Environmental Protection Authority
Te Mana Rauhī Taiao

FORM 1

Form 1: Pre-activity notice

Regulation 11(a), 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 a permitted activity (except seismic survey) as defined in the Exclusive Economic Zone and Continental Shelf (Environmental Effects-Permitted Activities) Regulations 2013. It fulfils, in part, the pre-activity requirements of Schedule 1 of the Regulations.

This form must be provided to the Environmental Protection Authority (EPA) at least 40 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
Ph +64 4 916 2426
Email info@epa.govt.nz
Fax +64 4 914 0433

Operation name:

Name used by operator to reference the activity described in this form: West Coast Canyons 4 (TAN1310)

Details of person undertaking permitted activity

Company name:	National Institute of Water & Atmospheric Research Ltd		
Contact person:	Dr Helen Neil		
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. This is the fourth in a series of marine scientific research voyages projected for the Challenger Plateau / West Coast Canyons South Island region. The aims of this research programme are to: (1) define deep-sea canyon, channel and fan morphology off the west coast South Island, and (2) to determine the sources and fluxes of sediment affecting the west coast of the southern New Zealand region. The research will enable evaluations of environmental changes in the marine environment during the recent past (<1 million years). An additional objective for this voyage is to undertake a brief survey to: (3) describe the invertebrate epibenthic communities of Gilbert Seamount. This seamount has not previously been sampled (nor have any off the west coast of the South Island), hence results will contribute to understanding the biodiversity of deep-sea seamounts in the New Zealand region.
Description of methods to be used to undertake the activity:	As part of defining: (1) the deep-sea channel and fan morphology, a multibeam survey will be conducted and bottom sediment samples will be collected via piston or gravity coring (7cm diameter sample), multicoring (4 x 10cm diameter samples), or box coring (sub-samples from a 50 x 50 cm sample) within channel levee deposits and the depositional fan (should this be encountered). Previous surveys indicate this region of the seafloor may have experienced episodic periods of natural disturbance and previous sampling has not indicated the presence of known sensitive environments. (2) sources and fluxes of sediment, further bottom sediment samples will also be collected via coring (7cm diameter sample), multicoring (4 x 10cm diameter sample), or box

	coring (sub-samples from a 50 x 50 cm sample). DTIS (deep towed imaging system) video and still photographic transects will also be undertaken across the upper reaches of the canyon system. Although previous sampling has not indicated the presence of sensitive environments, should any such environments be revealed during imaging transects, the sampling plan will be redesigned to minimise contact with these environments. If the fauna is completely unknown, sampling will be limited to obtain the smallest catch possible using epibenthic sleds. (3) Gilbert Seamount benthic biodiversity, data will be obtained from photographic and direct sampling operations. Following a multibeam survey of the main summit area, video and still images will be taken using DTIS along several transects designed to cover a diverse range of seafloor habitats (i.e., depth, seafloor features, and hardness). The fauna on Gilbert Seamount is unknown, and so direct sampling is required to capture specimens to confirm their species identification (since photographs cannot be used for reliable identification). Short tows will be undertaken using a small epibenthic sled (1 m wide by 0.6 m height), and will be targeted on sites of interest revealed during the DTIS transects. The sled is similar in size to a geological dredge, but on runners which limits the depth to which it can dig into the substrate. This gear and methodology is consistent with that used by NIWA on other seamounts under the MBIE project Vulnerable Deep-Sea Communities.

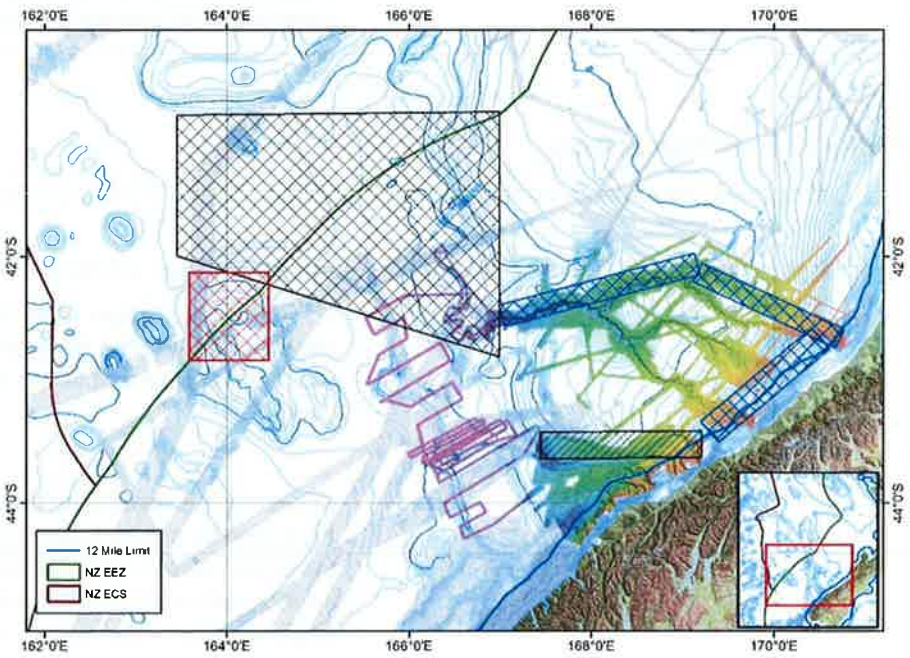
Timing of permitted activity

Proposed commencement date:	Voyage Dates: 7 Oct to 30 Oct 2013
Approximate duration of activity (in days):	Voyage duration: 24 days, with ~20 days sampling on site. (1) During the voyage, up to 10 coring activities will be undertaken along the deep reaches of the channel system, with each deployment taking less 3 hours (dependant on water depth). (2) During the voyage, up to 20 multicore and 10 box coring deployments and 10 DTIS profiles will be undertaken within the upper canyon and inter-canyon regions of the channel system, with each deployment taking less than 1.5 hours (dependant on water depth). An epibenthic sled will be deployed if DTIS profiles indicate completely unknown fauna; sampling will be limited to obtain the smallest catch possible, but no individual tow will be more than about 0.25 nautical miles in length.

