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| **transport logo** |  | **NEW LOGO (4)** |

**National Oiled Marine Wildlife Preparedness and Response Contingency Plan (NOWPRCP)**

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| Date | (approval date) |
| Amendment | 0 |

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| **Incident Reporting** |
| **Report any marine oil spill related incident to:**  **Tel: +27(0)21 938 3300** |

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# Definitions

|  |  |
| --- | --- |
| Coastal Environment | The environment within the coastal zone. |
| Coastal Environment | 1. Any wetland in the coastal zone, and includes –    1. Land adjacent to coastal waters that is regularly or periodically inundated by water, salt marshes, mangrove areas, inter-tidal sand and mud flats, marshes, and minor coastal streams regardless of whether they are of a saline, freshwater or brackish nature, and    2. The water, the subsoil and substrata beneath, and bed and banks of any such wetland. |
| Coastal Zone | The area comprising coastal public property, the coastal protection zone, coastal access land and coastal protected areas, the seashore, coastal waters and the exclusive economic zone and includes any aspects of the environment on, in, under and above such area. |
| Disaster | A progressive or sudden, widespread or localized, natural or human-caused occurrence which   1. Causes of threatens to cause    1. Death, injury or disease;    2. Damage to property, infrastructure or the environment; or    3. Significant disruption of the life of a community and 2. Is of a magnitude that exceeds the ability of those affected by the disaster to cope with its effects using only their own resources. |
| High Seas | The open ocean, especially that not within any country’s jurisdiction. |
| International waters | The areas of the sea that are not under the jurisdiction of any country. |
| Territorial seas | The sea up to a limit not exceeding 12 nautical miles, measured from the baselines of the country as determined in accordance with The Convention of the Law of the Sea (UNCLOS) and Maritime Zone Act 1994 (Act no. 15 of 1994). |
| Ecosystem | A system of relationships between animals and plans and their environment. |
| Exclusive Economic Zone (EEZ) | The sea beyond the territorial waters, but within a distance of two hundred nautical miles from the coast or the baselines. The United Nations Convention on the Law of the Sea (1982) and the Maritime Zones Act (No. 15 of 1994) are to indicate the exact outline of the “base line”. |
| Hazing | A method that uses deterrents to move an animal out of an area or discourages an undesirable behavior or activity. Hazing can help keep wildlife away from areas affected by an oil spill. |
| Incident | An occurrence or event, natural or human-caused that requires an emergency response to protect life, property or wildlife. Incidents can, for example, include major disasters, emergencies, terrorist attacks, hazardous material spills, weather-related disasters, medical emergencies, and other occurrences requiring an emergency response. |
| Incident Management System / Incident Command System | A system mandated by the Disaster Management Act that provides a consistent nationwide approach for national, provincial, and municipal governments; the private sector; and non-governmental organisations to work effectively and efficiently together to prepare for, response to, and recover from domestic incidents, regardless of cause, size, or complexity. |
| Marine Wildlife | Wildlife that lives in the salt water of the sea or ocean, or the brackish water of coastal estuaries. |
| Oiled wildlife response | The combination of activities that aim to minimize the impacts of an oil spill on wildlife (such as birds, mammals and reptiles) by both prevention of oiling where possible and mitigating the effects on individuals when oiling has taken place. |
| Oiled Wildlife Rehabilitation Facility | A rehabilitation centre that is permitted by the Department of Environment, Forestry and Fisheries (DEFF) or any other relevant government department to rehabilitate oiled wildlife. |
| Oil | Petroleum in any form including crude oil, fuel oil, sludge, oil refuse and refined products. |
| P&I Club | Representatives of the ship owner’s protection and indemnity insurance. |
| Prince Edward Islands | Two small islands in the sub-Antarctic Indian Ocean that are part of the Republic of South Africa (including Marion Island and Prince Edward Island). |
| Responsible Party | Any person or organization that has a responsibility for taking any action in the event of an incident. |
| Role players | Persons and/or organisations who are considered to have a role to play in preventing and combating oil pollution of the sea and coast. |
| Stakeholders | Persons who may have an interest in any of the activities being undertaken in relation to the incident or who may in any way be impacted by the incident. |
| Tiers 1,2 and 3 | Categories of response to an incident which require a local, national or international response, with Tier 1 being the lowest category of response. Tier 3 being the highest category requiring response from Government and/or international assistance. |
| Triage | The sorting of patients according to the urgency of their need for care. |
| VIP | Very important person (e.g. President or a Minister) |
| Wildlife | Wild animals collectively; the native fauna of a region (e.g. seabirds, seals, turtles) |
| Zoonosis | An infection or disease that is transmissible from animals to humans under natural conditions. |

# Acronyms

|  |  |
| --- | --- |
| APSS | African Penguin & Seabird Sanctuary |
| DEFF | The Department of Environment, Forestry and Fisheries |
| DICT | Dyer Island Conservation Trust |
| EEZ | Exclusive Economic Zone |
| EKZN | Ezemvelo KwaZulu Natal |
| ICS | Incident Command System |
| IMS | Incident Management System |
| OSRL | Oil Spill Response Limited |
| NOSCP | National Oil Spill Contingency Plan |
| NOWPRCP | National Oiled Wildlife Preparedness and Response Contingency Plan |
| OWRF | Oiled Wildlife Rehabilitation Facility |
| OWR | Oiled Wildlife Response |
| P&I Club | Protection & Indemnity Club |
| SANCCOB | The Southern African Foundation for the Conservation of Coastal Birds |
| SANParks | South African National Parks |
| SAMSA | The South African Maritime Safety Authority |
| SAPREC | Seabird and Penguin Rehabilitation Centre |
| SOP | Standard Operating Procedure(s) |
| TNPA | Transnet National Ports Authority |
| TOA | Two Oceans Aquarium |
| VIP | Very Important Person |

# Introduction & Context

South Africa is a maritime nation with a coastline of over 3900km (including the coastline around the Prince Edwards Islands) (RSA, 2014). According to the White Paper on the National Environmental Management of the Ocean (NEMO), South Africa’s ocean environment is regarded as relatively pristine (Griffiths et al. 2010; RSA, 2014) and is among the most varied in the world displaying high levels of biodiversity (Wepener and Degger, 2012).

Over the last century, anthropogenic activities in the marine environment have increased (RSA, 2014), including the transportation of oil. Oil transportation increased when coal was replaced by oil in the 1930s (Underhill et al. 1999). The first major oil spills in southern Africa were recorded in 1948 and 1952 (Underhill et al. 1999 and Wolfaardt et al. 2009). In 1967, the Suez Canal was closed resulting in an increase in shipping traffic around South Africa’s coastline of between 7000 and 10 000 tankers (Wolfaardt et al. 2009). The increase in shipping traffic resulted in a rise in oil spills. There were oil spills from about eleven tankers around the southern African coastline in 1967 (Wolfaardt et al. 2009). South Africa has experienced five of the world’s 50 major recorded oil spills (Whittington et al. 1999), making the country one of the global hotspots for oil pollution (Wolfaardt et al. 2009; Wepener and Degger, 2012). The oil spills have put marine wildlife at risk, with many animals having died as a result (Deem et al. 2001). Generally the majority of marine species affected by the oil spills are seabirds (Trathan et al. 2014), however other marine wildlife are also at risk including, but not limited to, fish, sharks, sea turtles, seals cetaceans, shellfish and other invertebrates. Furthermore, oil spills have negative impacts on a variety of shoreline and coastal habitats including sandy beaches, rocky shores, salt marshes, mangrove and estuarine systems

Currently, tankers carry cargos of crude oil and other hazardous materials of more than 250 000 tons with the sizes of the tankers having increased in past decades. It is now estimated that about 30 000 vessels pass the South African coastline annually with a large number of these being tankers laden with an excess of 30 million Dead-Weight-Tonnage of crude oil. In addition, with Operation Phakisa unlocking the economic potential of South Africa’s oceans and inviting offshore drilling for oil and gas, the risk that an oil spill can occur is greatly increased. It is estimated that 90 billion barrels of crude oil could be located off South Africa’s coastline, equivalent to 40 years of South Africa’s current demand. A large-scale oil spill could potentially have catastrophic consequences on the marine environment. Moreover, the continuous discovery of mineral resources including oil and gas in other parts of the continent attests to South Africa’s strategic importance going into the future (Iheduru, 1996). South Africa needs to ensure that while it seeks economic stability and prosperity it also ensures the protection of its natural biodiversity.

**South Africa’s** current legislation is limited in addressing issues of oiled wildlife. This not only affects the ecological consequence of this shortcoming, but may in turn, have significant legal, economic, cultural, political or public perception consequences of industry and government. The response to oil spills has been an iterative process to ensure that efforts are well coordinated. This therefore, poses a challenge

in the rescue efforts and rehabilitation of oiled wildlife in that there is no coordinated response from the various organisations. Furthermore, with the increase in anthropogenic activities and the decline of marine species, some of which now have a threatened conservation status, it is even more imperative to improve the coordination of oiled wildlife.

A proactive, coordinated and fully integrated oiled wildlife contingency plan ensures that the response meets the health, safety and operational objectives while minimising the impact on oiled wildlife. By considering the potential impacts on wildlife beforehand, the possible response options can be assessed and objectives defined. Preparation is the key to ensuring that the brief window of opportunity for responding to wildlife can be used effectively and appropriately.

