oil types in Lebanon. Heavy fuel oils imported, condensate expected from exploration.
Sea conditions	A minimum amount of wave energy is required for the successful use of dispersants at sea. Below this minimum, the dispersed oil droplets may re-surface and reform a slick. However, if conditions become too severe the oil may be submerged by breaking waves preventing direct contact between the dispersant and the oil and so the effectiveness will diminish. The natural propensity of the oil to disperse should also be considered, in rough seas a light oil may disperse readily without the use of dispersant. The results of field trials indicate that a wind speed between 8 and 25 knots is optimum.

Factor	Considerations
Location	Once oil is dispersed into the oil column there will be a rapid although temporary increase in the toxicity of the dispersed oil in the water column. It may therefore affect marine fauna and flora and hence chemical dispersion is not applicable everywhere, particularly in shallow water. All dispersant spraying operations in Lebanon must be approved by the Ministry of Environment. In general, dispersant may not be used within any waters of 20 meters' depth or less, or within one nautical mile of any such area and further than 1mile from the shoreline. No spraying operations will be considered close to sensitive habitats or species.
Dispersant Choice	Dispersants are manufactured to different formulations and their effectiveness varies with oil types. Laboratory tests may be carried out to rank the effectiveness of one dispersant relative to another for a particular oil.
Conflicts with other response methods	In a large incident coordination of all response actions is necessary to ensure dispersant use does not overlap or conflict with other response techniques. For example, oil dispersed into the water column cannot be contained by booms or recovered by skimmers.

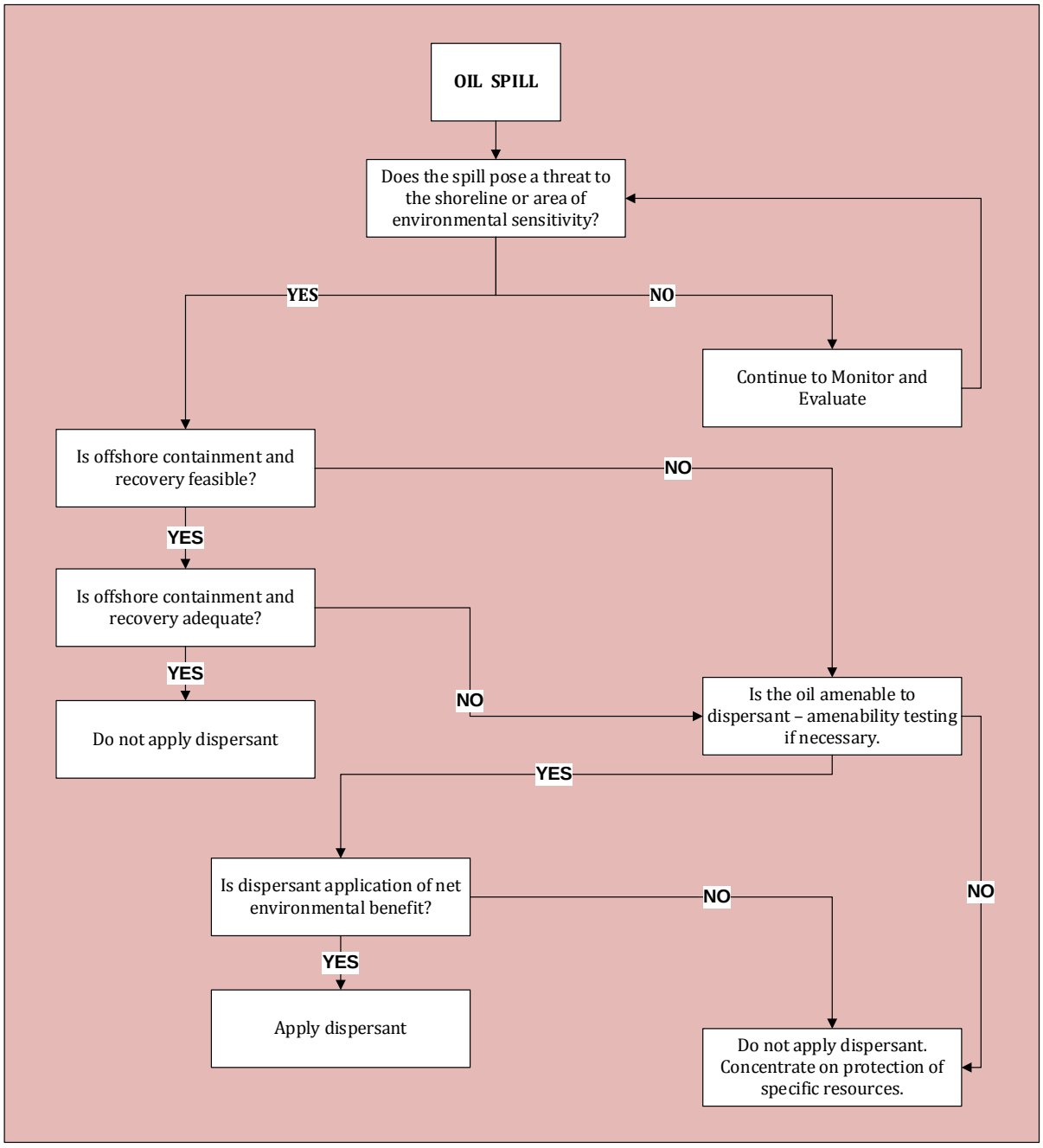
8.3 Dispersant Application Procedure

As described in this section and in Table 8.1, all factors associated with the spill response will be taken into account when making the decision to use dispersants, this decision making process is summarized as a decision tree in Figure 8.1.

Once the decision to spray has been made the application method should be selected. Dispersants may be applied from vessels or aircraft to oil split on open water. Large multi-engine aircraft offer advantages of speed and greater payload for application to major offshore spills but, together with vessels, helicopters and light aircraft may also be suitable for treating smaller spills closer to the shore.

It is important that spray systems deliver dispersant droplets of the correct size. Droplets need to be large enough to overcome the effects of wind drift and evaporative loss but not so large that they punch through the oil rather than migrate to the oil/water interface. The optimum dispersant drop size is between 600 and 800µm in diameter.

Figure 8.1: Dispersant decision tree



A list of UK approved dispersants accepted internationally is presented in Annex 6.

8.4 Monitoring Dispersant Effectiveness

The effectiveness of chemical dispersion should be monitored continually and the response terminated as soon as the dispersant is no longer effective. Visual observation of effectiveness is key but may be impaired in bad weather conditions, in waters with high sediment load, when dispersing pale-colored oils and in poor light.

For the application of dispersant to be worthwhile the oil needs to be dispersed relatively quickly after being spilt to reduce the risk of the oil reaching the shoreline and sensitive resources. A change in appearance should be visible from the air shortly after spraying. No

change in the appearance of the oil, no reduction in the oil coverage, or if the dispersant runs off the oil to create a milky white plume in the water all indicate the dispersant is not working.

Effectiveness can also be monitored using 'real time' data on the concentration of dispersed oil in the water column with ultra-violet fluorometry (UVF. One or more fluorometers are towed behind a sampling boat at depths of more than a meter under the slick to measure the variation in oil concentrations. Dispersion is demonstrated by a significant increase in the concentration of oil detected by the sensor relative to the concentration measured prior to dispersant application.

References:

- IPIECA Report Series Volume 15 Dispersants and their Role in Oil Spill Response
- IPIECA/IOGP Good Practice Guide: Dispersant: Surface application (April 2015)
- IPIECA/IOGP Good Practice Guide: Dispersants: Subsea Application (June 2015)
- ITOPF TIP 4 Use of Dispersants to Treat Oil Spills
- IPIECA/IOGP Good Practice Guide: At-sea monitoring of surface dispersant effectiveness (December 2014)
- IMO Manual on Oil Pollution Section 4: Combating Oil Spills

9 WILDLIFE RESPONSE

In the event of an oil spill incident it is highly likely that wildlife, including birds, fish, marine mammals as well as terrestrial species using the shoreline, will be affected. The Ministry of Environment, together with academic institutions and NGOs will be responsible for the wildlife welfare operations which should run alongside clean-up activities. It is imperative that actions taken in pursuit of wildlife welfare be compatible with wider environmental safeguard requirements.

Further operational planning will be required at an institution/operational level however this section will outline a wildlife plan template which should be implemented during a response involving oiled wildlife.

9.1 Standard Oiled Wildlife Response Objectives

1. Provide advice to Incident Command for effective and coordinated emergency response to 'at risk' and affected wildlife.

2. Protect the welfare of wildlife threatened or impacted by oil.

3. Co-ordinate field assessment of threatened or impacted wildlife.

4. Prevent or minimize exposure of wildlife to oil by undertaking:

    - Activities to deter wildlife from oiled habitats
    - Pre-emptive capture of wildlife as appropriate
    - Undertake efficient and safe capture of oiled wildlife.
    - Give priority to the treatment of threatened or endangered species when resources are overtaxed.
    - Establish a system for stabilization, cleaning and rehabilitation of impacted wildlife.
    - Release back into their native habitats, birds who will be healthy and contributing members of their wild populations.

5. Remove dead oiled wildlife from the food chain.

6. Inform members of the public of health risks associated with contaminated wildlife.

9.2 Response Activities

It is likely that MOE rangers will co-ordinate this aspect of response. Response activities will include the following:

- **Incident assessment and monitoring:** A competent incident assessment will be key to a successful response and will help determine the magnitude and nature of the response needed.
- **Preventing wildlife from becoming oiled:** This may not always be possible, the Incident Command must separate which is feasible from what is not, based on a technical assessment of the situation balanced with a realistic expectation for success and reasonable cost benefit. Methods include deterrence and pre-emptive capture.

- **Record keeping, evaluation and reporting:** Throughout wildlife response operations, records should be kept for the purposes of impact assessment, evaluation (lessons learnt) and submission of claims for compensation.
- **Dealing with dead casualties:** Corpses provide essential information for an impact assessment and wider ecological interest. Therefore, the adequate and systematic collection and storage of dead oiled animals is essential. Each corpse must be individually labelled for later identification and analysis.
- **Dealing with live casualties:** The treatment of wild animals should always be considered as a last resort activity after all efforts to keep them from being oiled have failed. To be successful in treating live oiled animals there are a number of critical components and strategies. Components include facilities, transport, intake and stabilization, cleaning and conditioning, and release and post release.

9.3 Operational Aspects

The Ministry of Environment should, if appropriate, develop, in conjunction with the operations team, a Wildlife Specific Incident Action Plan. Operational aspects that need careful planning include:

- **Mobilization:** The primary response organization should be experienced, large enough and sufficiently funded to deal with an oiled wildlife incident. An oil incident may cause wildlife casualties to arrive on beaches without previous warning. In such instances, the only option is to deploy the response teams whilst the organization structure is being established.
- **Coordinating wildlife response:** The Wildlife Response Centre (WRC) is the place from where all oiled wildlife response activities are monitored and directed. Ideally this center is integrated with the incident command center. In is likely to comprise MOA Rangers, Veterinary Services, Regional Rural Development Officers, Extension officers and regional Agriculture Centers as well as competent syndicates, NGOs and voluneets
- **Moving from incident response to project management:** At the outset, people and equipment must be mobilized and facilities activated, built, expanded or adapted. In this emergency phase decisions should be guided by priorities that have been defined in the contingency plan. Prescriptions of decision making processes, protocols and agendas for the first meetings allow response managers to quickly perform their roles. The second phase in the response will appear gradually depending on the incident. It should be the aim of any response manager to make the transition from emergency response to project management as quickly and as smoothly as possible.
- **Management of animal care:** If efforts to rehabilitate oiled animals are to be undertaken the organization of the response activities should be optimized. The aim is that any live animal is only kept in care for a period of time that will benefit its survival in the wild.
- **Geographical organization of facilities:** Geographical organization of facilities requires different inputs of information e.g. information on location of oil, site access, distribution of permanent rehabilitation centers and other available facilities.
- **Planning:** Planning activities over the short to long term will help to ensure the availability of the necessary resources.
- **Management of volunteers:** A larger more complicated type of wildlife response cannot be carried out without the help of volunteers. The involvement of volunteers

must, however, be carefully managed including registration, training, availability, health and safety planning etc. See section 12 of this volume for further details.

- **Minimizing waste and secondary pollution (waste management):** Each stage of the wildlife response should aim to minimize waste and secondary pollution.
- **International management:** An oiled wildlife incident may affect different countries. In terms of logistics resource planning and data collection it is recommended that countries cooperate and harmonies their efforts to the highest extent possible.
- **Wildlife operations and the media:** After the safety of human life the news media's next priority is the popularization of stories on animal welfare. A strategy for interacting with the media should be developed proactively.
- **Demobilization:** In most situations where buildings have been provided for temporary or full rehabilitation facilities, these will need to be returned to operational readiness soon after the incident is over.

References:

- IPIECA/IOGP Good Practice Guide: Oiled wildlife preparedness and response (October 2014)

10 MEDIA AND COMMUNITY RESPONSE

Management of the media and public communication is a strategic issue of national consideration, particularly when the international media interest and/or when local communities may be impacted. Consequently communication will be a responsibility of the NOR when activated for a tier 3 response. The Minister of Information, within the NOR framework, will set policy and strategy for communications. Clearly they will require operational details and input so close communication between the public relations officer in the Command Team will be essential. As the spill progresses the MOI may delegate a representative to work within the ICS structure reporting regularly to the NOR, see section 10.1.1 outlining the role of an Information Officer (PRO).

10.1 Media and Community Response Guidelines

The following guidelines are to assist the Ministry of Information as well as the Public Affairs Section and others of the ICS who are called upon to inform the media or the public during an oil spill event. The guidelines should be used as a guide, working within normal procedures and systems in Lebanon for dealing with the Media.

Information Centre

The center of operations of an oil spill response is the Incident Command Centre. An emergency public relations station should be established near, but not at, the Incident Command Centre so as to avoid undirected inquiries to the NOSIC support staff. This station should be in operation during a Tier 2 or Tier 3 response. The Logistics Director should be contacted for any assistance in installing Communications lines (phone, fax, internet access etc.)

Pre-planning

This effort should focus on ensuring actions that can foster positive media reaction, such as the following:

- Open but decisive management, particularly early in a spill;
- A well-prepared National Contingency Plan
- A rapid response commensurate to the size of the incident.
- A well-conducted clean-up operation, which should not be confused with a technically and environmentally unsound over-reaction;
- A well-thought out and reasoned media response strategy
- Prompt release of factual information
- Consistent, honest, factual accounts of operations by senior response managers
- Clear evidence of good co-operation among various agencies involved in a response

New Media

The advent of electronic media has meant that channels of Communications can no longer be controlled. The internet, mobile camera phones, satellite communications and social media can immediately transmit the details of the smallest oil spill around the world. Erroneous information once published can be retransmitted many times and is very difficult to stop. Therefore, it is very important to ensure that as far as possible, the correct story is issued on

social media right from the start. Otherwise, incorrect stories will be rebroadcast many times worldwide without any screening as to their correctness, when bloggers post their thoughts on the incident.

The earliest possible establishment of an official website on which the holding statement, official press releases and official video interviews (produced by the Joint Press Centre) can be posted, will be enormously helpful.

Immediate Actions

Clearly it is important to ensure that the media gives the best coverage possible. Lebanon may well not be the polluter, but will be the spill responder and, although it may not be the guilty party, nevertheless the response performance will be under the media microscope. It is important not to antagonize the media and there are a few rules that will be useful.

What the media wants: The media requires the truth, pure and simple. This is not the same as information. A few facts here and there do not help. They can lead people to the wrong conclusions.

What the public wants to know

- What happened?
- Why did it happen?
- What are you doing to put it right?
- Is that all that is going to happen?
- What is being done to prevent such an accident from happening again?

