Guide to Completing and Submitting Plans for Mines and Tunnels

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NEW ZEALAND PETROLEUM & MINERALS

MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

About this Guide

The Guide to Submitting Mine and Tunnel Plans has been developed to assist operators to submit mine and tunnel plans under regulation to the High Hazards Unit of WorkSafe New Zealand (WorkSafe) and New Zealand Petroleum and Minerals (NZP&M).

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This document is a guide only. It should not be used as a substitute for legislation or legal advice. The Ministry of Business, Innovation and Employment and WorkSafe New Zealand are not responsible for the results of any actions taken on the basis of information in this document, or for any errors or omissions.

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1 Introduction

1.1 Purpose

The Guide to Submitting Mine and Tunnel Plans ("the Guide") is a joint publication by the following regulators:

- Ministry of Business Innovation and Employment (MBIE), operating under the external brand New Zealand Petroleum & Minerals (NZP&M)
- The High Hazards Unit of WorkSafe New Zealand (WorkSafe)

The regulators have worked together on the Guide to ensure that requirements are standardised, where possible, in order to reduce duplication and rework by the operators. Our aim is to make it easier and less expensive for operators to comply with the regulations.

Mining and tunnelling operators who compile and submit plans as per these guidelines, at the dates specified, will comply with the relevant parts of the Crown Minerals (Minerals Other than Petroleum) Regulations 2007, Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016 and any other WorkSafe or NZP&M requirements that relate to the subject matter of this Guide and are current at the time of this Guide's publication.

Note that operators must also comply with regulator requests for additional information, if required, on a case-by-case basis.

1.2 Scope of this Guide

MBIE (operating under the external brand NZP&M) and WorkSafe are the appointed regulators for the Crown Minerals Act 1991 and the Health and Safety at Work Act 2015 respectively.

The Guide has been created to help operators comply with their obligations when compiling and submitting plans of mining operations and tunnelling operations ("mine plans") to WorkSafe or NZP&M under the following Acts and regulations:

- Health and Safety at Work Act 2015 (HSWA 2015)
- Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016 (HSW regs)
- Crown Minerals Act 1991 (CMA 1991)
- Crown Minerals (Minerals Other than Petroleum) Regulations 2007 (CMA regs)

This Guide provides information about the:

- legislative basis for the submission of mine plans to the relevant regulators
- content and format of mine plans
- approval and submission of mine plans.

1.3 How to use this Guide

This Guide outlines requirements for mine plans, as specified by the legislation, irrespective of the type of operation. Note that the definition of 'mine' in the HSW regs includes tunnels, therefore references to 'mine plans' in this Guide should always be read to include tunnel plans[1]. Coal exploration operations are also included.

This Guide is a resource to help operators meet their compliance obligations as they are defined in the various Acts and regulations, while minimising duplication and rework where possible. To this end the document explains:

- what information must be submitted to each regulator
- when the information must be submitted to each regulator
- an overview of the legislative basis for these requirements.

Information is provided in the form of checklists and tables wherever possible.

At all times operators are advised to use their judgement. If in doubt, include the information or call WorkSafe or NZP&M to discuss.

1.4 Legislative context

The following Acts and regulations underpin the requirements explained in this Guide:

- Health and Safety at Work Act 2015
  - Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016
- Crown Minerals Act 1991
  - Crown Minerals (Minerals Other than Petroleum) Regulations 2007

References to any regulation or section in the Acts and regulations in this Guide must not be considered exhaustive. They are included for context only and will exclude content that does not relate directly to the topic under discussion. The operator is advised to familiarise themselves with all relevant Acts and regulations.

1.4.1 Health and Safety at Work Act 2015

The Health and Safety at Work Act 2015 (HSWA 2015) provides for the health and safety of workers and workplaces. The Act is supported by a number of regulations applying to a range of specific categories of workplace.

[1] *HSWA 2015 Schedule 3 Health and Safety in the Mining Sector – Part 1(2)(c)(ii)*

Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016

The Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016, or HSW regs, specify WorkSafe's requirements for mine plans. The most commonly-referenced regulations are:

- Regulation 28: Mine surveyor
- Regulation 73: Consideration of whether inundation and inrush is a principal hazard
- Regulation 213: Plans of mining operation
- Regulation 214: Duty to give copy of plan of mining operation to WorkSafe
- Regulation 216: Plans of ceased mining operation
- Regulation 217: Details to be included in plans.

1.4.2 Crown Minerals Act 1991

The Crown Minerals Act 1991 (CMA 1991) administers the allocation of Crown-owned minerals. NZP&M is responsible for this administration on behalf of the Crown. The Act requires that permit holders must comply with relevant obligations under the Act and the regulations.