# Scope of the plan

## Geographical scope

The geographical area covered by the National Oiled Wildlife Preparedness & Response Contingency Plan (NOWPRCP) includes all South African Territorial Seas, waters including offshore islands and territories, South Africa’s Exclusive Economic Zone (EEZ), and the High Seas, where an oil spill has the potential to impact on South African Marine Wildlife.

## Oiled Wildlife Response in International Waters

There is currently no approach to the response of oiled wildlife in South Africa relating to international waters.

## Oiled Wildlife Response in National Waters

Reports of oil spills should be received by, or redirected to, the South African Maritime Safety Authority (SAMSA) who would notify the relevant authorities in terms of the National Oil Spill Contingency Plan[[1]](#footnote-2). Relevant organisations including local authorities and conservation agencies should be made aware of the oil spill.

## Wildlife scope

The Marine Wildlife that this plan aims to deal with includes Seabirds, Cape Fur Seals and Marine Turtles. Oil spill response related strategies to respond to oil spills affecting sensitive marine shoreline and eco-systems will be dealt with in the National Oil Spill Contingency Plan and relevant coastal and site-specific contingency plans.

## Relationships to other Plans

The NOWPRCP is a high level national contingency plan to deal with marine wildlife affected by an oil spill. The NOWPRCP will support the NOSCP when marine wildlife is affected but it will need to be supported by either site-specific or species-specific contingency plans, or both.

In addition, both the Oil & Gas and Shipping industries should develop their own site-specific / operation specific oiled wildlife contingency plans to deal with their specific operations. These should be prepared in collaboration with a recognised oiled wildlife response organisation and organisations / government departments within the area in which the Plans have relevance.in South Africa.

## Plan Objectives

The NOWPRCP aims to outline the roles and responsibilities as well as strategies involved in the rescue, rehabilitation and release of oiled marine wildlife by promoting a planned and nationally coordinated response to any marine oil spill affecting wildlife and ecosystems, to:

|  |  |
| --- | --- |
| **Number** | **Objective** |
| 1. | Improve communication between relevant stakeholders and responders before, during and before an oiled wildlife response. |
| 2. | Protect Marine Wildlife impacted or threatened by oil. |
|  | Outline roles and responsibilities during an Oiled Wildlife Response. |
| 2. | Assist with co-ordination of field assessments and initial response to threatened or impacted Marine Wildlife. |
| 3. | Prevent or minimize exposure of Marine Wildlife to oil spills. |
| 4. | Establish a system for stabilization, cleaning and rehabilitation of impacted Marine Wildlife on site as well as at a formal base. |
| 5. | Release back into their native habitats, animals who will be healthy and contributing members of their wild populations. |
| 6. | Remove dead oiled wildlife from the ecosystem and food chain and dispose of them appropriately. |
| 7. | Document adverse impacts of oiled wildlife that result from the spill and clean-up |

# Pre-spill risk assessment

## Wildlife at risk

|  |  |  |
| --- | --- | --- |
| African penguin.jpg  African penguin (**Endangered**) | Bank cormorant.jpg  Bank cormorant (**Endangered**) | leatherback_750_550_70_s_c1_c_c.jpg  Leatherback Turtle (**Vulnerable**) |
| Y:\Oiled Wildlife Response\Kiani Satu, Aug 2013\Edited\Gannet release 2 Sept Greg Darling-1.jpg  Cape gannet (**Endangered**) | Y:\Tertius Gous\Cape Cormorant portrait.jpg  Cape cormorant (**Endangered**) | Cape fur seal (**Vulnerable**) |

Please refer **to Annexure 5** of the NOWPRCP for more detailed information on wildlife sensitivity.

## Effects of oil on wildlife

Some marine wildlife species are highly susceptible to oil pollution and are visible victims of oil spills, usually providing the early indication the of an oil spill (Camphuysen & Heubeck 2001). Once marine wildlife has been oiled the effects can be fatal (Piatt et al. 1990). Some species are less noticeable than others, but also intertidal species on rocky shores and sandy beaches.

## Seabirds

Oil on seabirds will effectively break the ability of the plumage or pelage to maintain an insulation layer resulting in the loss of body heat and buoyancy, meaning that the animals lose their ability to float and/or hypothermic and exhausted (Wiese et al. 2001). As a result, seabirds that become unable to maintain body temperature and buoyancy will likely drown at sea or make it back to shore and are likely to die due to dehydration and starvation. Furthermore, animals that have been oiled will attempt to remove the oil from their bodies by preening resulting in the ingestion of oil, which can lead to dehydration, gastrointestinal problems and anaemia (Balseiro et al. 2005). Longer-term effects, many of which will be irreversible, will include damaged lungs, impaired reproduction and decreased survival rates of eggs and young (Barham et al. 2007, Barros et al. 2014).

## Marine mammals

The external effects of oil on marine mammals such as otters, seals, dolphins and whales vary depending on the species and their different fur and skin types, but may include:

* Hypothermia in fur seals pups by reducing or eliminating the insulation of their thick fur. Adult fur seals have blubber and would be less likely to suffer from severe hypothermia if oiled;
* Skin lesions;
* Eye irritation;
* Seals become easy prey when oil sticks to their flippers and bodies making it difficult to escape predators;
* Buoyancy - Fur seals with no air between the fur and skin could potentially drown;
* Loss of body weight as they cannot feed due to contamination of prey or environment;
* In some species, the scent which seal pups and their mothers rely on to identify each other is disguised, leading to rejection, abandonment and starvation;
* Reduced ability to forage due to fouling of the baleen of whale species.

Internal effects also vary by species but may include:

* Congestion of lungs and damaged airways from inhalation of oil vapours and droplets
* Drowning from drowsiness following the inhalation of fumes
* Emphysema and pneumonia are known in some mammal species
* Grooming behaviour and ingestion of oils may cause kidney, liver and brain damage, as well as anaemia and immune suppression. These are known side effects of ingestion and inhalation of oil.
* Gastrointestinal ulceration and haemorrhaging
* Anaemia from damaged red blood cells
* Damage to mucous membranes

As impact assessments come in from the Deepwater Horizon spill in the United States, the evidence is emerging for significant health effects in dolphins, including liver and lung damage, suggesting that, in some cases, oil can have a much greater impact on cetacean health than previously known.

**Information sourced from:** <http://www.oiledwildlife.eu/background-information/why-respond-wildlife-affected-oil-and-other-hazards/effects-oil-wildlife>

## Sea turtles

Sea turtles may become contaminated when they rise to the surface to breathe and find themselves in the midst of an oil slick. During the nesting season, females who come ashore may become oiled when arriving in a contaminated area. Hatchlings may become trapped in oil when they head to sea after hatching. Sea turtle spend large amounts of time in surface convergence areas which provide both food and sheltering habitat, but is also where oil would collect, thus placing them at greater risk of inhaling and ingesting oil. Although there is little statistical data on the effects of oil pollution on sea turtles, they are subject to the following impacts:

* Poisoning by absorption of toxic components through the skin or ingestion of contaminated food, leading to damage to the digestive tract and other organs
* Damage or irritation to airways, lungs, and eyes
* Contamination of eggs, which may inhibit their development

## Historic spills

Over a number of years, the increase in shipping traffic around South Africa’s coastline has resulted in oil spills, which have had substantial impact on marine wildlife. For example, in the year 2000, over 19000 penguins were oiled following an oil spill of the bulk ore carrier *MV Treasure* that occurred between Dassen and Robben islands in the Western Cape. This was one of the many oil spills that have occurred near Marine Protected Areas threatening important conservation areas and the South Africa’s coastline. The following table shows the recorded number of animals that were affected by historic oil spills, in the past five decades.

| **Year** | **Incident** | **Location** | **Sea Birds Affected** |
| --- | --- | --- | --- |
| 1968 | *ESSO ESSEN*  15 000 tons crude | Cape Point | 3 000 penguins  500 gannets |
| 1970 | *Kazimah* | Robben Island | 1 000 African penguins |
| 1971 | *WAFFRA*  15 000 tons crude | Dyer and Cape Agulhas | 1 200 African penguins |
| 1972 | Unidentified vessel | Ystervark Point | 1 700 penguins – Dassen Island |
| 1974 | *Oriental Pioneer* | Struisbaai | >1 000 seabirds |
| 1983 | *Castillo de Bellver*  190 000 tons crude | Saldanha Bay | 1 800 gannets  800 African penguins |
| 1985 | *Capodistrias* | Cape Recife, Port Elizabeth | 900 African penguins |
| 1994 | *Apollo Sea*  2400 tons heavy fuel oil | Robben Island | 10 000 penguins |
| 1995 | *Mystery Spill* | Dyer island | 1 600 African penguins |
| 1996 | *MV Cordigliera* | Port St Johns | 1 200 African penguins |
| 1998 | *Harbour Spill* | Cape Town | 671 seabirds |
| 1998 | *Mystery Spill* | Malgas Island | 300 Cape gannets |
| 1999 | *Mystery Spill* | Malgas Island | 220 Cape gannets |
| 2000 | *Treasure*  1300 tons heavy fuel oil | Robben Island & Dassen Island | 19 000 penguins  19 500 penguins relocated |
| 2009 | *Mystery Spill* | Namibia | 130 African penguins |
| 2011 | *MS Oliva* | Tristan da Cunha | 4000 Rockhopper penguins |
| 2012 | *Seli1 (Chronic spillage)* | Table Bay | 326 seabirds |
| 2013 | *Kiani Satu* | Buffels Bay | 299 seabirds |
| 2015 | *Mystery Spill* | Algoa Bay | 30 African penguins |
| 2016 | *Energy Challenger (Offshore Ship-to-Ship bunkering operation)* | Algoa Bay | 150 African penguins |
| 2019 | *MV Chrysanthi S*  *(Offshore Ship-to-Ship bunkering operation)* | Algoa Bay | 109 African penguins  13 Cape Gannets  3 Cape Cormorants |