Public Relations Tips

- **Issue a factual statement on social media.** Be the first or incorrect and critical blogs will begin to circulate
- **Issue a Holding Statement:** As soon as possible issue a holding statement, with as much information as you have, but include the words that as soon as you have full information you will issue a full statement – and do so. For an example see below
- **Pre-prepared Fact sheets:** Have pre-prepared fact sheets about your organization.
- **Inform the team of plans and progress:** Ensure that all your own people know and understand what is going on. The disgruntled employee can be a rich source of adverse information and can often be encouraged to give out unhelpful information. Passing information down to the employees is every bit as important as information up to the management.
- **What to say if approached:** Make sure that all the team know what to say if they are approached during the clean-up. For most employees it will be nothing and a polite reference to the Joint Press Office will be appropriate. However, when for example supervisors, such as Shoreline Supervisors are approached, "No Comment" or "Talk to the PRO" is not helpful. A factual explanation of what is being done is much more positive. However, as for the guidelines below, do not be drawn into discussion of anything else, and do not speculate.
- **Call back:** If you say you will call back – do so. It all helps to create a good impression, or at least helps not to create a bad one.

- **Think outward not inward:** Concentrate on how the media or the public receive your statement rather than on how you present it.
- **Be positive:** Speak in positive terms and act confidently
- **Think before answering:** Take time to think before responding to questions
- **Stick to the facts:** Do your research and state only the facts; do not express opinions and do not make any promises.
- **Be concise:** Keep to short statements and do not use jargon or acronyms
- **Direct attention:** Point to actions being taken, not to what ought to be done
- **Pursue unified information to combined audiences:** Establish consensus with information officers from other agencies by establishing a Joint Press Office.

10.1.1 Information Officer (PRO)

After the activation of the Plan, the Ministry of Information will designate an Information Officer (PRO) who shall be seconded to the National Incident Command Team.

Objectives

- The primary objectives of the spokesperson are to:
- Provide vital, timely information to any affected pubic or organization so as to enable them to guide their own response to the emergency (i.e. Protect their person or property);
- Establish a focal point for information by providing credible and reliable information to the news media, electronic media and the general public;
- Disseminate information to field crews and response personnel.

Information Priority

- In meeting these objectives, the priority for information should be for:
- Saving of human life or prevention of personal injury;
- Protection of property;
- Environmental impacts;
- Progress of response operations.
- Protection of reputation

The Information Officer shall be responsible for:

- Maintaining contacts with the press and other media including radio and TV through the NOR;
- Preparing press releases on behalf of the National Oil Spill Incident Commander;
- Monitoring the information released by the press and the media, correcting erroneous information and clarifying any possible misunderstandings.

Check List for the PRO

The following Check List is intended as a reminder to the PRO of the issues which may need to be considered in the initial stages of the incident to assist in the rapid response to heavy and sustained media demands.

- Consider the location of a suitable Joint Press Office close to, but not in, the Command Centre.
- Choose a suitable location for a Media Briefing/Press Conference facility, close to but quite separate from the Command Centre.
- Call out Information Officers from the other Government Departments involved to operate within the Joint Press Office.
- Call out of additional administrative and support staff to support the operation of a Press Office.
- Arrange for staff to open and set up the Joint Press Office and Media Briefing/Press Conference facilities.
- Arrange for suitable maps to be made available for the presentation of information.
- Arrange to attend the first Incident Command Team Meeting.
- Arrange to attend the first General Staff Planning Meeting. The Information Officer will also attend, or be represented at, all subsequent Planning Meetings.
- Nominate a deputy to cover for the absence of the Information Officer from the Press Office.
- If the Regional Contingency Plan is mobilized, make contact with the Press Offices of the Assisting Contracting States, request a Press Liaison Officer be sent to the Joint Press Office and coordinate the media response from the all States involved.
- Ensure that there will be two Shift Managers to run the Media center 24 hours a day and ensure continuity of information. Contact should be made with the Logistics Director in the Command Centre to provide the logistics and support services requirements for such an operation, with the Planning Director and the Situation Unit to facilitate the flow of accurate and timely information from the Command Centre and General Staff to the Joint Press Office.
- Arrange to gather all available factual information relevant to the incident.
- Make recommendations to the NOSIC for Spokespersons on his behalf in forward locations and ensure they are briefed on the limits of their authority.
- Formulate issues for discussion and advice during the first Management Team Meeting, including the need to co-ordinate statements to the media.
- Prepare a holding statement. A sample is included following this Check List.
- Prepare the first Press Release as soon as sufficient information is available. The final content must be agreed in liaison with the National Oil Spill Incident Commander.
- Arrange facilities to accommodate the media in the Media Briefing Centre– Desks, phones, e-mail if possible, fax, light refreshments.
- Issue Press Office telephone numbers to accredited media organizations and individuals.
- Arrange for all the Command Centre General Staff, Beach Managers/Shoreline Supervisors and the workforce to be briefed on how to respond to media enquiries and the need to refer all enquiries to the Media Centre.
- Establishing a "media" field kit that could include a portable fax, cellular phone, portable computer, etc.;
- Having a schedule and format for daily and continuous reporting of facts to media and the Ministry of Information;
- Identifying key target groups that are directly affected by the emergency and that will require essential information on the nature and magnitude of the event;
- Listing key association, community and other media contacts;
- Preparing to escort government and media;

- Disseminate up-dates on response efforts to field crews and response personnel.

10.1.2 Holding Statement

As soon as possible issue a holding statement, with as much information as you have, but include the words that as soon as you have full information you will issue a full statement – and do so.

Sample of a Simple Holding Statement

A report has been received from (Vessel, Aircraft, and JMOC etc.) of:

- a (Grounding, collision, sinking, capsize)
- involving: (name of ship or ships, type e.g. ferry, tanker, bulk carrier, etc., tonnage, bound for)
- at (give location of incident, if known).
- The incident occurred at (give time).
- The last reported situation was (give information on last known situation, if confirmed).
- The (name of Lead Agency) is
- What is the Lead Agency doing (setting up the Command Centre, carrying out beach patrols, etc.)?
- No further information is available at this time but a full statement will be issued as soon as further information is available.
- A press conference will take place at (time and location are known).
- Name
- Contact details

10.1.3 Press Releases

Following the issue of the initial holding statement, an initial press release should be prepared to include as much information as is known at the time. Thereafter, press releases will be prepared and distributed to the press at least twice a day during the early stages of an incident and at least once a day for the entire period between the activation and the deactivation of the Plan.

Press releases will be prepared by the PRO on the basis of accurate facts provided by the National Oil Spill Incident Commander and the General Staff. They should contain information concerning:

- the pollution incident and the development of the situation;
- injuries to personnel
- damage to the environment
- technical data on vessels involved, type and characteristics of the pollutants;
- the measures taken to combat pollution;
- the progress of the response measures;

The following guidelines will assist when preparing press releases:

- prepare titles/headlines;
- Express regret for the problems caused, especially if you are directly to blame.

- give priority to the most recent and important information;
- use simple sentences and give only one idea per sentence;
- avoid quoting estimates, conjectures and suppositions;
- avoid giving opinions on environmental or other unquantifiable damages;
- draft final wordings very carefully.

Maps showing the area of incident, the evolution of the spill and the sites of the response operations should accompany press releases whenever possible.

All press releases must be submitted by the National Oil Spill Incident Commander to the NOR for approval before distribution to the press.

10.1.4 Interviews

Journalists prefer one to one personal interviews with the person in charge. These require considerable preparation. Information should be succinct and to the point. Long winded statements annoy journalists and commentators and create headaches for audio and visual editors.

- Write out a short list of points you want to make although do not be tempted to try to read from a script when being interviewed.
- Keep sentences very short and no answer should last more than 30 seconds during standard interviews for news bulletins.
- Stick to the facts, avoid conjecture and be sincere.
- Leave out adjectives. A small spill to the industry is a large spill in journalistic terms.
- Be prepared to have a 'personal opinion.' We have all seen spokespeople caught out when asked we know what the company thinks but what do you think?
- Consider every word you say as being on the record and remain on your guard at all times. A good journalist is never off duty and most would do anything for a juicy exclusive.
- Keep you cool and pause to think before answering difficult questions. Be polite at all times
- Your face can give you away. If the subject is serious, look serious. If relief is in sight, look relieved. If the situation is amusing, a wry smile is better than a laugh.
- If you do not have an immediate answer, say so but offer to get the information as soon as possible (and do so)
- If for corporate reasons you cannot answer a particular question, tell them.
- No acronyms or jargon. Use full titles and explain what they mean if required.

10.1.5 Press Conferences

After the activation of the Plan, the National Oil Spill Incident Commander, in consultation with the NOR, should organize regular press conferences for briefing the media until such time as the incident has ceased to be newsworthy.

The following persons may take part in such press conferences:

- NOR Media Team
- National Oil Spill Incident Commander
- Experts from the ICAG

- PRO who will run the Press Conference
- Representative(s) of ship and cargo owners and/or their insurers.
- Operators of Offshore Installations

It is essential to prepare for press conferences. Get the team together to decide what you do want to say and what preferably you do not. A written statement should be prepared on the main facts concerning the pollution incident and the Joint Response Operations (which may be the latest press release). Maps and photographs may be prepared in advance by the PRO and approved by the National Oil Spill Incident Commander for use during the press conference.

A written statement should be prepared on the main facts concerning the pollution incident and the Joint Response Operations (which may be the latest press release). Maps and photographs may be prepared in advance by the PRO for the National Oil Spill Incident Commander and approved by the NORVespers2016 for use during the press conference.

Many of the points mentioned regarding press interviews are also relevant to press conferences. Punctuality is important. The reporter may have a deadline to meet or will have booked a satellite slot. If you are late he may miss it and will not be best pleased. This will not help him to be friendly toward you.

In the media center, provide basic work and comfort facilities for the journalists. Chairs, desks, telephones, fax or e-mail facilities are essential. Some comforts would also be appreciated such as tea/coffee, soft drinks and toilets.

At a big conference, always place the microphone in front of the panel. An elevated desk is probably better than a podium. Keep the microphones below chin level. Make sure the room is big enough, provide seating and leave a clear area with a view at the back of the room for TV crews. In addition:

- Enter and leave the room by a separate door from the journalists to avoid being hassled on the way out.
- At the press conference make sure everyone is ready – especially the TV news cameramen before you make your statement.
- Dress for the occasion. A business suit is appropriate for the boardroom but not at an oil spill.
- Have the PRO run the conference, who will issue the prepared statement.
- Read a précis of the statement and then invite questions
- If you can, memorize your most important statement and say it without referring to your notes
- Do not ramble on. Be the master of the 15 second sound-bite, breaking your words into short self-contained statements
- Tape yourself whether there is one reporter or 100. Be overt about it. Bring out the recorder and switch it on without commenting and start. If you are asked what it is for, say corporate policy. It may be a comforting umbrella or an electronic Judas. It's up to you.
- The person managing the conference should ask the journalists to give their name and accreditation. Try to remember their names and use them. Write them down if you can
- If there are reasons for keeping it short, say so at the outset. Then say your piece and leave

- Remain in charge. Do not get flustered. Share the questioning; do not let any one reporter dominate. If you think you have already answered something, say so.
- Do not ridicule a stupid questioner. Be patient and calm. Then other journalists will be just as irritated as you.
- Maps diagrams and blackboards are useful tools when trying to explain a complex point and gives you something to refer to occasionally
- Always observe the local safety regulations and insist that news teams do likewise. If you already have a problem, you do not want flak from an irate safety or union official.
- Be natural but do not relax too much and try to guard against lapses of concentration
- If you are saying something and are interrupted, finish what you are saying before replying
- If you did not hear or cannot understand a question, ask for it to be repeated. Do not answer until you have a clear understanding of what is being asked
- Rude and aggressive questioners need careful handling. Do not get angry, do not get personal. Get smart. Keep to the script and get out.
- Keep your sense of humor, but if the subject of the press conference is serious, be serious
- Have experts to answer technical questions, but brief your experts and do not let them take over your news conference. Access to your experts should be through you.
- If it seems that a particular problem at a remote site will last for days or weeks, provide basic comforts at the site. Caravans, tents, fax, power, light refreshments.

11 HEALTH, SAFETY AND SECURITY

11.1 Health and Safety

The health, safety and welfare of all response personnel and the public is the direct responsibility of the Incident Commander and the Incident Management Team. The provision of Health & Safety in response operations must be adequately funded, resourced and managed from the outset. Oil spills present a number of inherent hazards and consideration should be given to reducing the exposure to liability by the implementation of safe working practices and the application of control measures to mitigate the risks involved in response operations. It is recommended that accurate recording of events and decisions made is also initiated at the start of the incident. When determining Health & Safety strategy for the response the following aspects should be addressed:

Initial Site Assessment: A strategic assessment of the spill site and all hazards associated with the incident should be undertaken at the start of the oil spill response. This should include, but not be limited to procedures and document formats for hazard identification surveys, risk assessment methodology, mitigation and control measures, the safety organization and Communications, area maps and safety zones, specialist equipment and selection of competent personnel, training needs analysis, etc. Subsequently, a safety analysis of each operational period should be carried out by the Incident Safety Officer and included in the Incident Action Plan for the following day. A Site Safety Plan should be developed and a consistent safety message Communicated effectively at all levels of the response organization. This message can be conveyed at the daily operations briefing.

Site Safety Plan: A written Site Safety Plan should be promulgated. It should focus on hazard analysis and risk assessment, operational work plans, safe systems of work and method statements, selection of competent personnel and their training requirements, equipment and control methods, equipment maintenance and training on the task, PPE, surveillance monitoring for chemical hazards, environment and weather, site control of entry, induction briefings, decontamination and location of medical posts and emergency procedures, etc.

Hazard Identification and Risk Assessment: An initial top level risk assessment of the incident will be carried out by the National Oil Spill Incident Commander and the Incident Command Advisory Group before the operational response can begin. This assessment looks at the big picture and is taken into account when setting the incident response objectives. Once this is completed further local and site risk assessments should be produced and recorded. An oil spill presents a dynamic and fast moving situation, therefore it is also vitally important to constantly re-assess and review assessments as circumstances change and the situation unfolds. Any significant changes should be Communicated to responders at all levels.

Oil safety issues: Due to the nature of oil spill clean-up operations contact with oil cannot be avoided and vapor may be present. Therefore, the health & safety of responders should be closely monitored and control measures implemented to reduce the effects of exposure on the individuals involved. It is essential to ascertain the type of oil from the outset and once known, the Crude Oil Data Sheet or Material Safety Data Sheet should be obtained to understand its properties, effects on health, first aid measures, flammability, toxicity, propensity for explosion, firefighting tactics and clean-up methods. This information will be important in the production of risk assessments and site safety procedures and safe systems of work.

Response operations and the working environment: Every activity in support of the operational response such as on water recovery, shoreline protection and recovery, waste management, etc. will require a risk assessment and site specific safety procedures should be developed for each location. For example, it will be important to conduct air quality monitoring to ensure that no flammable or toxic gases are present. Night time working should be avoided if possible and the effects of working in extreme temperatures and the general effects of the weather on the environment must also be taken into consideration. Road safety is an area for concern and the risk of accidents can be elevated during prolonged response operations. A great deal of machinery will be deployed and it is essential that it is serviceable, fit for use and maintained correctly and that the operators have been properly trained in its use.

Personal Protective Equipment (PPE): Appropriate PPE should be issued to and worn by all responders involved in the oil spill clean-up. The correct PPE for the task should be identified by taking into account the nature of the task, the environmental conditions, the substances involved, the activities undertaken and compatibility with other items of PPE. Information and training should always be given before issue. This should include record keeping, maintenance and disposal. The procurement, management, de-contamination and disposal of PPE can quickly become a large logistical challenge and requires some pre- planning. A site for de-contamination should be identified and if cleaning is carried out on site, it should be done in a bunded which will prevent wash water and oil run off. Once the PPE requires disposal then it should become part of a segregated waste management scheme.

Management of volunteers: It is likely that at some stage during the response volunteers will offer their assistance in clean-up operations or wildlife clean-up. This can become an emotive issue, especially when it is highlighted by the press and media. Most volunteers will be untrained and un-equipped. They will require PPE, training, feeding, accommodation and transport. This situation can soon escalate into a significant management challenge, which can be alleviated to a certain extent by predetermining the strategy required to deal with them. If not handled correctly, safety issues can arise and the public perception of the management of the response may be adversely affected. However, if properly trained and channeled into activities or a location which minimizes their direct contact with spilled oil, they may be utilized to good effect. Further details are given in section 12 of this volume.