Crown Minerals (Minerals Other than Petroleum) Regulations 2007

The Crown Minerals (Minerals Other than Petroleum) Regulations 2007, or CMA regs, specify NZP&M's requirements for mine and tunnel plans. The most commonly-referenced regulations are:

- Regulation 33: Permit holder must supply chief executive with reports and records on prospecting, exploration, and mining activities
- Regulation 38: Annual report on mining activities under Tier 1 mining permits (Part 8 of Schedule 4)
- Schedule 4, Part 8: Information required under regulation 38 to be included in annual summary report on mining activities under Tier 1 mining permits.

1.5 Confidentiality

Mine plans submitted to NZP&M under the CMA are subject to the *CMA 1991 section 90: Permit holder records and reports (6)*, whereby NZP&M must make plans and other records available for external release under specified conditions. This does not apply to any records, reports, information, or returns relating to the calculation and payment of royalties by permit holders, which will not be released.

Information requested in this Guide is considered to be provided to NZP&M on the understanding that it will be released under section 90 of the CMA.

However if additional information, beyond that required by law, is provided voluntarily, the permit holder may request that it not be released externally.

The voluntary information and the request for confidentiality must be clearly identified and provided in a separate document, so that it can be kept separate from information that must be released by law.

This provision applies only to information supplied voluntarily beyond that required by law. The request may not be granted if it is not supported by the rules for releasing information that have been defined in the CMA.

Mine plans submitted to WorkSafe under the HSWA 2015 are not generally released externally, subject to the conditions of the *HSWA 2015 section 210: Confidentiality of information*.

Both regulators are able to, and do, share information with each other and other agencies subject to the conditions of the *HSWA 2015 section 197: Information sharing between regulator and regulatory agencies*, the *CMA 1991 section 90G: Regulatory agency may provide information for purposes of this Act* and the *CMA 1991 section 90E: Providing information to regulatory agencies*.

All records submitted to either regulator are subject to the provisions of the Official Information Act 1982 and the Privacy Act 1993.

Complete copies of all Acts and regulations referenced in this document can be viewed and downloaded from www.legislation.govt.nz

2 Interpretation

The following definitions have been used in this Guide. For a more comprehensive list of related definitions and terms, see Appendix 2: Glossary.

Term	Definition
2D layered PDF	Layered pdf files are PDF documents that contain two or more layers within a single page. Layers are common in other graphics files, especially map documents, and provide the ability to overlay different sets of data, maps, images or annotations onto the same area. Layers can be made visible or invisible in any combination, which is a powerful tool for analysing geospatial data, and maps in particular.
Appointed mine surveyor	The mine surveyor who has been appointed under *HSW reg 28: Mine surveyor*.
Borehole	*HSW reg 3: Interpretation* *1. Borehole -* *(a) means a hole of any diameter that has been bored or drilled for any purpose (including exploration, quality control, geological investigation, or geotechnical investigation in the mining operation) either from the surface or from an underground location; but* *(b) does not include a drill hole that has been drilled for the purpose of blasting operations.*
CMA 1991	*Crown Minerals Act 1991* The Crown Minerals Act 1991, referred to throughout this document as the CMA, administers the allocation of Crown-owned minerals. NZP&M is responsible for this administration on behalf of the Crown. The Act requires that permit holders must comply with relevant obligations under the Act and the regulations.
CMA regs	*Crown Minerals (Minerals Other than Petroleum) Regulations 2007* These regulations are referred to throughout this document as the CMA regs. They apply to operators of mining activities relating to crown-owned minerals other than petroleum. Note that there are other regulations supporting the CMA, however they are not relevant to this Guide and have not been referenced within.
Datum (Official Datum)	A datum is a particular type of reference system in which coordinates are defined in terms of a specified reference surface. NZGD2000 is the official datum and must be used for plans submitted to NZP&M or WorkSafe. If data has been collected in a different datum it may be transformed under the conditions provided in this Guide – see 3.1.4 Converted Plans Checklist.
GIS	Geographic information system (GIS) GIS is a system designed to capture, store, manipulate, analyse, manage, and present all types of spatial or geographical data
The Guide	This document. The full title is the Guide to Completing and Submitting Plans for Mines and Tunnels.

