



Rena

LONG-TERM ENVIRONMENTAL RECOVERY PLAN

December 2011

The Rena Long-term Environmental Recovery Plan was developed by the following organisations:



Maketu Taiāpure



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COVER PHOTOS:

From top clockwise:

1. Mt Maunganui. *Source: Ministry for the Environment.*
2. Clean-up crews hard at work patrolling and cleaning the shores of Tauranga. *Source: Maritime New Zealand.*
3. The Rena on Otaiti (Astrolabe Reef). *Source: Maritime New Zealand.*
4. A rare and protected New Zealand dotterel. *Source: Maritime New Zealand.*

Foreword

Every New Zealander's heart sank seeing the iconic Mt Maunganui and Papamoa beaches and our treasured birdlife smothered in oil in the aftermath of the Rena grounding in October. It was New Zealand's worst maritime environmental disaster. This Plan is about coordinating the long-term recovery and restoring the Bay of Plenty environment.



We appreciated the brave efforts of the salvors in preventing further significant oil spills, the fast work of the Wildlife Recovery Team, and the tireless hours put in by iwi, volunteers and the New Zealand Army on the immediate response.

We need to transition from this emergency phase to a long-term plan that pulls together the best knowledge and skills across central, regional and local government, iwi, and our scientific and research organisations.

This Plan identifies the environmental issues for the beaches, seabed, water, fisheries, wildlife and management of waste, setting out who is responsible for the recovery and monitoring of each. Some flexibility is needed as risks remain from the Rena salvage operation.

The Governance Group will oversee the Plan and ensure everything possible is done to restore the environment. We will be seeking to recover as much of the cost of this Plan as possible from those responsible; however, we cannot allow disputes over cost to hold back the necessary recovery work.

Disasters can bring out the best in people and so it has been here. I want to warmly acknowledge the contributions of iwi and councils to this Plan and commit to working with them to restore the Bay of Plenty environment.

A handwritten signature in black ink, appearing to be 'N Smith', written in a cursive style.

Hon Dr Nick Smith
Minister for the Environment



Mt Maunganui beach.
Source: Ministry for the Environment.

Purpose of the Plan



Matakana Island from Mount Maunganui.
Source: Ministry for the Environment.

The *Rena* Long-term Environmental Recovery Plan sets the goal and objectives for the long-term environmental recovery following the grounding of the *Rena* on Otaiti (Astrolabe Reef). It describes the environmental issues and outlines the actions that will be undertaken to address them.

“Toitu te Moana a Toi. Toitu te Iwi”: if the mana of Te Moana a Toi is restored, so the mana of the iwi is strengthened. The Long-term Environmental Recovery Plan is critical to restoring the affected environment including its people.

Whakarongo ki a Tangaroa. He tohu. Listen to Tangaroa. He will give a sign. This saying means you must stay in touch with the environment.

Where the Plan sits in the wider response and recovery effort

Maritime New Zealand has responsibility for managing the response to the oil spill from the *Rena* and the oversight of the salvage operation, container removal, and wreck removal.

The Ministry of Transport is coordinating central government agencies in identifying and planning the actions for the strategic, economic, social, cultural and environmental clusters of work required to recover from the *Rena* grounding. The Ministry for the Environment is taking a lead for the environmental cluster.

This Long-term Environmental Recovery Plan will be overseen by a Recovery Manager with support from a project team based in Tauranga.

2 Goal and objectives

Setting a goal and objectives will ensure all parties have a clear understanding of what will be achieved through the environmental recovery. This goal and objectives have been agreed by the *Rena* Long-term Environmental Recovery Governance Group (see section 6 for information about the Governance Group).

Goal: Restore the mauri of the affected environment to its pre-*Rena* state

Mauri includes: lifeforce, the integrity, form, functioning and resilience of the coastal environment, including its ecosystems, all kaimoana, marine and inter-tidal areas, rocks, estuaries, rivers and streams, islands, dunes and land, and customary fishing areas.

This goal recognises the environmental state that is desired by the people of New Zealand. The *Rena* grounding has affected the environment through the release of oil, containers, the contents of containers, and through its collision with Otaiti (Astrolabe Reef). The activities in this Plan are therefore focused on addressing the environmental consequences as far as it is practical to do so.

Objectives

1. The mauri of the takutai (coast) recovers from the effects of the *Rena* grounding.

Our coastal environment is a playground, food source and a major ecosystem that supports a range of species including plants, fish, shellfish, birds, marine mammals, and other wildlife. We need to ensure that it recovers from the effects of the *Rena* grounding and that recovery activities are conducted in a way that minimises their impact upon the environment.

2. The recovery effort meets community needs and expectations.

A range of community values and areas of importance are associated with our coast. It is essential that these values and areas are clearly recognised in any recovery actions taken.

3. The recovery effort meets iwi and hapū needs and expectations.

A range of iwi and hapū values and areas of importance are associated with our coast. It is essential that these values and areas are clearly recognised in any recovery actions taken.

4. Enable and engage with affected iwi and hapū and wider communities in the environmental recovery effort.

Iwi and hapū groups, our coastal communities, and people from other areas within New Zealand have taken a strong role in leading and assisting with the response to the *Rena* grounding. For the long-term recovery to be effective, we will need to build on and continue to mobilise this network of people and draw on their local knowledge, skills and expertise.

5. Iwi and hapū and the wider community are proactively informed about progress towards the environmental recovery goal.

Iwi and hapū, wider coastal communities, and many New Zealanders who have connections to this region, have a strong interest in the state of the environment. It is therefore essential that information on recovery activities and progress is clearly communicated to meet a variety of community information needs on an on-going basis.

6. Learn from the *Rena* grounding and recovery effort.

We need to capture environmental, cultural, social and management information from this incident so any future such event can be well informed of the environmental impacts, the actions taken, and progress made towards recovery and restoration of the environment. Knowledge and experience will inform the review of policy, regulations and operations to ensure a better response in the future.



Families picnic on Mount Maunganui main beach. Source: Maritime New Zealand.

Background

Grounding of the *Rena*

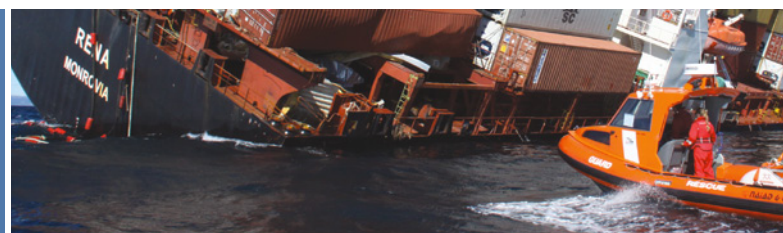
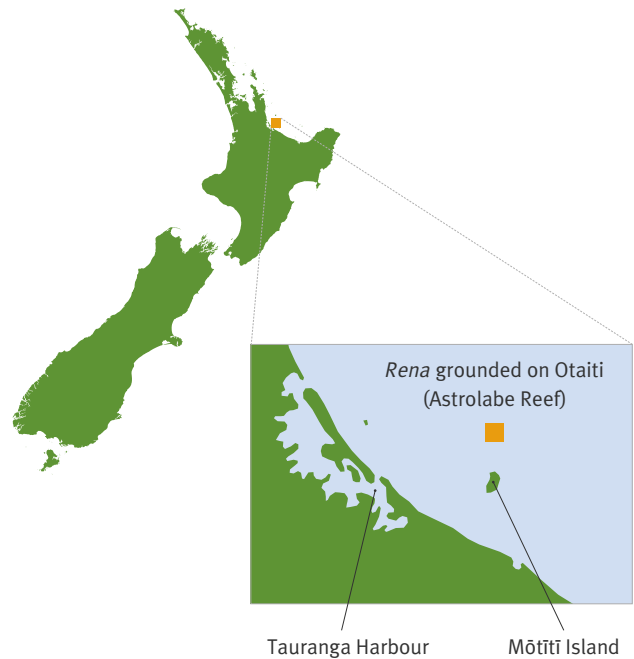
On 5 October 2011, the container ship *Rena* struck Otaiti (Astrolabe Reef) and grounded en route from Napier to Tauranga. The location of Otaiti (Astrolabe Reef) is approximately 4 nautical miles (7.4 kilometres) north of Mōtītī Island, about 12 nautical miles (22.2 kilometres) off the coast of the Bay of Plenty (see figure 1).

Although Astrolabe is the common name for the reef; its traditional name as called by Patuwai of Mōtītī is Te Tau o Otaiti, meaning the gateway or waharoa to Mōtītī. The name originates from an historical account whereby it is believed to be the place where Ngatoroirangi performed karakia before proceeding on to Mōtītī.

At the time of the incident, the *Rena* was carrying 1368 containers and 1733 tonnes of oil. On grounding, two of the cargo holds flooded and the hull was breached in several places resulting in the leakage of oil on the first night.



Figure 1: Location of Otaiti (Astrolabe Reef)





A team of volunteers at Matakana Island.
Source: Maritime New Zealand.

Response

Following the grounding, a Tier 3 national oil spill response was activated by Maritime New Zealand. This has been led from an Incident Command Centre established in Tauranga, by the National On-Scene Commander.

Maritime New Zealand has worked with several agencies, community groups, and iwi to clean up the environment and capture and treat affected wildlife. Over 360 tonnes of oil has been lost from the *Rena* since its grounding, and clean-up efforts have focused on areas of the shoreline where the oil has washed up. Over 1000 tonnes of waste (mainly oiled sand from the beaches) has been collected (as at 12 December 2011). This is largely due to the passion, dedication and support from the oil spill response personnel and volunteers who have worked tirelessly on the clean up. In addition to this, over 630 tonnes of waste has been collected by Braemar Howells from the recovered containers and their contents.

Wildlife response teams have been deployed throughout the Bay of Plenty coastal and island locations to locate and retrieve oiled wildlife as well as pre-emptively capture rare New Zealand dotterels to prevent them becoming oiled. Oiled birds are being treated at the wildlife treatment and rehabilitation facility in Te Maunga. The first release of about 50 of the oiled birds rescued (little blue penguins) were returned to their natural habitat on 22 November 2011. More staged releases will continue to be undertaken.

The owner of the *Rena* has engaged salvage company Svitzer Salvage to undertake salvage operations. Maritime New Zealand maintains oversight of the salvage operation through its Salvage Unit Managers based in the Incident Command Centre.