## Oil spill risks and scenarios

The following activities have been highlighted as areas where there is an oil spill risk, which could have an impact on wildlife:

|  |  |
| --- | --- |
| **Activity** | **Risk** |
| **Shipping** | Due to the rough conditions of the waters along the South African coastline, the country has a history of major shipping disasters resulting in pollution of the marine environment. The marine and coastal waters of South Africa host a wide range of animal species that are at risk from getting in contact with oil after an oil spill incident. Particularly at risk are species that use the sea surface for resting, breathing or feeding, and include marine and coastal birds, marine reptiles (in particular sea turtles) and marine mammals. If the water surface has a layer of oil as a result of a spill, and many sensitive animals are around at the particular time, there is a high probability that a wildlife response will be needed. |
| **Transfer of product from source to terminal** | In most cases, pipelines are used for the transport of crude and refined petroleum products to a terminal. Product could be lost from a pipeline as a result of human error, equipment failure, natural disasters or deliberate and/or vandalism acts. Another complicating factor with the receiving and/or transporting of product via a pipeline is due to the complexity of ownership of the product and/or pipeline, and the operation of the pipeline, e.g. BP product being transported using the pipeline of a partner company. Pipelines could be positioned above or below the ground, and could cover many kilometers. The loss of product from a pipeline could result in pollution of marine and terrestrial wildlife. |
| **Loss of product in terminal** | Terminals are usually designed and operated with the objective to prevent spillage, and in the event of a spill, to contain and mitigate impacts. Wildlife, such as birds, that frequent terminals could be exposed to oil pollution in the event of an incident. |
| **Loss of product during transport from a terminal to retail** | Product is being transported from the terminals to retail sites either by rail or road, and oil spills could result from a loss of product during collisions anywhere along South Africa road transport routes. Product entering rivers, estuaries and other sensitive environments could result in the oiling of marine and terrestrial wildlife. |
| **Offshore Ship-to-Ship Bunkering** | Despite the obvious economic benefits to offshore bunkering, bunkering at sea in areas with rough seas, such as Algoa Bay, brings a huge risk to the environment. The chance that something goes wrong is significantly higher in rough seas. The forces on the bunker beams, hoses and vessels are far greater. If there is a leak, the oil will spread faster than it would in a port due to strong currents and waves. Spills are harder to contain and rough weather makes oil spill responses more difficult meaning that the environment is at greater risk.  Such operations are occurring within Algoa Bay posing a huge threat to the largest breeding African penguin colony on St Croix as well as the largest Cape gannet population on Bird Island. |
| **Intentional discharge** | More oil is released into seas by illegal discharges than by shipping accidents. With no aerial surveillance currently taking place it is very worrying as 100,000 vessels pass by South Africa’s coastline every year.  Intentional discharge will likely be committed by a ship not intending to stop in South Africa meaning that no notification will be received from the ship. |
| **Offshore Oil & Gas Drilling** | This activity is highly risky, especially with the rough weather conditions off South Africa’s coastline. Currently there is little activity in terms of offshore oil and gas drilling however this will increase with Operation Phakisa. |
| **Mystery spills** | Sometimes the source of the spill or the polluter cannot be identified. |

# Oiled Wildlife Legislative Responsibilities

This section aims to highlight the international obligations that South Africa is signatory to:

## International Legislation on Oiled Wildlife

There are various international conventions that deal with oil pollution in the marine environment, none of which were found to specifically deal with the oiled wildlife aspect of response and preparedness.

* **The International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC):**

South Africa has been a member state to this convention since 1995. In 2000, Members of the International Oil Pollution Compensation Funds (OPRC) adopted a protocol on Preparedness, Response and Co-operation to pollution Incidents by Hazardous and Noxious Substances (OPRC-HNS Protocol) which came into force in 2007. The OPRC-HNS Protocol defines HNS as “*any substance other than oil, which, if introduced into the marine environment is likely to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea*.”

* **The International Convention for the Safety of Life at Sea (SOLAS)**

This was first adopted on 1 November 1974 and came into force on 25 May 1980. South Africa is a member state. The following text was adopted in the new standards for oil tankers and bulk carrier to have ‘*adequate strength, integrity and stability to minimize the risk of loss of the ship or pollution to the marine environment due to structural failure’*.

* **The International Convention for Prevention of Marine Pollution from Ships (MARPOL)**

It came into force in 1987. In Annex II, the regulations separate noxious liquid substances carried in bulk into four categories, each of which specifies whether and, if allowed, how these products may be discharged into the sea during tank cleaning or de-ballasting operations.

* Category X: Substances which present a major hazard to either marine resources (which includes wildlife) or human health and are, therefore prohibited from being discharged.
* Category Y: Substances which present a hazard to marine resources or human health or may cause harm to amenities or other legitimate uses of the sea, therefore justify limitations on quality or quantity of discharge.
* Category Z: Substances which present a minor hazard to either marine resources or human health and therefore are subject to less stringent restrictions on quality and quantity of discharge.
* Other Substances: Substances which present no harm to marine resources, human health, amenities or other legitimate uses of the sea. These substances are not subject to any MARPOL requirements.
* **The Convention on the International Trade of Endangered Species (CITES)**
* **The International Union for the Conservation of Nature (IUCN)**

## National Legislation

* **Constitution of the Republic of South Africa**

The South African Constitution is the highest law of the land. Section 24 of the Constitution affords *everyone the fundamental right to:*

*(a) to an environment that is not harmful to their health or well-being; and*

*(b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that-*

*(i) prevent pollution and ecological degradation;*

*(ii) promote conservation; and*

*(iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.*

The Department of Environmental Affairs (DEA) is mandated to ensure the protection of the environment and conservation of natural resources, balanced with sustainable development and the equitable distribution of the benefits derived from natural resources. The mandate of the Department is guided by its constitutional mandate, as contained in section 24 of the Constitution of the Republic of South Africa. In order to fulfil its mandate, the Department is responsible for formulating, coordinating and monitoring the implementation of national environmental policies, programmes and legislation. The Department is supported by, but not limited to various state entities, different spheres of government, NGO’s and academia.

* **National Environmental Management Act 107 of 1998**

The National Environmental Management Act (No 107 of 1998) “NEMA” is the overarching environmental act in South Africa. The NEMA is intended to integrate environmental management, by establishing principles to serve as a general framework for environmental matters and providing guidelines for the interpretation, administration and implementation of this Act and other Specific Environmental Management Acts. The NEMA further encourages government departments and organs of state to realise the importance of the constitutional environmental right and imposes co-operative governance.

Furthermore, NEMA imposes the responsibility for all to prevent and/or minimize the damage to the environment as outlined in the NEMA Principles. One of the NEMA Principles is the principle of Sustainable Development. Sustainable Development is defined as "*the integration of social, economic and environmental factors into planning, implementation and decision-making so as to ensure that development serves present and future generations."*

**National Environmental Management: Biodiversity Act 10 of 2004 (NEMBA)**

The aims of the act are:

* To provide for the management and conservation of South Africa’s biodiversity within the framework of NEMA;
* To protect species and ecosystems that warrant national protection;
* To ensure the sustainable use of indigenous biological resources;
* To ensure fair and equitable sharing benefits arising from bio-prospecting involving indigenous biological resources;
* To establish a South African National Biodiversity Institute
* **National Environmental Management: Protected Areas Act 57 of 2003 (NEMPAA)**

The National Environmental Management: Protected Areas Act creates a national system of protected areas in order to protect biodiversity in the country.

* **National Environmental Management: Integrated Coastal Management Act (Act 10 of 2008)**

The Act establishes a system of integrated coastal and estuarine management in order to promote the conservation of the coastal environment, and maintain the natural attributes of coastal landscapes and seascapes, and to ensure that development and the use of natural resources within the coastal zone is socially and economically justifiable and ecologically sustainable. The act also aims to:

* Supports the integrated and proactive management of the SA Coast;
* Establish an innovating legal and institutional framework that facilitates a new cooperative and participatory approach to managing the coast;
* **Marine Living Resources Act 18 of 1998 (MLRA)**

The objectives and principles of the MLRA deal with:

* The utilisation, conservation and management of marine living resources;
* Protection of whole ecosystems;
* Preservation of marine biodiversity;
* Minimising marine pollution;
* Compliance with international law and agreements…”

Chapter 8 of the act allows the Minister the power to make regulation. It states

1) The Minister may make regulation regarding –

*a) any matter required or permitted to be prescribed in terms of this Act; and*

*(b) generally all matters which are reasonably necessary or expedient to be prescribed in order to achieve the objects of this Act.*

2) Without prejudice to the generality of the provisions of subsection (1), the

Minister may make regulations—

1. …

w)  *regarding the prevention of marine pollution*

* **Policy on the Management of Seabirds, Shorebirds and Seals (NOTICE 1717 OF 2007)**

The Policy on the Management of Seabirds, Shorebirds and Seals (PMSSS: 2007) states “*The Department recognises the need for management of seals, seabirds and shorebirds that are oiled (or orphaned through their parents being oiled or removed to prevent their becoming oiled), especially African Penguins and Cape Gannets that have proved particularly susceptible to oil spills in the past, but also rare or threatened species such as Bank Cormorants. In this regard contingency plans, networks andlor rehabilitation facilities for the rescue and subsequent rehabilitation of birds that are oiled or orphaned should be developed. In order to prevent the proliferation of rehabilitation facilities, and costs associated with their functioning, specific rehabilitation facilities should be identified to take the lead in the care and rehabilitation of seabirds. Any banding of birds that is undertaken at rehabilitation facilities must be done by banders accredited by the South African Bird Ringing Unit. The Scientific Committee on Antarctic Research states that rehabilitated, vagrant seals, seabirds and shorebirds may not be released back into their normal breeding sites, because of the risks of disease transmission. The rehabilitation and release (within the South African continental EEZ) of vagrant seals, seabirds and shorebirds will be permitted, provided that they are kept separate from local seals, seabirds and shorebirds until they are certified to be disease-free by a qualified veterinarian.”*

*Animals Protection Act (No. 71 of 1962)*

# Oiled Wildlife Preparedness and Tiering

The first step in developing wildlife response capacity is to identify local (tier 1), regional (tier 2) or international resources (tier 3) and their ability to collaborate in a response. Depending on the requirements of the situation, the public can also be incorporated into wildlife response efforts in a convergent volunteer capacity. Tier 1 capability should be expanded via training and investment in equipment and supplies. This means, over time, Tier 1 capability becomes less dependent on Tier 3 resources for dealing with larger-scale incidents. For more information on tiered preparedness please refer to **Volume 2 of the NOSCP section 2.1**.