Term	Definition
Height datum (official height datum)	The height or depth of a reference point is its distance above or below a reference surface, which is the vertical datum (or height datum). Mine plans should be prepared using NZVD2016.
HSWA 2015	*Health and Safety at Work Act 2015* The Health and Safety at Work Act 2015, referred to throughout this document as the HSWA 2015, applies to workplaces including mining, tunnelling and exploration operations.
HSW regs	*Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016* These regulations are referred to throughout this document as the HSW regs. These regulations apply to all mining operations, including private, tunnelling and coal exploration. Note that there are other regulations supporting the HSWA 2015, however they are not relevant to this Guide and have not been referenced within.
Inundation and Inrush	*HSW reg 72: Inundation and Inrush* 1. *In these regulations, inundation and inrush refers to the sudden and unplanned entry into workings of a mining operation of liquid, gas, or other materials or substances.*
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*
Mine manager	The Mine manager is the person appointed under *HSW reg 13: Manager of mining operation* to manage the mining operation and supervise the health and safety aspects of the mining operation on every day on which any mine worker is at work.
Mine plan, plan, map	In this document, 'mine plan' and 'plan' refers to plans for mines, tunnels and quarries. 'Mine plan' falls within the definition provided for 'map' in the CMA regs. Further detail is provided throughout both sets of regulations via instructions for information to include on the plan (or map). These instructions are detailed in this Guide in section 3 Plan Preparation Checklists and section 4 Plan content and layers.
Mining Operation	This term is defined in the Health and Safety at Work Act 2015 and in the Crown Minerals Act 1991. In summary, it refers to an operation where materials are extracted from the earth, and incorporates the site of the extraction as well as any site where the material or related items are processed or stored. The definition in the HSWA includes tourist mining operations and tunnelling operations. See Mining Operation in Appendix 2: Glossary for more detailed definitions provided by the HSW regs and the CMA regs.

Term	Definition
Mine surveyor	This term is defined in *HSW reg 28: Mine surveyor*. In summary, a mine surveyor must be appointed by the site senior executive for any underground mining operation or tunnelling operation. The mine surveyor for an underground mining operation must hold a current certificate of competence as a mine surveyor. The mine surveyor for a tunnelling or opencast mining operation must hold a current certificate of competence as a mine surveyor or be a licensed cadastral surveyor. Unless expressly authorised by WorkSafe, no underground mining operation or tunnelling operation may operate for longer than 28 days without a person holding the position of mine surveyor. This definition also applies to appointed mine surveyor.
NZGD2000	New Zealand Geodetic Datum 2000. NZGD2000 is the official datum used to define the positions of points in New Zealand. It relates the physical location of a point with a coordinate in terms of latitude, longitude, and ellipsoidal height. Plans submitted to the regulators must be prepared using, or be converted to, NZGD2000[2]. http://www.linz.govt.nz/data/geodetic-system/datums-projections-and-heights/geodetic-datums/new-zealand-geodetic-datum-200-0
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.
NZTM2000	New Zealand Transverse Mercator 2000 In 2001, Land Information New Zealand (LINZ) adopted New Zealand Transverse Mercator (NZTM or NZTM2000) as the official projection for general mapping in New Zealand. NZP&M and WorkSafe request that this projection be used for submitted plans. http://www.linz.govt.nz/data/geodetic-system/datums-projections-and-heights/projections/new-zealand-transverse-mercator-2000
NZVD2016	New Zealand Vertical Datum 2016 NZVD2016 is defined by the NZGeoid2016 geoid. Heights in terms of NZVD2016 are in the normal-orthometric height system. The NZVD2016 datum covers the New Zealand continental shelf area between 160°E –170°W and 25°S – 60°S. The datum also defines relationship grids that enable heights to be consistently transformed from the 13 existing major LVD to NZVD2016 (and also NZGD2000 ellipsoidal heights if required). The values in the LVD relationship grids vary with horizontal position. NZVD2016 is consistent with NZGD2000. This means that normal-orthometric NZVD2016 heights can be transformed to ellipsoidal NZGD2000 heights and vice versa. http://www.linz.govt.nz/data/geodetic-system/datums-projections-and-heights/vertical-datums/new-zealand-vertical-datum-2016-nzvd2016
Old workings	**Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016** Defined in *HSW reg 3: Interpretation*, old workings are workings (or any part of the workings) of an abandoned or suspended operation that are above, below, or within 200m of the boundary of a mining operation. Old workings include roadways, voids and goafs.

[2] *HSW reg 213: Plans of mining operation (3)(a), CMA reg 4: Definition of a map (a)*

Term	Definition
Opencast (also commonly known as opencut or open pit)	Defined in *HSW reg 3: Interpretation*, an open cast mining operation is one in which no person works underground.
Operator	In this document the term 'operator' means the person or entity who holds responsibility for the action referenced. This may be • the permit operator, if the operation holds a permit under the Crown Minerals Act 1991, • the permit holder under that Act, or • the entity carrying out those activities, if the operation does not require a permit under that Act.
Permit holder	*Crown Minerals Act 1991 Section 2: Interpretation* *(1) In this Act, unless the context otherwise requires,—* ***permit holder** means the person who is the sole permit participant, or all of the permit participants, as the case may be.*
Permit operator	***Crown Minerals Act 1991*** *Section 27: Permit holder must have a permit operator* *(3) For the purposes of the permit, this Act, and the regulations, the permit operator is responsible, on behalf of the permit holder, for the day-to-day management of activities under the permit.*
Principal hazard	A Principal hazard is defined in *HSW reg 65: Meaning of principal hazard* as any hazard that could create a risk of multiple fatalities in a single accident, or a series of recurring accidents. See Appendix 2: Glossary for the detailed definition provided in the regulations.
Projection (Official Projection)	NZP&M and WorkSafe request that plans be submitted in the official national projection, Transverse Mercator 2000 (NZTM2000). More information about the official projection can be found here: http://www.linz.govt.nz/data/geodetic-system/datums-projections-and-heights/projections/new-zealand-transverse-mercator-2000
Scale	The scale of a map is the ratio of a distance on the map to the corresponding distance on the ground.
Scale bar	Scale bars provide a visual indication of the size of features and distance between features on the map. A scale bar is a line or bar divided into parts and labelled with its ground length, usually in multiples of map units, such as tens of kilometres or hundreds of miles. When a scale bar is added to the layout, it is associated with a map frame and maintains a connection to the map inside of the frame, so even if the map scale changes, the scale bar remains correct.