Svitzer has so far removed over 1350 tonnes of oil from the *Rena* (as at 1 December 2011). The success of the salvors has significantly reduced the amount of oil released to the environment. Inaccessible areas within the vessel are expected to contain a reasonable quantity of oil; however, the volumes are uncertain. Ongoing attempts at recovery of trapped oil will be carried out as and when tanks, holds and spaces become available. Oil is surfacing from this area periodically.

Attention has now turned to recovering the containers from the *Rena*. Of the 1368 containers on board the *Rena*, 86 were lost overboard on the night of 11 October 2011. The locations of 33 of these containers is known whilst 53 remain lost. As of 12 December 2011, 195 containers have been removed from the *Rena*. In addition to the 110 tonnes of hazardous goods identified on the *Rena* manifest, an additional 21 containers remaining on board contain hazardous material (Cryolite).



On 5 October 2011, the container ship ***Rena* struck Otaiti (Astrolabe Reef)** and grounded en route from Napier to Tauranga.

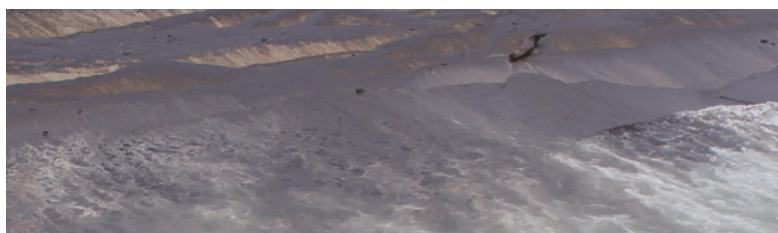
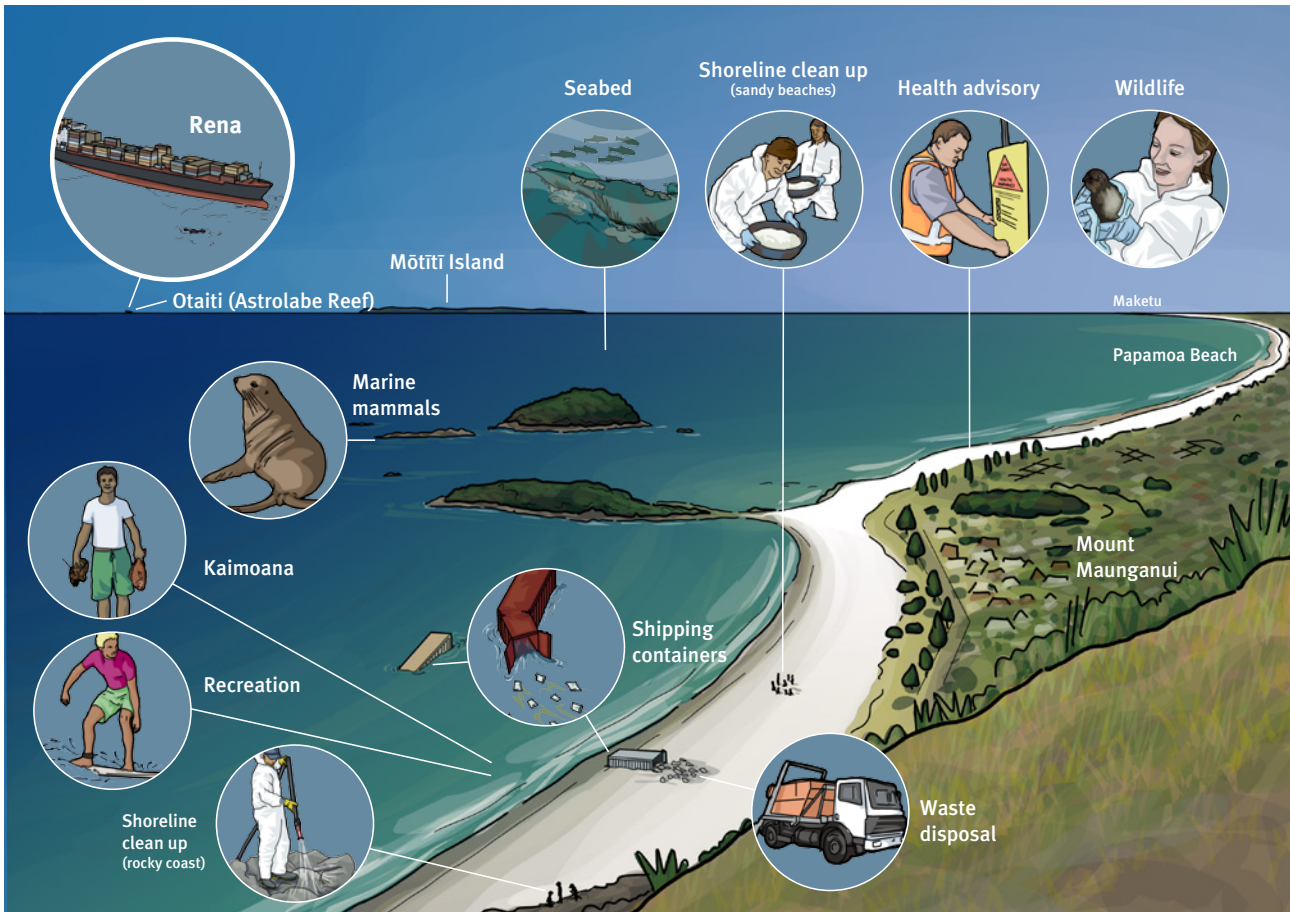
4 Environmental effects

The grounding of the *Rena* has resulted in widespread adverse environmental and cultural impacts on the marine environment and the coastline of the Bay of Plenty and various communities, as well as popular recreational beaches and offshore islands (figure 2).

Iwi and hapū have a strong holistic connection with the environment and all that it encompasses. As a result of the *Rena* grounding tāngata whenua values have been compromised. That environment is extremely important to providing the cultural,

physical and spiritual sustenance to whānau, hapū and iwi. Excluding whānau, hapū and iwi from their traditional and customary resource, and preventing them from exercising their customary practices, has been very difficult for those affected.

Figure 2: Environmental effects of the *Rena* grounding

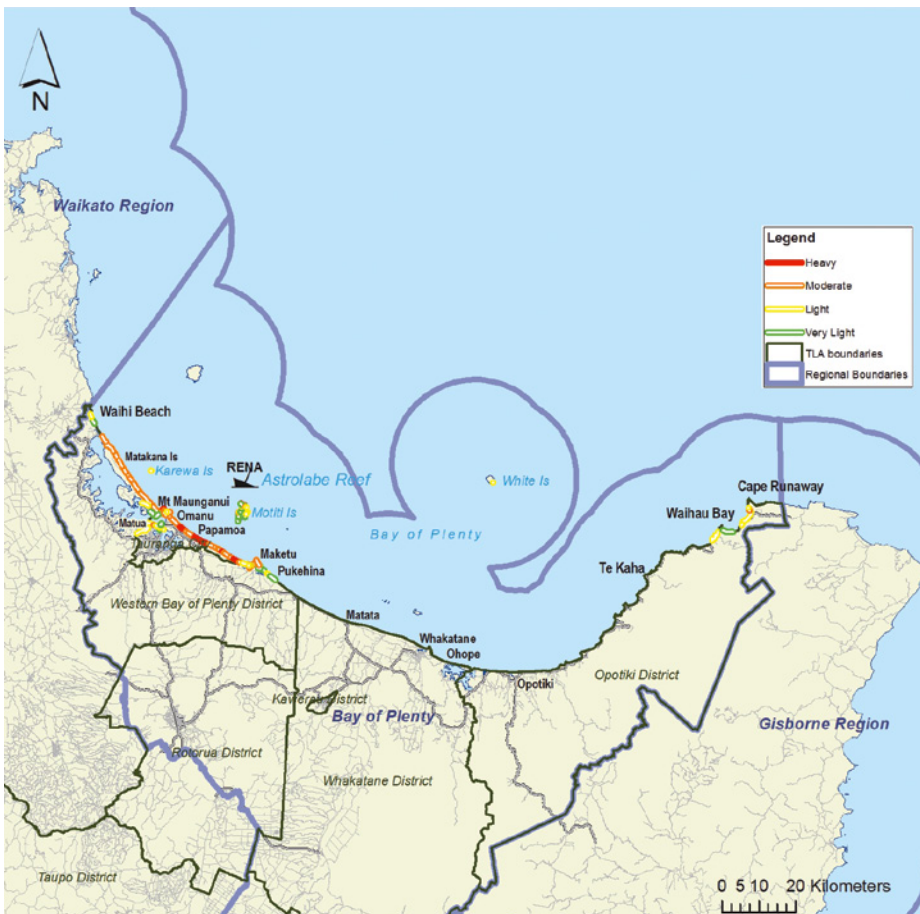


The release of oil and the loss of containers and their contents into the sea may have affected the environment in a variety of ways. However, until assessments are completed, the precise nature of the environmental and cultural effects will not be known.

Gisborne district. The response effort has successfully helped to address the immediate impacts (eg, removing oil from the beach); however, the long-term effects of the grounding may not be apparent for some time.

Figure 3 illustrates the areas that have been affected by oil. While the affected coastline currently lies within the Bay of Plenty region, the effects may extend to the Waikato region and the

Figure 3: Coastline affected by the spill of oil from the *Rena* as at 1 November 2011



Source: Maritime New Zealand.



The grounding of the *Rena* has resulted in **widespread adverse environmental and cultural impacts** on the marine environment.

Beaches and shorelines

The oil spill has resulted in oiled sand, boulders, bedrock and the presence of tar-balls on and under beach sand. It is likely that the presence of oil will affect the health and abundance of flora and fauna in coastal and rocky shore communities. Whilst the volunteers have successfully removed a lot of oil from the beaches and shorelines, the reoccurrence of oil may pose a risk to human health and the health of domestic animals that come into contact with it.

In addition to oil, the *Rena* lost 86 containers overboard on 11 October. If these containers or their contents reach the shore it is likely that they will cause some harm. This is most likely to occur if they wash up on rocky shorelines or in sensitive areas of the coast.

One of the containers contained Alkylsulphonic liquid and 21 contain Cryolite. This is not believed to present a significant risk to the environment. However, if this washes up on shore there may be further localised effects. A number of the other containers contained perishable foodstuffs. If washed ashore these goods are likely to pose a localised risk to human health, domestic animals, and create bad odours as they degrade.