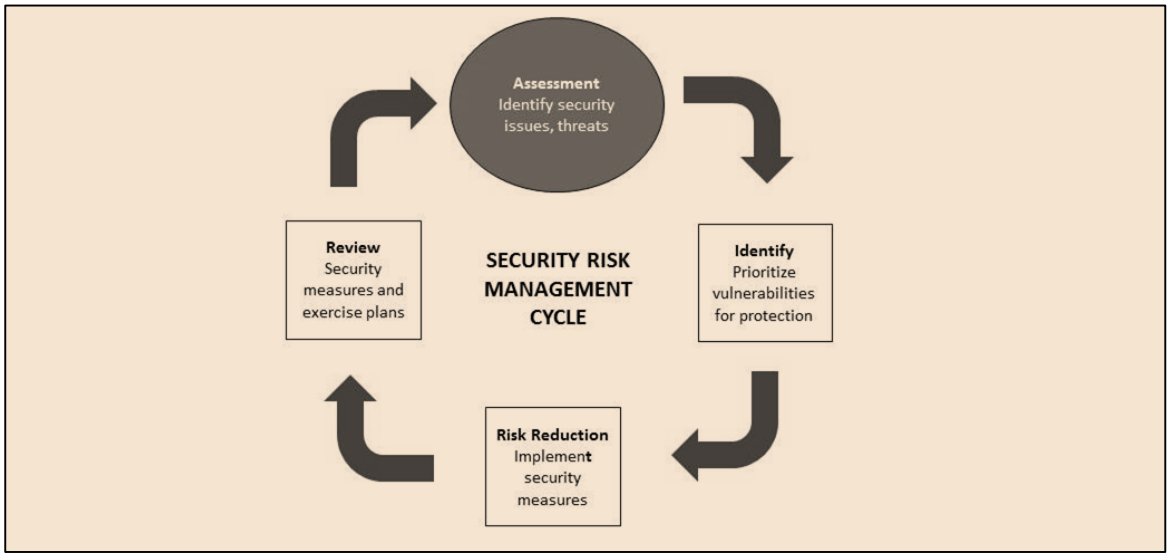
11.2 Security in Oil Spill Response

It is essential that security measures are in put place at all Incident Command Centers, staging areas and oil spill clean-up sites. This will ensure the safety of spill response personnel and the general public, the protection of stores and equipment and the maintenance of site access and egress routes, The NOSIC Support Staff Security Officer will take the lead on this.

11.2.1 Security Planning

The first step in the implementation of security measures is to assess the risk. This will identify threats, vulnerabilities and assist in the production of site specific security plans. All steps in security planning are shown in Figure 11.1 below.

Figure 11.1: Steps in security planning



Potential security issues or vulnerabilities which should be considered will include:

- **People** – Identification of personnel responders, visitors, contractors, the media, the public
- **Site or building security** - Access points, control of entry
- **Supervision** - Control of visitors, contractors
- **Emergency procedures** - accounting for people, site evacuation
- **Physical assets** – equipment, stores, IT and communications equipment, vehicles, chemical storage
- **Information** – data, electronic data

Once key areas for protection have been identified, security measures should be implemented to reduce or negate security issues or vulnerabilities to as low as reasonably practicable. These security measures should not impact on the safety of personnel and should meet any health & safety regulations.

11.2.2 Security Plans

The NOSIC Staff Security Officer is responsible for producing security plans for Incident Command Centers and all other operational sites based on a security risk assessment. He or she will also arrange staff security training and briefings to promulgate the plans. The security plan will include details of physical security, IT and communications policy, information security, protective security measures and site evacuation procedures. To ensure the effectiveness of security plans and they should be regularly exercised to take account of any changes in response operations, site procedures, new equipment or change on personnel.

Security plans should include:

- **Access Control:** Site or Command Centre entrances should be kept to a minimum and should be clearly signed.
- **Security passes:** A security pass system should be in place for responders, contractors and visitors to clean-up sites or Incident Command Centers. This will assist in mustering of personnel and evacuations. Visitors should be escorted at all times.

- **Vehicle Security:** All vehicles entering site should be authorized by gate security staff. Equipment laydown areas should be clearly marked out.
- **Evacuation:** Site or Command Centre evacuation procedures should be included in the security plan. Assembly areas and safe evacuation routes should be identified and personnel appointed as evacuation marshals.

References:

- IPIECA/IOGP: Oil spill responder health and safety (February 2013)
- REMPEC: Personal Protection Equipment and Monitoring for Maritime Chemical Emergencies (2003)

12 MANAGEMENT OF VOLUNTEERS

In the event of a high profile oil spill it is likely that members of the local and national population may wish to assist with the clean-up efforts. This assistance can prove to be a useful resource and can often provide quick access to a large number of people who often possess useful local knowledge. However, it is critical posing specific challenges associated with using large numbers of untrained volunteers and it is important to ensure these are properly managed both at a command level as well as operationally.

Advantages of using volunteers:

- Quick access to a large number of people to assist with the response.
- Local knowledge
- Enthusiasm
- Dissemination of key response messages

Disadvantages

- Management and liability issues may add to the complexity of the response
- Will require a programme of providing training and PPE
- Ideally volunteers will commit to spending a period of days on the response, but this may not always be the case.
- Effective use of volunteers requires high levels of supervision and direction which will require management and manpower.
- Volunteers may be hard to keep motivated and working effectively as the work that they tend to be involved with is often laborious, repetitive and slow

12.1 Command Considerations

Guiding principles for using volunteers:

1. Decide whether it is suitable to use volunteers on the response.
2. If it is agreed that volunteers will be used, determine the tasks in which they will be involved, with particular consideration for safety and oil exposure issues.
3. Decide how the volunteer effort will be coordinated and managed within the Incident Command System.
4. Set up a volunteer registration process
5. Set up a volunteer induction and training process.
6. Advertise the roles that volunteers could fill and how to register their interest.
7. Allocate volunteer resources and produce tasking documents for the specific sites and operations where volunteers will be working.

Activities 1-6 can be carried out as part of the contingency planning process and provision is made within this plan for these activities, see volume C on roles and responsibilities. Full protocols and procedures specific to Lebanon will be put in place as part of the ongoing implementation of this plan.

12.2 Operational Considerations

It is during shoreline response activities that volunteers can be used to maximum benefit, however procedures must be put in place to ensure the safety of volunteers. These will include:

1. When arriving at a site, ensure that volunteers check in and that appropriate personal information is recorded (volunteers should also check out at the end of a shift).
2. Before commencing work ensure that a daily brief is given.
3. Ensure in-field site supervision is in place and scalable.
4. Always have consideration for the welfare and well-being of volunteers.

Volunteer tasks

It is recommended that, where possible, volunteers work in the areas away from the heaviest contamination and volunteers have more successfully been used to assist with the secondary and 'final polish' clean up after bulk oil removal of oil has been carried out. Volunteers can be involved in a number of areas of the response, for example:

1. Wildlife (typically people/groups involved in the wildlife units are pre-identified/trained as this is a specialist activity requiring training and expertise):
   - Patrols to identify and collect oiled wildlife.
   - Set-up and maintenance of oiled wildlife reception facilities. l Information technology
   - The presentation of response status through the use of GIS packages. l Clean-up
   - Pre-cleaning of pre-impact shorelines
   - The clean-up and collection of oiled sediment/debris.
2. Personnel and logistics support:
   - Cooking and/or serving food and drink
   - Driving people and/or equipment.
3. Site Management:
   - Decontamination of people and equipment.
   - Site set-up and control of access points.
   - Assistance with set-up and management of rest and/or accommodation areas.

References:

- IPIECA/IOGP JIP Finding 15: Volunteer Management
- POSOW Oil Spill Volunteer Management Manual

Annex 1: Sensitivity Mapping

These maps are representative of an electronic GIS data set that has been put together. The follow maps have been produced for quick reference here, but for full details and during a response the GIS should be used:

Full shoreline classification: North 1 (Figure A1- 1)

Full shoreline classification: North 2 (Figure A1- 2)

Full shoreline classification: North 3 (Figure A1- 3)

Full shoreline classification: North 4 (Figure A1- 4)

Full shoreline classification: North 5 (Figure A1- 5)

Full shoreline classification: South 1 (Figure A1- 6)

Full shoreline classification: South 2 (Figure A1- 7)

Full shoreline classification: South 3 (Figure A1- 8)

Full shoreline classification: South 4 (Figure A1- 9)

Full shoreline classification: South 5 (Figure A1- 10)

Marine Protected Areas and proposed Marine Protected Areas (Figure A1- 11)

High, Medium and Low priority sites as proposed in the Environmental Resources Monitoring in Lebanon report 2012. (Figure A1- 12)

Socio-economic sensitive sites including ports, tourist sites and cultural sites. (Figure A1- 13).

In addition, the results from the modelling, see Volume B of this plan, have been added as a layer in the GIS so priorities for protection can be identified for each of the scenarios modelled.