Term	Definition
Site senior executive (SSE)	*Health and Safety at Work Act 2015 Schedule 3: Health and safety in mining sector.* *1. Interpretation* *In this schedule, -* ***site senior executive** means a worker appointed as the site senior executive by the mine operator* *HSW reg 3: Interpretation* *1. In these regulations, unless the context otherwise requires, -* ***site senior executive—*** *(a) has the meaning given in clause 1 of Schedule 3 of the Act; and* *(b) in relation to a particular mining operation, means the site senior executive for that mining operation*
Suspended	According to *HSW reg 3: Interpretation* a 'suspended' operation is not being worked but has not been abandoned.
Tunnelling operation	According to the *HSW regs, Schedule 3, 1: Interpretation* a tunnelling operation involves the extraction of fill in order to create, enlarge, or extend a tunnel or a shaft. The definition includes the activities as well as the site where the activities are carried out. See Appendix 2: Glossary for the detailed definition provided in the regulations.
Underground mining operation	Defined in *HSW reg 3: Interpretation*, underground mining operation means any mining operation, other than a tunnelling operation, where any person works underground.

3 Plan Preparation Checklists

This section provides checklists to help you confirm that your mine plans meet the regulators' quality standards.

The Acts and regulations do not always use the same wording to define their requirements; however your plans will comply with the mine plan content and presentation requirements of WorkSafe and NZP&M if you follow the guidance in this section and in section 4 Plan content and layers.

Note that plans and other records submitted to NZP&M will be made available for external release (publication) under conditions defined in the Act. See section 1.5 Confidentiality for more information.

3.1 Preparing the plan

3.1.1 Plan creation checklist

Use the following checklist to ensure your plan has been prepared correctly.

Ref	Requirement	✓
PC_01	Responsibility for preparation • Mine and Tunnel plans must be prepared by a mine surveyor. The mine surveyor who prepares the plan must hold a certificate of competence as a mine surveyor or, in the case of an opencast mining operation or tunnelling operation only, be a licenced cadastral surveyor [3] • Plans for coal exploration operations to be submitted to NZP&M can be prepared by the site senior executive. **This is not the case** for coal exploration plans submitted to WorkSafe, which must be prepared by a mine surveyor.	
PC_02	Official datum and projection Plans must be prepared to suitable scale using an official projection based on NZGD2000[4] and the official height datum, NZVD2016. NZP&M and WorkSafe request that NZTM2000 is used for the projection. An official local projection may be used under the following conditions • NZGD2000 is used (see section 3.1.4 Converted Plans Checklist if required) • if any mining operation or tunnel straddles official projection boundaries the operator must commit to a single official projection and height datum for all data submitted under regulation. • The projection and height datum must be recorded on the plan and in the metadata.	
PC_03	Australian Standard for Mine Plans Scale, use of symbols, abbreviations and colours using on the mine plan should comply with the Australian Standard for Mine Plans – Preparation and Symbols (AS-4368) If a symbol is not provided for in AS4368, a suitable symbol should be created and shown in the legend on the plan.	

[3] HSW reg 213: Plans of mining operation (4)
[4] *HSW reg 213: Plans of mining operation (3)(a), CMA reg 4: Definition of a map (a)*

Ref	Requirement	✓
PC_04	Fact vs interpretation • Any feature or detail that is proven or factual should be represented by a solid line on the plan (eg ———————) • Any feature or detail that is an interpretation should be represented by a dash line on the plan (eg – – – – – – – – – –).	
PC_05	The plan should be signed and dated by • the appointed mine surveyor who has authorised the plan, and • the senior official of the operation, such as a mine manager or site senior executive (SSE), who has approved the plan. By signing and dating the plan, the signatories declare that the plan has been prepared in accordance with the HSW regs and the CMA regs, as applicable. Signatures can be applied to pdf documents as follows: • Using the standard PDF signature and timestamp tool to digitally signed and timestamp the plan • The signature and timestamp should be placed at the bottom of the drawing • The signature, name and position of the signatory must all be clearly visible	

