Environmental Protection Authority
Te Mana Rauhī Taiao

FORM 3

Form 3: Initial environmental assessment and sensitive environments contingency plan

Regulation 11(c), Exclusive Economic Zone and Continental Shelf (Environmental Effects–Permitted Activities) Regulations 2013

How to use this form:

This form should be completed by organisations planning to carry out marine scientific research, prospecting, or exploration. It fulfils the initial environmental assessment and contingency plan requirements of Schedule 2 of the Exclusive Economic Zone and Continental Shelf (Environmental Effects – Permitted Activities) Regulations 2013.

This form must be provided to the Environmental Protection Authority (EPA) at least 5 working days before commencing the activity.

Note: Items marked in italics are non-compulsory fields; however, inclusion of this information will assist the EPA in processing this form.

Please note that this completed form, once received and processed by EPA, will be posted on the EPA website.

Submitting in hard copy:

If you wish to provide this form in hard copy, please post your completed form to: Environmental Protection Authority, Private Bag 63002, Wellington, 6140.

Submitting electronically:

If you wish to provide this form electronically, please email your form to: eez.compliance@epa.govt.nz

Any form submitted electronically should be attached to an email that sets out:

- The details of the person undertaking the permitted activity (the operator);
- The name of the person supplying the completed form; and
- A statement that the person is authorised to supply the form on behalf of the operator.

Note: there is an 8 MB limit on electronic files submitted via email.

All forms prescribed by the Exclusive Economic Zone and Continental Shelf (Environmental Effects – Permitted Activities) Regulations 2013, as well as suggested templates for providing other information, may be viewed and downloaded from our website at www.epa.govt.nz or requested by contacting us:

Private Bag 63002, Wellington, 6140
Email info@epa.govt.nz
Ph +64 4 916 2426
Fax +64 4 914 0433

Operation name:

Name used by operator to reference the activity described in this form: Chatham Rise Seamounts

Details of person undertaking permitted activity

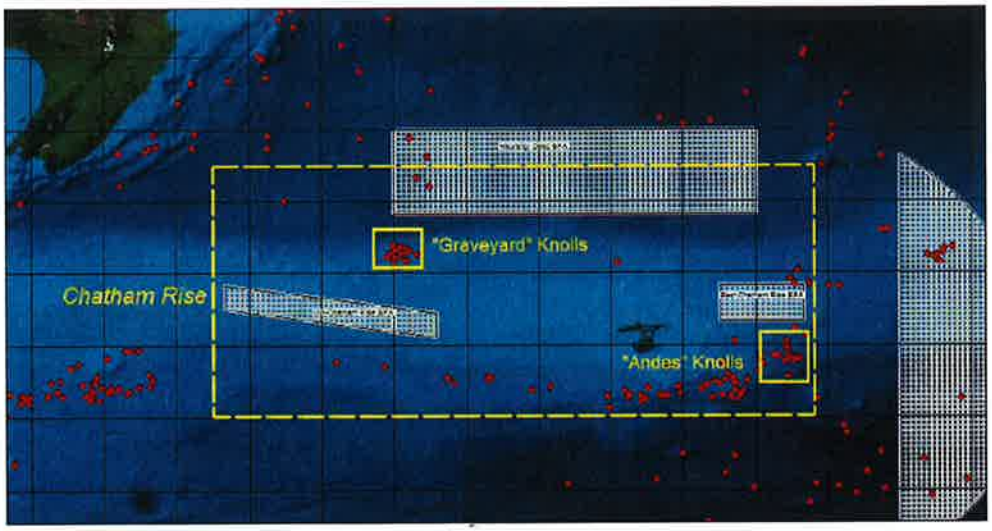
Company name:	National Institute of Water & Atmospheric Research		
Contact person:			
Phone number:			
Mobile number:		Fax number:	
Physical address:		Postcode:	
***Postal address** (if different):*		*Postcode*	
Email address:			