Figure A1- 1: Lebanon sensitivity map: North 1

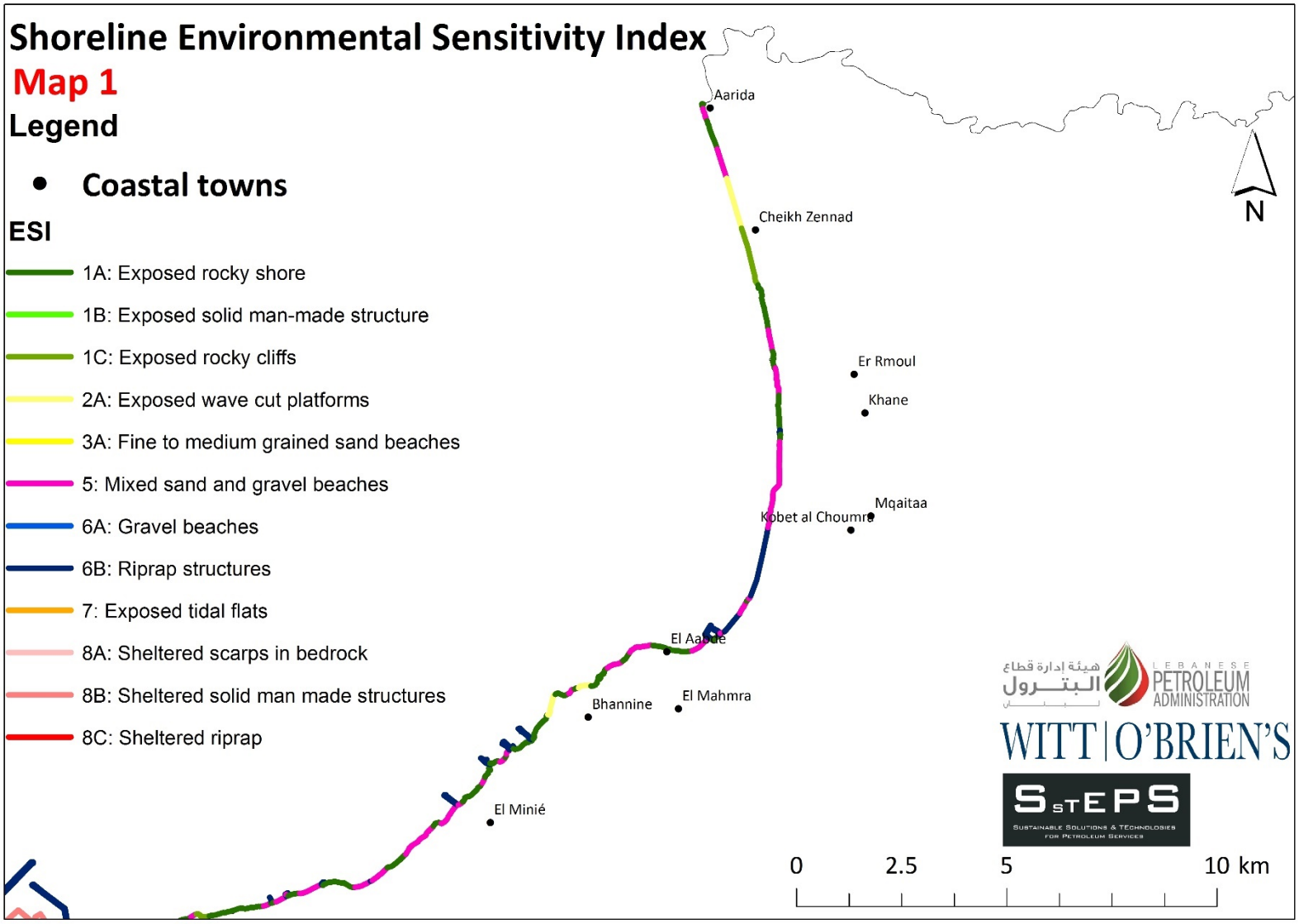


Figure A1- 2: Lebanon sensitivity map: North 2

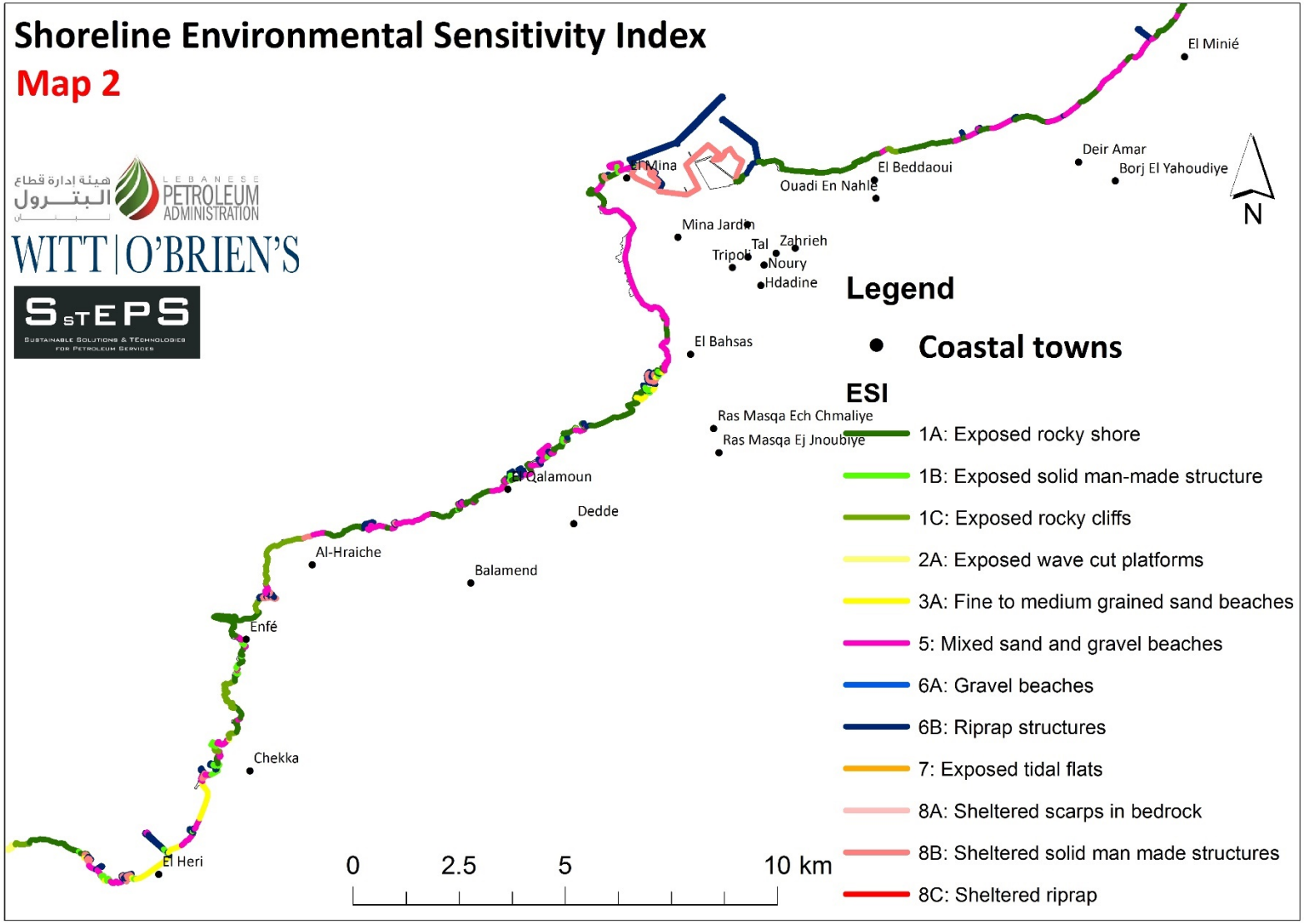


Figure A1- 3: Lebanon sensitivity map: North 3

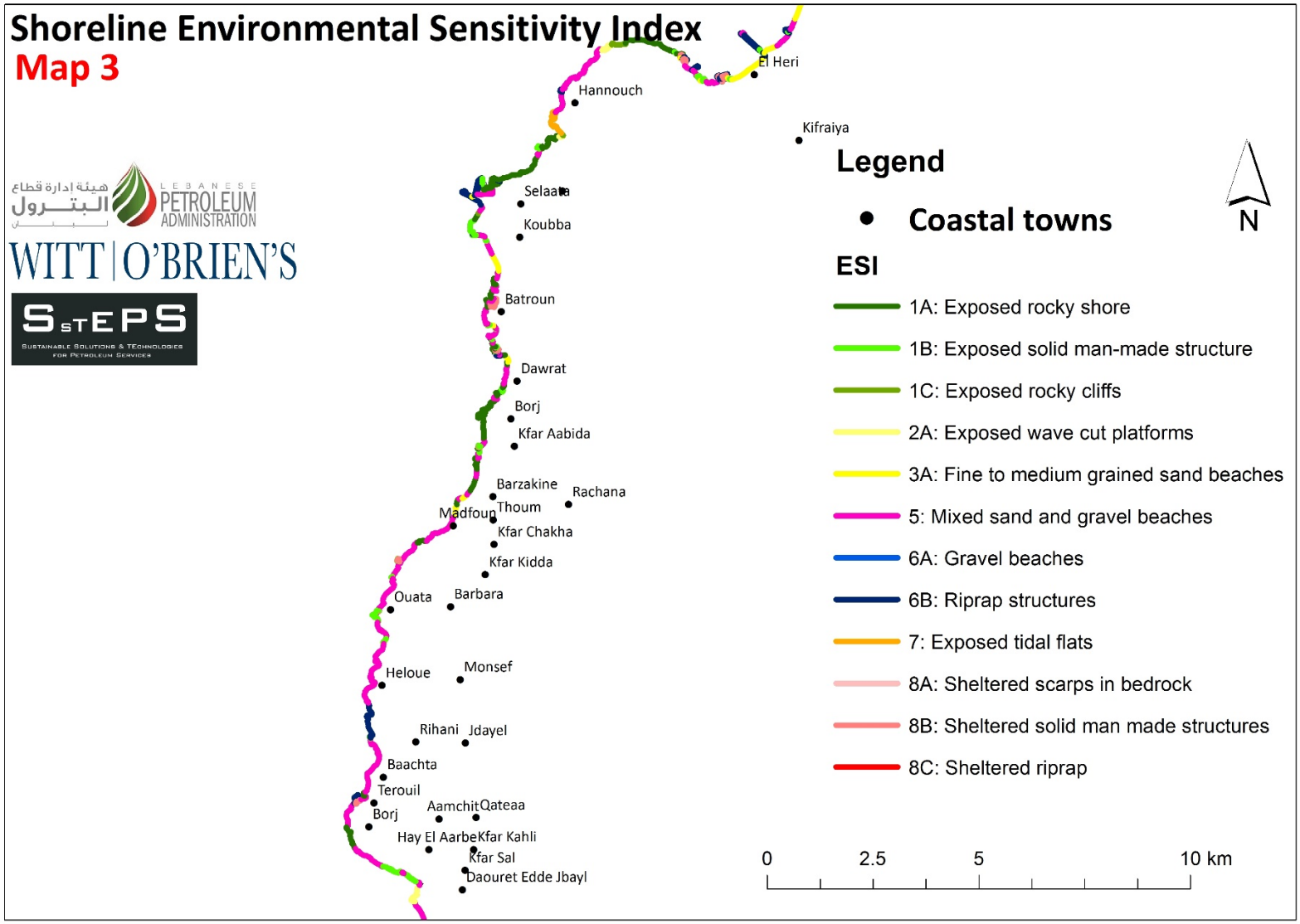


Figure A1- 4: Lebanon sensitivity map: North 4

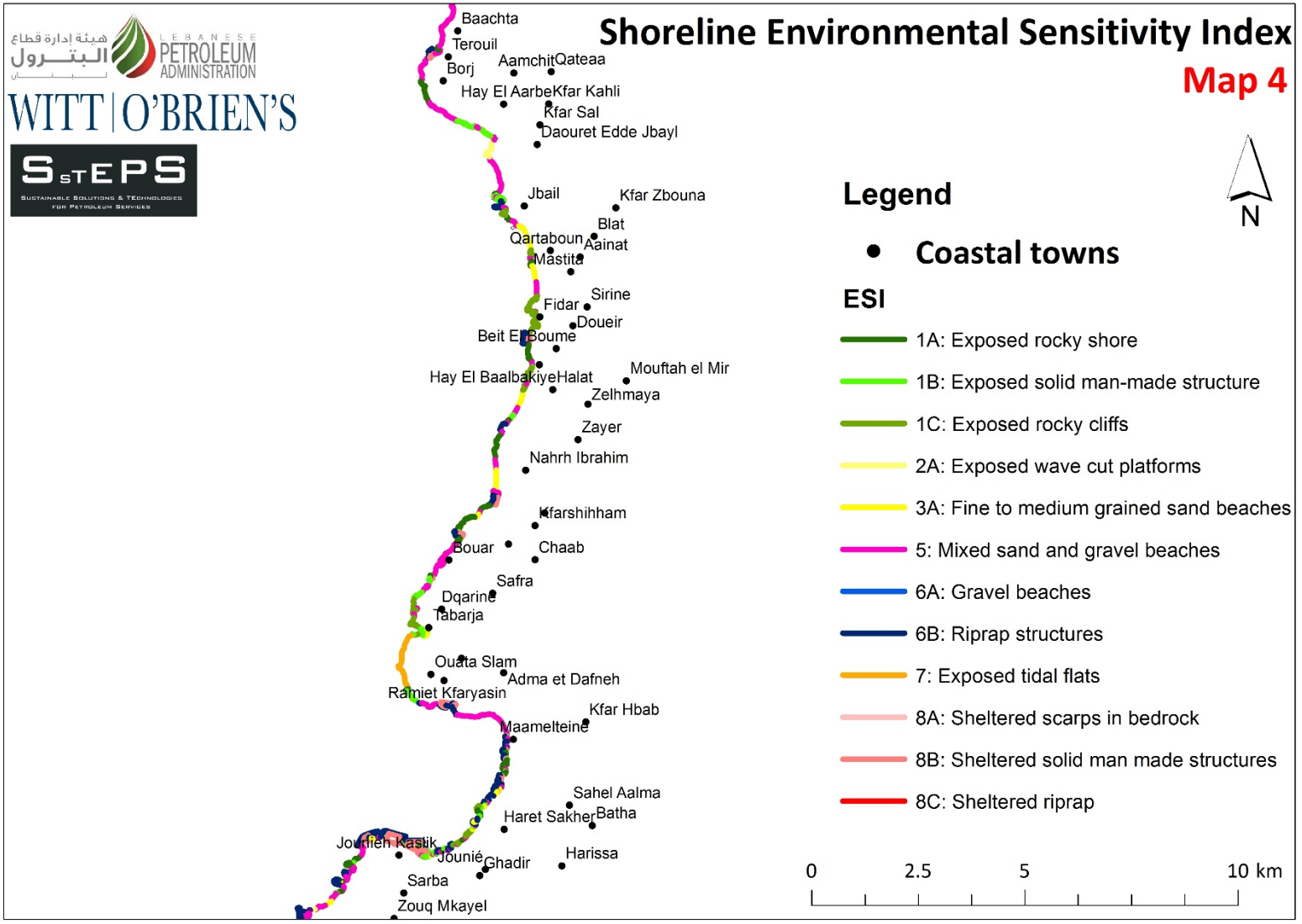


Figure A1- 5: Lebanon sensitivity map: North 5

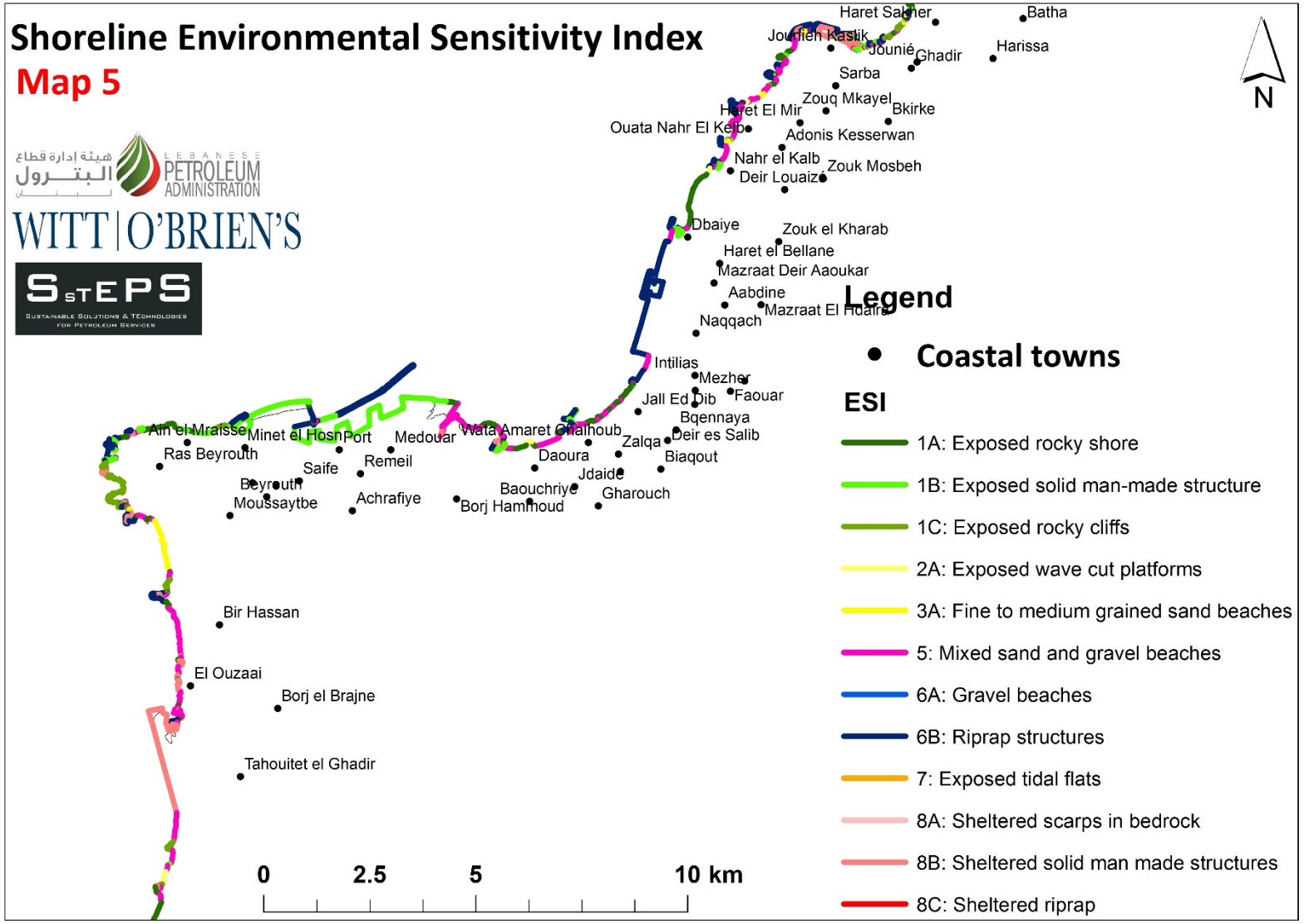


Figure A1- 6: Lebanon sensitivity map: South 1

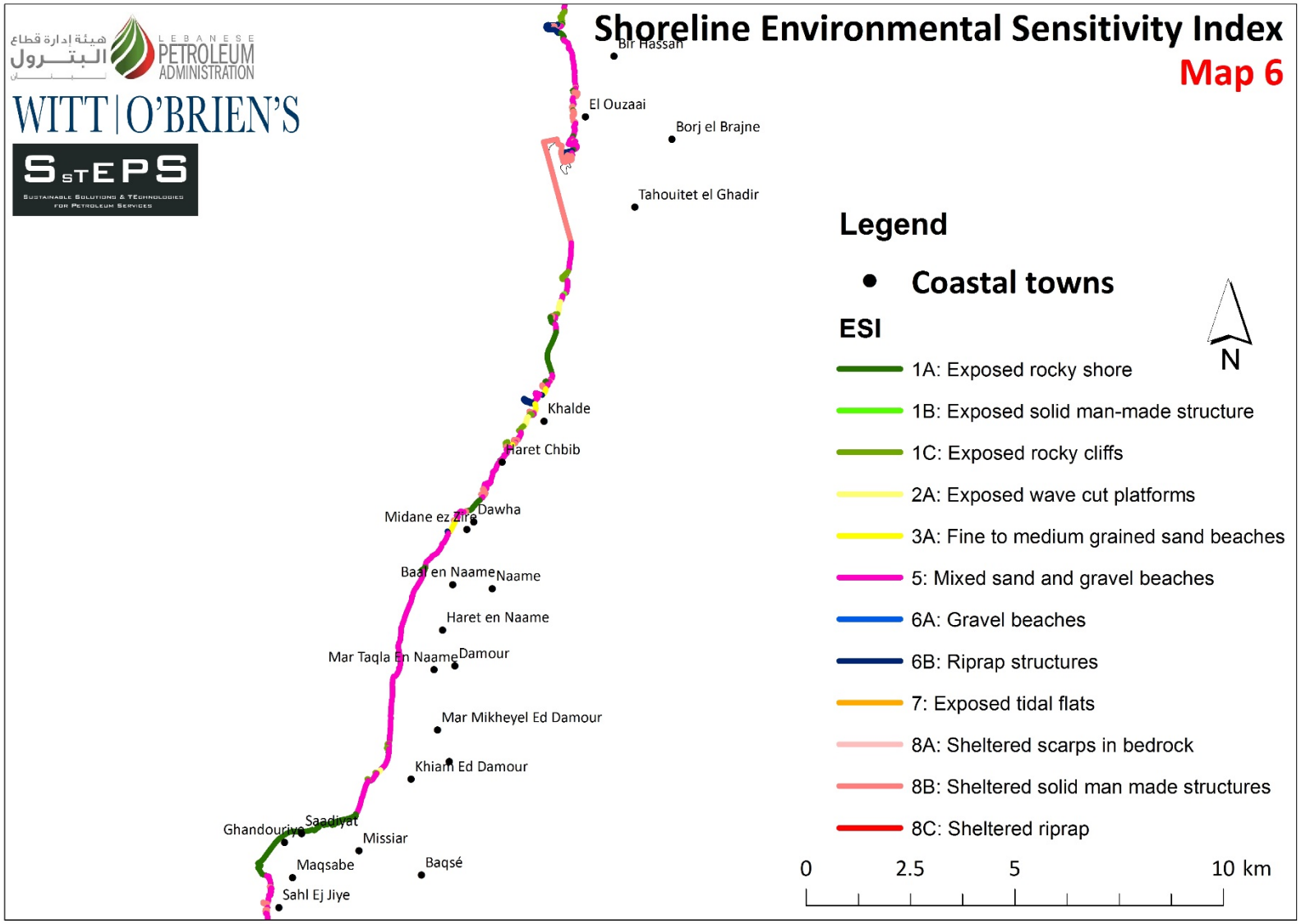


Figure A1- 7: Lebanon sensitivity map: South 2

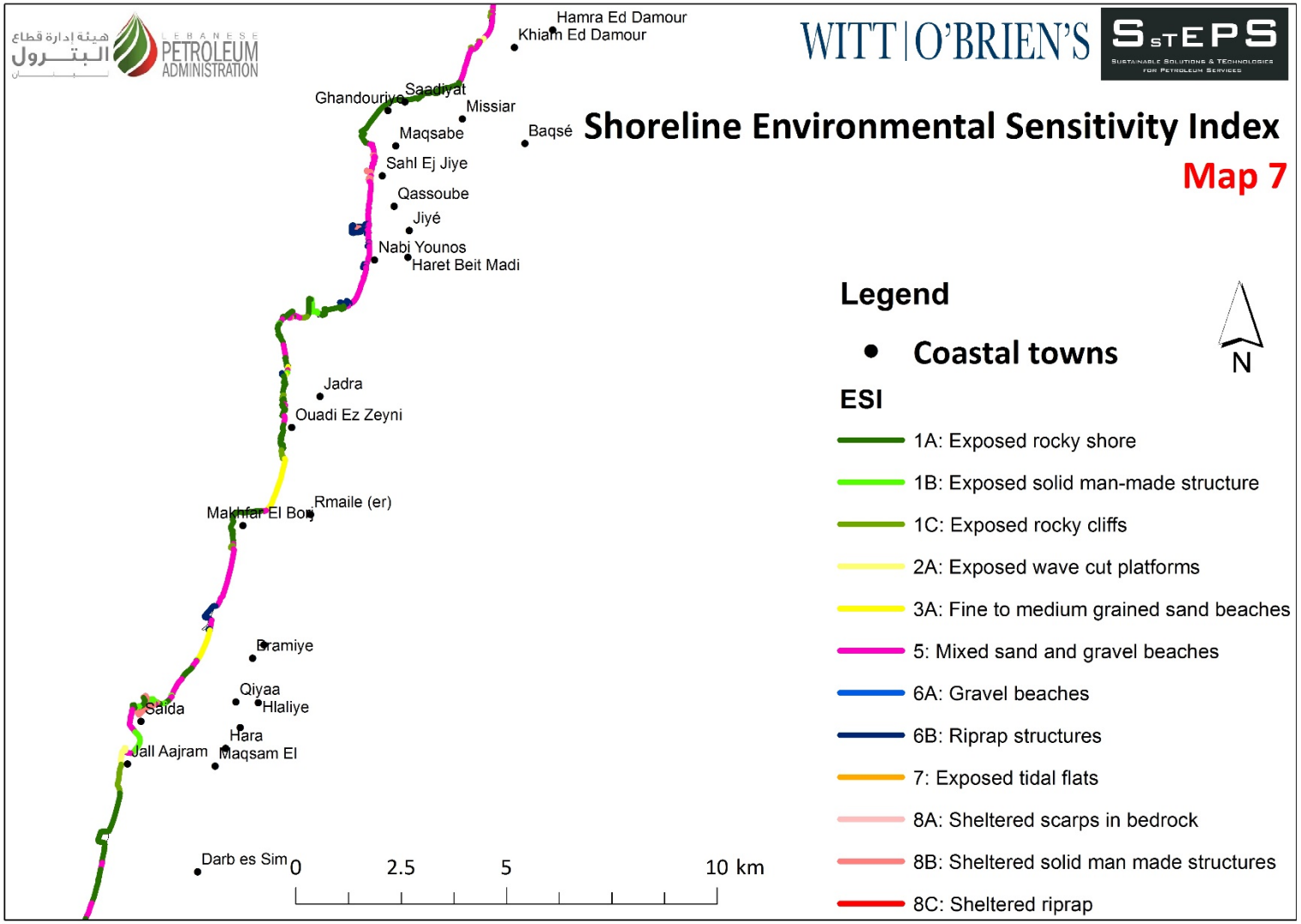


Figure A1- 8: Lebanon sensitivity map: South 3

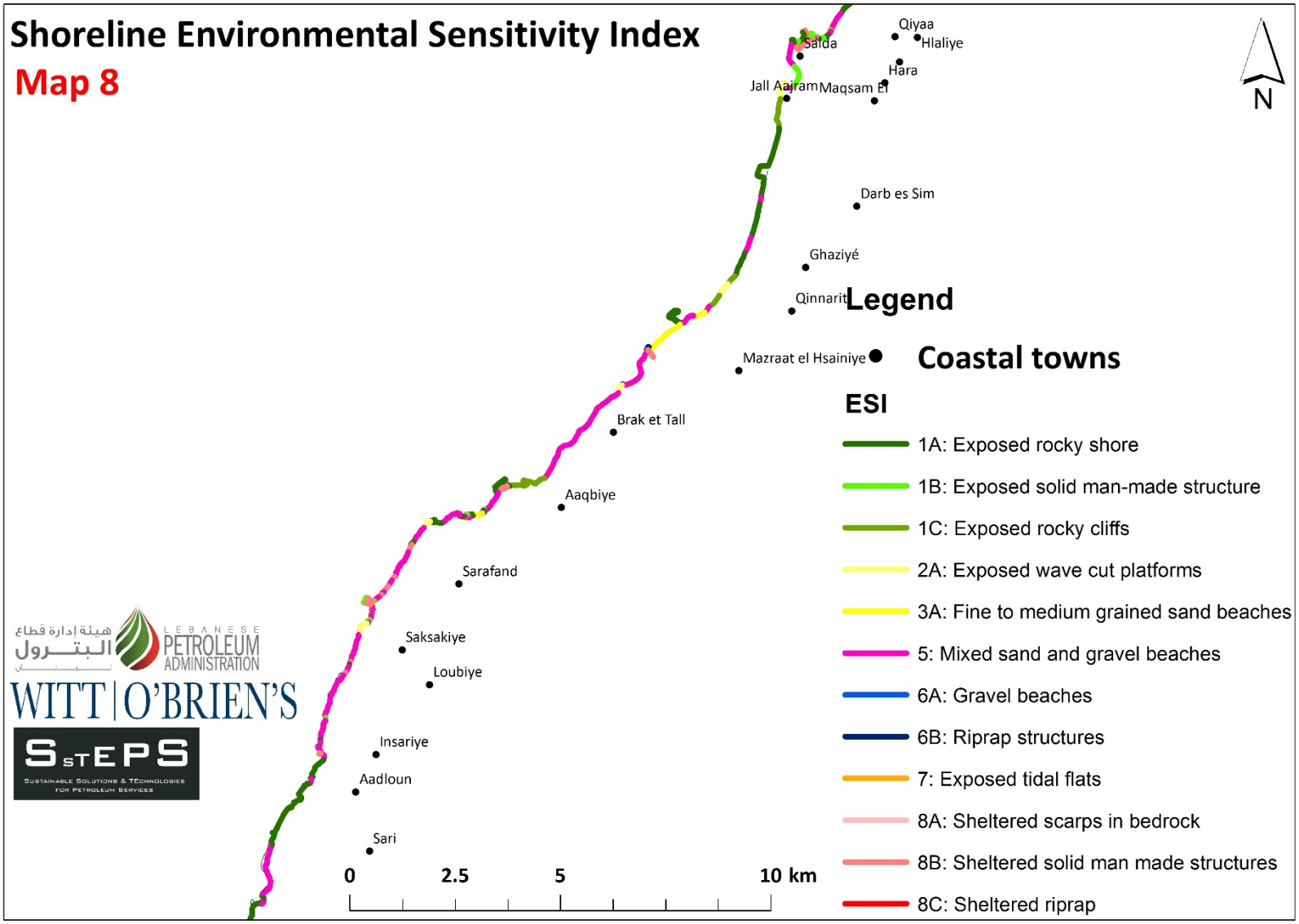


Figure A1- 9: Lebanon sensitivity map: South 4

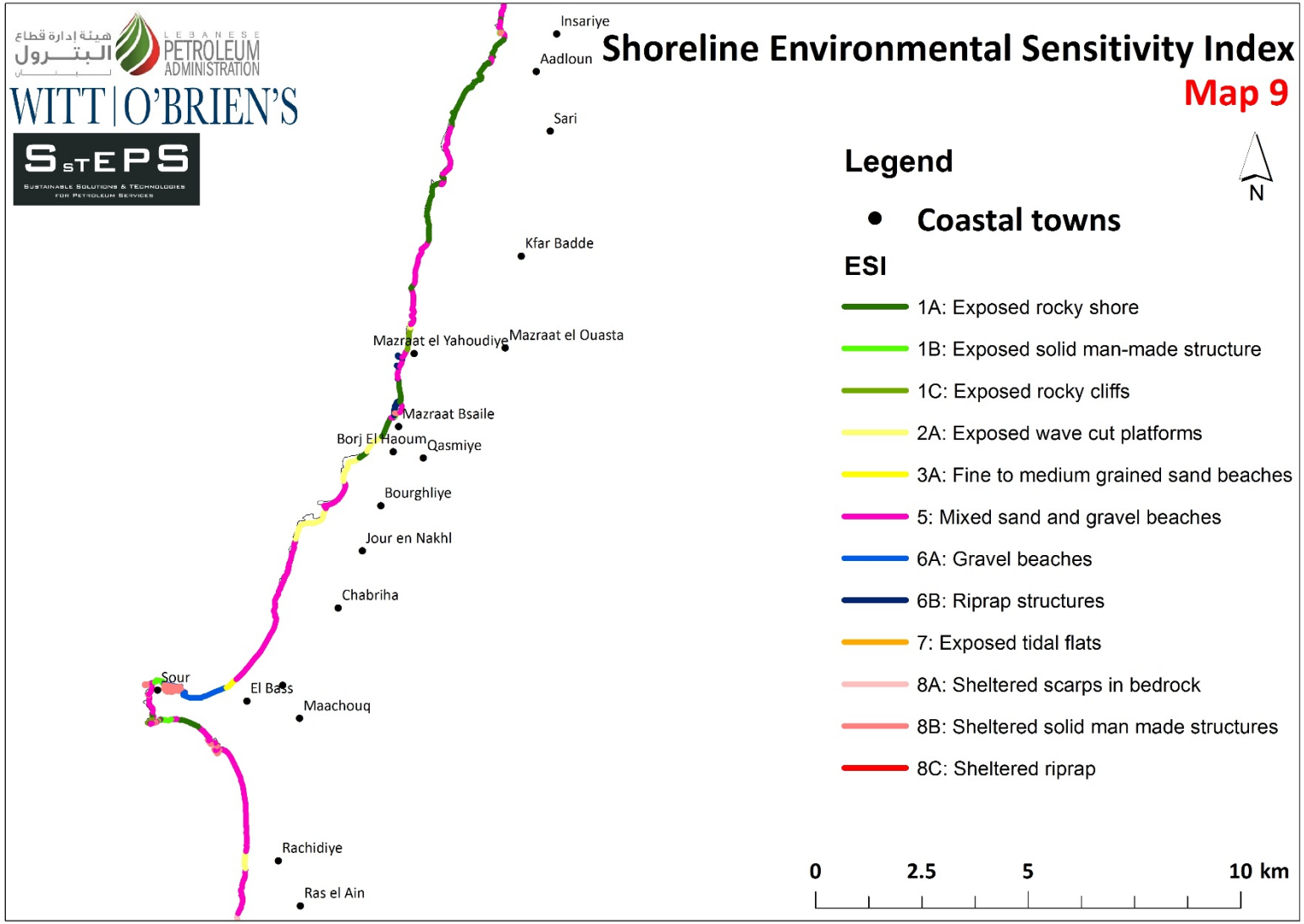


Figure A1- 10: Lebanon sensitivity map: South 5

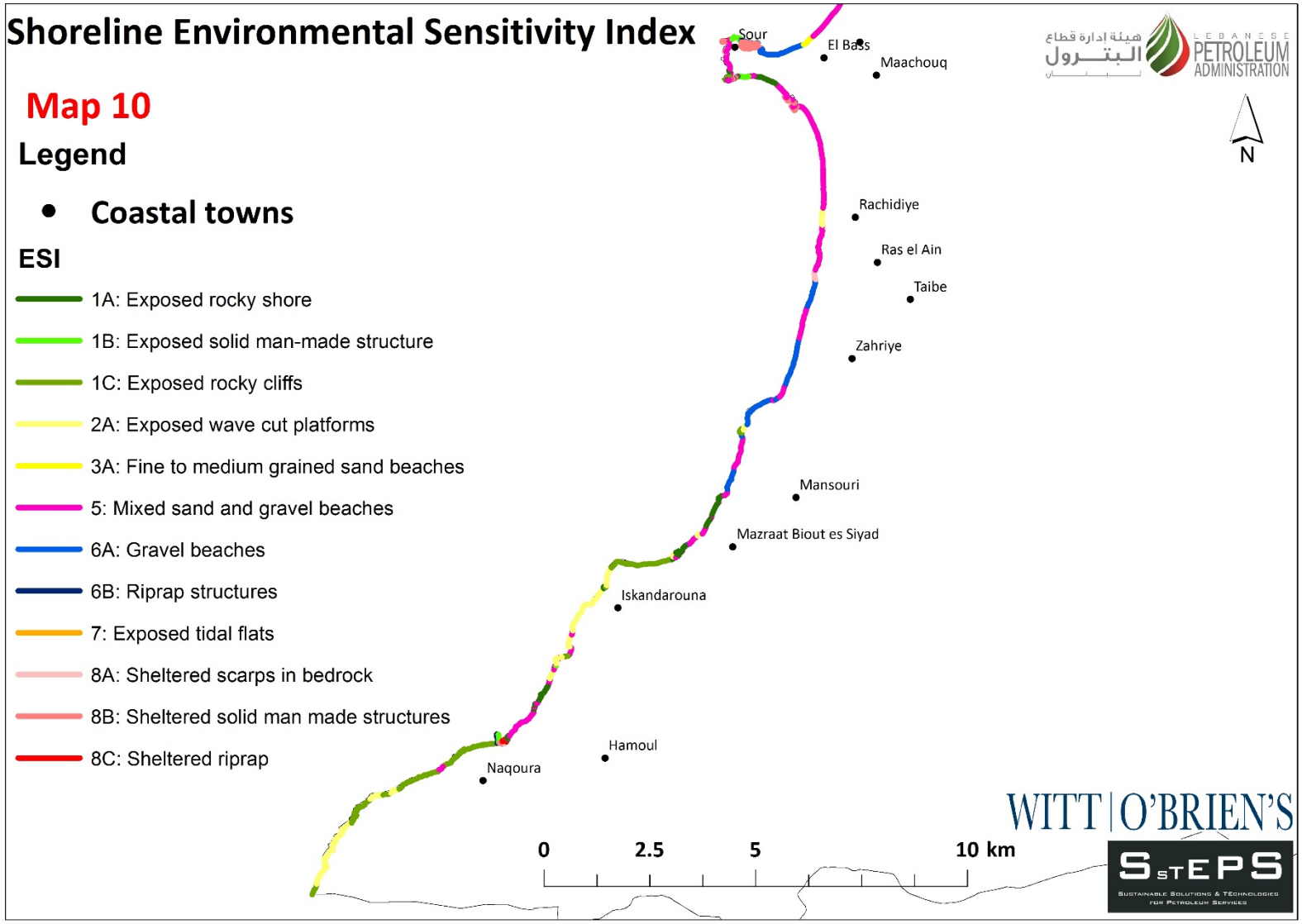


Figure A1- 11: Marine Protected Areas and proposed Marine Protected Areas

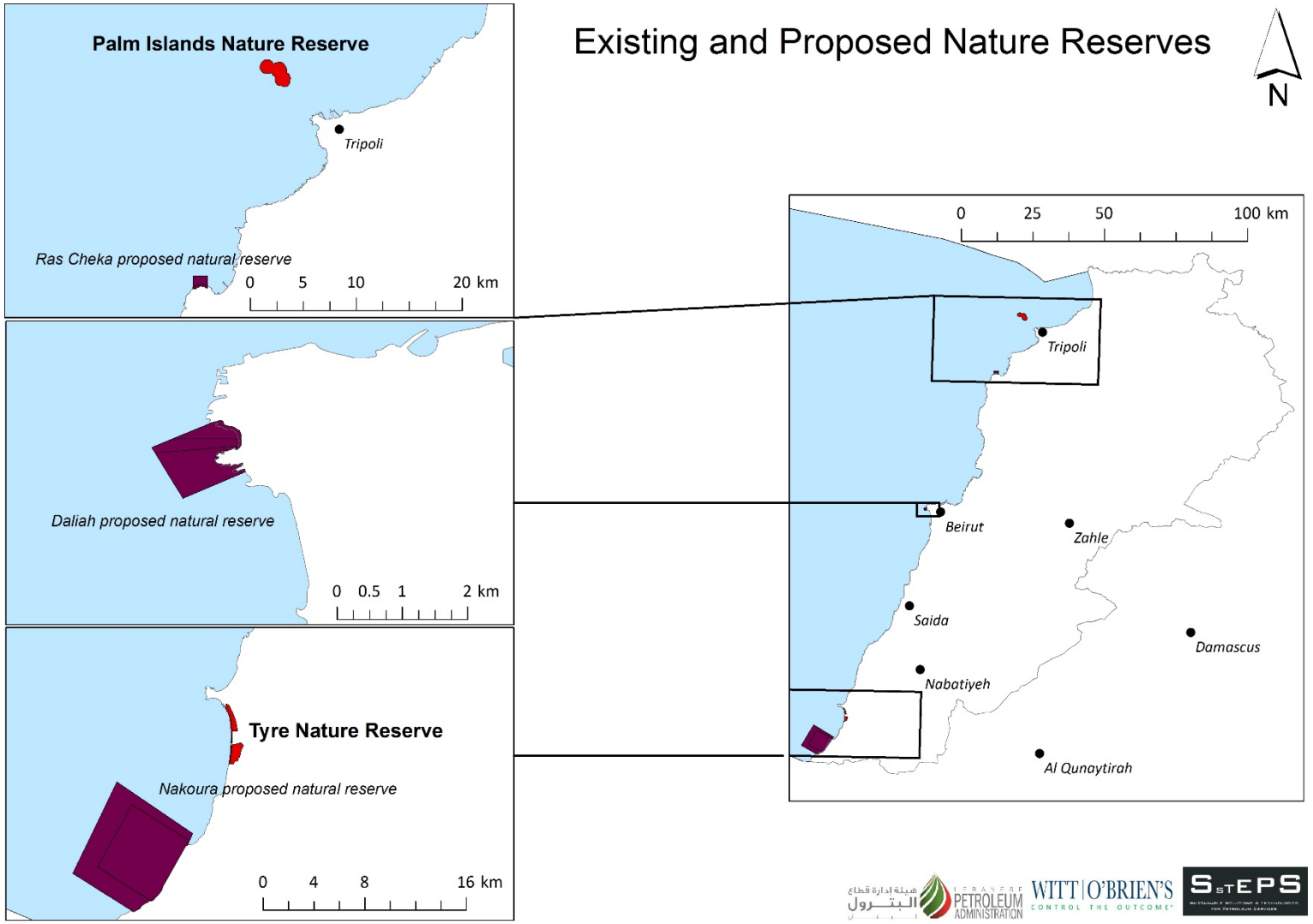

Existing and Proposed Nature Reserves
N
Palm Islands Nature Reserve
Tripoli
Ras Cheka proposed natural reserve
0 5 10 20 km
Daliah proposed natural reserve
0 0.5 1 2 km
Tyre Nature Reserve
Nakoura proposed natural reserve
0 4 8 16 km
0 25 50 100 km
Tripoli
Beirut
Zahle
Saida
Damascus
Nabatiyeh
Al Qunaytirah

Figure A1- 12: Priority Areas as proposed in the Environmental Resources Monitoring in Lebanon report 2012

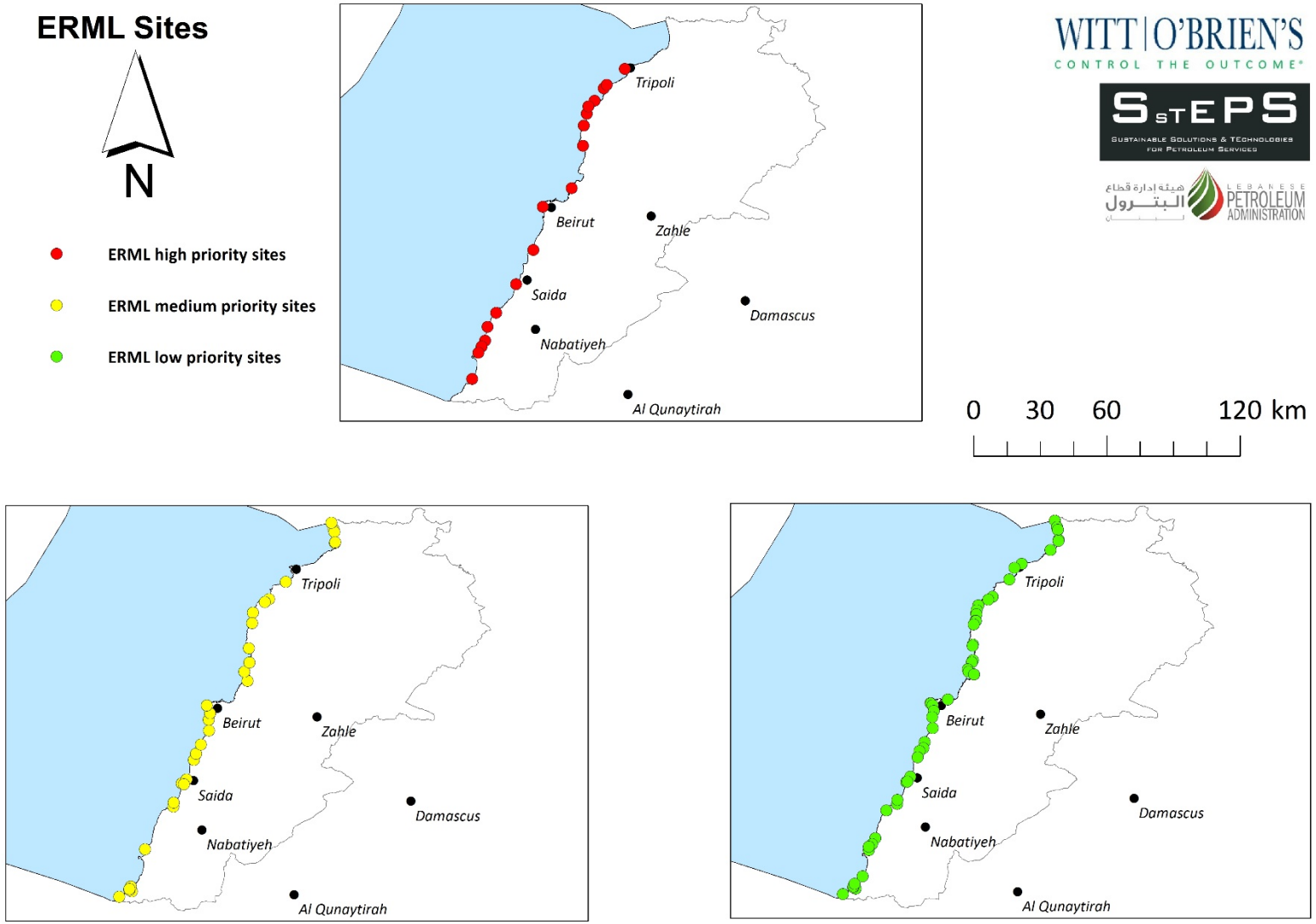
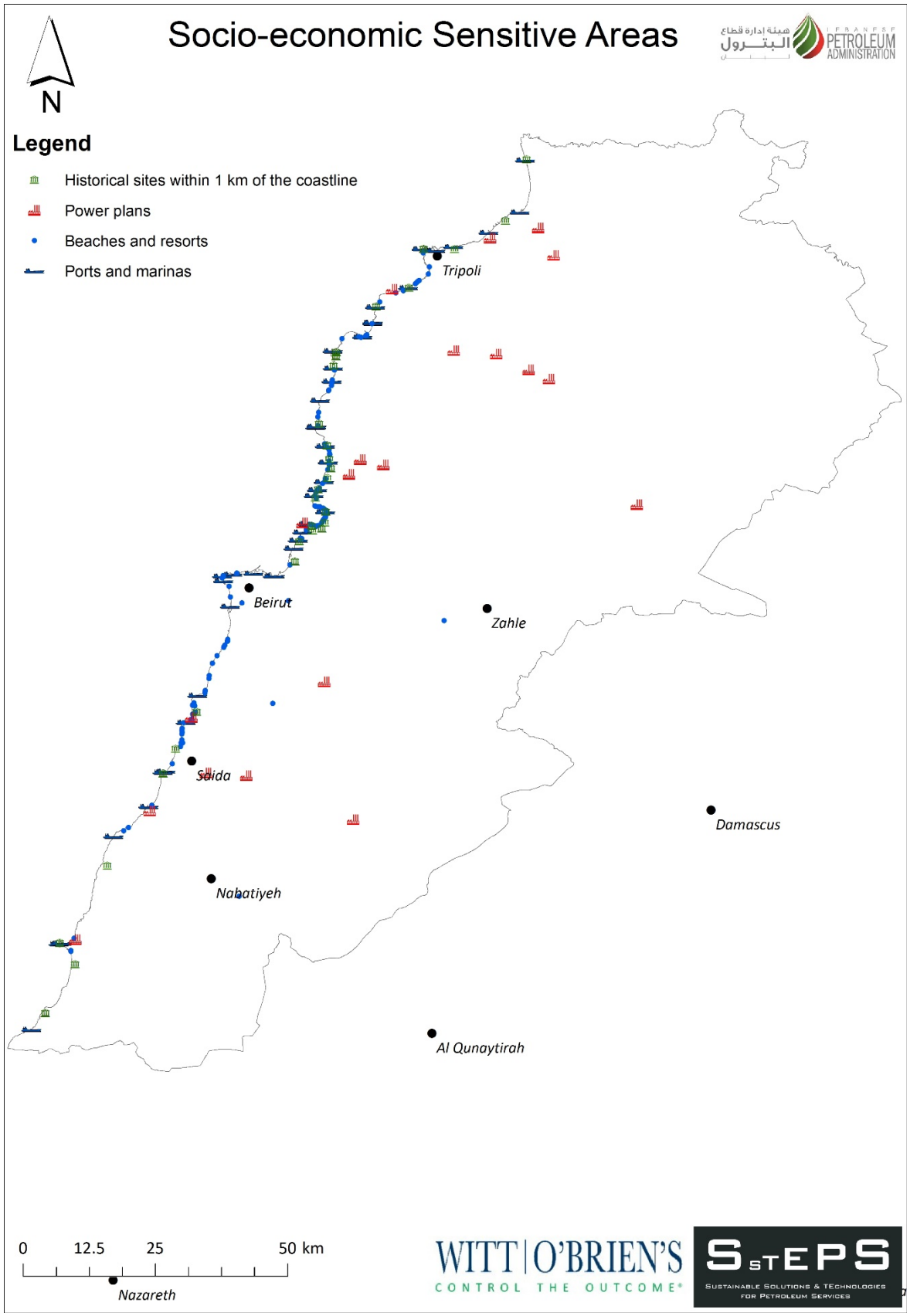


Figure A1- 13: Socio-economically sensitive sites



Annex 2: Facility Level Oil Spill Contingency Plan

The following is taken from the IMO Manual on Oil Spill Response Volume II 4th Edition and is given as guidance to the contents of a facility level oil spill contingency plan.

1) INTRODUCTION
- a) Overall response priorities and objectives
- b) Plan scope (including a summary description of operations and risks)
- c) Geographical area of coverage
- d) Integration with other plans
- e) Document control (plan custodian, distribution, review and update records)

2) INITIAL ACTIONS
- a) Initial actions and strategy decision guide
- b) Initial site safety and spill assessment
- c) Initial response priorities and objectives
- d) Initial action checklists for key personnel
- e) Immediate notifications and reporting
- f) Activation of response management team
- g) Identification of environmental and socio-economic sensitivities