3.1.2 Plan explanatory content checklist

Record the following information on the plans. Many of these requirements are defined in *CMA reg 4: Definition of a map (b).*

Ref	Requirement	✓
EC_01	Title and reference information, including • datum and projection (see section 3.1.4 Converted Plans Checklist for additional information required where the plan has been prepared using data that has been transformed to NZGD2000 from a different datum) • a descriptive title • the publisher's name and the place and date of the plan's publication • a legend	
EC_02	The source and currency of any reference, derived, or interpreted data (for example, cadastral, topographic, or photographic data)	
EC_03	Purpose of the plan	
EC_04	A scale that uses an appropriate standard metric representative fraction or a metric graphic bar scale	
EC_05	Direction or compass indicators	
EC_06	Date of creation	

Ref	Requirement	✓
EC_07	Date of submission	
EC_08	Any relevant permit area boundaries	
EC_09	Regulation or regulations submitted under	
EC_10	Owner of the plan (eg the Mine Operator of the mine or tunnel)	
EC_11	Author of the plan	
EC_12	The name of the appointed Mine Surveyor who has signed off on the plan	
EC_13	Any other information that will aid in the relocation of the area to which the map or plan relates.	

Note that plans and other records submitted to NZP&M will be made available for external release (publication) under conditions defined in the Act. See section 1.5 Confidentiality for details.

3.1.3 Plan metadata checklist

Please record the following information in the file metadata.[5]

Note that additional metadata is required if the plans have been converted from an alternative datum (see section 3.1.4 Converted Plans Checklist).

Ref	Requirement	✓
MD_01	Title/Name of the plan	
MD_02	Purpose of the plan	
MD_03	Description of the plan	
MD_04	Scale used to compile the plan	
MD_05	Datum and Projection (See 3.1.4 Converted Plans Checklist for additional information required where the plan has been prepared using data that has been transformed to NZGD2000 from a different datum)	
MD_06	Date of creation	
MD_07	Date of submission	
MD_08	Regulation or regulations submitted under	
MD_09	Owner of the plan (eg the Parent Operator of the mine or tunnel)	
MD_10	Author of the plan	
MD_11	The name of the appointed mine surveyor who has signed off on the plan[6]	

[5] *See AS/NZS ISO 19115.1:2015 Geographic information - metadata*
[6] See *HSW reg 213: Plans of mining operation (4)* for requirements

3.1.4 Converted Plans Checklists

WorkSafe and NZP&M request that plans are submitted using the official national projection, NZTM2000, which is based on NZGD2000.

If the operator is not already using NZTM2000 or an official projection based on NZGD2000, then the plan must be converted to an official projection based on NZGD2000 before being submitted.

Failure to convert to NZGD2000 or a current official projection such as NZTM2000 constitutes an offence under *HSW reg 213: Plans of mining operation (5)*.

The following checklist should be used for any plan where data has been collected under a non-official datum then transformed to NZGD2000.

Transformation parameters checklist

Please provide the information, either on the plan itself or in a covering sheet.

Ref	Requirement	✓
TP_01	The date of transformation	
TP_02	The relationship between • the original grid and height datum used, and • NZTM2000 and the New Zealand Vertical Datum 2016 (NZVD2016)	
TP_03	Notations as to the location of any additional information relevant to the plan, including reference to any datum used[7]	
TP_04	Sufficient points of known coordinates in both the original grid and NZTM to enable the transformation of the plan onto the NZTM grid. The datum reference points should be chosen to give a broad coverage of the mine/tunnel area.	
TP_05	Additional information • fixed calibration points shown on the plan* • date the points were calibrated • translation(s) • a rotation angle • a scale factor	

* The number of calibration points used must be sufficient to ensure an appropriately accurate transformation. The number of points required will vary based on the size of the operation.

Calibration points should be:

- solid and protected survey marks (suitable marks include: iron rods or tubes embedded in a solid concrete foundation or stainless steel survey pins embedded in solid rock)

[7] See section 1.5 Confidentiality for more information.

- sufficiently far removed from the effects of mine subsidence or pit wall movement so that the mark achieves a degree of stability and permanence that is acceptable for the projected lifespan of the mine/tunnel.
- well documented and photographed so that any later reopening or examination of the site can relocate them and confirm the transformation parameters independently.
- These survey marks should be shown on all mine and other site plans.

Transformed plans metadata checklist

If a plan has been transformed, please provide the following metadata in addition to the metadata requested in section 3.1.3 Plan metadata checklist.

