

# Mapping standards for minerals permit applications

New Zealand Petroleum and Minerals (NZP&M) have developed mapping standards to enable more accurate spatial definition of mineral permit locations for the benefit of the applicant, permit holder, and regulator.

These mapping standards will improve the quality of information provided to the regulator, improving positional accuracy of applications, permits, and facilitating improvements to application processing times.

These standards align to the purpose of the Crown Minerals Act 1991 (the Act) to facilitate the:

- a) efficient allocation of rights to prospect for, explore for, and mine Crown owned minerals; and
- b) the effective management and regulation of the exercise of those rights; and
- c) the carrying out, in accordance with good industry practice, of activities in respect of those rights.

All parties benefit from having confidence in the positional accuracy of applications and permits, ensuring that the area permitted is consistent with the work programme, efficient allocation, and good industry practice.

NZP&M may adjust the map provided to improve accuracy where appropriate, to meet the standards and regulations, subject to acceptance from the applicant. Maps that do not meet the standards may result in the application being declined.

## Application plotting requirements

### SPATIAL DEFINITION

The permit area should be defined by the coordinates underpinning the digital file provided. Care should be taken that areas applied for cover only land available for permitting. An application for a new mineral permit or extension of land to an existing mineral permit must supply:

1. **A map of the area** that suitably meets regulation 4 of the Crown Minerals (Minerals Other than Petroleum) 2007 Regulations (the Regulations).
  - a. It is expected that the map would utilise the digital file provided by the applicant (2b below).
  - b. Data source(s) used to derive the map are expected to meet the accuracy parameters listed below for different permit types.
  - c. The map needs to be appropriately annotated.
2. **A digital file** that meets regulation 5 of the Regulations.
  - a. It is expected that the main descriptor used (regulation 5(1)(a) of the Regulations) would be the coordinates that define the boundary, which will be the underlying data file creating the digital map;
  - b. Creation or digitisation of permit application area digital data files should be at 1:5,000 or a higher level of accuracy (< 1:5,000);
  - c. The coordinates are expected to be in **NZTM2000** (WKID: 2193 EPSG) or **NZGD2000** (WKID: 4167 EPSG);
  - d. Acceptable formats for digital files include:
    - i. File Geodatabase (fgDB) poly feature class
    - ii. Esri shapefile
    - iii. MapInfo tab file
    - iv. GPS collected data (GPX, etc.)

- e. Metadata – to include:
  - i. Data source(s) used to derive digital files.
  - ii. Description of process for deriving proposed permit boundary.
- 3. **Text description** - The permit application map and digital files should be accompanied by a brief, plain language description of:
  - a. the boundaries of the area being applied for.
  - b. the purpose and intended use for the area being applied for.
- 4. The area expressed in hectares or square kilometres as appropriate **must** be provided.
- 5. Permit boundaries must be coincident with abutting or adjacent permits and applications. If areas of land are left orphaned or excluded from the permit application and are too small to potentially allocate to another permit applicant, the mapped area may be adjusted accordingly.
- 6. Ordinarily permit application areas should be contiguous in their boundaries, unless an acceptable justification is supplied.

## Accuracy and definition

NZP&M recommend the use of a licensed cadastral surveyor to create maps and digital files prior to submission. For areas where accuracy cannot be suitably demonstrated NZP&M may request the area be surveyed on the ground using equipment sufficient to meet the accuracy standards.

Accuracy for digital data supplied should be at a much higher level of accuracy than 1:50,000. NZP&M generally do not consider that using 1:50,000 topographic data (e.g. NZ Topo50) is suitable for permit boundary definitions, and an application utilising digital files derived from 1:50,000 topographic data may be declined. For hobby permits a suitable scale would be 1:5,000 or a higher level of accuracy.