- h) Immediately available Tier 1 resources and contacts
- i) Activation and deployment of Tier 1 resources
- j) Response escalation procedures
- k) Key facility information

3) NOTIFICATIONS AND REPORTING
- a) Internal requirements and procedures
- b) External requirements and procedures
- c) Supplemental notifications, if any
- d) Contact details and forms (included either within the main body of the plan or as a separate directory for ease of frequent updating)

4) ASSESSMENTS
- a) Site health, safety and security assessments
- b) Spill surveillance methods (aerial surveillance, tracking buoys, etc.)
- c) Spill observation and assessment guidance
- d) Meteorological and hydrodynamic forecasting
- e) Spill trajectory and modelling
- f) Tier level assessment and escalation potential

5) RESPONSE RESOURCES
- a) Resource inventories and services list including required logistics support, contact information and mobilization times (included either within the main body of the plan, or as a separate directory if lists are extensive and/or frequent updates are anticipated)
- b) Resourcing procedures
- c) Vessels of opportunity (required vessel specifications, lists of locally available vessels, etc.)
- d) Local labor sources and volunteers
- e) Subject matter experts or specialty expertise

6) RESPONSE MANAGEMENT

a) Response organization
b) Roles and responsibilities
c) Management processes and procedures
Response management facility activation and location

7) SENSITIVE AREAS
a) Identification of sensitivities
b) Protection priorities
c) Sensitivity maps (include either a full set of maps within the main body of the plan, or a reference list of maps that are supplied in a separate document or GIS; the best arrangement will depend on the volume, size and type of maps)
d) Operational sensitivity maps/site-specific tactical plans/geographical response plans (include a full set within the main body of the plan, or a reference list of maps/plans that are supplied in a separate document; the best arrangement will depend on the volume and size of the material)

8) RESPONSE STRATEGIES
a) Strategy decision guidance (flow charts, scenario matrix, NEBA decision guidance, etc.)
b) Scenario-specific response strategy summaries
c) Offshore, near-shore, shoreline and inland waterway response capabilities, as applicable
d) Regulatory pre-approvals and/or approval application procedures
e) General tactical plans, if any (included either within the main body of plan or as separate documents)

