

Pollution Response

RESPONDING TO AN OIL SPILL

Most oil spills within New Zealand waters are likely to happen close to the coast or in harbours. This makes it extremely difficult for responders to prevent some oil from reaching the shoreline as, depending on local weather, currents and tides, any spilt oil could reach the coast and coastal resources within hours.

THE THREE-TIERED APPROACH

In line with international practice, New Zealand has a three-tiered approach to managing all aspects of marine oil spill preparation and response. These Tiers are provided for in the Maritime Transport Act 1994.

Tier 1

Tier 1 is site-specific and includes most shore-side industry with oil transfer sites, offshore installations, pipelines and all vessels from which a spill of oil is possible. Commercial ships are required to have a shipboard oil pollution emergency plan (SOPEP). All Tier 1 sites and vessels are expected to be able to provide an initial response to incidents on their sites.

Tier 2

Regional councils (and those unitary authorities acting as regional councils) make up Tier 2. These agencies must maintain a regional marine oil spill contingency plan for their region. These councils respond to marine oil spills within their regions that exceed the clean-up capability of Tier 1.

Each regional council has a stock of the equipment needed to clean up oil spills within their regional boundaries and particularly within their ports. This is supplied by the Oil Pollution Fund and is overseen by Maritime New Zealand.

Maritime NZ provides regional councils with resources and training to support them undertake this role.

Tier 3

When, due to size, cost, location, complexity or environmental impact, containing and cleaning up a marine oil spill exceeds the capacity of the resources available at both Tier 1 and Tier 2, Maritime NZ assumes responsibility for managing the response.

Maritime NZ manages the response to any oil spill within the Exclusive Economic Zone (EEZ) and those that occur outside the EEZ and over the New Zealand continental shelf.

International Support

If a large marine oil spill occurs anywhere within New Zealand's area of responsibility, and it is beyond New Zealand's own resources to contain it and clean it up, Maritime NZ will seek international support to the Tier 3 response.

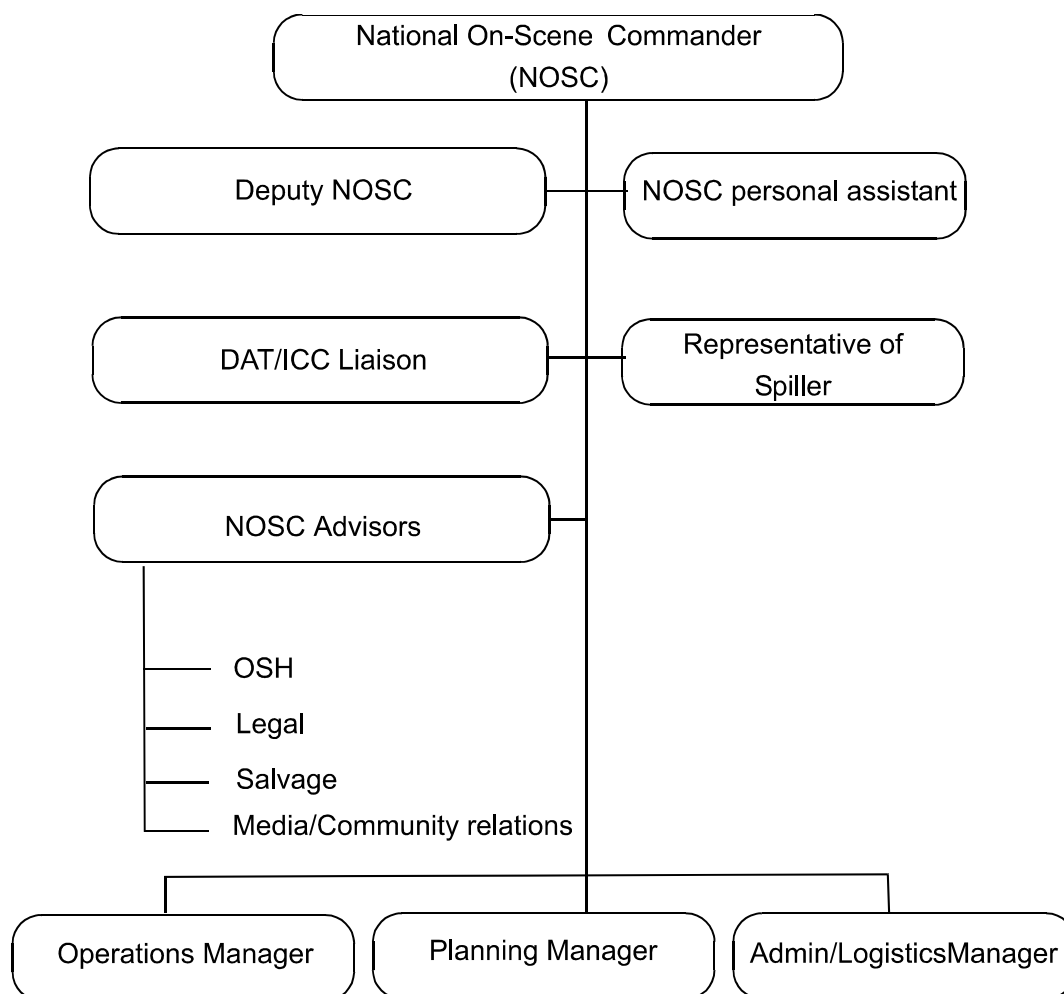
New Zealand already has in place arrangements to provide international support through the 1990 International Convention on Oil Spill Preparedness, Response and Co-operation (OPRC 90).