Ref	Requirement	✓
TM_01	The datum used for data collection	
TM_02	Any known error limit on this conversion	
TM_03	The tools used for the transformation (including distortion grid)	
TM_04	The date of the transformation	

3.2 File management

Plans must be submitted to NZP&M in digital format[8]. This is also the preferred format for WorkSafe.

3.2.1 File naming convention

All files supplied should comply with the following naming conventions.

Data Type	Naming Convention	Example
Plan	*d_o_p*, where: *d* = **date of the submission:** yyyy 4 digit year mm 2 digit month dd 2 digit day *o* = **operation name** (spaces between names are to be replaced with an underscore (_)) *p* = permit number (where applicable, otherwise blank)	20160331_Huntly_East_37152.pdf 20160601_Private_Operation.pdf In these examples: • 20160331 denotes the 31st March 2016 • 20160601 denotes the 1st of June 2016

[8] *CMA regs schedule 4, part 8: Information required under regulation 38 to be included in annual summary report on mining activities under Tier 1 mining permits (7)*

Data Type	Naming Convention	Example
PDF layer (within the PDF)	*L,* where: *l* = **layer name** (spaces between names are to be replaced with an underscore (_))	Pit_outline See the tables in the submission checklists for suggested names for each type of layer
Mine workings outline	*d_o_p_GIS,* where: *d* = **date of the submission:** *yyyy* 4 digit year *mm* 2 digit month *dd* 2 digit day *o* = **operation name** (spaces between names are to be replaced with an underscore (_)) *p* = **permit number** (where applicable otherwise blank) *GIS* = abbreviation for **G**eographic **I**nformation **S**ystem	20160331_Huntly_East_37152_GIS.shp 20160601_Private_Operation_GIS.shp plus supporting files using same naming convention (with different extensions)
Zip file*	*d_o_p,* where: *d* = **date of the submission:** *yyyy* 4 digit year *mm* 2 digit month *dd* 2 digit day *o* = **operation name** (spaces between names are to be replaced with an underscore (_)) *p* = **permit number** (where applicable otherwise blank)	20160331_Huntly_East_37152.zip 20160601_Private_Operation.zip

*where files are supplied within a zip file

3.2.2 Digital files checklist

Please supply the following. Files under 10MB may be emailed or, in the case of NZP&M, submitted via OPS. All other files must be saved to an external storage device and delivered to the regulator. Please note that storage devices cannot be returned.

Ref	Requirement	✓
DF_01	Plan of the mining operation in one of the following digital formats • 2D layered PDF (*.pdf). Features within the plan are presented as separate layers (see following sections for required layers and content). • Where operators are unable to submit a layered PDF, a standard PDF is acceptable. If a standard PDF is supplied, enough pages must be provided to ensure that all required detail is included and is legible.	

Ref	Requirement	✓
DF_02	Mine workings outline showing the full extent of the mine or tunnel[9], in the following formats • Shape file plus supporting files (*.shp)	
DF_03	Files supplied on one of the following external storage devices* • CD • DVD • USB flash drive • USB hard drive **Please note that storage devices cannot be returned.** *Digital plans less than 10MB in file size can be emailed or, in the case of NZP&M, submitted via OPS.	
DF_04	Please clearly label any supplied media with the following information. This may be provided in a cover sheet or data transmittal. • The particulars of the permit holder / operator • The permit number, if applicable • Submission type (Annual Summary Report, additional information request etc). • A file listing of all files contained on the device • Submission date • Return address and contact details	

3.2.3 Physical plans

Physical copies, that is, plans printed on paper or other material, are not accepted by NZP&M[10]. They are not the preferred format for WorkSafe.

If a physical copy is submitted to WorkSafe, the following is required

- The printed plan must be clear, legible, and to an appropriate scale.
- The plan must be signed and dated by
  - the appointed mine surveyor who authorised the plan
  - the senior official of the mine who approved the plan
- the name and position of the signatory must be clearly marked next to the signature
- All required detail must be clearly displayed. This may require the submission of multiple pages.
- Section 3.3 Supporting information checklist still applies.

[9] *CMA regs schedule 4, part 8: Information required under regulation 38 to be included in annual summary report on mining activities under Tier 1 mining permits (11)(b)*
[10] *CMA regs schedule 4, part 8: Information required under regulation 38 to be included in annual summary report on mining activities under Tier 1 mining permits (7)*

3.3 Supporting information checklist

Please supply the following information with all submissions. This may be provided in a cover sheet.

Ref	Requirement	✓
SI_01	Measurement • The method used to determine the position of the measurement or observation points (including accuracy estimates). • The results obtained (including, for each measurement or observation, the value of it in terms of recognised physical units). • Any interpretations of the data obtained.	
SI_02	Records of data including (if obtained or produced) – • the spatial reference for the data; and • the original observational data; and • if the original data has been processed or corrected, a description of the method of processing or correction sufficient to enable the original observational data to be recovered (see section 3.1.4 Converted Plans Checklist)	
SI_03	Where any layer identified in section 4 Plan content and layers is not shown on the submitted plans: • a list of the layers that have not been included • for each missing layer, an explanation of why it has not been included.	