General description of permitted activity

Type of activity: *(e.g. marine scientific research, prospecting)*	Marine scientific research The main aims of the voyage are: 1) To describe differences in benthic biodiversity between north western and eastern regions of the Chatham Rise 2) To continue the time series of observations in the NW Chatham Rise (Graveyard seamounts) to demonstrate recovery in terms of biodiversity 3) To extend the observations on fished-unfished contrasts and recovery of fauna on protected seamounts to an oceanographically distinct location (Andes-Diamond Head seamounts) This research survey is being carried out by NIWA under the "Vulnerable Deep-Sea Communities" project (MBIE contract CO1X0906) with support from MPI (project BEN2014-02).
Description of methods to be used to undertake the activity:	Data on faunal composition and distribution will be obtained primarily by the use of NIWA's deep towed imaging system (DTIS). This will operate approximately 2-3 m above the seafloor while collecting imagery. This gear does not touch the seafloor under normal operations. The collection of specimens to confirm the identification of taxa seen in the video and still imagery will be made by limited direct sampling. The remote gear used for this sampling will depend on the seafloor type; hard or rocky substrate is expected on the seamounts, and an epibenthic sled (1 m wide) will be the main tool used. On occasion on soft sediment a box-corer or grab (surface area 0.25m^2) or beam trawl (4 m width) may be deployed.

Location of permitted activity

Co-ordinates of area where activity will be undertaken: *(latitude and longitude)*	North: 41°30' S South: 45°00'S West:177°30'E East: 174°20'W



Description of the current state of the area and the surrounding environment, including any known sensitive environments:

The seamount features of both the Graveyard and Andes seamount complexes have been surveyed by NIWA in the past.

The Graveyard comprises 28 small volcanic cones covering an area of about 140 km^2 on the northern flank of the Chatham Rise (Clark et al. 2010). Orange roughy aggregate for spawning on several of the features, and they have been commercially fished since the mid-1990s. A number of unfished seamounts have extensive areas of reef-like coral habitat composed of stony corals *Solenosmilia variabilis* and *Madrepora oculata*. These offer an open-lattice type structure that is habitat for diverse benthic invertebrate communities, including squat lobsters, seastars, brittle stars, polychaete worms, and crabs (Clark & Rowden 2009).The stony coral communities are recognised as "sensitive habitats", and are confirmed as extensive on Gothic, Pyre, and Ghoul features in the complex, They occur also in patchy locations on several other features (Clark et al 2010b). Time series of surveys have been carried out (2001, 2006, 2009) to monitor changes in the benthic fauna on these seamounts following the closure of several in 2001, but to date no recovery of the stony coral reefs has been observed (Williams et al. 2010).

The Andes seamount complex comprises 12 volcanic cones off the eastern margin of the Chatham Rise, close to a complex of 3 peaks of the "Diamond Head" seamounts which were closed to bottom trawling in 2001. Less is known about these seamounts than the Graveyard, as they have been surveyed once in 2009 (Clark et al. 2009). Stony corals occur, but their species composition (*Goniocorella dumosa, Enallopsammia rostrata*) appears to differ from the Graveyard seamounts. Bamboo and primnoid corals, sponges, anemones and echinoderms are also known from the seamounts.

The area on the central part of the Chatham Rise will be sampled with a box corer in areas of phosphorite nodules to undertake some ecotoxicity studies. This is an area known to have sensitive habitats of stony coral.

Clark, M.R.; Rowden, A.A. (2009). Effect of deepwater trawling on the macro-invertebrate assemblages of seamounts on the Chatham Rise, New Zealand. *Deep Sea Research I 56*: 1540–1554

Clark, M.R.; Rowden, A.A.; Wright, I.; Consalvey, M. (2010). Spotlight: "Graveyard Seamounts". *Oceanography 23(1)*: 146–147

Clark, M.R.; Bowden, D.A.; Baird, S.J.; Stewart, R. (2010b). Effects of fishing on the benthic biodiversity of seamounts of the "Graveyard" complex, northern Chatham Rise. *New Zealand Aquatic Environment and Biodiversity Report No. 46.* 40 p.

Clark, M.R.; Tracey, D.M.; Pallentin, A.; Schnabel, K.; Anderson, O.F.; Bowden, D. (2009). Voyage report of a survey of "seamounts" on the northwest and southeast Chatham Rise (TAN0905). 49 p. (unpublished report available from NIWA, Wellington).