TIER 3 RESPONSE

The Director Maritime NZ appoints a National On-Scene Commander (NOSC), who is responsible for leading the onsite response to a large (Tier 3) marine oil spill, and two support teams are then established to assist these people during a response:

THE INCIDENT COMMAND CENTRE

The NOSC's Incident Command Team provides on-site planning and an operational and logistical capability to manage and clean up a large marine oil spill. This team advises the NOSC on areas like dispersants, wildlife, environment, iwi and community, legal and health and safety issues.

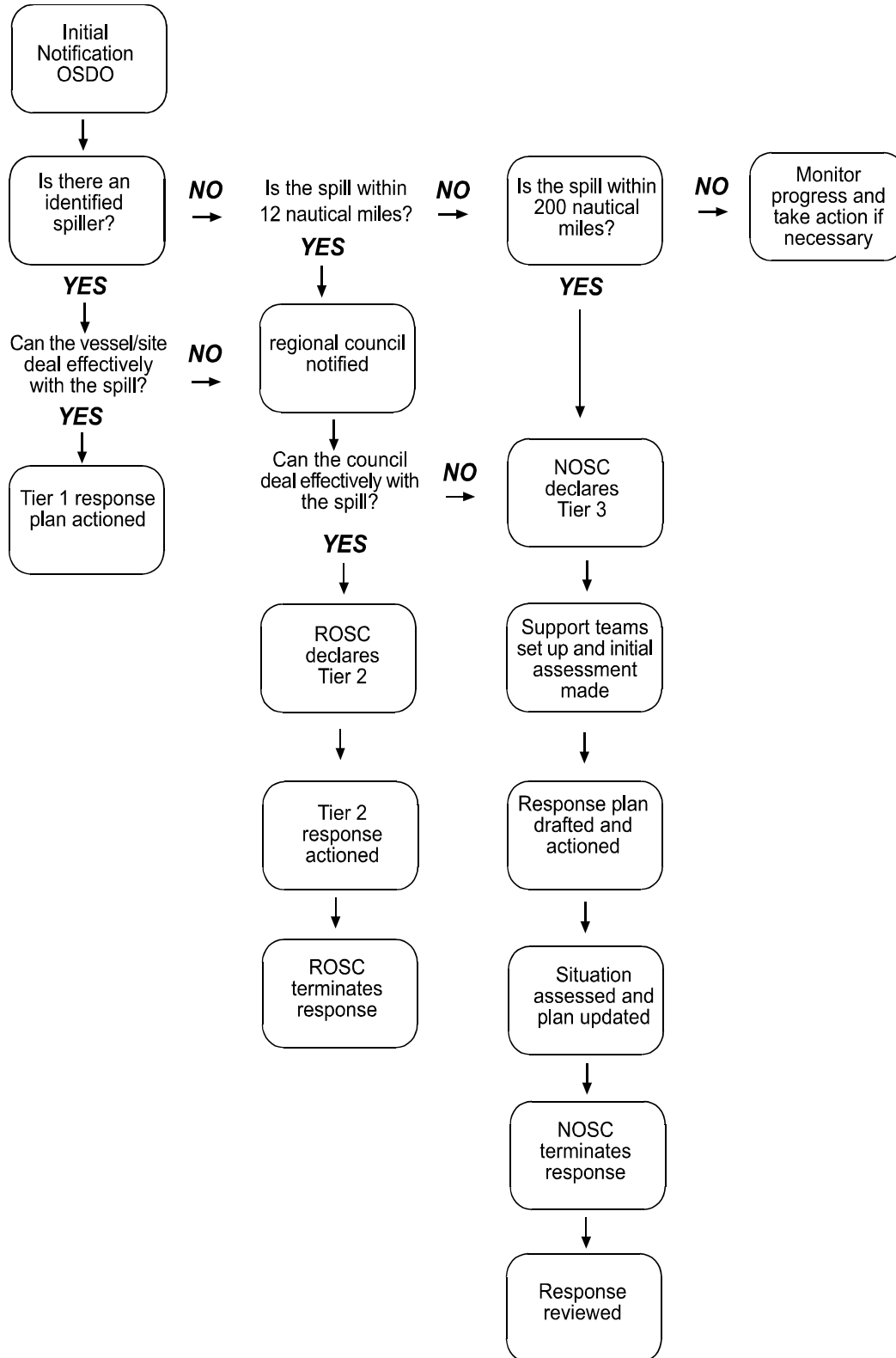


THE DIRECTOR'S ADVISORY TEAM (DAT)

The DAT provides legal, nautical, financial, administrative and technical advice to the Director Maritime NZ and backup support to the NOSC during a major shipping incident.

RESPONSE STAGES

No two incidents are the same but generally a response will run along the lines of this diagram:



RESPONSE OPTIONS

All oil spill response is a balance between removing all the oil while causing minimum harm to the environment in the area being cleaned and taking into account safety issues and the available resources.

The main options the Incident Command Team consider when dealing with an oil spill are:

Salvage and Intervention

Avoiding a potential or imminent spill is recognised as the best outcome in oil spill response.

Actions such as salvage of a vessel or installation, or containment of the oil within its original structure (tank, bunker, pipeline, etc.), or safe transfer of the oil to secondary containment (a barge or lightering vessel), can prevent the oil from spilling in the first place or work to contain an existing spill.

This will prevent or minimise environmental effects, potentially reduce toxic or health impacts, and very likely lower the overall cost of response.