Tier 1, 2 and 3 oiled wildlife response resources have been identified in **Annexures 2 and 4 of the NOWPRCP.**

# Training

## Training

Training is an important aspect of oiled wildlife preparedness ensuring that relevant responders and volunteers are ready to respond to an oil spill affecting wildlife. Each wildlife response organisation should ensure that personnel are adequately trained to mount a credible and effective response to a pollution incident affecting wildlife. Wildlife scientists, conservation officers and veterinarians are good candidates to take leading and decision-making positions.

It is also vital that relevant government departments and members of the relevant oil, gas and shipping industries ensure that their staff received industry specific oiled wildlife response training.

**Incident Management System**

All key staff involved in the Oiled Wildlife Response must be competent in Incident Management System (IMS)[[2]](#footnote-3) or equivalent. Their competence is dependent on the role that they will fill in the IMS Organisation.

* Introductory: Every person that would be playing a role in any of the response functions, including the Command and General staff must complete IMS 100; IMS 200 and IMS 300.
* Intermediate: Functional Heads, Deputies and Heads
* Advanced: Must have Incident Command.

**Oiled Wildlife Response Training**

In addition, there is a number of Oiled Wildlife Response specific training available including the following:

|  |  |
| --- | --- |
|  | **OWR Training Topic** |
|  | **Health & Safety Training** |
|  | First Aid / Emergency First Response |
|  | Hazardous Waste Operations (e.g. HAZWOPER 24H or HAZMAT) |
|  | **Field Operations Training** |
|  | Surveillance / reconnaissance |
|  | Field stabilization |
|  | Species identification |
|  | Hazing & Deterrence |
|  | Animal Handling |
|  | Animal Capture |
|  | Animal Collection & Transport |
|  | **Rehabilitation facility operations** |
|  | Rehabilitation facility design / operation |
|  | **Rehabilitation Training** |
|  | Stabilisation |
|  | Triage |
|  | Pre-wash care |
|  | Washing, rinsing and drying oiled wildlife |
|  | Post wash care |
|  | Zoonotic diseases |
|  | Animal husbandry |
|  | **Veterinary training specific to oiled wildlife rehabilitation** |
|  | Blood sampling and analysis |
|  | Diseases and conditions commonly observed during an oil spill response |
|  | **Communications and media training during an oil spill** |
|  | Communications and media |
|  | **General training** |
|  | Effects of oil on wildlife |
|  | Post-release monitoring |
|  | Carcass handling |

## Exercises

Exercises are used to test the competence of role players and validate the effectiveness of the plan. Real incidents are not a substitute for exercises. Conducting regular exercises will ensure that South Africa’s oiled wildlife capability will remain prepared.

For the purposes of the plan, exercises can take different forms that assist in developing readiness by learning, developing relationships between role players and identifying improvements to the plan where necessary.

| **Type of Exercise** | **Purpose** | **Frequency** |
| --- | --- | --- |
| Drills | A coordinated, supervised activity usually employed to validate a specific function or capability in a single organization or agency.  Drills are commonly used to provide training on new equipment, validate procedures, or practice and maintain current skills. For example, a drill may be used to test the notification and alert procedures within oil spill contingency plan.  A drill is useful as a stand-alone tool, such as to test or verify a tactical booming plan to protect a sensitive shoreline resource. However a series of drills can be used as building blocks to prepare several organisations to collaborate in a full-scale exercise. | Annually |
| Desktop | Desktop exercises involve discussion of simulated scenarios by key personnel in an informal setting.  They are facilitated activities, used to build competence and confidence in the implementation of oil spill contingency plans and procedures. Desktop exercises can range from basic to complex.  In a basic desktop exercise, the scenario is presented and remains constant. Players apply their knowledge and skills to a list of problems presented by the facilitator, problems are discussed as a group; and resolution is reached and documented for later analysis.  In more advanced desktop exercises, the scenario advances as players receive pre-scripted messages. A facilitator usually introduces problems one at a time in the form of a written message, simulated telephone call, multimedia presentation or other means. Players discuss the issues raised by each problem, referencing established authorities, plans and procedures for guidance. Player decisions are incorporated as the scenario continues to unfold. | Annually |
|  | Checking equipment lists | Annually |
|  | Testing notification and mobilization procedures | Annually |
| Functional exercise | Designed to validate and evaluate capabilities, multiple functions and/or sub-functions, or interdependent groups of functions.  They are typically focused on exercising plans, policies, procedures, and staff members involved in management, direction command and control functions. An exercise scenario with event updates drives activity, typically at the management level. A functional exercise is conducted in a realistic, real time environment; movement of personnel and equipment is usually simulated.  Functional exercise controllers typically ensure participant activity remains within predefined boundaries and that exercise objectives are accomplished. Simulators (i.e. role-players] can inject scenario updates and developments to mimic real events. | 2 years |
| Full-scale exercise | Full-scale exercises are typically the most complex and resource-intensive type of exercise. They may involve multiple agencies, organisations and jurisdictions, and can validate many facets of preparedness.  These exercises may be held to test plans and procedures across the breadth of an organization’s crisis, emergency response and oil spill contingency arrangements. They can involve national capability and regional or international support, i.e. trans-boundary response issues. They often include many players operating under cooperative incident management systems.  In a full-scale exercise, an exercise scenario with injects [event updates] drives activity at the operational level. Full-scale exercises are usually conducted in a real-time, stressful environment that is intended to mirror a real incident. Personnel and resources may be mobilized and deployed.  The full-scale exercise simulates reality by presenting complex and realistic problems that require critical thinking, rapid problem solving and effective responses by trained personnel. The level of support needed to prepare for, and conduct, a full-scale exercise is greater than that needed for other types of exercise. The exercise site is usually large and site logistics require close monitoring. Safety issues, particularly regarding the use of oil spill combating equipment, must be monitored.  Throughout the duration of the exercise, a number of activities can occur simultaneously. The guiding principles introduced in this document should be borne in mind when considering the inclusion of a full-scale exercise within a programme. Care should be taken not to tackle complex exercises until personnel are sufficiently experienced and competent.  Furthermore, too many activities, locations and participants can overcomplicate an exercise and may be detrimental. A full-scale exercise is usually considered as suitable for the culmination of an exercise programme’s cycle or a tool for mature organizations to periodically verify overall response capability. | 5 years |

## Plan Revision & Monitoring

The IMOrg will ensure that there is an updated database of all relevant exercises in place. Stakeholders are encouraged to share any planned exercises with the IMOrg for their records. It is vital that the NOWPRCP is reviewed and maintained periodically or at least every five years to ensure that they stay relevant and up to date. Any gaps or weaknesses following an exercise or actual response should be reflected in the plan.

The following review schedule will be adopted:

|  |  |
| --- | --- |
| **Type of Review** | **Frequency** |
| Checklist review:   * Contact lists * Equipment lists | 6 months |
| Major Review | 5 years or as necessary |
| As necessary after an incident or exercise | As necessary |

# Equipment & facilities

In addition to trained and experienced personnel, two other key elements for a successful wildlife response are the availability of appropriate **equipment** and adequate **facilities**.

**Equipment (Annex 3)**

**Tier 1** wildlife equipment should be stockpiled locally and be readily available on-site within a few hours.

**Tier 2** wildlife equipment should be widely available from identified suppliers and on-side within 24-48 hours.

**Tier 3** wildlife equipment should be regionally or globally available in stockpiles or by retail suppliers, and capable of being on-site within 48-72 hours.

**Facilities (Annex 2)**

The availability of appropriate facilities is one of the keys to success in an oiled wildlife response. The requirements for appropriate facilities can be met by one or more of three difference approaches – the use of permanent facilities, buildings of opportunity or mobile facilities.

# Communications

Effective communications is critical during an oiled wildlife response. Poor communication can result in harm being caused to the animals, people, the organisations involved, as well as to the environment, which can lead to public outrage and potentially to financial loss. Communication should be quick, accurate, clear, courteous and consistent.