Seabed (benthic habitats)

The grounding of the *Rena* will have caused significant damage to Otaiti (Astrolabe Reef). However, until the vessel has been removed it is not possible to confirm how severe this has been or what contamination is left behind. Similarly, containers and their contents lost from the *Rena* may be moved along the seabed by currents and settle on the seabed causing damage to these habitats.

The release of oil and other contaminants such as antifouling paint may impact on these habitats as well, affecting the health of these marine communities. These marine communities are a fundamental part of the food chain for many species, and vegetation such as seaweeds and sea grass, are key food sources for fish species.

Water quality and the water column

The water column is the vertical arrangement of water from the surface to bottom sediments. Oil released from the *Rena* may remain in the water for some time. Contamination of marine waters may lead to effects upon the mauri and the health of fish stocks. However, it is most likely to affect sedentary species that are unable to avoid the contaminated area, such as shellfish. Contaminated sea water may also affect people and domestic animals that may ingest it when swimming in the coastal waters.

Water quality could also be affected by the release of waste matter and other products from the containers that have been lost overboard. An abundance of perishable foodstuffs could result in excessive levels of nutrients in local areas, promoting algal growth, which may in turn affect other marine species.

Kaimoana

The contamination of fish stocks, including shellfish which is caught for the purposes of consumption, has not only restricted the cultural practises of iwi and hapū to collect kai but may also affect the health of the individuals who consume it.

Since the *Rena* grounded on Otaiti (Astrolabe Reef), there has been an exclusion zone in place which has prevented unauthorised vessels entering the area. This area was reduced to a 3 nautical mile radius on 18 November. As a result no commercial or recreational fishing from boats has taken place close to Otaiti (Astrolabe Reef).

Ministry of Agriculture and Forestry (Food Safety) have assessed the current exclusion zone as being sufficiently protective to prevent consumption of significantly contaminated kaimoana on an ongoing basis while the salvage effort continues. This is providing that more containers are not lost and cause localised contamination elsewhere. There may still be localised pockets of oil contamination that have not yet been cleaned from the shoreline, especially on rocky coast on some of the offshore islands. Standing advice continues to reflect that people should not collect kaimoana from areas where they can see visible oil or smell or taste it.

Due to the unknown risk to public health from consumption of kaimoana contaminated with oil from the *Rena*, Toi Te Ora Public Health Service initially issued an advisory notice not to collect shellfish, crabs, crayfish, kina and seaweed across large parts of the Bay of Plenty coastline. Koura/crayfish were removed from this advisory in the week of 14 November 2011.

Ongoing testing of kaimoana in areas where oil has been found, both inside and outside the exclusion zone, has found low levels of Polycyclic Aromatic Hydrocarbons (PAH) of human health concern. PAH are used internationally as markers of the safety of seafood contaminated by oil.

Levels of PAH in the worst affected shellfish sampled, tuatua at Papamoa Beach, have been steadily declining since the initial event.

To date no testing of kaimoana has been undertaken at Otaiti (Astrolabe Reef) itself. It is not planned to undertake any testing of kaimoana until the salvage operation is close to concluding. At that time it should be clear what contamination has been released into the environment and testing can be targeted at marine life most likely to be affected and for all contaminants identified as being of concern.

Wildlife

Oil impairs the insulating ability of fur-bearing mammals, such as seals, and the water-repelling abilities of a bird's feathers, meaning they can die from exposure. Animals can also ingest oil when they try to clean themselves and when consuming other species that have been contaminated with oil, resulting in poisoning.¹

Since the grounding of the *Rena*, over 2000 dead oiled birds and 13 dead New Zealand fur seals have been found. At the peak of the response over 400 animals were being cared for at the wildlife facility. 345 of these were little blue penguins, 60 were rare New Zealand dotterels that have been pre-emptively caught, and four were pied shags. These are now being returned to their natural habitat as part of an ongoing staged programme of wildlife releases.

1 US Fish and Wildlife Service. Effects of Oil Spills on Wildlife and Habitat. <http://alaska.fws.gov/media/unalaska/Oil%20Spill%20Fact%20Sheet.pdf>. Retrieved 1/11/2011.



Oil washing up on the shoreline of Tauranga.
Source: Maritime New Zealand.

Recovery work streams

Approach

Work streams have been developed to address the key environmental issues identified in section 4. Three broader work streams have also been developed for waste management, monitoring, and communications and engagement (figure 4). Each of the actions in the work streams will be led by a single agency or iwi which will take the responsibility for its delivery with the support of others.

The approach taken in this Plan is deliberately flexible and adaptive to allow for the continuous expansion of knowledge and understanding on the longer-term environmental impacts of the *Rena* grounding. Consequently, the work streams will be updated (under the guidance of the Governance Group) in response to new information, events, progress and feedback. The following factors will need to be considered within this approach.

Scenario planning

The *Rena* recovery operation is still underway. Consequently, these work streams need to be sufficiently flexible to accommodate a range of scenarios from a ‘best case’ to a ‘worst case’ scenario. The parameters of the ‘worst case’ scenario are changing daily as the recovery operation progresses.

Uncertainty about long-term environmental impacts

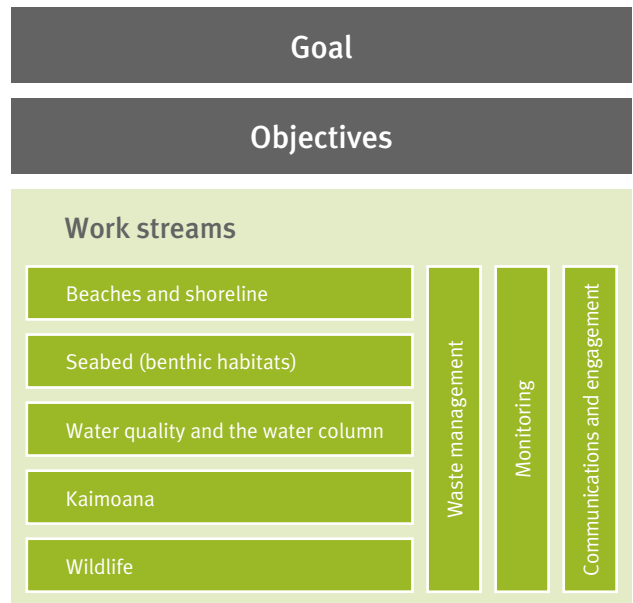
Long-term environmental impact is hard to predict. The effects of the *Rena* grounding will depend on a variety of factors, such as the ability of salvors to remove containers from the vessel, the amount of oil that has been lost, and the success of the shoreline clean-up operation.

Removing visible oil from beaches alone does not necessarily mean the environment has recovered. Experience from post-spill monitoring around the world shows that oil may become trapped in the environment resulting in on-going localised environmental effects. The continuing progressive dropping of PAH levels in the Papamoa tuatua (discussed in section 4) is encouraging given the difficulty of completely removing oil from a sandy shoreline.

Variability of environmental impacts

Different habitats will be impacted in different ways. A variety of habitats throughout the receiving environment will be affected, and these habitats will be impacted differently – with variable recovery rates and degrees of sensitivity. For example, sandy beaches are relatively resilient and probably the least sensitive of habitats in the receiving environment notwithstanding that some of these beaches also support some endangered wildlife. Rocky shores and wetlands are highly sensitive and may take longer to recover.

Figure 4: Environmental Recovery Plan work streams





The first batch of cleaned penguins were released back into the wild at Mt Maunganui on 22 November 2011. Source: Maritime New Zealand.

Reporting

The Recovery Manager appointed to implement this Plan will provide the Governance Group with an update on progress every month or upon request.

Reviews and updates

This Plan will be reviewed by the Recovery Manager on an ongoing basis to:

- assess progress in implementing the Plan
- measure how successful the Plan has been in meeting its goal and objectives
- determine whether any updates are required.

Updates to the Plan will be made on a monthly basis if required.



Work streams have been developed to address the **key environmental issues.**

Beaches and shorelines

- Our open coast beaches and rocky shores, and our harbour and estuarine shorelines are of significance for a range of environmental values. In particular:
- we value the amenity of these areas, including visual amenity and a lack of odour
 - bird and other wildlife need to be able to have access to their breeding, nesting and feeding grounds
 - dune systems are a significant storm and tsunami buffer, along with being habitat for important plant and bird species.

- we need to be able to use and enjoy these coastal areas for diving, swimming, surfing, kaimoana collection and other such activities without any risk to our health
- we value the amenity of these areas, including visual amenity and a lack of odour
 - bird and other wildlife need to be able to have access to their breeding, nesting and feeding grounds
 - dune systems are a significant storm and tsunami buffer, along with being habitat for important plant and bird species.

ID	ACTIVITY	KEY PARTNERS			SUPPORT/ OPERATIONS	TIMEFRAMES	RESOURCE REQUIREMENTS	PERFORMANCE MEASURE
		LEAD	IWI	AGENCIES/ AUTHORITIES				
BS1	Monitor: •distribution of residual oil (tar balls) at representative sites •contaminant analysis of: - sediment/sand - pore water •dune and estuarine vegetation by comparison against existing baseline data (links to <i>Monitoring work stream</i>)	Maritime New Zealand Bay of Plenty Regional Council	Iwi and hapū: • providing mātauranga as well as scientific evidence to inform the process and decision making • coordination of iwi effort, logistics and operation support	Toi Te Ora Public Health Service Crown research institutes	University of Waikato Other research providers Iwi and hapū	Monitoring will take place until residual oil levels have reduced to a safe level	Time of technical specialists, including iwi advisory groups Existing datasets Information and communications technology Equipment for data collection Laboratory testing facilities	Monitoring is carried out in accordance with the monitoring plan (<i>monitoring plan is under development</i>)
BS2	Clean-up activities for affected areas, including removal of oil	Maritime New Zealand Bay of Plenty Regional Council	Iwi and hapū: • coordination of iwi effort, logistics and operation support • cultural assurance	Tauranga City Council Western Bay of Plenty District Council Other coastal local authorities as necessary	Volunteers	This will depend on whether material continues to be washed up on shore. These activities will take place as and when required	Trained oil spill responders, including volunteers	All reports of pollution responded to within 48 hours
BS3	Clean-up activities for affected areas, including removal of: •spilt waste from containers •containers •debris from the <i>Rena</i>	Maritime New Zealand Vessel owner	Iwi and hapū: • coordination of iwi effort, logistics and operation support • cultural assurance	Tauranga City Council Western Bay of Plenty District Council Other coastal local authorities as necessary	Volunteers	This will depend on whether material continues to be washed up on shore. These activities will take place as and when required	Trained volunteers and Braemar Howells contracted resource	All containers and debris removed