	(3) On Gilbert Seamount, up to 8 DTIS profiles will be undertaken, each covering about one nautical mile, followed by 8-10 epibenthic sleds, each tow about 0.25 nautical miles in length.
Timetable:	Voyage is highly weather dependent, such that activity order and timing are indicative only. 7 Oct 2013 Mobilisation 8-9 Oct Transit to Survey site 10-13 Oct Hokitika Canyon DTIS & core/sled sampling 14-22 Oct Offshore multibeam and coring 23-24 Oct Gilbert Seamount multibeam, DTIS & sled sampling 25-28 Oct Hokitika Canyon DTIS & core/sled sampling 29-30 Oct Transit to Wellington 30 Oct Demob Wellington

Location of permitted activity

Co-ordinates of area where activity will be undertaken: *(latitude and longitude)*	Survey area is shown below by the hatched pattern. Previous NIWA surveys are shown by the coloured bathymetry; previous international surveys are shown as grey polygons. Bathymetric contours are from NIWA's bathymetric database.



General areas of the proposed activities are outlined as follows:

(1) deep-sea channel and fan morphology: Black cross-hatched box – multibeam surveying and coring.

(2) sources and fluxes of sediment: Blue cross-hatched boxes – multicoring, box coring, DTIS, epibenthic sleds (if required). Black diagonal box – alternate to northern area.

(3) Gilbert seamount survey: Red cross-hatched box – multibeam, DTIS, epibenthic sleds.

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

The west coast, South Island supports two large canyon-channel complexes fed by steep, short-reach rivers that carry ~30% of New Zealand's total riverine contribution to the sea. Previous surveys along the canyon-channel system show that the lower reaches of the channels are incised, erosional and narrow. Dependant on location, sediments within this channel-levee system range from well-sorted, mica-rich silts and sands to coarser last glacial gravels and turbidite deposits derived from sediment gravity flows, responsible for distributing vast amounts of sediment into the deep ocean. The deep-sea fan that is anticipated to occur at the terminus of the canyon-channel system has not been found on previous surveys of the region, and its discovery and characterisation is one of the key targets of the research voyage. Ssedimentation rates on the levees (and therefore also anticipated for the depositional fan) are high for the New Zealand marine region (i.e., 10 cm per thousand years c.f. 1-2 cm per thousand years). These deposits are derived from both background sedimentation and mud and silt turbidity flow deposition. Hence, these regions of the deep seafloor have experienced episodic periods of natural disturbance, while previous sampling has not indicated the presence of sensitive environments.

The upper reaches of the canyon/channel complex are up to 28 km wide and comprise numerous v-shaped canyons, feeding into multiple, sinuous and migrating channels. Previous surveys also show high sedimentation in upper canyon and inter-canyon slope areas, and preliminary organic carbon data show that, contrary to expectations, higher amounts of more labile organic material is found at the inter-canyon continental slope sites. Similarly, previous sampling has not indicated the presence of sensitive environments. Should any sensitive environments be identified during video profiles the sampling plan will be redesigned to minimise contact with these environments.

Gilbert Seamount is at present undescribed in terms of its geology and fauna. Under previous seamount and deep-sea community research programmes, over 50 seamount features in the NZ EEZ have been surveyed. However, most of these have been on ridge and rise systems to the north (Kermadec Ridge/Arc), south (Macquarie Ridge) and east (Chatham Rise) of New Zealand. None have been sampled off the west coast of the South Island. Seamount faunal communities have proven highly diverse and variable, and hence the combination of Gilbert Seamount's geographical location, as well as the water depth of its summit (about 2500 m deep), will provide extremely valuable information on the diversity of NZ seamount communities. Sensitive deep-water coral reefs, which can be found on seamounts, typically occur at depths between 200-2000m. As such these sensitive habitats are not expected to be encountered on Gilbert Seamount. It is highly likely that species new to science, or new records for the NZ region, will be discovered. Hence, while at present we have no knowledge of the communities that may occur on this seamount, should any sensitive environments be revealed during video profiles the sampling plan will be redesigned to minimise the catch from the direct sampling by epibenthic sleds.

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

Minimal. Several of the activities are non-invasive in that no instruments touch the seafloor. These are multibeam, SVP, and DTIS. DTIS will be towed at a height of about 2 m above the seafloor, and a strobe light will flash at 20 second intervals to obtain high quality still images. No gear will remain on the seabed.

The combined footprint of all bottom sediment sampling using corers (e.g., piston/gravity, multi- and box corer) is less than 5 m^2.

The combined footprint of all potential epibenthic sled sampling is less than 5000 m^2; in particular, with respect to Gilbert Seamount, approximately 0.00003% of the area of the seamount (total ~18,000 km^2).

Other information

Name of ship involved in activity:	*RV Tangaroa*
International call sign or vessel number of the ship:	ZMFR
Associated licence number (under the Continental Shelf Act 1964):	N/A
Associated permit number (under the Crown Minerals Act 1991):	N/A

28 August 2013

Signature of authorised contact person **Date**

Name: Helen Neil

Title: Group Manager, Ocean Sediments

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