A clear communications plan needs to be developed for the incident detailing both **internal communication** (i.e. communication between members of the oiled wildlife response team and Wildlife Branch Director / Incident Commander) and **external communication** (i.e. between the OWRF / Wildlife Branch Director and other organisations or individuals such as governments, media, board and other stakeholders (**Section 9: External Communication**)

Communication methods include two-way radios, telephones, mobile / cell phones, intranet, internet, face-to-face, notice boards, screens, press releases, memos, communication packs and reports.

# External Communication

An oil spill is of immediate interest to the local and international media. Social media means that the public will become aware very quickly. It is therefore important and in the interest of all concerned to keep the media informed as fully and regularly as possible. Failure to consider the media response at an early stage may have serious implications for the management of the whole incident. The best way to control social media is to be pro-active.

## Communications Officer Responsibilities

The designated Communications Officer is responsible to:

* Keep all relevant parties informed of media relations;
* Arrange press conferences;
* Issue regular news bulletins;
* Ensure that the media do not interfere with the operational activity of the response;
* Ensure that the information provided is consistent with other organisations and is accurate as possible;
* Ensure good cooperation between all press officers essential, and where possible to arrange for combined press conferences.

## Media guidelines

* Daily press conferences should be arranged and should not last more than 30 minutes;
* A media information pack should be prepared prior to any incident to facilitate good media relations during an event;
* An initial press statement should be prepared and included as an annexure to local or site specific oiled wildlife contingency plans;
* Websites and social media must provide a reliable source of information, and should be updated regularly;
* Staff and volunteers should be instructed to refer all media queries to the relevant Communications Officer.

## VIP Visits

In the case of a major incident it is very likely that Ministers or other VIPs will wish to visit the Oiled Wildlife Rehabilitation Facility. The Communication Officer should ensure that these visitors are properly escorted and informed, and should advise relevant management and staff of these visits during the daily meetings.

## Media Considerations

* There should be an upfront agreement with all organisations that are likely to be involved and those who want to be involved (e.g. SANParks and CapeNature) setting out the roles regarding media response.
* The Communications Officer forms part of the Command Staff and will attend daily briefing sessions.
* The Communications Officer should provide a regular daily update to relevant stakeholders, either in person; via email; or other instant communication;
* Daily press conferences are usually held during spills, and include organisations like the Department of Environmental Affairs (DEA) and insurers. This is a good time for an update on the rehabilitation situation to be given to the media;
* A comprehensive media list, and media email distribution list should be drawn up and kept current. This is will be provided in the regional and site-specific oiled wildlife contingency plans;
* Photographers and videographers should be contracted ahead of time and the stills photographer must have the capacity to distribute pictures to the media on a daily basis;
* A media monitoring service should be contracted;
* The Communications Officer is responsible for updating any relevant websites or social media platforms on a daily basis.
* Communications staff should have full time access to computers and internet, if possible (at each satellite centre that may be set up);
* Spokespeople – designated spokespeople need to be identified. These would include key management staff and communications staff. Volunteers and general staff should refer all media queries to the communications team.

# Incident Management Organisation, Roles & Responsibilities

# Oiled Wildlife Response Incident Management Structure

The Oiled Wildlife Response Incident Management structure will be consistent with the Incident Management System used under the NOSCP.

The structures and positions set out below are indicative only and the actual response structure required will be determined by the Wildlife Branch Director during the response. Depending on the size and requirements of the spill and response, many of these positions may be filled by more than one person. Alternatively, one person may be responsible for more than one of these roles.



Figure above: Wildlife Branch developed by the Global Oiled Wildlife Response System

## Roles & Responsibilities

The table below lists roles and responsible in South Africa that may be mobilised in an oiled wildlife response:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Position** | **Function** | | | **Responsibilities** | | **Who?** |
| **Wildlife Branch Director** | The Wildlife Branch Director is the person responsible for all aspects of the wildlife response, including developing incident objectives, managing all incident operations, application of resources as well as responsibility for all personnel involved. | | | * Determine objectives and strategy for the wildlife response; * Review and approve overall Incident Action Plan; * Ensure that the response team is adequately staffed; * Ensure that appropriate Health & Safety measures are in place; * Establish internal communication between personnel; * Approve requests for additional resources; * Keep the relevant stakeholders informed of incident status; * Be the main point of contact between the relevant authorities and stakeholders. | | Joint command between OWRFs, management authorities, industry, other role players. |
| **Command Staff** | | | | | |  |
| **Public Information Officer (PIO)** | The PIO forms part of the Command Staff and reports directly to the Wildlife IC. The PIO’s primary responsibilities include developing and releasing information regarding the wildlife response activities to the media and all other appropriate authorities and organisations. | | | | * Communicate with the Wildlife IC to determine any limitations on information release; * Develop material that can be used in media briefings; * Obtain Wildlife IC approval of media releases; * Inform media and conduct media briefings; * Maintain current information summaries and/or displays on the response and provide information of status of response to assigned personnel. * Have received relevant media training to assume such responsibilities | Appointed by Wildlife Branch Director |
| **Health and Safety Officer** | The Safety Officer’s function is to develop and recommend measures for assuring safety of all response personnel, and to assist and/or anticipate hazardous and unsafe situations. | | | | * Conduct a Health & Safety risk assessment for each work site or task, and that the risk is continuously evaluated; * Determine level of PPE requirements; * Ensure that all incidents and near-miss accidents are identified and reported; * Ensure that all responders have received the appropriate training to carry out the assigned tasks; * Ensure that First Aid is available; * Ensure that the site is secure and safe | Appointed by Wildlife Branch Director |
| **Field Operations** | | | | | | |
| **Surveillance & Reconnaissance Supervisor** | | Responsible for conducting daily field assessments to identify wildlife that is either oiled or at risk of becoming oiled. | | * Develop the operations section of the Incident Action Plan in relation to Surveillance and Reconnaissance; * Brief and assign all operational personnel in accordance with the Incident Action Plan; * Determine the need for resources; * Request additional resources if necessary; and ensure appropriate release of resources. * Assemble and disassemble strike teams assigned to the Surveillance and Reconnaissance Team. * Coordinate operations of the team. | | Management authorities   * SANParks * CapeNature * EKZN * Robben Island Museum |
| **Hazing & Deterrence Supervisor / Pre-emptive Capture** | | Responsible for using hazing & deterrence measures to deter animals from oiled sites or sites that are anticipated to become oiled. | | * Develop the operations section of the Incident Action Plan in relation to Hazing & Deterrence / Pre-emptive Capture * Brief and assign all operational personnel in accordance with the Incident Action Plan; * Determine need the need for resources; * Request additional resources if necessary; and ensure appropriate release of resources. * Assemble and disassemble strike teams assigned to the Operations Section; * Coordinate Hazing & Deterrence / Pre-emptive capture Operations | | Management authorities   * SANParks * CapeNature * EKZN * Robben Island Museum |
| **Collection & Transport Supervisor** | | Responsible for collecting and transporting oiled wildlife. | | * Develop the operations section of the Incident Action Plan in relation to Collection & Transport * Brief and assign all operational personnel in accordance with the Incident Action Plan; * Determine need the need for resources; * Request additional resources if necessary; and ensure appropriate release of resources. * Assemble and disassemble strike teams assigned to the Operations Section; * Coordinate Collection & Transport Operations | | Management authorities   * SANParks * CapeNature * EKZN * Robben Island Museum |
| **Field Stabilisation Supervisor** | | If more than one hour will elapse between capture and arrival at the rehabilitation facility then Staging Teams should initiate basic stabilization actions. | | * Develop the operations section of the Incident Action Plan in relation to Field Stabilisation * Brief and assign all operational personnel in accordance with the Incident Action Plan; * Determine need the need for resources; * Request additional resources if necessary; and ensure appropriate release of resources. * Assemble and disassemble strike teams assigned to the Operations Section; * Coordinate Field Stabilisation Operations | | Management authorities   * SANParks * CapeNature * EKZN * Robben Island Museum * EKZN   **Or**  OWRF   * APSS * Bayworld * SANCCOB * SAPREC * uShaka |
| **Operations at Rehabilitation Centre** | | | | | | |
| **Rehabilitation Manager** | | Responsible for the management of all field operations and for directing the execution of the agreed Incident Action Plan. The OSC also requests and releases resources and reports to the IC on all operational matters. | | * Develop the operations section of the Incident Action Plan; * Brief and assign all operational personnel in accordance with the Incident Action Plan; * Determine need the need for resources; * Request additional resources if necessary; and ensure appropriate release of resources. * Assemble and disassemble strike teams assigned to the Operations Section; * Coordinate Operations | | Appointed by the relevant OWRF. |
| **Veterinarian and veterinary support** | | This person is in charge of all the veterinary aspects of Operations at the rehabilitation facility. | | * Oversee the activities of the group team members; * Staffing the group as necessary; * Ensure the safety of the veterinary group team members; * Ensure all veterinary team members have had appropriate training to carry out the necessary tasks; * Develop communication protocols; * Ensure that team members are given the appropriate level of PPE; * Ensure that all SOP’s and Protocols are adhered to; * Provide timely information to the Rehabilitation Manager. * Ensure the optimal welfare of wildlife at all times | | Appointed by the relevant OWRF. |
| **Intake & Stabilisation Unit** | | This group is in charge of admitting the captured seabirds / wildlife and stabilisation at the rehabilitation facility. | | * Oversee the activities of the group team members; * Staffing the group as necessary; * Ensure the safety of the group team members; * Ensure all team members have had appropriate training to carry out the necessary tasks; * Develop communication protocols; * Ensure that team members are given the appropriate level of PPE; * Ensure that all SOP’s and Protocols are adhered to; * Provide timely information to the Rehabilitation Manager. | | OWRFs |
| **Pre-Wash Rehab Unit** | | This group is responsible for rehabilitating the captured seabirds / wildlife so that they meet the criteria for washing & rinsing. | | * Oversee the activities of the group team members; * Staffing the group as necessary; * Ensure the safety of the group team members; * Ensure all team members have had appropriate training to carry out the necessary tasks; * Develop communication protocols; * Ensure that team members are given the appropriate level of PPE; * Ensure that all SOP’s and Protocols are adhered to; * Provide timely information to the Rehabilitation Manager. | | OWRFs |
| **Wash & Rinse Unit** | | This group is responsible for washing, rinsing and drying oiled seabirds / wildlife. | | * Oversee the activities of the group team members; * Staffing the group as necessary; * Ensure the safety of the group team members; * Ensure all team members have had appropriate training to carry out the necessary tasks; * Develop communication protocols; * Ensure that team members are given the appropriate level of PPE; * Ensure that all SOP’s and Protocols are adhered to; * Provide timely information to the Rehabilitation Manager. | | OWRFs |
| **Post-wash Rehab Unit** | | This group is responsible for rehabilitating washed seabirds / wildlife until they meet release criteria. | | * Oversee the activities of the group team members; * Staffing the group as necessary; * Ensure the safety of the group team members; * Ensure all team members have had appropriate training to carry out the necessary tasks; * Develop communication protocols; * Ensure that team members are given the appropriate level of PPE; * Ensure that all SOP’s and Protocols are adhered to; * Provide timely information to the Rehabilitation Manager. | | OWRFs |
| **Chick Rearing Unit** | | This group is responsible for rearing chicks. | | * Oversee the activities of the group team members; * Staffing the group as necessary; * Ensure the safety of the group team members; * Ensure all team members have had appropriate training to carry out the necessary tasks; * Develop communication protocols; * Ensure that team members are given the appropriate level of PPE; * Ensure that all SOP’s and Protocols are adhered to; * Provide timely information to the Rehabilitation Manager. | | OWRFs |
| **Other IMS General Staff** | | | | | | |
| **Planning Section Chief** | | Planning is responsible to collecting, evaluating, processing and disseminating information for use during the response. | * Provide input to the IC and OSC to prepare the Incident Action Plan; * Collect and process information about the incident and report any significant changes in status; * Collection special information e.g. weather data, toxic, etc. * Determine the need for any specialised resources to support the response; * Oversee preparation of Demobilisation; * Activate any further staff necessary such as:   + Resource Leader; * Technical Specialists | | |  |
| **Logistics Section Chief** | | This position is responsible for providing all the response needs. | * Manage all response logistics; * Provide logistical input to the IC in preparing the Incident Action Plan; * Identify anticipated and known incident service and support requirements; * Request additional resources as approved by the IC; * Appoint additional staff if necessary:   + Supply Unit;   + Facilities Unit;   + Communications Unit;   + Food Unit; * Medical Unit | | |  |
| **Financial and Administration Section Chief** | | This position is responsible for managing all financial aspects of the response. | * Provide financial and cost analysis information; * Determine the need to set up and operate an incident fund; * Ensure that all personnel time sheets and cost tracking tools are accurately completed and submitted. * Appoint additional staff if necessary:   + Time Unit;   + Procurement Unit;   + Compensation / Claims Unit; * Cost Unit | | |  |