ID	ACTIVITY	KEY PARTNERS			SUPPORT/ OPERATIONS	TIMEFRAMES	RESOURCE REQUIREMENTS	PERFORMANCE MEASURE
		LEAD	IWI	AGENCIES/ AUTHORITIES				
BS4	Issue public health notices about beach contamination for public health and safety	Toi Te Ora Public Health Service	<ul style="list-style-type: none"> Iwi and hapū: <ul style="list-style-type: none"> work in parallel with Toi Te Ora cultural assurance 	Tauranga City Council Western Bay of Plenty District Council Other coastal local authorities as necessary Bay of Plenty Regional Council (risk assessment and toxicological advice)	Iwi and hapū Bay of Plenty District Health Board	Ongoing advice will be provided on the safety of using beaches	Public health monitoring information Publishing advice on websites, media releases Signage and fencing Security Public health advice is endorsed by affected iwi If Medical Officer of Health requests signage be erected this will be completed within 24 hours All requests for further information from Toi Te Ora are responded to within 10 days	Public health advice is publicised on the internet within 24 hours of assessment by Medical Officer of Health Public health advice is endorsed by affected iwi If Medical Officer of Health requests signage be erected this will be completed within 24 hours All requests for further information from Toi Te Ora are responded to within 10 days
BS5	Issue and implement rahui (ban) over the affected area	Iwi (eg. Tauranga Moana Customary Fisheries)	<ul style="list-style-type: none"> Iwi and hapū: <ul style="list-style-type: none"> disseminate information widely cultural assurance providing mātauranga as well as scientific evidence to inform the process and decision making 	Toi Te Ora Public Health Service Tauranga City Council Western Bay of Plenty District Council Bay of Plenty Regional Council Other coastal local authorities as necessary	Bay of Plenty District Health Board	Ongoing advice will be provided when required	Iwi advisory groups Iwi and cultural information Publishing advice on websites, media releases Accurate information is provided to iwi and hapū Accurate information is provided to the wider community Rahui is in place within 24 hours of public health advice	Accurate information is provided to iwi and hapū Accurate information is provided to the wider community Rahui is in place within 24 hours of public health advice
BS6	Assess the environmental and cultural impacts upon the shoreline to identify and prioritise key areas or habitats that would benefit from restoration works	Bay of Plenty Regional Council Department of Conservation Iwi and hapū	<ul style="list-style-type: none"> Iwi and hapū: <ul style="list-style-type: none"> cultural assurance providing mātauranga as well as scientific evidence to inform the process and decision making coordination of iwi effort, logistics and operation support 	Tauranga City Council Western Bay of Plenty District Council Other coastal local authorities as necessary	Coast care and estuary care groups	Ongoing – assessments will be made within 6 months. However, longer-term monitoring may also identify areas for restoration	Expertise in restoration of affected areas Affected iwi and hapū and community skills, knowledge and experience Community and iwi knowledge of local environment sought to enable identification and prioritisation of key areas or habitats Assessment of affected environment and prioritisation completed within 6 months Assessment is endorsed by affected iwi and hapū	Community and iwi knowledge of local environment sought to enable identification and prioritisation of key areas or habitats Assessment of affected environment and prioritisation completed within 6 months Assessment is endorsed by affected iwi and hapū

ID	ACTIVITY	KEY PARTNERS			SUPPORT/ OPERATIONS	TIMEFRAMES	RESOURCE REQUIREMENTS	PERFORMANCE MEASURE
		LEAD	IWI	AGENCIES/ AUTHORITIES				
BS7	Prepare restoration plans for priority areas	Iwi and hapū Bay of Plenty Regional Council	Iwi and hapū: • cultural assurance • providing mātauranga as well as scientific evidence to inform the process and decision making	Department of Conservation Tauranga City Council Western Bay of Plenty District Council Other coastal local authorities as necessary	Coast care and estuary care groups	Plans will be prepared within 3 months of priorities being set	Expertise in restoration of affected areas Te Moana a Toi Technical Advisory Group Local iwi, hapū and community skills, knowledge and experience All restoration plans developed with participation from the local community All plans prepared within 3 months of priorities being set All plans endorsed by affected iwi and hapū	
BS8	Restoration of affected areas	Iwi and hapū Bay of Plenty Regional Council	Iwi and hapū: • cultural assurance • providing mātauranga as well as scientific evidence to inform the process and decision making • coordination of iwi effort, logistics and operation support	Department of Conservation Tauranga City Council Western Bay of Plenty District Council Other coastal local authorities as necessary	Coast care and estuary care groups	Timeframes for completing restoration work will be identified during the planning stage (BS6)	Expertise in restoration of affected areas Affected iwi and hapū and community skills, knowledge and experience Activities identified in restoration plans are completed Restoration achieves objectives specified in restoration plan	

Seabed (benthic habitats)

Benthic habitats cover all those areas that are on the seabed, including habitats for shellfish. We harvest our shellfish for customary, recreational and commercial purposes. Oil deposits in these areas can impact on the health of shellfish, and therefore on human health. Likewise, contamination on the seabed can impact on

the benthic invertebrate communities, which are a fundamental part of the food chain for many species, and on vegetation such as seaweeds and sea grass, which are also key habitat areas for fish species. There will also have been damage to Otaiti (Astrolabe Reef) from the grounding.

ID	ACTIVITY	KEY PARTNERS			SUPPORT/ OPERATIONS	TIMEFRAMES	RESOURCE REQUIREMENTS	PERFORMANCE MEASURE
		LEAD	IWI	AGENCIES/ AUTHORITIES				
S1	Investigate reports of oil/waste/contamination/debris in sub-tidal areas	Maritime New Zealand Bay of Plenty Regional Council Iwi and hapū	Iwi and hapū: •cultural assurance •providing mātauranga as well as scientific evidence to inform the process and decision making •coordination of iwi effort, logistics and operation support	Tauranga City Council Western Bay of Plenty District Council Other coastal local authorities as necessary	Coast care and estuary care groups	Ongoing – responses to sightings of oil/waste/contamination/debris will continue until sightings stop	Iwi liaison Equipment for underwater surveys Time for personnel to carry out surveys	Surveys completed within 48 hours of sighting being reported
S2	Clean-up activities for affected areas, including removal of oil and other contaminants	Maritime New Zealand Bay of Plenty Regional Council	Iwi and hapū: • providing mātauranga as well as scientific evidence to inform the process and decision making • coordination of iwi effort, logistics and operation support	Tauranga City Council Western Bay of Plenty District Council Other coastal local authorities as necessary	Volunteers	This will depend on whether material continues to be found Clean-up activities will take place as and when required	Trained oil spill responders, including volunteers Appropriate equipment and machinery Salvage expertise (for recovery of containers)	All reports of pollution responded to within 48 hours
S3	Clean-up activities for affected areas, including removal of: •spilt waste from containers •containers •debris from the Rena	Maritime New Zealand Vessel owner	Iwi and hapū: •providing mātauranga as well as scientific evidence to inform the process and decision making •coordination of iwi effort, logistics and operation support	Tauranga City Council Western Bay of Plenty District Council Other coastal local authorities as necessary	Volunteers	This will depend on whether material continues to be found Clean-up activities will take place as and when required	Appropriate equipment and machinery Salvage expertise (for recovery of containers) Trained volunteers and Braemar Howells contracted resource	All containers and debris removed

ID	ACTIVITY	KEY PARTNERS			SUPPORT/ OPERATIONS	TIMEFRAMES	RESOURCE REQUIREMENTS	PERFORMANCE MEASURE
		LEAD	IWI	AGENCIES/ AUTHORITIES				
S4	Assess the environmental and cultural impacts upon the seabed and its ecosystems	Bay of Plenty Regional Council Iwi and hapū	<ul style="list-style-type: none"> Iwi and hapū: <ul style="list-style-type: none"> • cultural assurance • providing mātauranga as well as scientific evidence to inform the process and decision making • coordination of iwi effort, logistics and operation support 	Department of Conservation Ministry of Agriculture and Forestry	University of Waikato	Ongoing – initial assessments will be made within 6 months. However, longer-term monitoring may identify additional effects	Equipment for assessment Affected iwi, hapū and community knowledge Time for personnel to carry out assessments	Community, whānau, hapū and iwi knowledge of local environment sought to enable identification and prioritisation of key areas or habitats Assessment of affected environment and prioritisation completed within 6 months Assessment endorsed by affected iwi
S5	Monitor for, and respond to, any biosecurity risks that may have been posed by the ship, its containers, or other related response activities <i>(links to Monitoring work stream)</i>	Ministry of Agriculture and Forestry	<ul style="list-style-type: none"> Iwi and hapū: <ul style="list-style-type: none"> • cultural assurance • providing mātauranga as well as scientific evidence to inform the process and decision making 	Bay of Plenty Regional Council National Institute of Water and Atmospheric Research (NIWA)	Monitoring will be carried out for an initial period of 12 months, followed by review to determine if further monitoring is required	Sampling equipment Laboratory facilities	Monitoring is carried out in accordance with the monitoring plan (<i>monitoring plan is under development</i>)	
S6	Monitor the recovery rate of selected rocky reef and island habitats by: <ul style="list-style-type: none"> • analysis of photo and video where available • comparison against existing data on biodiversity and community structure <i>(links to Monitoring work stream)</i>	University of Waikato	<ul style="list-style-type: none"> Iwi and hapū: <ul style="list-style-type: none"> • cultural assurance • providing mātauranga as well as scientific evidence to inform the process and decision making • coordination of iwi effort, logistics and operation support 	Bay of Plenty Regional Council Tauranga City Council Department of Conservation Ministry of Agriculture and Forestry	Monitoring will take place for an initial period of 12 months, followed by review to determine if further monitoring is required	Equipment for data collection Laboratory testing facilities Equipment for assessment Affected iwi, hapū and community knowledge Time for personnel to carry out monitoring	Monitoring is carried out in accordance with the monitoring plan	
S7	Investigate impacts from the <i>Rena</i> on the Otaiti (Astrolabe Reef)	Bay of Plenty Regional Council Iwi and hapū	<ul style="list-style-type: none"> Iwi and hapū: <ul style="list-style-type: none"> • providing mātauranga as well as scientific evidence to inform the process and decision making • coordination of iwi effort, logistics and operation support 	Tauranga City Council Department of Conservation Ministry of Agriculture and Forestry	Shortly after the <i>Rena</i> has been removed from Otaiti (Astrolabe Reef)	Equipment for data collection Equipment for assessment Affected iwi, hapū and community knowledge Time for personnel to carry out monitoring	Assessment of the impacts from the <i>Rena</i> on Otaiti (Astrolabe Reef) completed within 6 months of the <i>Rena</i> being removed Assessment endorsed by affected iwi	

Water quality and the water column

Marine waters that are healthy and clean from the effects of oil or other contaminants are fundamentally important because:

- we need to be able to use and enjoy these waters for boating, diving, swimming, surfing and other activities without any risk to our health and safety

- high water quality is important for the health of fisheries and aquaculture, birds, marine mammals, and other wildlife.