Williams, A.; Schlacher, T.A.; Rowden, A.A.; Althaus, F.; Clark, M.R.; Bowden, D.A.; Stewart, R.; Bax, N.J.; Consalvey, M.; Kloser, R.J. (2010) Seamount megabenthic assemblages fail to recover from trawling impacts. *Marine Ecology 31(suppl. 1)*: 183–199

Description of the likely effects of the activity on the environment:

The sampling plan has been designed to minimise the catch from direct sampling on seamounts, because of the likelihood of encountering sensitive environments or taxa.

Several of the activities that may occur are non-invasive, as instruments don't touch the seafloor. CTD (Conductivity-temperature-depth) equipment may be deployed to measure environmental conditions and collect water samples from the water column, but will not contact the seabed. DTIS will be towed at a target height of 2-3 m above the seafloor. A strobe light on DTIS will flash at 20 second intervals to obtain high quality still images.

The number of epibenthic sled deployments is uncertain, depending on when it is necessary to confirm the identity of organisms. Few will be done on the Graveyard seamounts, as their biodiversity is already reasonably well known but more may be required in the Andes-Diamond Head region. Sampling will be kept to a minimum to obtain samples for species identification, as well as some for genetic and climate change studies being done under MPI projects. Assuming about 12 sled deployments, and 2 box corer samples, the total footprint of direct bottom sampling will be less than 0.01 km^2.

Identification of sensitive environments

Describe any sensitive environments likely to exist in the area where the activity will be undertaken:

Of the thirteen 'sensitive environments' recognised currently by the Ministry for the Environment, it is likely that two may be found at the water depths to be sampled on the seamounts in the survey area. These are, 'sponge gardens' and 'stony coral thickets or reefs'. The existence of stony coral thickets is well known on certain features in the Graveyard Knolls complex, including Gothic, Ghoul, and parts of Morgue, Zombie, Scroll, and Diabolical. Stony corals also occur in the Diamond Head complex, although the *Enallopsammia* corals seen in one DTIS transect in 2009 were not dense, and probably below the definition threshold. Thickets of the stony coral *Goniocorella* are known from the central part of the Chatham Rise. Sponge gardens are not known from any of the areas we will be surveying.

Contingency plan

Specify measures that could be taken to avoid, remedy, or mitigate the adverse effects of the activity on sensitive environments:

a) Can the activity be undertaken in another place?	No* **Explain:** The two seamount complexes offer unique scientific opportunities for a robust compare-and-contrast study. They include varying fishing histories from no fishing through to heavily fished, and the seamounts in the complex are close together and of similar sizes so the comparison is not affected by variations in benthos expected with depth and area differences.
b) Can the activity be undertaken in a way that reduces the amount of contact with the seabed?	Yes **Explain:** The activity planned is already going to be conducted with a very low level of seabed contact. The survey will rely primarily on the use of remote imaging of the seafloor to collect data, and direct sampling will be kept to a minimum. The towed camera will be 'flown' 2m above the seafloor and should not make contact with any sensitive environments. In total, the amount of seafloor to be sampled by direct sampling (epibenthic sleds and corers) is expected to be <0.01 km^2.
c) Can different methods be used in undertaking the activity to lessen its effects on the sensitive environment?	No **Explain:** The methods proposed lessen the effects as much as possible while still being able to meet the objectives of the research.
d) Can the activity be undertaken in a way that lessens its effects in the sensitive environment?	Yes **Explain:** Direct sampling by sleds or corers will be kept to a minimum. Such gears will only be used to confirm the identity of species seen in seafloor images, provide limited material for coral, taxonomic and genetic connectivity studies, and samples for ecotoxicity tests. Should a sensitive environment be encountered and identified by seafloor imaging, the use of direct sampling will be particularly restricted, and minimised by using the smallest sampling gear, or tow length; and not repeated within any one patch of sensitive environment.

* *Select one*

21 March 2015

Signature of authorised contact person **Date**

Name:

Title: Principal Scientist (Fisheries)

Note: *A signature is not required for electronic (email) forms.*