It is not the role or responsibility of the OSC or the response operation to engage in salvage operations. However the Maritime Transport Act 1994 has provided the Director of Maritime NZ with wide powers to intervene to protect marine interests from discharges of harmful substances during emergencies. The Director (or nominee) can require the owners of a vessel or site, a ship's master or salvor, or the operator of a site or installation or pipeline to take actions to protect marine interests. The Director can also take direct action, with respect to the ship, structure or cargo.

Allow Natural Break Up

If the spill is a good distance from shore and unlikely to cause damage to marine wildlife or the environment, the best response may simply be to allow the oil to disperse naturally. The ocean contains bacteria that break down the molecular structure of oil into less complex substances that are not hazardous. In this situation, the only actions taken may be to report the incident and then monitor the movement of the oil and its rate of dispersal.

Mechanical Action

This involves using other vessels to churn up the water to assist in breaking up the oil, which can then be left to disperse naturally.

Dispersants

Dispersants are compounds, which are applied to the spill and assist in the break up of the oil in the water. Maritime NZ may consult with regional councils, the Department of Conservation, environmental and wildlife advisors and iwi before dispersant is used. For more information see the OSR Equipment fact sheet.

Containment

With some oil spills the first priority may be to contain the oil to limit the impact on the environment. Once contained the oil can be recovered and removed for disposal. To contain an oil spill the most common piece of equipment used is a boom. For more information see the OSR Equipment fact sheet.

Recovery

Once the oil has been contained, work can then start on recovering the oil from the water. Mechanical skimmers and/or sorbents are most commonly used for this task. For more information see the OSR Equipment fact sheet.