Oil and other materials can be suspended in the water column and transported in currents. Water quality could also be affected by the release of waste matter and other products from the containers that have been lost overboard.

ID	ACTIVITY	KEY PARTNERS			SUPPORT/ OPERATIONS	TIMEFRAMES	RESOURCE REQUIREMENTS	PERFORMANCE MEASURE
		LEAD	IWI	AGENCIES/ AUTHORITIES				
WQ1	Investigate reports of oil and other contamination of water	Maritime New Zealand Bay of Plenty Regional Council	Iwi and hapū: • cultural assurance • providing mātauranga as well as scientific evidence to inform the process and decision making • coordination of iwi effort, logistics and operation support	Tauranga City Council Western Bay of Plenty District Council Other coastal local authorities as necessary		Ongoing – responses to sightings of oil and other contaminants is a responsibility of the Regional Council	Iwi liaison Equipment for underwater surveys Time for personnel to carry out surveys	Surveys completed within 48 hours of sighting being reported
WQ2	Clean up oil and other contaminants from affected areas	Maritime New Zealand	Iwi and hapū: • cultural assurance • providing mātauranga as well as scientific evidence to inform the process and decision making • coordination of iwi effort, logistics and operation support	Tauranga City Council Western Bay of Plenty District Council Other coastal local authorities as necessary	Volunteers	This will depend on whether oil and other contaminants continue to be found Clean-up activities will take place as and when required	Trained oil spill responders, including volunteers Appropriate equipment and machinery	All reports of pollution responded to within 48 hours
WQ3	Monitor water quality (including its mauri) to identify any effects of the Rena grounding at representative sites (links to Monitoring work stream)	Bay of Plenty Regional Council	Iwi and hapū: • cultural assurance • providing mātauranga as well as scientific evidence to inform the process and decision making • coordination of iwi effort, logistics and operation support	Tauranga City Council Western Bay of Plenty District Council Other coastal local authorities as necessary	Crown research institutes University of Waikato Other research providers	Monitoring will be carried out for an initial period of 12 months, followed by review to determine if further monitoring is required	Sampling equipment Laboratory facilities Qualified sampling technicians Affected iwi, hapū and community knowledge	Monitoring carried out in accordance with the monitoring plan and mauri monitoring framework (monitoring plan is under development)

ID	ACTIVITY	KEY PARTNERS			SUPPORT/ OPERATIONS	TIMEFRAMES	RESOURCE REQUIREMENTS	PERFORMANCE MEASURE
		LEAD	IWI	AGENCIES/ AUTHORITIES				
WQ4	Issue public health notices about water quality	Toi Te Ora Public Health Service	Iwi and hapū: • cultural assurance	Tauranga City Council Western Bay of Plenty District Council Other coastal local authorities as necessary Bay of Plenty Regional Council	Bay of Plenty District Health Board	Ongoing advice will be provided on the safety of water for swimming	Public health monitoring information Iwi and cultural information Publishing advice on websites, media releases Signage and fencing Security	Public health advice is publicised on the internet within 24 hours of assessment by Medical Officer of Health Public health advice is endorsed by affected iwi If Medical Officer of Health requests signage be erected this will be completed within 24 hours All requests for further information from Toi Te Ora are responded to within 10 days
WQ5	Issue and implement rahui (ban) over the affected area	Iwi and hapū	Iwi and hapū: • disseminate information widely • cultural assurance • providing mātauranga as well as scientific evidence to inform the process and decision making	Toi Te Ora Public Health Service Tauranga City Council Western Bay of Plenty District Council Bay of Plenty Regional Council Other coastal local authorities as necessary	Bay of Plenty District Health Board	Ongoing advice will be provided when required	Iwi advisory groups Iwi and cultural information Publishing advice on websites, media releases	Accurate information is provided to iwi and hapū Accurate information is provided to the wider community Rahui is in place within 24 hours of public health advice

Kaimoana

Access to healthy and safe kaimoana is pivotal to the health and well-being of iwi and is thus highly valued by them. Healthy kaimoana is also a fundamental indicator of the health of our marine ecosystem. As such, it is closely linked to all parts of the

marine environment from the habitats that support shellfish, to the water column and habitats that support our fish species, birds and other wildlife.

ID	ACTIVITY	KEY PARTNERS		SUPPORT/ OPERATIONS	TIMEFRAMES	RESOURCE REQUIREMENTS	PERFORMANCE MEASURE
		LEAD	IWI				
K1	Collate existing information, including scientific data and cultural evidence, on health and abundance of local stocks before the grounding of the <i>Rena</i>	Bay of Plenty Regional Council Iwi and hapū	Iwi and hapū: • cultural assurance • providing mātauranga as well as scientific evidence to inform the process and decision making • coordination of iwi effort, logistics and operation support	Ministry of Agriculture and Forestry Crown research institutes	Information will be compiled and analysed within 6 months	Iwi, hapū and community knowledge and understanding of importance of kaimoana Time for personnel to gather information Sampling equipment Laboratory facilities	Whānau, hapū, iwi, and community knowledge of health and abundance of kaimoana sought Cultural evidence and scientific data compiled, analysed and a baseline established within 6 months
K2	Monitor: • contaminant analysis of biota at selected sites: - shellfish at beach and estuarine sites - shellfish and finfish at selected rocky shore and reef sites • abundance where baseline data already exists • biosecurity risk to kaimoana from the ship, containers and any vessels assisting in the salvage operation <i>(links to Monitoring work stream)</i>	Bay of Plenty Regional Council (recreational and customary stocks) Ministry of Agriculture and Forestry (commercial stocks)	Iwi and hapū: • cultural assurance • providing mātauranga evidence to inform the process and decision making • coordination of iwi effort, logistics and operation support	Toi Te Ora Public Health Service Crown research institutes	Monitoring of contaminants will continue until kaimoana status meets regulatory standards for consumption Monitoring of abundance will be carried out for an initial period of 12 months, followed by review to determine if further monitoring is required 3 – 4 weeks warning will be required before the 3 nautical mile exclusion zone is to be lifted to allow targeted sampling and testing of kaimoana at Otaiti (Astrolabe Reef) to inform public health messaging	Iwi, hapū and community knowledge and understanding of importance of kaimoana Time for personnel to gather information Equipment for sampling Laboratory testing facilities Qualified sampling technicians	Monitoring is carried out in accordance with the monitoring plan (<i>monitoring plan is under development</i>)

ID	ACTIVITY	KEY PARTNERS			SUPPORT/ OPERATIONS	TIMEFRAMES	RESOURCE REQUIREMENTS	PERFORMANCE MEASURE
		LEAD	IWI	AGENCIES/ AUTHORITIES				
K3	Assess chronic impacts on the animal and plant life of the region (biota) by: <ul style="list-style-type: none"> • histological examination of reproductive tissue • contaminant bioaccumulation and depuration experiments • mauri modelling and assessment <i>(links to Monitoring work stream)</i>	University of Waikato	Iwi and hapū: <ul style="list-style-type: none"> • cultural assurance • providing mātauranga as well as scientific evidence to inform the process and decision making • coordination of iwi effort, logistics and operation support 	Bay of Plenty Regional Council Crown research institutes	Other research providers	Monitoring will be carried out for an initial period of 12 months, followed by review to determine if further monitoring is required	Time of technical specialists Equipment for data collection Laboratory testing facilities	Comparison against baseline completed following each assessment
K4	Assess the fate of contaminants by: <ul style="list-style-type: none"> • assessment of oil weathering patterns • isotopic analysis to follow contaminants through the food chain <i>(links to Monitoring work stream)</i>	University of Waikato	Iwi and hapū: <ul style="list-style-type: none"> • cultural assurance • providing mātauranga as well as scientific evidence to inform the process and decision making • coordination of iwi effort, logistics and operation support 	Bay of Plenty Regional Council Crown research institutes	Other research providers	Monitoring will be carried out for an initial period of 12 months, followed by review to determine if further monitoring is required	Time of technical specialists Equipment for data collection Laboratory testing facilities	Fate of contaminants determined
K5	Issue public health notices about health of kaimoana	Toi Te Ora Public Health Service	Iwi and hapū: <ul style="list-style-type: none"> • work in parallel with Toi Te Ora • cultural assurance 	Ministry of Agriculture and Forestry Tauranga City Council Western Bay of Plenty District Council Bay of Plenty Regional Council Other coastal local authorities as necessary	Iwi and hapū	Ongoing advice will be provided if it is determined that kaimoana is not safe for consumption 3 – 4 weeks warning will be required before the 3 nautical mile exclusion zone is to be lifted to allow targeted sampling and testing of kaimoana at Otaiti (Astrolabe Reef) to inform public health messaging	Public health monitoring information Publishing advice on websites, media releases Signage and fencing	Public health advice is publicised on the internet within 24 hours of assessment by Medical Officer of Health If Medical Officer of Health requests signage be erected this will be completed within 24 hours All requests for further information from Toi Te Ora are responded to within 10 days
K6	Issue rahui (ban) over the affected area	Iwi and hapū	Iwi and hapū: <ul style="list-style-type: none"> • disseminate information widely • cultural assurance • providing mātauranga as well as scientific evidence to inform the process and decision making 	Toi Te Ora Public Health Service Tauranga City Council Western Bay of Plenty District Council Bay of Plenty Regional Council Other coastal local authorities as necessary	Ongoing advice will be provided when required	Iwi advisory groups Iwi and cultural information Publishing advice on websites, media releases	Accurate information is provided to iwi and hapū Accurate information is provided to the wider community Rahui is in place within 24 hours of public health advice	

Wildlife

Coastal birds and other wildlife such as seals depend on healthy water quality, fish and other marine species. There may be long-term impacts on our wildlife from the consumption of food that has been contaminated. Wildlife may also be affected if

key feeding areas and habitats are impacted by the oil spill or other contaminants from the containers.