Permit type	Size limit (ordinarily)	Location	Area definition	Expected accuracy	Recommended datasets for location
River permit	50 hectares (hobby/recreational permits)	Fixed (location is fixed at time of grant in the event the river moves)	Encompasses the riverbed from bank to bank, including both wet and dry bed areas within the banks. Exclusive river permit applications should not cross solid ground to adjacent waterways.	+ / - 2 metres	In order of preference: <ol style="list-style-type: none"> <li>1. Field survey (handheld GPS coordinates or drone survey)</li> <li>2. <a href="#">LINZ Imagery</a> (use most recent high-resolution imagery available)</li> <li>3. Non-LINZ high resolution imagery</li> </ol>
Beach permit	50 hectares (hobby/recreational permits)	Fixed (location is fixed at time of grant in the event the beach moves)	Covers the inland non-vegetated active beach area, extending no more than 50m seaward from the mean high-water mark (MHW).	+ / - 2 metres	In order of preference: <ol style="list-style-type: none"> <li>1. Field survey (handheld GPS coordinates or drone survey)</li> <li>2. <a href="#">LINZ Imagery</a> (use most recent high-resolution imagery available)</li> <li>3. Non-LINZ high resolution imagery</li> </ol>
Prospecting permit	Maximum 500 km <sup>2</sup> (Onshore) Maximum 5,000 km <sup>2</sup> (Offshore)	Fixed	Onshore or offshore	+ / - 10 metres Higher accuracy may be necessary near geographic	No preferred dataset provided the boundary definition meets accuracy requirements

				features such as rivers, coastlines, trig points, other permits or cadastral parcels.	
Exploration permit	Minimum 150 hectares	Fixed	<p>Alluvial exploration permits should avoid areas that do not have alluvial cover.</p> <p>Exploration permits for non-statute minerals must exclude areas of privately owned minerals.</p> <p>Applications that include any non-statute minerals should include a Land Mineral Status report (LMS) from a LINZ accredited supplier. An application for non-statute minerals cannot progress without knowing whether the minerals are Crown owned.</p>	+ / - 5 metres Higher accuracy may be necessary near geographic features, other permits or cadastral parcels.	No preferred dataset provided the boundary definition meets accuracy requirements
Mining permit	200 hectares (Tier 2)  Tier 1 size should reflect the extent and size of discovery	Fixed	<p>Alluvial mining permits should avoid areas that do not have alluvial cover.</p> <p>Mining permits for non-statute minerals must exclude areas of privately owned minerals.</p> <p>Applications that include any non-statute minerals should include a Land Mineral Status report (LMS) from a LINZ accredited supplier. An application for non-statute minerals cannot progress without knowing whether the minerals are Crown owned.</p>	+ / - 2 metres	No preferred dataset provided the boundary definition meets accuracy requirements.
Special purpose mining permit	Less than 5 hectares	Fixed	The area required for demonstrating	+ / - 2 metres	No preferred dataset provided the boundary

			historical mining methods.		definition meets accuracy requirements.
Gold fossicking area	Size designated by MBIE	Fixed	Areas specifically designated by MBIE in accordance with the Department of Conservation, council or any other Crown agency.	+ / - 2 metres	Surveyed by relevant agency.
Offshore permit (Exploration or Mining)	Not defined limit	Fixed	Offshore permit applications are allowed where offshore minerals are Crown-owned.  Offshore permit geometries should be as regular and simple as possible and able to be represented as a set of minimal coordinates and length/direction.	+ / - 10 metres	No preferred dataset provided the boundary definition meets accuracy requirements.

## INTERNAL NZP&M EVALUATION AND MAP ACCEPTANCE

### Plot evaluation

On receipt of the digital file and map NZP&M will assess the adherence to the standards and accuracies described above.

1. Maps and digital files that do not meet the standards may result in:
  - a) Map and digital file being returned to the applicant for correction; or
  - b) Application being rejected.

NZP&M will conduct the further checks and assessments:

2. Overlap checks on, but not limited to;
  - a) Current mineral permits and applications with respect to rules around permit overlaps;
  - b) Land included in, or subject to, Schedule 3 of the Minerals Programme 2013;
  - c) Schedule 4 of the Crown Minerals Act 1991;
  - d) Other sensitive land areas.

NZP&M will check the area of the application provided and ascertain an area using a standard method and quote an area to five significant figures. If the area calculated differs significantly with the area provided with the application, the applicant will be asked to review their area calculation.