Shoreline Clean Up

In some cases it is not possible to prevent the oil reaching the shoreline and so the oil spill response is focussed on minimising long term damage and clean up of the area affected.

The goal of any shoreline clean up is to clean only to the extent that will speed up the recovery and use of the area. This option has to be carefully measured against allowing natural recovery as in many cases intervention can do more harm than good.

A Shoreline Clean up Assessment Team (SCAT) undertakes detailed analysis of the affected area and identifies sensitive areas. They then prioritise areas according to a number of factors including ecological value, socio-economic value, recovery time and cultural significance.

SHORELINE CLEAN-UP TECHNIQUES

Flushing

The use of high or low pressure cold or hot water flushing to remove residual oil, e.g. stains, weathered crusts, or oil absorbed in sediments is an option. From the biological point of view, there is little point in disturbing the shore to remove such residues if biological recovery is progressing. It might be justifiable if absorbed oil is hindering recovery. The use of this response is designed to significantly reduce the recovery time or be driven by over-riding economic, amenity or wildlife concerns.

Natural cleaning

This is an option for exposed shores where wave action is sufficient to remove oil. It is particularly appropriate for remote beaches where there are no overriding considerations. It is also appropriate for more sheltered shores where other techniques would cause unacceptable damage to the environment.

Vacuum pumping

This is suitable for thick layers of oil but care is taken to minimize the removal of sediments and any organisms living on or in them. Unfortunately many suction devices are heavy and cannot easily be carried over rough terrain. The environmental advantages of the method need to be continuously weighed against the damage caused by human interference.

Mechanical removal

Where oil contamination may be extensive but has not penetrated deeply graders can be used to skim the surface layer of oiled sand, no deeper than the oil penetration depth. Oily sand is then collected using front-end loaders. Front-end loaders can also be used alone but this may result in more sand being removed, which increases the disposal problem. Sediment removal is best justified when there are overriding short-term considerations, e.g. the need to clean a fishing or tourist beach where activities of socio-economic importance need to continue.

Mechanical relocation

This involves moving oily sediments lower down the shore where they are exposed to greater cleaning action by the waves, or moving buried oil to the surface for the same reason. This technique is most appropriate for badly oiled coarse sediments on relatively exposed shores, where wave action will eventually restore the normal shore profile.

Manual removal

Small areas of a spill where oil has not significantly penetrated the sediments can be cleared using rakes and spades. It is a useful technique for cleaning patchy oil, and in cases where use of machinery is limited because of access or because it would damage the beach structure.

Bioremediation

This is the breaking down of oil by microorganisms helped by nutrient application and works best when the oil concentration in the sediment is very low. Repeated and slow-release applications of appropriate fertilizers appear in some cases to speed up oil biodegradation by enhancing the activity of naturally occurring microorganisms.

Note: The situation may allow or dictate that a combination of any of the above actions provides the most effective response.

TERMINATING THE RESPONSE

Responsibility for control of the response remains with the higher-level agency (Maritime NZ in a Tier 3) until the response is formally concluded.

Winding down the response involves the recovery, cleaning and maintenance of all equipment used during the clean up, demobilisation of all personnel involved in the response and the completion of all documentation associated with the spill.

Monitoring of the environmental impact of the oil spill may continue for some time, ensuring the safety of wildlife, measuring the toxicity of seafood and gathering information on the recovery of the site.

Staff involved in the response are fully debriefed and a final report is prepared. Information to assist cost recovery is also gathered and investigations and/or reviews of the incident and the response may be held.

WHO PAYS FOR THE RESPONSE?

Under the Maritime Transport Act 1994 the polluter pays all costs from an oil spill response and subsequent clean up. If the spiller cannot be identified, the cost of the response can be recovered from the Oil Pollution Fund.

The Director of Maritime NZ has the power to investigate any discharge or escape of a harmful substance in breach of the Maritime Transport Act 1994 or the Resource Management Act 1991.

From this investigation the Director may decide to initiate a prosecution against those he considers liable for the pollution incident.

The cost of a response will depend on many factors, such as the quantity and type of oil spilled, the weather conditions at the time of the spill and the area affected. Large spills a long way from shore can cost very little if they break up naturally, but relatively small spills in a coastal zone supporting fishing and tourism can be very costly.