9) WASTE MANAGEMENT
a) Regulatory requirements
b) Procedures (including segregation, minimization, site removal, etc.)
c) Guidance for developing spill-specific waste management plan
d) Pre-designated temporary storage sites
e) Treatment and final disposal arrangements or options

10) DECONTAMINATION
a) Health and safety guidance
b) Procedures and approved cleaning agents
c) Pre-designated decontamination sites
d) Guidance for developing a spill-specific decontamination plan

11) DEMOBILIZATION
a) Procedures (final equipment and vessel inspections, personnel checkout, resupply of consumables, claims for repairs, return of hired gear, etc.)
b) Guidance for developing a spill-specific demobilization plan
c) TERMINATION OF RESPONSE
d) Guidance on establishing treatment end points and response termination criteria
e) Designation of the roles with authority to sign off on completed areas and approve termination of the response

12) RESPONSE DEBRIEF
a) Responsibilities and guidelines for conducting a post-spill analysis

13) Potential appendices or supporting documentation
a) General response information
b) Health and safety guidelines

c) In-field communications
d) Documentation requirements and forms
e) Frequently updated information or large volumes of material
f) Resource and contact directories
g) Site-specific plans
h) Sensitivity maps and general tactical plans
i) Background information
j) Description of the facility and/or operations (including facility information, oil types/volumes handled, oil properties and weathering data, etc.)
k) Baseline environmental and socio-economic information
l) Meteorological and hydrodynamic information (including both prevailing and limiting/extreme conditions)
m) Specialized subject-specific plans
n) Shoreline assessment
o) Claims and compensation
p) Sampling and monitoring
q) Crisis (external) communications—public information, media, stakeholder engagement
r) Wildlife protection and response
s) Waste management
t) Finance and administration
u) Human resources procedures (hiring, managing and compensating local labor)
v) Financial responsibility and sources of funding
w) Contractual agreements
x) Plan justification and other preparedness material
y) Risk assessment and scenario planning

Annex 3: Forms

1. **POLREP**
2. **INCIDENT BRIEFING (ICS 201)**
3. **INCIDENT OBJECTIVES (ICS 202)**

POLREP

Spill report form – POLREP. To be used to:

- ***Report pollution to JMOC***
- ***Report pollution to a neighboring government (undertaken by NOR)***
- ***Request international assistance***
- ***Give updates on on-going operations to interested parties (SITREP)***

From	
To	
1. Date and Time	
2. Position	
3. Incident	
4. Outflow	
5. Position and/or extent of pollution on the sea	
6. Characteristics of pollution	
7. Source and cause of pollution	
8. Wind direction and speed	
9. Current direction and speed and/or tide	
10. Sea state and visibility	
11. Drift of pollution	
12. Forecast of likely effect of pollution and zones affected.	
13. Identity of observer/reporter. Identity of ships on the scene	
14. Action taken	
15. Photographs or samples	
16. Names of other states and organizations informed	
17. Other information	
18. Request for assistance	
19. Cost	
20. Pre-arrangements for the delivery of assistance	
21. To where assistance should be rendered and how.	
22. Acknowledge	

Guidance notes:

1. *Date AND TIME: The day of the month as well as the time of the day that the incident took place or, if the cause of the pollution is not known, the time of the observation should be stated using 6 digits. It should be stated in GMT.*
2. *POSITION: Indicates the main position of the incident, the longitude and latitude in degrees and minutes, and may, in addition give the bearing of and the distance from a location known by the receiver.*
3. *INCIDENT: The nature of the incident should be stated here, such as blowout, tanker grounding, tanker collision, oil slick etc.*
4. *OUTFLOW: The polluting substance, such as crude oil, as well as the total quantity in tonnes of the outflow and/or the flow rate, and the risk of further outflow should be mentioned. If there is no pollution, but a threat of pollution, the words NOT YET followed by the substance should be stated.*
5. *POSITION AND/OR EXTENT OF POLLUTION ON/ABOVE/IN THE SEA. Indicates the main position of the pollution in degrees and minutes of latitude and longitude, and may in addition give the distance and bearing of some prominent landmark known to the receiver if other than indicated in number 2. Estimated amount of pollution (e.g. size of polluted areas, number of tonnes of oil spilled if other than indicated in number 4)*
6. *CHARACTERISTICS OF POLLUTION: Gives type of pollution and a description e.g. type of oil, viscosity, pour point etc.*
7. *SOURCE AND CAUSE OF POLLUTION: Indicates the source of pollution e.g. from a vessel or other undertaking. If from a vessel, it should be notified whether the pollution is a result of a deliberate discharge or casualty. If the latter a brief description should be given. Where possible the name, type, size, call sign, nationality and port of registration of polluting vessel should be mentioned. If the vessel is proceeding on its way, course, speed and destination should be indicated.*
8. *WIND DIRECTION AND SPEED: Indicates wind direction and speed in degrees and in m/sec. The direction always indicates from where the wind is blowing.*
9. *CURRENT DIRECTION AND SPEED AND/OR TIDE: Indicates current direction and speed in degrees and knots and tenths of knots. The direction always indicates the direction in which the current is flowing.*
10. *SEA STATE AND VISIBILITY: Sea state indicates the wave height in meters. Visibility should be indicated in nautical miles.*
11. *DRIFT OF POLLUTION: Indicates drift course and speed of pollution in degrees and knots or tenths of knots.*
12. *FORECAST OF LIKELY EFFECT OF POLLUTION AND ZONES AFFECTED: Results of mathematical models could indicate e.g. arrival on beach with estimated timing.*
13. *INDENTITY OF OBSERVER/REPORTER. IDENTIFY OF SHIPS ON SCENE: Identifies who has reported the incident. If it is a ship, the name, home port, flag and call sign must be given. Ships on scene could also be indicated under this item by name, home port, flag and call sign, especially if the polluter cannot be identified and the spill is considered to be of recent origin.*
14. *ACTION TAKEN: Mentions action taken for the disposal of the pollution.*
15. *PHOTOGRAPHS OR SAMPLES: Indicates if photographs or samples from the pollution have been taken. Contact numbers (including telephone numbers, email address, telefax, and telex numbers as appropriate) of the sampling authority should be given.*

16. *NAMES OF OTHER STATES AND ORGANIZATIONS INFORMED.*
17. *OTHER RELEVANT INFORMATION: For example results of sample or photographic analysis, results of inspections or surveyors, or statements of ship's personnel.*
18. *REQUEST FOR ASSISTANCE: Type and amount of assistance required in form of specified equipment, trained personnel.*
19. *Cost: Information on cost of delivered assistance to be notified to requested country.*
20. *PER-ARRANGEMENTS FOR THE DELIVERY OF ASSISTANCE: Information concerning customs clearance, access to territorial waters in the requesting country.*
21. *TO WHERE ASSISTANCE SHOULD BE RENDERED AND HOW; Information concerning the delivery of the assistance, e.g. rendezvous at sea with information on frequencies to be used, call sign and name of On-Scene Commander of the requesting country or land based authorities with contact numbers and contact persons.*
22. *ACKNOWLEDGE: When this number is used the telex/telefax/email should be acknowledged as soon as possible by the competent national authority.*

INCIDENT BRIEFING (ICS 201) Notes

Purpose. The Incident Briefing (ICS 201) provides the Incident Commander (and the Command and General Staffs) with basic information regarding the incident situation and the resources allocated to the incident. In addition to a briefing document, the ICS 201 also serves as an initial action worksheet. It serves as a permanent record of the initial response to the incident.

Preparation. The briefing form is prepared by the Local Incident Commander for presentation to the incoming NOSIC as part of a more detailed oral briefing.

Distribution. Ideally, the Incident Briefing (201) is distributed before the initial briefing of the NOSIC Support and General Staffs or other responders as appropriate. The "Map/Sketch" and "Current and Planned Actions, Strategies, and Tactics" sections (pages 1–2) of the briefing form are given to the Situation Unit, while the "Current Organization" and "Resource Summary" sections (pages 3–4) are given to the Resources Unit.

The ICS 201 can serve as part of the Initial Incident Action Plan (IAP)

Ref	Section	Instructions
1	Incident Name	Enter the name assigned to the incident
2	Incident Number	Enter the number assigned to the incident
3	Date/Time Initiated	Enter the date initiated (month/day/year) and time initiated (using 24 hour clock)
4	**Map/Sketch** (include sketch, showing the total area of operations, the incident site/area, impacted and threatened areas, overflight results, trajectories, impacted shorelines, or other graphics depicting situational status and resource assignment):	Show perimeter and other graphics depicting situational status, resource assignments, incident facilities, and other special information on a map/sketch or with attached maps. Utilize commonly accepted ICA map symbology. North should be at the top of the page unless otherwise noted.
5	**Situation Summary and Health and Safety Briefing (for briefings or transfer of command):** *Recognize potential incident Health and Safety Hazards and develop necessary measures (remove hazard, provide personal protective equipment, warn people of the hazard) to protect responders from those hazards.*	Self-explanatory.
6	**Prepared by:** **Name** **Position/Title** **Signature** **Date/Time**	Enter the name, ICS position/title, and signature of the person preparing the form. Enter date (month/day/year) and time prepared (24 hour clock)

7	**Current and planning objectives**	Enter the objectives used on the incident and note any specific problem areas.
8	**Current and Planned Actions, Strategies and Tactics**	Enter the current and planned actions, strategies, and tactics and time they may or did occur to attain the objectives.
9	**Current Organization** ☐ Incident Commander(s) ☐ Liaison Officer ☐ Safety Officer ☐ Public Information Officer ☐ Planning Section Chief ☐ Operations Section Chief ☐ Finance/Administrati on Section Chief ☐ Logistics Section Chief	• Enter on the organizational chart the names of the individuals assigned to each position. • Modify the chart as necessary and add any lines/spaces needed for the command staff assistances, agency representatives and the organization of the general staff sections.
10	**Resource Summary**	Enter the following information about the resources allocated to the incident. • Enter the number and appropriate category, kind or type of resource ordered. • Enter the relevant agency designator and /or resource designator (if any) • Enter the date (month/day/year0 and time (24 hour clock) the resource was ordered. • Enter the estimated time of arrival (ETA) to the incident (use 24 hour clock). • Enter an 'X' or a check mark upon arrival to the incident. • Enter notes such as the assigned location of the resource and/or the actual assignment and status.

INCIDENT BRIEFING (ICS 201) (Page 1)

Incident Name:	**Incident Number:**	**Date/Time Initiated:**
Map/Sketch (include sketch, showing the total area of operations, the incident site/area, impacted and threatened areas, overflight results, trajectories, impacted shorelines, or other graphics depicting situational status and resource assignment):		
Situation Summary and Health and Safety Briefing (for briefings or transfer of command): *Recognize potential incident Health and Safety Hazards and develop necessary measures (remove hazard, provide personal protective equipment, warn people of the hazard) to protect responders from those hazards.*		
Prepared By:	**Position/Title**	**Signature**

INCIDENT BRIEFING (ICS 201) (Page2)

Incident Name:	Incident Number:	Date/Time Initiated:

Current and Planning Objectives:

Current and Planning Actions, Strategies and Tactics

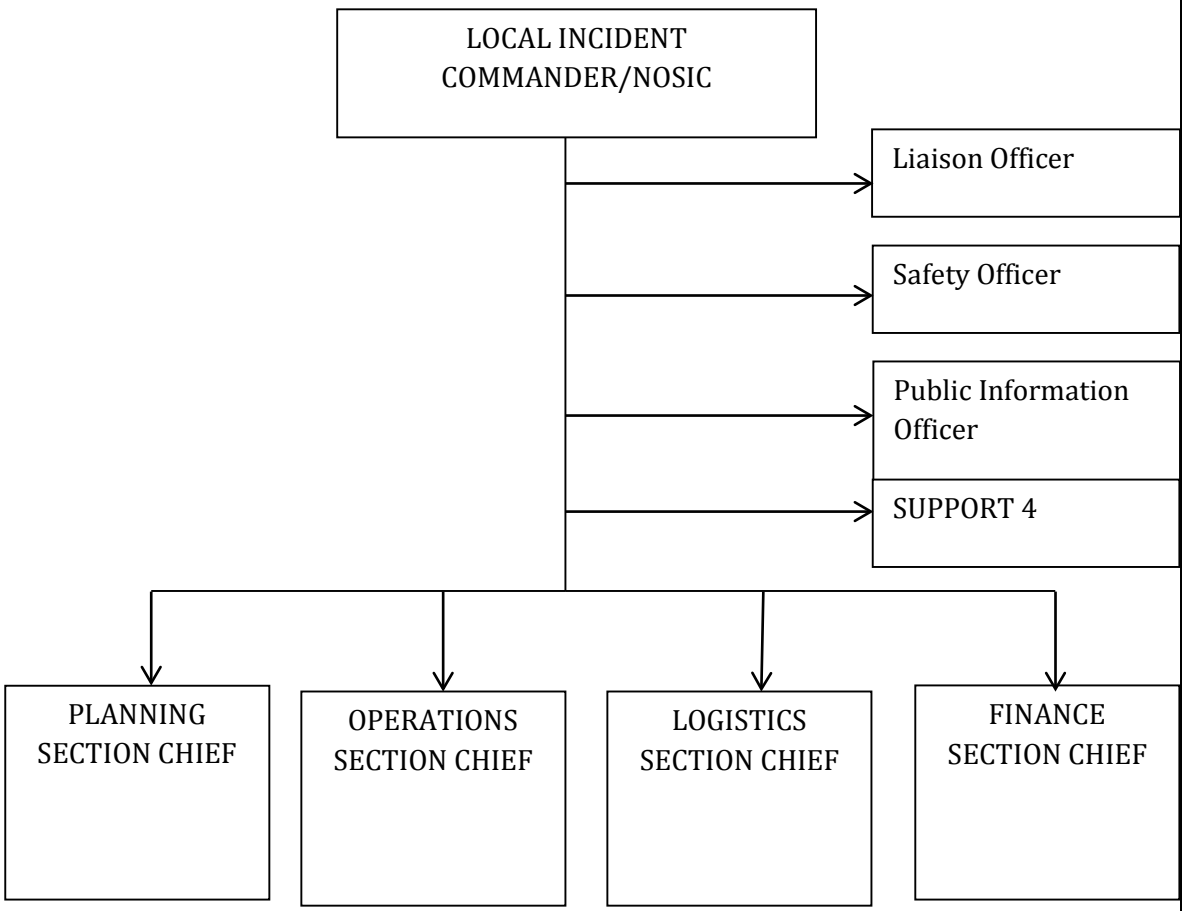
Time	Actions

Prepared By:	Position/Title	Signature
Signed over to	**Position/Title**	**Signature**

INCIDENT BRIEFING (ICS 201) (Page 3)

Incident Name:	Incident Number:	Date/Time Initiated:

Current Organization (fill in additional organization as appropriate):



Prepared By:	Position/Title	Signature
Signed over to	Position/Title	Signature

INCIDENT BRIEFING (ICS 201) (Page 4)

Incident Name:	Incident Number:	Date/Time Initiated:

Resource Summary

Resource	Resource ID	Date/Time Ordered	ETA	Arrived	Notes (location/assignment/status)

Prepared By:	Position/Title	Signature
Signed over to	Position/Title	Signature

INCIDENT OBJECTIVES (ICS 202) (Notes)

Purpose. The Incident Objectives form describes the basic incident strategy, control objectives, and provides weather, tide and current information, and safety considerations for use during the next operational period.

Preparation. The Incident Objectives (202) is completed by the Planning Section following each NOSIC Support and General Staff Meeting which is conducted to start preparation of the Incident Action Plan (IAP). The National Oil Spill Incident Commander (NOSIC) approves the Incident Objectives (202).

Distribution. The Incident Objectives (202) is distributed to all supervisory personnel at the Section, Branch, Division/Group and Unit levels. All completed original forms must be given to the Documentation Unit

Ref	Section	Instructions
1	Incident name	Enter the name assigned to the incident
2	Operational period	Enter the time interval for which the form applies. Record the start and end date and time.
3	Overall incident objectives	Enter clear, concise statements of the objectives for managing the response. Ideally these objectives will be listed in priority order. These objectives are for the incident response for this operational period as well as for the duration of the incident. Include alternative and/or specific tactical objectives as applicable. Objectives should follow the SMART model or a similar approach: **S**pecific – Is the wording precise and unambiguous? **M**easurable – How will achievements be measured? **A**ction-oriented – Is an action verb used to describe expected accomplishments? **R**ealistic – Is the outcome achievable with given available resources? **T**ime-sensitive – What is the timeframe?
4	Objectives for specified operational period	Enter agreed NOSIC and ICAG emphasis for the operational period, which may include tactical priorities or the need for personal safety for the operational period. This is not a narrative on the objectives but a discussion about where to place emphasis if there are needs to prioritize based on the NOSIC's or IACG's direction. Examples: Be aware of dangerous rip tides, sharp objects on a beach, etc.
5	General Situational Awareness	General situational awareness may include a weather forecast, incident conditions, and/or a general safety message. If a safety message is included here, it should be reviewed by the Safety Officer to ensure it is in alignment with the Safety Message/Plan (208).
6	Site Safety Plan Required? Yes ☐ No ☐	Safety Officer should check whether or not a site safety plan is required for this incident.
	Approved Site Safety Plan(s) Located At	Enter the location of the approved Site Safety Plan(s).