ID	ACTIVITY	KEY PARTNERS			SUPPORT/ OPERATIONS	TIMEFRAMES	RESOURCE REQUIREMENTS	PERFORMANCE MEASURE
		LEAD	IWI	AGENCIES/ AUTHORITIES				
W1	Collate existing information, including scientific data and cultural evidence, on health and abundance of local wildlife before the Rēna grounding	Maritime New Zealand Department of Conservation	Iwi and hapū: <ul style="list-style-type: none"> • cultural assurance • providing mātauranga as well as scientific evidence to inform the process and decision making • coordination of iwi effort, logistics and operation support 	Ministry of Agriculture and Forestry	Massey University Waikato University Te Papa Tongarewa Researchers Ornithological Society of New Zealand Royal Forest and Bird Protection Society Coastal care groups Volunteers	Information will be compiled and analysed within 6 months	Time for personnel to gather information Iwi, hapū and community knowledge Iwi advisory groups	Whānau, hapū, iwi and community knowledge of health and abundance of wildlife sought Cultural evidence and scientific data compiled, analysed and a baseline established within 6 months
W2	Capture oiled animals	Maritime New Zealand Department of Conservation	Iwi and hapū: <ul style="list-style-type: none"> • cultural assurance • providing mātauranga as well as scientific evidence to inform the process and decision making • coordination of iwi effort, logistics and operation support 		Massey University Volunteers	1 – 12 months (after all oil removed from the Rēna and cleared from Bay of Plenty beaches and shores)	Staff/contractors, boats, vehicles Equipment, including nets, traps and cages	All oiled animals successfully captured and transported to the recovery centre without any injuries to animals
W3	Pre-emptively capture endangered species	Maritime New Zealand Department of Conservation	Iwi and hapū: <ul style="list-style-type: none"> • cultural assurance • providing mātauranga as well as scientific evidence to inform the process and decision making • coordination of iwi effort, logistics and operation support 		Massey University Volunteers	1 – 12 months (should any further spills occur from the Rēna and endanger any threatened species)	Staff/contractors, boats, vehicles, nets and traps	Endangered species are successfully captured and transported to the recovery centre without any injuries to animals

ID	ACTIVITY	KEY PARTNERS			SUPPORT/ OPERATIONS	TIMEFRAMES	RESOURCE REQUIREMENTS	PERFORMANCE MEASURE
		LEAD	IWI	AGENCIES/ AUTHORITIES				
W4	Treat affected animals	Maritime New Zealand Massey University Vets	Iwi and hapū: • cultural assurance • providing mātauranga as well as scientific evidence to inform the process and decision making • coordination of iwi effort, logistics and operation support	Department of Conservation	Local caregivers Iwi and hapū	1 – 12 months. However, this will depend on whether further oil is released from the Rēna	Staff/contractors Equipment and facilities for caring for captive animals	90% of captured animals recover to a healthy state for release to their natural habitat
W5	Release animals to their natural habitats	Maritime New Zealand Department of Conservation Iwi and hapū	Iwi and hapū: • cultural assurance • providing mātauranga as well as scientific evidence to inform the process and decision making • coordination of iwi effort, logistics and operation support	Massey University Researchers Volunteers	1 – 12 months	Contractors/staff Equipment and facilities for caring for captive animals Equipment for monitoring released animals Boats to transport wildlife to islands	All healthy animals released back into their natural habitat within 2 weeks of affected areas being officially cleared of oil No wildlife release without iwi and hapū consultation and agreement	
W6	Monitor: • threatened species using existing monitoring programmes • contaminant analysis of: - food species - eggs • key ecosystems: - marine reserves and associated sites - island reserves - estuaries <i>(links to Monitoring work stream)</i>	Department of Conservation	Iwi and hapū: • cultural assurance • providing mātauranga as well as scientific evidence to inform the process and decision making • coordination of iwi effort, logistics and operation support	Bay of Plenty Regional Council Maritime New Zealand	Local environmental interest groups	Monitoring of threatened species will occur on an ongoing basis through existing programmes Monitoring of key ecosystems and analysis of food and eggs will take place for 12 months. If monitoring shows a dramatic effect during this time monitoring will be extended	Time of staff and volunteers Equipment for data collection Laboratory testing facilities Iwi advisory groups	Monitoring is carried out in accordance with the monitoring plan

ID	ACTIVITY	KEY PARTNERS			SUPPORT/ OPERATIONS	TIMEFRAMES	RESOURCE REQUIREMENTS	PERFORMANCE MEASURE
		LEAD	IWI	AGENCIES/ AUTHORITIES				
W7	Assess the environmental and cultural impacts upon the habitats of local birds and marine mammals to identify and prioritise key areas or habitats that would benefit from restoration works	Department of Conservation Iwi and hapū	<ul style="list-style-type: none"> Iwi and hapū: <ul style="list-style-type: none"> • cultural assurance • providing mātauranga as well as scientific evidence to inform the process and decision making • coordination of iwi effort, logistics and operation support 	Ministry of Agriculture and Forestry	<p>Massey University Waikato University Te Papa Tongarewa Researchers Ornithological Society of New Zealand Royal Forest and Bird Protection Society Coastal care groups</p>	<p>Ongoing – initial assessments will be made within 6 months. However, longer-term monitoring may also identify habitats that have been seriously affected</p>	<p>Time of staff and volunteers Understanding of local environment Iwi advisory groups</p>	<p>Whānau, hapū, iwi and community knowledge of local environment sought to enable assessment Assessment of affected environment and prioritisation completed within 6 months Assessment endorsed by affected iwi and hapū</p>
W8	Prepare restoration plans for priority areas	Department of Conservation (for DOC managed habitats in coastal reserves, island reserves and marine protected areas. Advice and support to island residents for Mōtītī Island) Iwi and hapū Bay of Plenty Regional Council	<ul style="list-style-type: none"> Iwi and hapū: <ul style="list-style-type: none"> • cultural assurance • providing mātauranga as well as scientific evidence to inform the process and decision making • coordination of iwi effort, logistics and operation support 	Tauranga City Council Western Bay of Plenty District Council Other coastal territorial authorities as required	<p>Coast care and estuary care groups Universities Researchers Volunteers Local environmental interest groups</p>	<p>Plans will be prepared within 3 months of priorities being set</p>	<p>Expertise in restoration of affected areas Whānau, hapū, iwi and community knowledge Iwi advisory groups</p>	<p>Whānau, hapū, iwi and community input provided for restoration planning Plans prepared within 3 months of priorities being set Plans endorsed by affected iwi and hapū</p>
W9	Restoration of affected areas	Iwi and hapū Department of Conservation Bay of Plenty Regional Council	<ul style="list-style-type: none"> Iwi and hapū: <ul style="list-style-type: none"> • cultural assurance • providing mātauranga as well as scientific evidence to inform the process and decision making • coordination of iwi effort, logistics and operation support 	Tauranga City Council Western Bay of Plenty District Council Other coastal territorial authorities as required	<p>Coast care and estuary care groups Universities Researchers Volunteers Local environmental interest groups</p>	<p>Timeframes for completion of restoration work will be identified during the planning stage (W8)</p>	<p>Contractors/staff, boats, vehicles, equipment, computers Training and contract Animal pest control and active management at sites where predators exist eg, Mount Maunganui, Mōtiti, Matakana, Maketu</p>	<p>Activities identified in restoration plans are completed Restoration achieves objectives specified in restoration plan</p>

ID	ACTIVITY	KEY PARTNERS			SUPPORT/ OPERATIONS	TIMEFRAMES	RESOURCE REQUIREMENTS	PERFORMANCE MEASURE
		LEAD	IWI	AGENCIES/ AUTHORITIES				
WM10	Monitor recovery of affected habitats (links to <i>Monitoring work stream</i>)	Department of Conservation (for DOC managed habitats in coastal reserves, marine protected areas and private islands, eg, Mōtiti) Bay of Plenty Regional Council Iwi and hapū	Iwi and hapū: • cultural assurance • providing mātauranga as well as scientific evidence to inform the process and decision making • coordination of iwi effort, logistics and operation support	Tauranga City Council Western Bay of Plenty District Council Other coastal territorial authorities as required	Universities Researchers Mōtiti island residents Tangata whenua Coastal care groups Volunteers Local environmental interest groups Coastal territorial authorities as required	Monitoring will take place for 12 months. If monitoring shows the habitats are not recovering during this time monitoring may be extended	Contractors/staff, boats, vehicles, equipment, computers Mōtiti island residents Iwi advisory groups	Monitoring is carried out in accordance with the monitoring plan (<i>monitoring plan is under development</i>)

Waste management

To protect public health and to avoid unacceptable odour, managing the waste material carefully and ensuring it is disposed of safely is important. This includes collecting and disposing of not only the oil, but also the containers themselves, the contents of the containers, and affected birds, wildlife and vegetation.

ID	ACTIVITY	KEY PARTNERS			SUPPORT/ OPERATIONS	TIMEFRAMES	RESOURCE REQUIREMENTS	PERFORMANCE MEASURE
		LEAD	IWI	AGENCIES/ AUTHORITIES				
WM11	Removal of solid waste (mainly contaminated sand) collected from shorelines in skips	Maritime New Zealand Appropriate local authority for area waste is collected	Iwi and hapū: • cultural assurance	Bay of Plenty Regional Council Tauranga City Council Western Bay of Plenty District Council Other local authorities as necessary		This will depend on whether material continues to be washed up on shore These activities will take place as and when required	Waste contractors Skips and other equipment/machinery to facilitate removal of waste	All solid waste collected during clean-up operations is cleared daily to an appropriate transfer station or disposal facility
WM12	Transfer and disposal of solid waste at approved waste disposal facility	Maritime New Zealand Appropriate local authority for area waste is collected	Iwi and hapū: • cultural assurance	Bay of Plenty Regional Council Tauranga City Council Western Bay of Plenty District Council Other local authorities as necessary		This will depend on whether material continues to be washed up on shore These activities will take place as and when required	Waste contractors Skips and other equipment/machinery to facilitate removal of waste	Waste removed from transfer stations daily All solid waste disposed of to approved facility