# Operational Assistance - Volunteers

In the event of an oil spill, it is likely that volunteers will be utilised, particularly in a large or protracted spill event, to assist in the collection, cleaning and rehabilitation of wildlife, record keeping and other general activities. Managing volunteers is a major component of an oiled wildlife response and should be managed by a competent volunteer coordinator. The efficient and effective management of potentially large numbers of volunteers requires clear instructions, appropriate equipment and inductions, strong organisational skills and regular feedback.

## Wildlife Volunteer Coordinator

The volunteer coordinator must ensure the following:

* Volunteers register and sign relevant indemnity forms prior to undertaking any activity.
* For safety and legal reasons, volunteers must wear a badge identifying themselves as registered volunteers.
* Volunteers should be physically able to undertake the activities.
* On arrival volunteers must be inducted on safety, first aid and legal requirements.
* Volunteers must sign in and out of each shift.
* Ideally a dedicated phone line should be established for people wishing to volunteer. Names, addresses, skills and experience should be recorded.
* Each area leader should ensure volunteers are taking adequate breaks and meals.
* Volunteers should be briefed regularly on the status of the spill and the progress of the rescue and rehabilitation efforts.

## Legal Requirements

Labour Relations Act 66 of 1995 does not specifically exclude any volunteer workers. They could be regarded as employees, even where they are unpaid, but “assist in the carrying out or running of the business”. As such they would be – at least in theory – be entitled to the same protections as other employees.

All workers, including unpaid volunteers, have a constitutional right to fair labour practices. Yet, “unpaid employees working for charitable organisations” are specifically excluded from the provisions of the Basic Conditions of Employment Act (BCEA) (Section 3).

The situation with volunteer workers who work for organisations that are not charitable organisations is more straightforward. By implication these workers enjoy the same protections under the BCEA as other employees (except that they are not entitled to pay).

## Specialist volunteers

Veterinarians, keepers and veterinary nurses will be essential for assisting with the rescue and rehabilitation of wildlife for the duration of the rehabilitation process. These may be pair or volunteer workers. Veterinarians can provide initial assessment of affected wildlife, determine priorities for treatment, administer veterinary treatment and conduct pathology tests and autopsies. Zoo Keepers will be essential for their husbandry skills in the rehabilitation process.

## On-site inductions and training

All personnel involved in the collection and treatment of oiled wildlife (including all volunteers and staff) must receive on-site training or an induction prior to any involvement. This is important in preventing injury to both the animals and the people handling them. Ideally only experienced personnel will handle wildlife and teams of volunteers be supervised by experienced persons. Volunteers who have not received training must be directly supervised by a trained person. Volunteers must be briefed and then may be sent to a particular area and be trained. On-site training / induction should include both a written and demonstrated description of handling and cleaning techniques. Each person must also be given a written risk assessment form, and a brief which covers safety, legal requirements and the importance of recording all data for any of the functions undertaken. These forms must be signed by all volunteers.

# Oiled Wildlife Response Strategies

## Plan Activation

This plan should be activated when there is imminent or actual impact to wildlife as a result of an oil spill incident.

## Notification

Key stakeholders and responders identified in the NOWPRCP should be identified and notified that an oil spill has occurred and there is a threat or actual impact to wildlife. Key stakeholders will vary for each response depending on where the spill has occurred. Key stakeholders will include national government, local government, non-governmental organisations etc. Contacts are located in **Annexure 1** of the NOWPRCP.

## Health & Safety Strategy

Human safety and health are the highest priority in both response planning and during any response event. Occupational safety and health requirements will be fundamental to any oil spill response. The table below identifies potential hazards that relate specifically to oiled wildlife response. These health and safety risks, as well as general health and safety risks, must be communicated to all responders. An Incident Site Safety Plan for oiled wildlife response should be displayed at the entrance of the site at all times.

| **Health & Safety Risks** | **Mitigation measures** |
| --- | --- |
| **Heat Stroke**  This may be a risk when working indoors with birds due to the temperatures being maintained above normal to assist with the birds’ recovery. | Regular re-hydration is important particularly during the cleaning stage of the response.  It is vital that regular breaks are taken to rest and eat meals. Fresh drinking water should be available at all times. |
| **Transport risks**  Transport will be used regularly whether it be transporting Oiled wildlife or specialised equipment or indeed passengers | All drivers must hold appropriate licenses for the work undertaken (this may include a Public Drivers Permit in the event of transporting members of the public)  Vehicles must be maintained and appropriately ventilated if being used to drive oiled wildlife. |
| **Injuries involving use of equipment**  Specialised or heavy duty equipment as well as medical and electrical equipment involves risk of injury | First Aid kits must be available during the entire response.  All staff and volunteers who are first aid qualified must be noted.  All electrical equipment will be maintained and in working condition.  Sharp equipment such as scalpels, knives and needles should be disposed of in adequate containers. These must be provided. |
| **Injuries inflicted by animals**  Teeth, beaks, wings, flippers and claws can cause injuries | Appropriate Personal Protective Equipment (PPE) must be worn in accordance with relevant Standard Operating Procedures (SOPs) including appropriate eyewear when handling wildlife  Adherence to strict handling protocol must be observed. |
| **Zoonotic Disease**  Birds, mammals and reptiles carry a number of pathogens that can be transferred to humans. Disease outbreaks in captive birds are not uncommon. | Quarantine protocols must be in place and strictly adhered to when working with wildlife. These must be posted in all areas.  Hand washing before eating and drinking must be compulsory.  Eating, drinking and smoking must be prohibited in wildlife handling areas. |

## Waste Management Strategy

The aim of this strategy is to help teams of responders and volunteers understand oil spill waste management challenges and be able to participate efficiently in the first steps of the waste management process.

Waste management starts from the removal of oil and oily debris on the shoreline or at sea, and includes temporary storage, transport, treatment, and final disposal in a safe and secure manner taking into consideration the hazardousness of oil. The main concern will be predominantly oily waste at the oiled wildlife rehabilitation facility.

It is important to take into account the following factors:

* Type of waste
* Volume of waste
* Facilities available
* Treatment techniques and
* Legal, environmental, operational, logistical and financial issues, of holding, transporting and disposing of waste.