7	Incident Action Plan	Check appropriate forms and list other relevant documents that are included in the IAP. ☐ Incident Objectives (202) ☐ Organization Assignment List (203) ☐ Assignment List (204) ☐ Incident Radio Communications Plan (205) ☐ Communications List (205A) ☐ Medical Plan (206) ☐ Incident Organization Chart (207) ☐ Safety Message/Plan (208) ☐ Map/Chart ☐ Weather Forecast/ Tides/Currents Other Attachments:
8	**Prepared by** ☐ Name ☐ Position/Title ☐ Signature	Enter the name, position, and signature of the person preparing the form. Enter date (month/day/year) and time prepared (24-hour clock).
9	**Approved by National Oil Spill Incident Commander** ☐ Name ☐ Signature ☐ Date/Time	NOSIC will approve the Incident Objectives (202

INCIDENT OBJECTIVES (ICS 202) (Page 1)

Incident Name:	**Operational Period** **From:**	**To:**
Overall Incident Objectives		
Objectives for Specified Operational Period		
General Situational Awareness		
Site Safety Plan Required: Yes/No		
Approved Site Safety Plan (s) Located at:		
Attachments (check if attached) ☐ 202 ☐ 203 ☐ 204 ☐ 205 ☐ 205A	☐ 206 ☐ 207 ☐ 208 ☐ Map/chart ☐ Weather Forecast/tides/cuurent	☐ Other Attachments:
Prepared By: (Planning section chief):		**Date/Time:**

Approved by NOSIC: Name:		**Signature**
(202)	**IAP Page:**	**Date/Time:**

تقرير التلوّث (POLREP)

يستعمل هذا التقرير لـ:

- تبليغ غرفة العمليّات البحريّة المشتركة عن تلوّث من حادثة تسرّب نفطي
- تبليغ دولة مجاورة (من خلال غرفة العمليّات الوطنيّة)
- طلب مساعدة دوليّة
- تقديم التحديثات حول مجريّات العمليّات للجهات المعنيّة ***(SITREP)***

من	
إلى	
23. التاريخ والتوقيت	
24. الموقع	
25. الحادثة	
26. مصدر التسرّب	
27. موقع و/ أو مدى انتشار التلوّث في البحر	
28. خصائص التلوّث	
29. مصدر وسبب التلوّث	
30. سرعة وإتجاه الرياح	
31. سرعة وإتجاه التيّارات و/ أو المد والجزر	
32. حالة البحر والرؤيا	
33. إنجراف التلوّث	
34. تقدير الأثر المحتمل للتلوّث والمناطق المتأثّرة	
35. هويّة الجهة المراقبة/ المبلّغة هويّة السفينة في الموقع	
36. الإجراء المتّخذ	
37. صور فوتوغرافيّة وعيّنات	
38. أسماء الدول والجهات الأخرى التي تم تبليغها	
39. معلومات أخرى	
40. طلب مساعدة	
41. الكلفة	
42. الترتيبات المسبقة اللازمة لتسليم المساعدات	
43. إلى أين يجب أن يتم تسليم المساعدات وكيف.	
44. الإفادة بالتسلّم	

تقرير الإحاطة بالحادثة (ICS 201) (الصفحة الأولى)

إسم الحادثة:	رقم الحادثة:	تاريخ وتوقيت بدء الحادثة:

خريطة / رسم (إضافة رسم يبيّن المساحة الإجمالية للعمليات، موقع / منطقة الحادثة، المناطق المتأثّرة والمهدّدة، نتائج التحليق الإستطلاعي، مسارات بقع النفط، الشواطئ المتأثرة، أو غيرها من الرسومات التي تصور الوضع الظرفي وتخصيص الموارد):

ملخّص الوضع والإحاطة حول الصحّة والسلامة (بهدف الإحاطات أو نقل القيادة): تحديد مخاطر الصحة والسلامة المحتملة المتعلّقة بالحادثة وتطوير التدابير اللازمة (إزالة الخطر، توفير معدات الوقاية الشخصية، تحذير الناس من الخطر) لحماية المستجيبين من تلك المخاطر.

حُضّر من قبل:	المنصب/ اللقب	الإمضاء:

تقرير الإحاطة بالحادثة (ICS 201) (الصفحة الثانية)

إسم الحادثة:	رقم الحادثة:	تاريخ وتوقيت بدء الحادثة:

الأهداف الحاليّة وأهداف التخطيط:

الإجراءات، الاستراتيجيات والتكتيكات الحالية ولغرض التخطيط

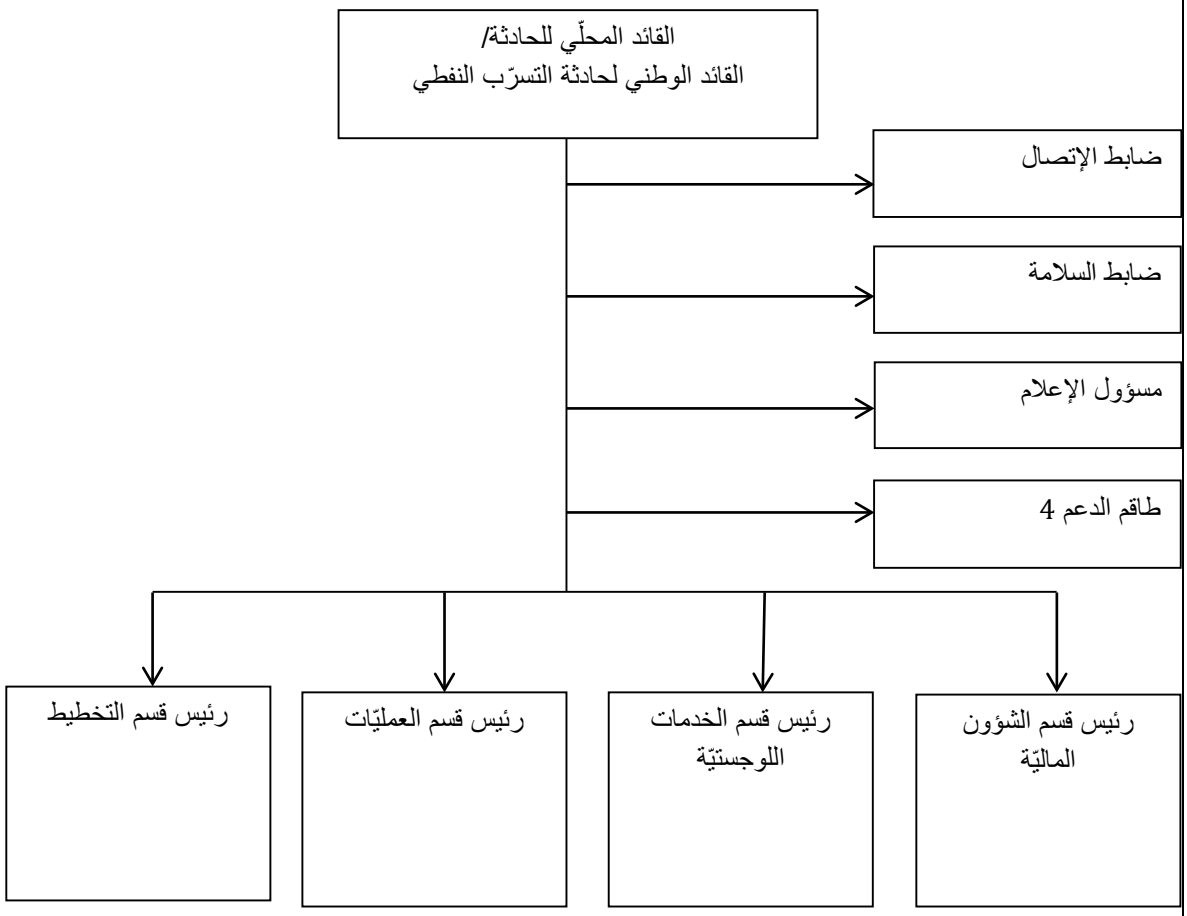
التوقيت	الإجراءات

حُضّر من قبل:	المنصب/ اللقب	التوقيع:
سُلّم إلى:	المنصب/ اللقب	التوقيع:

تقرير الإحاطة بالحادثة (ICS 201) (الصفحة الثالثة)

إسم الحادثة:	رقم الحادثة:	تاريخ وتوقيت بدء الحادثة:

الهيكليّة الحاليّة للمنظّمة (ملء وظائف إضافيّة حسب الإقتضاء):



خُضّر من قبل:	المنصب/ اللقب	التوقيع:
سُلّم إلى:	المنصب/ اللقب	التوقيع:

تقرير الإحاطة بالحادثة (ICS 201) (الصفحة الرابعة)

إسم الحادثة:	رقم الحادثة:	تاريخ وتوقيت بدء الحادثة:

ملخّص عن الموارد

المورد	رقم تعريف المورد	تاريخ/ توقيت وضع الطلبيّة:	الوقت المتوقع للوصول	الوصول	ملاحظات (الموقع، المهام المعيّنة، الحالة)

حُضّر من قبل:	المنصب/ اللقب	التوقيع:
سُلّم إلى:	المنصب/ اللقب	التوقيع:

Annex 4: Contact Directory

Organization	Phone (24 hours)	Email
Civil Defense ICAG Representative		
DG LOI		
DG Oil		
EDF		
European Maritime Safety Agency (EMSA)		
Governorates		
International Maritime Organization (IMO)		
JMOC		
LAF ICAG Representative		
LPA ICAG Representative		
Ministry of Agriculture ICAG Representative		
Ministry of Energy and Water ICAG Representative(s)		
Ministry of Environment ICAG Representative		
Ministry of Finance ICAG Representative		
Ministry of Foreign Affairs		
Ministry of Industry		
Ministry of Information		
Ministry of Information		
Ministry of Interior & Municipalities ICAG Representative		
Ministry of Labor		
Ministry of Public Health ICAG Representative		
Ministry of telecommunications		
MOPWT-DGLMT ICAG Representative		

National Center for Scientific Research ICAG Representative		
NOR		
REMPEC		
Syndicate of Professional Divers		

Annex 5: Current Response Equipment Inventory

Adjusted list of equipment distributed to the Navy and Civil Defense based on inventory of donated equipment provided by APIC

All LAF equipment located at the Beirut Naval Base. Civil Defense equipment mainly at Jounieh Marine Rescue Base with small stockpiles at Jiyyeh and Tyre.

Item Description		Naval Base	Civil Defense
Pomp GMP B3 x RA 10 HP		1	0
Absorbent booms		191	143
Flexi 900 fence oil boom (345 m)		0	2
Flexi 900 fence oil boom (405 m)		0	2
Flexi 900 fence oil boom (225 m)		1	0
Towing end (pulling head) for the fence boom		0	4
Repair kit bag for the fence boom		1	4
Magnetic connectors for the fence boom		2	8
ASTM connectors for the fence boom		0	8
RCY Coastal boom 450 m (5 mooring kits, 1 reparation kit, 1 inflating gun, 1 manometer)		1	0
Geoland Coastal boom (100 m)		4))	0
RCY Canarie Coastal boom (100 m)		0	5
Expanding Booms 4300		1	0
Power Generation (13 KVA)		1	0
Inflatable buoys for anchors		0	47
Other buoys		0	-
Hoe Anchors (15 Kg)		6	68
Ropes for anchor buoys		20	100
Buoys with lights		6	20
Inflatable buoys for anchors diameter: 60 cm		4	0
Other buoys diameter 50 cm long 20 cm		10	[
Dismountable oil recovery basin 4m3		0	4
Lamor skimmer minimax 10 + power pack	Skimmer	0	4
	Power pack	0	4
Harbor oil boom NOFI 250 EP (25 m length sections)		0	7 sections
Oil boom oil-stop NRC (100 feet length sections)		0	8 sections
Coastal oil boom Oil Stop NRC (100 feet length sections		24 sections	0
Reparation & maintenance kit for oil boom oil-stop NRC		0	1
Harbor oil boom NOFI 250 EP (25 m length sections)		13 sections	0
Galvanized steel storage platform double height		4	1
Galvanized steel storage platform single height		0	1
Antifriction geotextile mat		0	1

Item Description	Naval Base	Civil Defense
Gasoline air blowers Benza BA500K	3	1
Plastic cans 5L gasoline 3% oil, for blowers	3	1
Weir skimmer Foilex TDS 150	0	1
Diesel power pack (Lamor Lpp 30)	1	0
Hydraulic hose 3/4 degree	0	60 m
Discharge oil hose 3 degree with Camlock coupling	20 m	20 m
Kit of spare parts for Foilex TDS skimmer	0	1
Collapsible tanks, easy tank 10 m^3 capacity	2	0
Belt skimmer Lamor minimax 30	1	0
Anchor lines, 45 kg anchor, ready to use	30 pcs	0
Plastic storage box Arca system	6	0
Absorbent mat or roll 450	0	3
Shovels	118	420
Boots	600	1580
Gloves PVC	1680	1680
Nylon braided rope (4m)	25	0
Steel chain (5.80 m long)	24	0
Steel chain (7.40 m long)	25	0
Steel chain (9.70 m long)	5	0
Shackle 3 cm	4	0
Shackle 2.5 cm	42	0
Shackle 6 cm	20	0
Shackle 4 cm	14	0
Shackle 2 cm	51	0
Defense (diameter: 5.35 cm)	24	0
Defense (external diameter: 110 cm)	6	0
Defense (external diameter: 80 cm)	6	0
Defense (external diameter: 45 cm)	24	0
Buoys for rope	48	0
Fiber rope (14 mm diameter; 37 m long)	4	0
Fiber rope (14 mm diameter; 36 m long)	6	0
Fiber rope (14 mm diameter; 36 m long)	3	0
Fiber rope (14 mm diameter; 32 m long)	6	0
Fiber rope (14 mm diameter; 30 m long)	7	0
Fiber rope (14 mm diameter; 20 m long)	1	0
Fiber rope (14 mm diameter; 3 m long)	12	0
Fiber rope (14 mm diameter;4.5 m long)	5	0
Fiber rope (14 mm diameter; 5 m long)	1	0
Fiber rope (14 mm diameter; 3.5 m long)	7	0
Fiber rope (21 mm diameter; 28 m long)	25	0

Item Description		Naval Base	Civil Defense
Fiber rope (21 mm diameter; 30 m long)		4	0
Fiber rope (21 mm diameter; 25 m long)		1	0
Fiber rope (21 mm diameter; 5.4 m long)		10	0
Fiber rope (21 mm diameter; 5 m long)		3	0
Fiber rope (21 mm diameter; 4.4 m long)		2	0
Fiber rope (21 mm diameter; 4 m long)		8	0
Barrels of chemical dispersants		4	3
High Pressure Cleaners (Karcher)		3	1
Hand tools for beach cleanup	Beach hand tools	10	0
	Fork piece	0	12
	Shovel piece oval	0	4
Aggregates	power pack - HYDAC	0	0
Pipes and maneuver panels	Manual skimmers square	18	0
	Manual skimmers circular with bag	0	17
	Manual skimmers circular without bag	10	7
	Manual skimmers circular incomplete	1	0
	Yellow boxes for big bags	5	5
	Big white bags 80 cm x 100 cm	82	232
	White bag 1200 kg	16	0
	Halogen projectors	9	0
	Shovels aluminum	6	0
	Big funnel aluminum	4	3
	Funnel stand aluminum	4	3
	Shovel sticks t-shaped	34	20
Near shore boats (Foxbarges)		1	1

Annex 6: List of UK approved Dispersants accepted internationally

Product name	Product nature and type* (if valid)	Approved use**	Expiry date
Agma DR 379	D – 2/3	S B RS	20/06/2021
Caflon OSD	D – 2/3	S B RS	20/12/2018
Corexit EC9500A	D – 2/3	S	12/12/2018
Corexit EC9500B	D – 2/3	S	13/07/2020
Disperep 12	D - 2/3	S	13/07/2021
Finasol OSR 51	D – 2/3	S B RS	27/06/2017
Finasol OSR 52	D – 2/3	S B RS	18/03/2020
OD 4000	D – 2/3	S B RS	18/03/2020
OSD/LT Oil Spill Dispersant	D – 1	S B RS	20/06/2021
OSR 4000	D – 1	S B RS	07/08/2018
Radiagreen OSD	D – 2/3	S	19/02/2020
Seacare Ecosperse	D – 2/3	S B RS	20/03/2017
Seacare Ecosperse 52	D – 2/3	S B RS	25/04/2018
Seacare Ecosperse LT23	D – 2/3	S B RS	28/10/2018
Seacare OSD	D – 1	S B RS	10/05/2018
Seacare OSD2	D – 1	S B RS	28/10/2018
Slickgone EW	D – 2/3	S B RS	20/02/2019
Slickgone NS	D – 2/3	S B RS	25/04/2018
Super-dispersant 25	D – 2/3	S B RS	17/03/2020

1 = hydrocarbon solvent-based dispersant used undiluted
2 = concentrates, diluted 1:10 with seawater before use
3 = high efficacy concentrates used undiluted

**Approved use: S = Sea; B = Beach; RS = Rocky shore

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