ID	ACTIVITY	KEY PARTNERS			SUPPORT/ OPERATIONS	TIMEFRAMES	RESOURCE REQUIREMENTS	PERFORMANCE MEASURE
		LEAD	IWI	AGENCIES/ AUTHORITIES				
WM3	Management and disposal of containers at Te Maunga transfer station	Maritime New Zealand Vessel owner	Iwi and hapū: • cultural assurance	Bay of Plenty Regional Council Tauranga City Council Western Bay of Plenty District Council Other local authorities as necessary		This will depend on the time taken to recover containers from the Rēna and locate those lost overboard These activities will take place as and when required	Consented site established at Te Maunga transfer station to process 1300 containers (including water separators and holding tanks)	All recovered containers safely processed and managed at an appropriately consented transfer station
WM4	Management of liquid waste (wash water; oil/water collected out at sea)	Maritime New Zealand Appropriate local authority for area waste is collected	Iwi and hapū: • cultural assurance	Bay of Plenty Regional Council Tauranga City Council Western Bay of Plenty District Council Other local authorities as necessary		This will depend on whether liquid waste continues to be collected These activities will take place as and when required	Managed at local sites with appropriate resource consents	100% of liquid waste is transported, treated and disposed of appropriately (consistent with consents and existing practices)
WM5	Monitor: • the volume of waste collected • the nature of the waste collected • destination for waste being disposed of • resource consent requirements for waste facilities • mauri of the receiving environment <i>(links to Monitoring work stream)</i>	Maritime New Zealand Iwi and hapū	Iwi and hapū: • cultural assurance	Ministry for the Environment Tauranga City Council Western Bay of Plenty District Council Other local authorities as necessary		Monitoring will continue as long as waste is still being created by the Rēna	Waste contractors Time for council staff and officials to gather monitoring information	Waste is monitored in accordance with the monitoring plan <i>(monitoring plan is under development)</i>

Monitoring

Monitoring is an important part of the recovery. By monitoring both the environmental and cultural effects of the *Rena* grounding it will be possible to determine how well they are recovering. In many cases this information will help to keep the public informed about issues, such as the health of our kaimoana.

ID	ACTIVITY	KEY PARTNERS		SUPPORT/ OPERATIONS	TIMEFRAMES	RESOURCE REQUIREMENTS	PERFORMANCE MEASURE
		LEAD	IWI				
M1	Develop a detailed monitoring plan, which identifies objectives, scope of monitoring, frequency and parameters	Bay of Plenty Regional Council	<ul style="list-style-type: none"> Iwi and hapū: <ul style="list-style-type: none"> providing mātauranga as well as scientific evidence to inform the process and decision making coordination of iwi effort, logistics and operation support 	Department of Conservation Crown research institutes Ministry of Agriculture and Forestry Toi Te Ora Public Health Service	Detailed monitoring plan completed within 3 months	Time of monitoring plan advisory group Volunteer time of partners and stakeholders Existing datasets	Iwi and hapū and community knowledge of local environment sought to enable identification and prioritisation Detailed monitoring plan completed within 3 months (<i>monitoring plan is under development</i>)
M2	Monitor the mauri of water to determine whether the mauri is improving	Bay of Plenty Regional Council Iwi and hapū	<ul style="list-style-type: none"> Iwi and hapū: <ul style="list-style-type: none"> provide information on cultural mauri indicators provide framework for methods to measure mauri cultural assurance providing mātauranga as well as scientific evidence to inform the process and decision making 	Iwi and hapū	Monitoring will be carried out for an initial period of 12 months, followed by review to determine if further monitoring is required	Sampling equipment Local iwi, hapū and community knowledge Mauri modelling experts	Monitoring is carried out in accordance with the monitoring plan
B51	Monitor: <ul style="list-style-type: none"> distribution of residual oil (tar balls) at representative sites contaminant analysis of: <ul style="list-style-type: none"> sediment/sand poor water dune and estuarine vegetation by comparison against baseline data 	Maritime New Zealand Bay of Plenty Regional Council	<ul style="list-style-type: none"> Iwi and hapū: <ul style="list-style-type: none"> providing mātauranga as well as scientific evidence to inform the process and decision making coordination of iwi effort, logistics and operation support 	University of Waikato Other research providers Iwi and hapū	Monitoring will take place until residual oil levels have reduced to a safe level	Time of technical specialists, including iwi advisory groups Existing datasets Information and communications technology Equipment for data collection Laboratory testing facilities	Monitoring is carried out in accordance with the monitoring plan (<i>monitoring plan is under development</i>)

ID	ACTIVITY	KEY PARTNERS			SUPPORT/ OPERATIONS	TIMEFRAMES	RESOURCE REQUIREMENTS	PERFORMANCE MEASURE
		LEAD	IWI	AGENCIES/ AUTHORITIES				
S5	Monitor for, and respond to, any biosecurity risks that may have been posed by the ship, its containers or other related response activities	Ministry of Agriculture and Forestry	Iwi and hapū: • cultural assurance • providing mātauranga as well as scientific evidence to inform the process and decision making	Bay of Plenty Regional Council National Institute of Water and Atmospheric Research (NIWA)	Crown research institutes Other research providers	Monitoring will be carried out for an initial period of 12 months, followed by review to determine if further monitoring is required	Sampling equipment Laboratory facilities	Monitoring is carried out in accordance with the monitoring plan (<i>monitoring plan is under development</i>)
S6	Monitor the recovery rate of selected rocky reef and island habitats by: • analysis of photo and video where available • comparison against existing data on biodiversity and community structure	University of Waikato	Iwi and hapū: • cultural assurance • providing mātauranga as well as scientific evidence to inform the process and decision making • coordination of iwi effort, logistics and operation support	Bay of Plenty Regional Council Tauranga City Council Department of Conservation Ministry of Agriculture and Forestry		Monitoring will take place for an initial period of 12 months, followed by review to determine if further monitoring is required	Equipment for data collection Laboratory testing facilities Equipment for assessment Affected iwi, hapū and community knowledge Time for personnel to carry out monitoring	Monitoring is carried out in accordance with the monitoring plan
WQ3	Monitor water quality (including its mauri) to identify any effects of the Rēna grounding at representative sites	Bay of Plenty Regional Council	Iwi and hapū: • cultural assurance • providing mātauranga as well as scientific evidence to inform the process and decision making • coordination of iwi effort, logistics and operation support	Tauranga City Council Western Bay of Plenty District Council Other coastal local authorities as necessary	Crown research institutes University of Waikato Other research providers	Monitoring will be carried out for an initial period of 12 months, followed by review to determine if further monitoring is required	Sampling equipment Laboratory facilities Qualified sampling technicians Affected iwi, hapū and community knowledge	Monitoring carried out in accordance with the monitoring plan and mauri monitoring framework (<i>monitoring plan is under development</i>)

ID	ACTIVITY	KEY PARTNERS			SUPPORT/ OPERATIONS	TIMEFRAMES	RESOURCE REQUIREMENTS	PERFORMANCE MEASURE
		LEAD	IWI	AGENCIES/ AUTHORITIES				
K2	<p>Monitor:</p> <ul style="list-style-type: none"> contaminant analysis of biota at selected sites; shellfish at beach and estuarine sites shellfish and finfish at selected rocky shore and reef sites abundance where baseline data already exists biosecurity risk to kaimoana from the ship, containers and any vessels assisting in the salvage operation 	<p>Bay of Plenty Regional Council (recreational and customary stocks)</p> <p>Ministry of Agriculture and Forestry (commercial stocks)</p>	<p>Iwi and hapū:</p> <ul style="list-style-type: none"> cultural assurance providing mātauranga as well as scientific evidence to inform the process and decision making coordination of iwi effort, logistics and operation support 	<p>Toi Te Ora Public Health Service</p> <p>Crown research institutes</p>	<p>Seafood Industry Council</p> <p>University of Waikato</p> <p>Other research providers</p>	<p>Monitoring of contaminants will continue until kaimoana status meets regulatory standards for consumption</p> <p>Monitoring of abundance will be carried out for an initial period of 12 months, followed by review to determine if further monitoring is required</p> <p>3 – 4 weeks warning will be required before the 3 nautical mile exclusion zone is to be lifted to allow targeted sampling and testing of kaimoana at Otaiti (Astrolabe Reef) to inform public health messaging</p>	<p>Iwi, hapū and community knowledge and understanding of importance of kaimoana</p> <p>Time for personnel to gather information</p> <p>Equipment for sampling</p> <p>Laboratory testing facilities</p> <p>Qualified sampling technicians</p>	<p>Monitoring is carried out in accordance with the monitoring plan <i>(monitoring plan is under development)</i></p>
K3	<p>Assess chronic impacts on the animal and plant life of the region (biota) by:</p> <ul style="list-style-type: none"> histological examination of reproductive tissue contaminant bioaccumulation and depuration experiments mauri modelling and assessment 	<p>University of Waikato</p>	<p>Iwi and hapū:</p> <ul style="list-style-type: none"> cultural assurance providing mātauranga as well as scientific evidence to inform the process and decision making coordination of iwi effort, logistics and operation support 	<p>Bay of Plenty Regional Council</p> <p>Crown research institutes</p>	<p>Other research providers</p>	<p>Monitoring will be carried out for an initial period of 12 months, followed by review to determine if further monitoring is required</p>	<p>Time of technical specialists</p> <p>Equipment for data collection</p> <p>Laboratory testing facilities</p>	<p>Comparison against baseline completed following each assessment</p>
K4	<p>Assess the fate of contaminants by:</p> <ul style="list-style-type: none"> assessment of oil weathering patterns isotopic analysis to follow contaminants through the food chain 	<p>University of Waikato</p>	<p>Iwi and hapū:</p> <ul style="list-style-type: none"> cultural assurance providing mātauranga as well as scientific evidence to inform the process and decision making coordination of iwi effort, logistics and operation support 	<p>Bay of Plenty Regional Council</p> <p>Crown research institutes</p>	<p>Other research providers</p>	<p>Monitoring will be carried out for an initial period of 12 months, followed by review to determine if further monitoring is required</p>	<p>Time of technical specialists</p> <p>Equipment for data collection</p> <p>Laboratory testing facilities</p>	<p>Fate of contaminants determined</p>