NZP&M may adjust the map provided to improve accuracy where appropriate, to meet the standards and regulations subject to acceptance from the applicant.

In the event of an adjustment made to the application area, the change will be communicated to the permit applicant (or authorised person) with a map shown at a suitable scale. The applicant will then confirm that the amended area accurately represents the area and intention for the proposed work programme. This process may be iterative.

### PROPOSED PERMIT CERTIFICATE CHANGES

Schedule 2 (The Land to which the Permit Relates) of the permit certificate shall include the wording:

*“All that area of land as **represented** in the attached map but identified and defined by the coordinates underpinning the final accepted map held by the chief executive”.*

# Glossary

The following definitions and terms are used in or are related to the content of the Mapping standards.

Term	Definition
Boundary of area applied for	A polygon (closed shape) based on a series of coordinates that fixes the limits or extent of an area.
Coordinates	A geographic coordinate system is a two or three-dimensional reference system that locates points on the Earth's surface. A point is represented by a pair of coordinate values (numbers), latitude and longitude, which measure angles. The unit of measure of these coordinate points is often decimal degrees.
Crown Minerals Act 1991	See <a href="#">Crown Minerals Act 1991</a>
File Geodatabase (fGDB)	A collection of files in a folder that can store and manage both spatial and non-spatial data. A spatial layer stored within a file geodatabase is called a feature class.
GPX	GPS Exchange Format, a common GPS data format that can be used to record waypoints, tracks and routes.
Land Mineral Status Report (LMS)	A report providing mineral ownership details for land titles obtained through research of property details held by Land Information New Zealand (LINZ).
Licensed cadastral surveyor	Licensed cadastral surveyor has the same meaning as in section 4 of the Cadastral Survey Act 2002  Licensed cadastral surveyor or cadastral surveyor means a person—  (a) licensed as a cadastral surveyor under Part 3; or (b) deemed to be licensed as a cadastral surveyor under that Part
MapInfo TAB	A MapInfo TAB is a geospatial vector data format for storing the geometric location and attribute information of geographic features. The mandatory file extensions needed for a MapInfoTAB file are .TAB, .MAP, .DAT and .ID.
Metadata	Contextual information about a dataset, such as how and when it was created, and for what purpose, as well as accuracy and use limitations.
New Zealand Petroleum and Minerals (NZP&M)	New Zealand Petroleum & Minerals is the externally facing brand that represents the Ministry of Business Innovation and Employment (MBIE) in the administration of the Crown Minerals Act 1991 on behalf of the New Zealand Government.
Non-statute minerals	All petroleum, gold, silver and uranium occurring in its natural state in land is the property of the Crown in New Zealand. Other, non-statute, minerals can be privately owned. A Land Mineral Status report is required to determine ownership.
Permit area	Permit area, in relation to an application for a permit, means the area to which the application relates, defined using 1 or more of the following descriptors:  (a) co-ordinates of the boundaries:  (b) land parcels:  (c) bearings, distances, or both, from a fixed point (for example, a trig station) in terms of a specified projection:  (d) geographical features (for example, a river edge or mountain peak):  (e) coastline, sovereign, territorial, or other boundaries:  (f) any other descriptor acceptable to the chief executive.
Permit holder	<b>Crown Minerals Act 1991</b>

	<p><i>Section 2: Interpretation</i></p> <p><i>(1) In this Act, unless the context otherwise requires,—</i></p> <p><b>permit holder</b> means the person who is the sole permit participant, or all of the permit participants, as the case may be.</p>
Scale	Large scale maps show a smaller amount of area with a greater amount of detail. The geographic extent shown on a large scale map is small. A large scale map expressed as a representative scale would have a smaller number to the right of the ratio. For example, a large scale map could have a scale of 1:1,000.
Shapefile	A shapefile is a geospatial vector data format for storing the geometric location and attribute information of geographic features. The mandatory file extensions needed for a shapefile are .shp, .shx and .dbf. The optional files are: .prj, .xml, .sbn and .sbx, but these should be included if they exist.
Significant figures	Significant figures are the number of digits in a value that contribute to the degree of accuracy of the value. Start counting significant figures from the first non-zero digit.