Waste in South Africa is currently governed by means of a number of pieces of legislation, including:

* The South African Constitution (Act 108 of 1996);
* Hazardous Substances Act (Act 5 of 1973);
* Health Act (Act 63 of 1977);
* Environment Conservation Act (Act 73 of 1989);
* Occupational Health and Safety Act (Act 85 of 1993);
* National Water Act (Act 36 of 1998);
* The National Environmental Management Act (Act 107 of 1998);
* Municipal Structures Act (Act 117 of 1998);
* Municipal Systems Act (Act 32 of 2000);
* Mineral and Petroleum Resources Development Act (Act 28 of 2002);
* Air Quality Act (Act 39 of 2004);
* National Environmental Management: Waste Act, 2008 (Act 59 of 2008) (as amended).

### Procedure to handle each type of waste

The following special waste categories are encountered at facilities caring for marine wildlife:

### Fish waste

Care must be taken to manage fish waste in order not to attract flies, and disposal in municipal waste is generally acceptable.

### Bio-hazardous and medical waste

Medical waste refers to waste products that can’t be considered general waste and can be considered capable of causing or spreading infection. Expired medication, medical rubber gloves and injectable medication bottles as well as any organic material such as scabs, organs and waste removed during operations or medical procedures must be placed in a red bio-hazard bag and disposed of by a professional medical waste company. The nature and volume of the waste inside the disposal container, will predict how often the bin will be emptied.

All sharp medical waste such as needles, scalpel blades and broken glass must be discarded in a dedicated sharps container. This container is replaced once it has reached the level indicated on the container.

### Carcasses

Carcasses and organic wastes suspected of disease contamination, or those that have been euthanized using chemical methods should be deep buried or incinerated. Burial of carcasses should be at a depth that will discourage scavenger species from unearthing them. Discarding carcasses must be done in accordance with local regulations and permit conditions for the disposal of medical waste, e.g. professional and accredited cremation service. Carcasses can only be donated to third parties providing they have the necessary permits to be in possession of a carcass. It is important to ensure that the chain of evidence in terms of signing off all hazardous waste to the next level must be kept as records for auditing and claim purposes.

**Record keeping and reporting needed for legal, compensatory or recovery cost related reasons.**

## Oil collection and sampling

Collecting oil samples from the oiled wildlife is important for the purposes of determining the source of the oil to both identify the Responsible Party and make a claim for reasonable oiled wildlife costs incurred. A guideline for oil feather collection and sampling has been outlined below:

**Collection and sampling guidelines**

* Using a pair of haemostats or tweezers that have been cleaned with isopropyl alcohol remove a minimum of 5 heavily oiled covert feathers. Feathers should not be taken from one location as this may negatively affect waterproofing.
* Remove the feathers by pulling in the direction of feather growth.
* Testing Laboratories require five (5) completely oiled covert feathers (~100 mg of oil) to properly analyse the sample.
* If the feathers are oiled at a surface or moderate depth, more feathers must be collected to have enough product for fingerprinting.
* Place the sampled feathers on a piece of aluminium foil taking care not to touch them against any other surface. Note: Do not allow nitrile or vinyl gloves to touch any part of the oil sample.
* Fold the foil over the feathers, sealing them inside.
* Provide the following information on an evidence label or piece of masking tape:
* spill name;
* date;
* species;
* capture location;
* animal identification numbers.
* Waterproof labels that can withstand freezer storage are recommended.
* When applying the label, make certain it covers the folded ends of the foil, to ensure the correct label accompanies the correct sample.
* Place samples in a zip lock bag. Place the zip lock bag inside a standard mailing envelope that is labelled with the same information that is on the evidence label. Store enveloped samples in a locked freezer.
* The chain of evidence must be kept in terms of signing over, until collection or delivery to government authority investigating the oil spill laboratory.

## Oiled Wildlife Response Operations

## Stage 1: Initial Evaluation

Upon arrival at the Incident Command Centre or spill site, the Wildlife Branch Director will be briefed on the current oil spill situation. The Wildlife Branch Director will decide whether to proceed with the oiled wildlife response sequence based on the information available, or conduct a wildlife specific field evaluation. Following evaluation, oiled wildlife response intentions will be incorporated into the Incident Action Plan.

## Stage 2: Mobilisation of Resources

This stage involves the initial mobilisation of resources in accordance with the time frames for each tier set out in Section 6.

* The OWR personnel, equipment and facilities mobilised for any event will be determined by the circumstances of the event, however a minimum capacity must be mobilised to provide a safe and effective response capability (and critical mass).
* A Wildlife Branch Director will also be mobilised to lead the mobilisation of operational resources at the scene where oiled wildlife have been observed.
* Further personnel mobilisation along with equipment, and facility acquisition needs to occur ahead of need if wildlife impact is anticipated.
* An indication of the resources needed for each stage of the OWR is outlined in this section under each relevant stage.
* The level and escalation of resource mobilisation will be determined by the incident management team (IMT) informed by advice from the Wildlife Branch Director.

## Stage 3: Field Operations

A Shoreline Staging Site (SSS) should be established to provide a base for search and capture teams, and to provide shelter for animals waiting to be transported to the Oiled Wildlife Rehabilitation Facility (OWRF).

### Field Assessment

Daily field assessments will be made to identify wildlife that is either oiled or at risk of becoming oiled until the point at which the Field Assessment Team is confident that all casualties have been identified. If resources are limited then priority should be placed on assessment of areas inhabited by species of high conservation value.

### Hazing and Deterrence

Hazing methods may be effective in some circumstances to deter animals from oiled sites or sites that are anticipated to become oiled. Hazing methods may include the use of vehicles (e.g. boats, aircraft); physical barriers (e.g. fences, crowd barriers); auditory disturbance (e.g. propane canons); visual disturbance (e.g. balloons, lights, reflectors, flags); pyro-techniques (e.g. flares).

### Pre-emptive capture

Pre-emptive capture is the preferred method in South Africa and is particularly useful for ‘at risk’ populations of high conservation value. This involves the capture of a significant proportion of individuals from populations at risk to prevent their oiling. This method requires the capacity to care for potentially large numbers of animals in captivity prior to their release once the habitat is clean.

### Capture and collection

Teams will search, capture and transport wildlife to the SSS. These teams should be a minimum of two people and should be led by personnel with specific expertise in assessment and capture techniques. Teams must also require at least one person who has good knowledge of the local area, habitat and wildlife. Depending on the circumstances (i.e. conditions, species, situation), capture operations may be shore-based, boat-based, or a combination of both. It is very important that sufficient pre-planning and logistical support has taken place. Care must be taken when restraining individual animals to ensure animal welfare. A wildlife collection tag must be completed for each captured bird and be attached to its transport box. Animals must be staged for transport in a sheltered area with appropriate protection from wind and heat.

### Dead wildlife recovery

Dead oiled wildlife should be collected when found. Carcasses of oiled birds, mammals and turtles can provide essential information for impact assessment and wider ecological and scientific interest. Dead wildlife can help evaluate the impact of the spill on affected populations, for veterinary and pathological information, and to remove contaminated carcasses from the environment/food chain. Dead oiled wildlife may also present a risk of contamination to scavenging animals. Carcasses should be collected and placed in sealed, labelled plastic bags and transported to the nearest SSS.

### Field Stabilisation

If more than one hour will elapse between capture and arrival at the OWRF then Staging Teams at the SSS should initiate basic stabilization actions.

Basic stabilization includes the following:

* Rehydration therapy with warmed oral fluids;
* Superficial decontamination of oil from birds (especially eyes and nostrils);
* Basic temperature correction (i.e. shelter and heat lamps).

Field stabilization teams should ideally include a vet; a rehabilitator; and an assistant. If oiled wildlife numbers are high (e.g. more than 100 birds over an 8 hour period) two field stabilization teams may be required.

### Transport

Oiled wildlife must be transported in suitable cardboard or plastic cartons that have adequate ventilation and soft absorbent padding on the floor. Vehicles used for transporting animals must provide a well-ventilated area for holding transport cartons. Care must be taken to not stack or pack the boxes tightly together – this may stop airflow. Pieces of timber may be used to ensure a gap of approximately 10cm between boxes. Tarpaulin may also be used as a cover to stop further temperature stress and excessive wind exposure. Air transport of oiled wildlife may also be possible in some circumstances.