ID	ACTIVITY	KEY PARTNERS			SUPPORT/ OPERATIONS	TIMEFRAMES	RESOURCE REQUIREMENTS	PERFORMANCE MEASURE
		LEAD	IWI	AGENCIES/ AUTHORITIES				
W6	<p>Monitor:</p> <ul style="list-style-type: none"> • threatened species using existing monitoring programmes • contaminant analysis of: <ul style="list-style-type: none"> - food species - eggs • key ecosystems: <ul style="list-style-type: none"> - marine reserves and associated sites - island reserves - estuaries 	Department of Conservation	<p>Iwi and hapū:</p> <ul style="list-style-type: none"> • cultural assurance • providing mātauranga as well as scientific evidence to inform the process and decision making • coordination of iwi effort, logistics and operation support 	<p>Bay of Plenty Regional Council</p> <p>Maritime New Zealand</p>	Local environmental interest groups	<p>Monitoring of threatened species will occur on an ongoing basis through existing programmes</p> <p>Monitoring of key ecosystems and analysis of food and eggs will take place for 12 months. If monitoring shows a dramatic effect during this time monitoring will be extended</p>	<p>Time of staff and volunteers</p> <p>Equipment for data collection</p> <p>Laboratory testing facilities</p> <p>Iwi advisory groups</p>	Monitoring is carried out in accordance with the monitoring plan
W10	Monitor recovery of affected habitats	<p>Department of Conservation (for DOC managed habitats in coastal reserves, island reserves, marine protected areas and private islands, eg. Mōtiti)</p> <p>Bay of Plenty Regional Council</p> <p>Iwi and hapū</p>	<p>Iwi and hapū:</p> <ul style="list-style-type: none"> • cultural assurance • providing mātauranga as well as scientific evidence to inform the process and decision making • coordination of iwi effort, logistics and operation support 	<p>Tauranga City Council</p> <p>Western Bay of Plenty District Council</p> <p>Other coastal territorial authorities as required</p>	<p>Universities</p> <p>Researchers</p> <p>Mōtiti island residents</p> <p>Tāngata whenua</p> <p>Coastal care groups</p> <p>Volunteers</p> <p>Local environmental interest groups</p> <p>Coastal territorial authorities as required</p>	<p>Contractors/staff, boats, vehicles, equipment, computers</p> <p>Mōtiti island residents</p> <p>Iwi advisory groups</p>	<p>Monitoring is carried out in accordance with the monitoring plan (<i>monitoring plan is under development</i>)</p>	
WM5	<p>Monitor:</p> <ul style="list-style-type: none"> • the volume of waste collected • the nature of the waste collected • destination for waste being disposed of • resource consent requirements for waste facilities • mauri of the receiving environment 	Maritime New Zealand	<p>Iwi and hapū:</p> <ul style="list-style-type: none"> • cultural assurance 	<p>Ministry for the Environment</p> <p>Tauranga City Council</p> <p>Western Bay of Plenty District Council</p> <p>Other local authorities as necessary</p>	<p>Monitoring will continue as long as waste is still being created by the <i>Rena</i></p>	<p>Waste contractors</p> <p>Time for council staff and officials to gather monitoring information</p>	<p>Waste is monitored in accordance with the monitoring plan (<i>monitoring plan is under development</i>)</p>	

Communications and engagement

Iwi, hapū and communities have been an integral part of the response to the *Rena* grounding, particularly in terms of environmental clean-up activities. The environmental recovery depends on these communities continuing to receive accurate and consistent information, and remaining engaged in clean-up activities. In the longer term, community groups and iwi and hapū will play an important role in the ongoing surveillance, restoration and care of affected environments.

ID	ACTIVITY	KEY PARTNERS			SUPPORT/ OPERATIONS	TIMEFRAMES	RESOURCE REQUIREMENTS	PERFORMANCE MEASURE
		LEAD	IWI	AGENCIES/ AUTHORITIES				
CE1	<p>The community is engaged and informed of any issues with and the progress of recovery:</p> <ul style="list-style-type: none"> websites will be regularly updated to ensure the community is informed council call centre staff will answer questions with up-to-date information signage and public notices will be up to date to inform the public on water and kaimoana quality communications with and information prepared for iwi, hapū and communities is culturally appropriate (ie, meets Māori information needs and may need to be targeted) 	<p>Bay of Plenty Regional Council Maritime New Zealand</p>	<p>Iwi and hapū:</p> <ul style="list-style-type: none"> cultural assurance 	<p>Ministry for the Environment Ministry of Agriculture and Forestry Toi Te Ora Public Health Service Tauranga City Council Western Bay of Plenty District Council Whakatane District Council Opotiki District Council Other coastal local authorities as required Department of Conservation</p>	<p>University of Waikato Bay of Plenty Polytechnic</p>	<p>For the duration of the recovery</p>	<p>Time of communications and engagement specialists Information and communications technology Iwi advisory groups</p>	<p>Up-to-date information is available to iwi and communities</p>
CE2	<p>Liaison with volunteers to request ongoing assistance</p>	<p>Bay of Plenty Regional Council</p>	<p>Iwi and hapū:</p> <ul style="list-style-type: none"> cultural assurance coordination of iwi effort, logistics and operation support 	<p>Department of Conservation Tauranga City Council Western Bay of Plenty District Council Whakatane District Council Opotiki District Council Other coastal local authorities as required</p>	<p>Iwi and hapū</p>	<p>For the duration of the recovery</p>	<p>Communication to volunteers is maintained through email and websites Organisation, training and supervision of volunteers Volunteer time of partners and stakeholders</p>	<p>Volunteers are available and willing to participate in clean-up activities</p>

ID	ACTIVITY	KEY PARTNERS			SUPPORT/ OPERATIONS	TIMEFRAMES	RESOURCE REQUIREMENTS	PERFORMANCE MEASURE
		LEAD	IWI	AGENCIES/ AUTHORITIES				
CE3	Local iwi and hapū are engaged in recovery activity (from governance level through to clean-up activities)	Iwi and hapū	<ul style="list-style-type: none"> Iwi and hapū: <ul style="list-style-type: none"> • cultural assurance • coordination of iwi effort, logistics and operation support 	Ministry for the Environment Department of Conservation Ministry of Agriculture and Forestry Bay of Plenty Regional Council Tauranga City Council Western Bay of Plenty District Council Other coastal local authorities as required		For the duration of the recovery	Iwi and hapū liaison Time of iwi and hapū representatives Time of identified personnel with the specialist knowledge and hapū Knowledge of iwi and hapū strategies, plans, protocols and procedures	Relationships with other agencies are positive and strong Up-to-date information is available to iwi and hapū Iwi and hapū meet agreed timeframes

Governance and management

A Governance Group has been established to oversee the long-term environmental recovery. This group comprises representatives of local government, iwi and central government to ensure the key parties are represented and take responsibility for the environmental recovery following the *Rena* grounding.

Iwi from Hauraki through to Lottin Point have either been affected (or are at risk of being affected) by the grounding of the *Rena* on Otaiti (Astrolabe Reef).

The collective leadership and effort of the iwi expresses the strong, direct and constant connectedness they had with Te Moana a Toi before the incident. That leadership and effort give voice to: firstly, the need to restore the health and well-being of Te Moana a Toi and secondly, as a consequence, restoring the health and well-being of the iwi. Iwi necessarily assume an all-encompassing leadership role that enables decision makers and participants in the recovery effort to have confidence in the pathways forward.

The membership of the group currently consists of those identified in figure 5.

However, this arrangement will need to remain flexible as the nature and extent of the *Rena* grounding continues to evolve. It may be necessary to invite additional council and iwi representatives into the Governance Group if the harm to the environment extends beyond the Bay of Plenty region.

This group will meet as and when required over the course of one year with the provision to extend if necessary. A Recovery Manager has been appointed to direct all elements of the long-term recovery and will be supported by a project team and the leaders of each work stream.

Reporting

The Recovery Manager will provide the Governance Group with an update on progress every month or upon request.

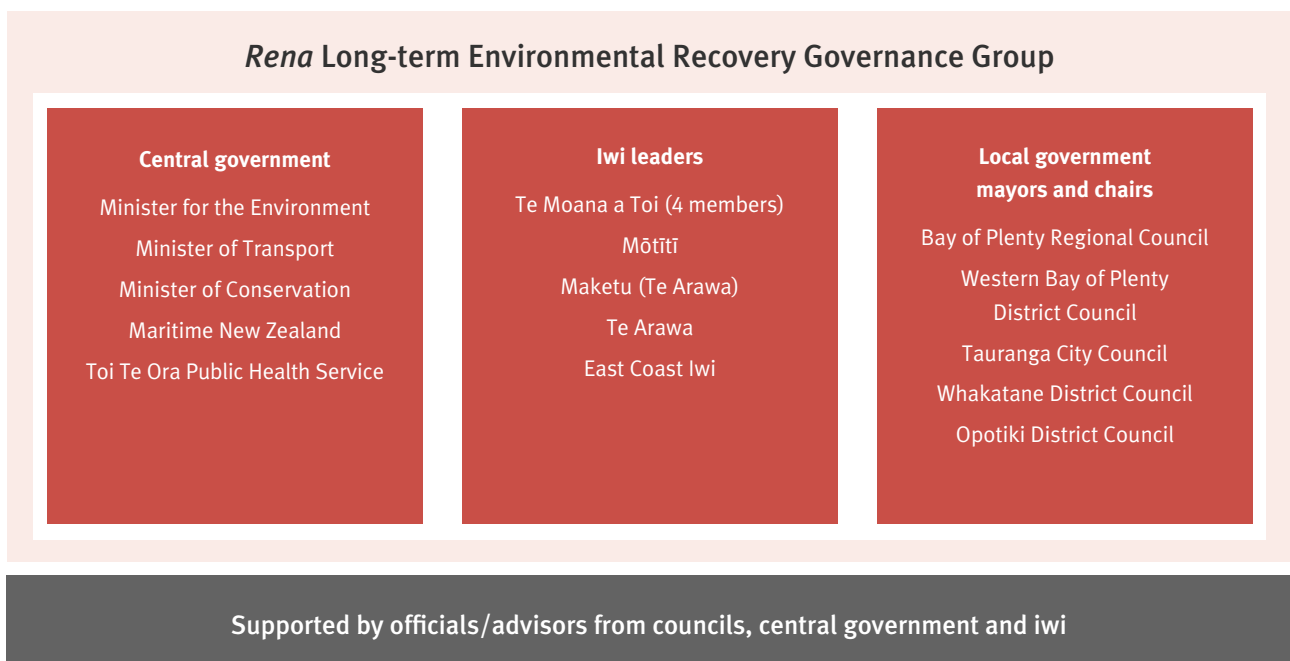
Reviews and updates

This Plan will be reviewed by the Recovery Manager on an ongoing basis to:

- assess progress in implementing the Plan
- measure how successful the Plan has been in meeting its goal and objectives
- determine whether any updates are required.

Updates to the Plan will be made on a monthly basis if required.

Figure 5: *Rena* Long-term Environmental Recovery Governance Group



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