4 Plan content and layers

4.1 Introduction

This section details the different submissions required under regulations to NZP&M or WorkSafe.

Three submission types are shown:

- **Regulator**, which refers to plans that must be submitted to the regulator.
- **Hold on site**, which refers to plans that must be kept at the site office and be available for inspection at all times at which a mine worker is present at the mining operation. This category only applies to WorkSafe plans[11]
- **Posted**, which refers to plans that must be posted in a manner described in the regulation. This category only applies to WorkSafe plans.

Note that this Guide refers only to the mine plans component of the required submissions. Please check the regulations for more information about other content that may be required.

This section also provides

- the submission calendar for each regulator
- the WorkSafe notice periods and update schedule
- The content required to be shown on the mine plans in each submission

For all categories in the following checklists, operators are required to provide the necessary detail relevant to the operation. Operators are advised to use their judgement; if in doubt, call WorkSafe or NZP&M to discuss **before** submitting the plan.

4.2 Customising the plan for each regulator

This Guide requests that various information groups are provided as separate layers within the PDF plan. To compile the plan, operators have the choice of:

- Providing all layers within one plan to both regulators, or
- Providing a plan with only those layers that are required by the specific regulator.

The tables listed in the following sections indicate which regulator requires the data in each layer. For example, WorkSafe requires details of every known barrier to be provided as a layer within the plan, called "Barriers". Operators are not required to include this layer in the plan submitted to NZP&M, however they may choose to include it.

[11] Note that this Guide does not provide an exhaustive list of records that the operator must retain onsite. For more information see *HSW reg 219: Mining operation records.*

Note that plans and other records submitted to NZP&M will be made available for external release (publication) under conditions defined in the Act. See section 1.5 Confidentiality more information.

4.3 NZP&M Submissions

If the total file size is less than 10MB, plans may be submitted via email or OPS. All other plans must be saved to an external storage device and delivered to NZP&M. Acceptable storage devices include CDs, DVDs, USB flash drives or USB hard drives. Storage devices cannot be returned.

Paper copies are not accepted by NZP&M.

See sections 3.2 File management and 3.3 Supporting information checklist for more information about preparing and submitting your files.

4.3.1 NZP&M contact details

NZP&M's postal address is provided below.

New Zealand Petroleum and Minerals
PO Box 1473
Wellington 6140
New Zealand
Attn: Mine Plans Analyst

NZP&M's physical address for courier services is provided below.

New Zealand Petroleum and Minerals
15 Stout Street
Wellington 6011
New Zealand
Attn: Mine Plans Analyst

Contact NZP&M by phone on

- 0508 263 782 (within New Zealand)
- +64 3 962 6179 (from overseas)

Contact NZP&M by email to nzpam@mbie.govt.nz

4.3.2 NZP&M Submission Calendar

NZP&M mine plan submissions are listed in the table below. There is no regulated update schedule for NZP&M, however the operator must ensure that the plan is current at the time it is submitted.

Ref	Submission Type	Description	Submission Date
NZP&M1	Regulator	**Annual Summary Report**[12] Annual report (including mine plans) on mining activities that have taken place under the permit during that calendar year.	No later than 31 March following the end of each calendar year in which the permit is in force.

4.3.3 NZP&M Checklist – Annual Summary Report

The checklist below provides required layers for NZP&M1 - Annual Summary Report.

Where the requirements in this table have been defined in the regulations they can be located in

- *CMA regs Schedule 4, Part 5 - Additional information required under regulation 33(4)(d) to be included in report of drilling and shaft sinking*
- *CMA regs Schedule 4, Part 8 - Information required under regulation 38 to be included in annual summary report on mining activities under Tier 1 mining permits*

Operators are required to provide the necessary detail relevant to the operation. If in doubt, you must include the information or contact the regulator for clarification **before** submitting the plan. Please provide a list of layers that have been excluded with an explanatory note (see section 3.3 Supporting information checklist).

Additional information can also be provided by the operator and/or requested by NZP&M (section 1.5 Confidentiality discusses the handling of voluntarily-supplied information).