## Stage 4: Establishment of an Oiled Wildlife Rehabilitation Facility

In the event of an oil spill that impacts wildlife, rehabilitation facilities will be required for the stabilisation, cleaning and rehabilitation of oiled wildlife. The facilities are required to be scalable to enable increases in wildlife units. Ideally, Oiled Wildlife Response Facilities will need to be established either at pre-identified site (e.g. **Annex 2 NOWPRCP**). Alternatively temporary / satellite rehabilitation facilities can be used. Such a temporary facility will most probably require access to the NOSCP resources and industry resources through the current NOSCP arrangements. Priorities for establishing the Oiled Wildlife Rehabilitation Facility during the Field Operations period is to rapidly provide for the intake and holding capacity of oiled wildlife, with other functions added on in additional phases.

| **Checklist of most important characteristics and equipment** | | |
| --- | --- | --- |
| **Reception**   * Desk * Space to put bird boxes * White board | **Corridor**   * Connecting all indicated rooms * Signposts | **Showers, toilet**   * For women * For men * Hot/cold running water * Benches/chairs * Coat hooks |
| **Examination room (if vet available)**   * Water, electricity * Table * Cupboard with medical equipment, medicine * Balance | **Office**   * Desk, chair * Computer, internet, telephone, fax/copier/printer * Meeting table * White board | **Recreation room**   * Table(s), chairs * White board * Mugs, plates, cutlery * Fridge with snacks * Microwave |
| **Stabilisation room**   * Clean working environment * Good ventilation * Net bottom cages and pens | **Veterinary lab (if vet available)**   * Desk, chair * Computer * Centrifuge * Freezer (to put dead animals) | **Parking**   * Parking space * Security checkpoint * Signposted * Waste storage containers |
| **Dressing Room**   * Benches and hooks * Lockers for personal belongings * Signs with instructions | **Animal kitchen**   * Hot/cold water * Work tables * Fridge, freezer * Microwave, mixers | **Facility as a whole**   * Existing building or party tents * Hot & cold water, electricity * Climate control (+ventilation) * Space & flexibility * Near city/ main roads * Freezer for waste fish storage * Swimming pools or space to place temporary swimming pools |

## Stage 5: Operations at Oiled Wildlife Rehabilitation Facility (‘OWRF’)

### Intake admission and Assessment Group

This phase consists of the following procedures carried out by intake & stabilisation teams which include veterinary staff:

* Initiation of an individual medical record (rehabilitation centres should use their own medical cards)
* Individual identification applied (e.g. flipper tags)
* Clinical assessment, triage and medical stabilisation
* Entry to oiled bird holding area to regain strength prior to cleaning
* Euthanasia (if necessary)

#### Triage

The first phase of triage evaluation may take place at the temporary holding facility, before transportation to the Oiled Wildlife Rehabilitation Facility (OWFR) or at the OWFR itself. The physical conditions of birds that have been captured may range from very weak and completely oiled individuals to strong and lively ones, which are only partly covered with oil. The process of triage enables the responder to prioritise and to select those animals that may have the best chance of surviving further treatment. Other considerations may include species conservation value, age priority or the resources available. Triage is an ongoing process throughout treatment.

#### Euthanasia[[3]](#footnote-4)

Euthanasia is part of the triage process, and is critical for ‘herd health’ management (e.g. providing an average treatment regime to large numbers of animals, and/or removing animals that are less likely to survive so that resources can be directed towards those most likely to survive) and for the welfare of animals involve in oil spills. It is used as a tool to protect the healthier members of the population undergoing treatment, as emaciated and immune compromised patients are prone to acquire and transmit infectious diseases, including zoonoses. It can also be used as a management tool when resources are inadequate to attempt the rehabilitation of all, or a portion, of the affected animals.

A written Euthanasia Plan should be developed for each event, and should follow established criteria in accordance with local legislation and authorities. The Plan should be discussed and agreed upon by the veterinary staff before rehabilitation operations commence. The Plan should be made available for responders, response planners and interested sections of the Incident Management Structure.

The Plan will include relevant approvals and associated conditions, including the following:

* Details of authorised personnel (both to authorise as well as conduct euthanasia procedures);
* Legal requirements
* Detailed criteria for decision making
* Storage methods prior to disposal (based on ability and timeliness of necropsy/post-mortem).
* Methods/contacts for the appropriate disposal of carcasses in accordance with the waste management plan for the response.

### Pre-wash Care & Rehabilitation

Prior to cleaning, medical stabilisation is continued until individual animals have met pre-determined health criterion. Cleaning is very stressful for wildlife and it may take up to 72 hours before animals have gained sufficient strength to undergo cleaning.

Pre-wash rehabilitation includes:

* Fluid and nutritional support;
* Provision of warmth as necessary (e.g. heat lamps, wind breaks; appropriate housing);
* Other medical treatments as determined by the overseeing veterinarian.

### Washing and Rinsing

Once individual animals have met pre-determined health criteria they move into the cleaning process (washing, rinsing and drying). Washing is required to remove oil or other contaminants from the feathers, fur, skin or other parts of the affected animal’s body.

Washing, rinsing and drying is an exhausting experience for animals (particularly birds). It is important that these steps are conducted in a professional and efficient manner to minimize stress. For oiled birds, plumage must be cleaned and rinsed thoroughly to remove all traces of oil and detergent without damaging the feather structure.

Before washing, animals should be clinically assessed and will need to meet pre-established and written washing criteria to ensure their survival during the washing, rinsing and drying processes. This criterion should include the following:

* Blood values (PCV and TP) should be appropriate to minimise the likelihood of animals having medical issues during the cleaning process.
* Animals should exhibit normal behaviour for the species.
* Animals should be bright, alert and responsive.
* Body weight should be stable or increasing and adequate for the species.

After washing, rinsing is critical to regaining waterproofing in most oiled animals, in particular those with a structural means of maintaining normal body temperature (e.g. the feathers in birds). Rinsing removes the soap and residue which can interfere with the animal’s natural waterproofing. Once washed and rinsed the birds and heavily-furred mammals will need to be dried after cleaning. Animals will enter the drying area where their condition is closely monitored by experienced personnel to gauge thermoregulatory stress.

OWRFs must develop robust washing, rinsing and drying SOPs outlining personnel requirements, pre-wash evaluation, pre-wash treatment, washing, rinsing and drying.

### Post-wash Rehabilitation

The objective of rehabilitation is to achieve the necessary requirements for release whilst minimizing the impact of captivity on the animals’ welfare. This is a delicate balance and animals must be prepared for release to the wild as soon as possible to reduce captive complications. Restoration of waterproofing is the key aspect of post-wash rehabilitation. This is achieved though preening and physical restoration of correct feather structure. Preening is stimulated by allowing the birds to swim in water (preferably moving water). After oil contamination and cleaning the process of regaining waterproofing can be lengthy. Birds must not be released until plumage is fully waterproof. Hygiene and quarantine are very important during rehabilitation as well as specific husbandry requirements that vary depending on species. A gradual transition from indoor temperature controlled areas to outdoor enclosures may be required depending on ambient temperatures.

### Pre-release assessment

The ideal target is that the animals are biologically and behaviourally normal and capable of competing in the wild. Most importantly, in the case of mammals and seabirds, each individual must pass a waterproofing test whereby they are able to swim for a pre-determined duration after which their plumage or fur is checked thoroughly for wet patches. Individuals that have no wet patches after the test process through a veterinary assessment before they will be considered for release.

Release criterion should be established to consider the following elements:

* 100% waterproof;
* Minimum healthy weight;
* Normal blood values (PCV, BC, TP)
* All other medical issues resolved.

Once the wildlife satisfies the waterproofing test and the pre-release veterinary assessment has been completed, the release will depend on a suitable release site with favourable conditions being available, including weather considerations. Careful attention must be given to choice of release site and timing, and wildlife should only be released once the environment has been cleared of oil. Most species have high site fidelity and if released far away from their original site, they will swim or fly back. If oil is still present in the environment, they will most likely become re-oiled.

### Post-release monitoring

Monitoring of post release survival rates is becoming increasingly important in oiled wildlife response. In the case of birds, transponders should be inserted into African penguins and SAFrings placed on other flying seabirds. If funding allows, GPS loggers would be useful to track movements of released wildlife.

## Stage 6: De-mobilisation

Once the decision has been made to terminate oiled wildlife operations, the Incident Commander will begin standing down functions and resources. This phase involves the decontamination of all the equipment; the dismantling of the facilities and the restoration of contingency capability to standby status. This could involve a range of physical activities such as dismantling marquees or other temporary constructions, removing electrical and plumbing installations, removing furnishings or cleaning facilities and equipment. Typically demobilization will be a gradual process as oiled animal numbers begin to decrease.

Demobilisation of personnel, equipment and facilities used for the wildlife response will generally lag behind that of the wider spill response because cleaning, treatment and rehabilitation of wildlife can take longer than the spill response. Therefore, ongoing resources may be required beyond the demobilisation of clean-up operations, to continue with the rehabilitation of some affected animals and to conduct monitoring programs after their release.

Factors determining the timing of demobilisation will include:

* The numbers of affected wildlife still being found (if any) and the cut-off below which formal rescue efforts will be suspended.
* The numbers and condition of captive wildlife and the need for ongoing cleaning and rehabilitation operations.
* The condition of clean-up of any impacted wetlands, shorelines or islands and their capacity to support released wildlife.
* Sign-off by the Incident Commander (with input from Department of Environmental Affairs) providing assurances that habitats to which wildlife are to be returned are no longer contaminated.

## Stage 7: Review of Response / De-Brief / Hot-wash

Once the Wildlife Branch has been demobilised, the Wildlife Branch Director should arrange a debriefing session to analyse their involvement in the wildlife response within three months. A subsequent review of systems, including policies and procedures should be undertaken based on lessons learned during the response. Once the major operational phase of the response is completed an ‘all agencies’ debrief/after action review of the incident/emergency response will be organised followed up with a formal report.

ANNEXURES

Annex 1: Oiled Wildlife Response Contact List

Annex 2: Tier 1 and 2 Resources Available

Annex 3: Equipment Lists

Annex 4: Transboundary agreements and Tier 3 Resources

Annex 5: Wildlife Sensitivity Data

1. Section 3 of the National Oil Spill Contingency Plan (Volume 1) [↑](#footnote-ref-2)
2. Volume 1 – National Oil Spill Contingency Plan (2019 – 2024) [↑](#footnote-ref-3)
3. This section has been extracted from the IPIECA-IOGP: Key principles for the protection, care and rehabilitation of oiled wildlife – Section 3: Overarching principles of wildlife response: Euthanasia [↑](#footnote-ref-4)