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
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: **Colville III**

Details of person undertaking permitted activity

<table>
<thead>
<tr>
<th><strong>Company name:</strong></th>
<th>GNS Science</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contact person:</strong></td>
<td>[redacted]</td>
</tr>
<tr>
<td><strong>Phone number:</strong></td>
<td>[redacted]</td>
</tr>
<tr>
<td><strong>Mobile number:</strong></td>
<td>[redacted]</td>
</tr>
<tr>
<td><strong>Physical address:</strong></td>
<td>[redacted]</td>
</tr>
<tr>
<td><strong>Postal address (if different):</strong></td>
<td>[redacted]</td>
</tr>
<tr>
<td><strong>Email address:</strong></td>
<td>[redacted]</td>
</tr>
</tbody>
</table>

General description of permitted activity

**Type of activity:**
(e.g. Marine scientific research, prospecting)

**Marine scientific research.**

Following the successful 2013 and 2015 Colville surveys we plan to undertake research along the Colville Ridge north of the previous Colville Ridge surveys. The Colville Ridge is a tectonic feature that begins ~200 km offshore, northeast of Auckland and which extends for ~1500 km towards Fiji, in water depths ranging from 700 to 3000 m below sealevel.

The aim of this survey is to understand the geological and tectonic setting of the region, how and when the Colville Ridge formed and how it evolved. The information gained from the survey will be used to underpin research on tectonic models of backarc formation and corresponding arc volcanism, on the geological and structural environment for faulting and models of seafloor mineral deposit formation. The data will also be used to identifying areas that could be followed up with surveys by AUVs, ROVs, and possibly manned submersibles.

We have identified one area of seafloor to be swath mapped using an EM302 multibeam system, in addition to collecting gravity and magnetic data along the same survey tracks. Sea floor samples may be taken with a rock dredge from up to 20 sites within the proposed survey area. No samples will be collected within territorial waters.

**Description of methods to be used to undertake the activity:**

**Multibeam (swath) bathymetry**

Multibeam sonar measures the depth to the seafloor by analyzing the time it takes for sound waves to travel from a boat to the seafloor and back. It is now the standard method for obtaining a detailed map of the seabed. Multiple acoustic beams make it possible to map a broad swath of the seabed under the...
ship (in this case ~5x water depth), in contrast to single-beam sonar depth sounders that only map points directly below the ship.

**Sub-bottom profiler (3.5 kHz)**
In some areas the sub-bottom profiler may be used. The sub-bottom profiler is similar to a single-beam sonar depth sounder, but uses a slightly lower frequency that is able to image and characterise geological formations just beneath the seafloor. The image obtained is typically restricted to just a few metres below the seabed, and possibly up to 50 m below the seabed in perfect conditions. The type of source (frequency, power) is quite different (less powerful, higher frequency) to that typically used in petroleum exploration.

**Rock Sampling**
The removal of samples from a hard seabed will be done using a purpose built dredge. The rock dredge is approximately 1 m wide and made of metal chain links attached to a simple heavy frame. Because of the coarse chain links, finer material falls back to the bottom, leaving only large (typically 40-400 mm) objects in the bag. The dredge is winched up to the surface and samples are sorted and preserved on the ship’s deck.

---

**Timing of permitted activity**

<table>
<thead>
<tr>
<th>Proposed commencement date:</th>
<th>26th September 2015 (Date of the ship leaving port)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approximate duration of activity (in days):</td>
<td>21 days</td>
</tr>
<tr>
<td>Timetable:</td>
<td>Currently the plan is to depart Wellington and transit approximately 4 days to the study area. Approximately 13-17 days surveying will be carried out in the study area. The ship will transit to Auckland where the voyage will end.</td>
</tr>
</tbody>
</table>
Location of permitted activity

Co-ordinates of area where activity will be undertaken:

\( (\text{latitude and longitude}) \)

Activity will be undertaken along the Colville Ridge within the proposed area (map above) between:

- 177.5° E and 178.5° W longitude
- -34° S and -30.5° S latitude

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

Mixed rocky and soft sediment sea bottom at <2500m water depth. To our knowledge, this area has never been sampled previously. However, we expect from previous experience that we will encounter relatively old, hard volcanic rocks along the Colville Ridge (i.e., depths above 2500 m).

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

Transient and highly-localised seabed disruption at the point of sampling. Rock dredge effects are confined to a 1m-wide track for a distance of up to 400 m (commonly less than 200m). If a sandy or muddy bottom is encountered, sediment will be disrupted as it washes through the dredge, the water column will be locally turbid, and then sediment and any small organisms will settle out (it is rare to catch a large organism). If a hard bottom is encountered then the bucket is designed to gather or break off and collect a few rocks, but is likely to leave much of the dredge track unaffected. When dredging over hard substrates, like volcanic rock, the dredge commonly touches down on several occasions along the track and is
not always continually dragged across the seafloor. Multibeam swath bathymetry mapping, and acquisition of gravity and magnetic data do not use instruments that come into contact with the seabed and have no known effect on the marine and benthic environment. In summary, the likely effects of our proposed activities are very minor to negligible.

Other information

<table>
<thead>
<tr>
<th>Name of ship involved in activity:</th>
<th>RN Tangaroa</th>
</tr>
</thead>
<tbody>
<tr>
<td>International call sign or vessel number of the ship:</td>
<td>ZMFR</td>
</tr>
<tr>
<td>Associated licence number (under the Continental Shelf Act 1964):</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Associated permit number (under the Crown Minerals Act 1991):</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

Signature of authorised contact person

Name: [Redacted]

Title: [Redacted]

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