In the following table:

- *Underground* has the meaning provided in the glossary for underground mining operation
- *Opencast* has the meaning provided in the glossary for opencast mining operation
- *Tunnelling* has the meaning provided in the glossary for tunnelling operation

[12] *CMA (Minerals Other than Petroleum) Regulations 2007 reg 38 Annual report on mining activities under Tier 1 mining permits*

Ref	Layer name	Description	Operation Type	✓
L_1	Survey_marks	Control stations and calibration points	All	
L_2	Boreholes Drillholes Shafts	For every borehole/drillhole or shaft, provide: • Elevation • Co-ordinates	All	
L_3	One or more Planned_development Planned_stoping Planned_drilling Planned_resource_extension	Indication of every location at which it is proposed to develop the mining operation with the next 12 months * This can be provided as a separate plan	All	
L_4	Lithological	Major lithological changes	All	
L_5	Timing_planned	Timing and sequence of planned development	All	
L_6	In_ground_resources Inferred_resources Indicated_resource Measured_resource Probable_reserve Proved_reserve	Estimates of total in-ground resources If applicable, extent of: • Inferred resources • Indicated resource • Measured resource • Probable reserve • Proved reserve	All	
L_7	Current_pit_outline	Show current extent of resource extraction: • Pit bottom • Pit shell	Opencast	
L_8	Resource_mined	A summary of mine production for the calendar year, including: • Location • Tonnes • Grade of resource mined (gold) or ash/sulphur content (coal)	All	
L_9	Backfill	Indication of every location where it has been backfilled • Pit shell contours – no greater than 5m intervals	Opencast	
L_10	Current_development	Plan of all surveyed mine workings	Underground	
L_11	Sealed_backfill	Indication of every location that has been sealed or backfilled • Type of seal (e.g explosion proof) Accompany the type of seal with the appropriate symbol (e.g. explosion proof – Type B, C, D or E).	Underground	

Ref	Layer name	Description	Operation Type	✓
L_12	*Layer** * name the layer as appropriate	Any other feature or layer as deemed appropriate or important by the operator / permit holder	All	

4.4 WorkSafe Submissions

WorkSafe's mine plan submissions, updates and penalties for failing to comply are specified in the *Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016.*

If the total file size is less than 10MB, plans may be submitted via email. All other plans must be saved to an external storage device and delivered to WorkSafe. Acceptable storage devices include CDs, DVDs, USB flash drives or USB hard drives. Storage devices cannot be returned.

Physical copies (eg plans printed on paper) may be supplied however this is not the preferred format.

See sections 3.2 File management and 3.3 Supporting information checklist for more information about preparing and submitting your files.

4.4.1 WorkSafe contact details

WorkSafe's postal address is provided below.

WorkSafe New Zealand
PO Box 165
Wellington
New Zealand 6140
Attn: High Hazards Unit - Extractives

WorkSafe's physical address for courier services is provided below.

WorkSafe New Zealand
National Office
Level 6, 86 Customhouse Quay
Wellington 6011
New Zealand
Attn: High Hazards Unit - Extractives

Contact WorkSafe by phone on

- 0800 030 040 (within New Zealand)
- +64 4 897 7699 (overseas)

Contact WorkSafe by email to hhu.extractives@worksafe.govt.nz

4.4.2 WorkSafe Submission Calendar

WorkSafe submissions are listed in the table below.

Ref	Submission Type/s	Description	Submission Date
HHU1	Regulator Hold on site	**Commencement** A plan must be made as at the date of commencement of the mining operation. A copy must be submitted to WorkSafe as soon as practicable after the date of completion. Tunnel construction companies are expected to provide a plan at the commencement of tunnelling operations, prepared by an appointed surveyor; this is the "pre-construction" plan	Date of completion
HHU2	Regulator	**Annual Submission** The current plan must be submitted to WorkSafe at intervals of 12 months from the date of first submission (HHU1)	Every 12 month anniversary of HHU1 submission date
HHU3	Regulator Hold on site	**Significant Change** The updated plan must be submitted to WorkSafe whenever any significant changes are made. A significant change can involve changes to the following: • a mining method, such as changes from a hydro to longwall extraction method • the ventilation system • any change that may affect a principal hazard. This is not an exhaustive list of significant changes. Where there is any doubt, operators must either submit an updated plan or consult with WorkSafe to clarify.	The plan must be updated and submitted to WorkSafe as soon as practicable.
HHU4	Regulator	**Suspension or abandonment** The plan must be updated and submitted to WorkSafe immediately if the operation is suspended or abandoned. Note that, for the purpose of this regulation, a tunnel is considered 'abandoned' once the project is complete. The plan required at this point is the "as-built" plan.	Immediately following the suspension or abandonment of the mining operation.
HHU5	Regulator	**Notice of intention to seal underground coal mining operation** The plan showing proposed seals must be submitted to WorkSafe a minimum of 1 month prior to any action to seal underground coal mining operation	As described in WorkSafe Notice Periods section below.

Ref	Submission Type/s	Description	Submission Date
HHU6	Posted	**Firefighting, rescue and emergency facilities** Up-to-date plan showing firefighting, rescue and emergency facilities must be posted at prominent and secure locations on the surface and underground, where they will be able to • assist any person who may have to escape in an emergency • assist with any rescue operation.	This plan must be kept current.

4.4.3 WorkSafe Notice Periods

The table below explains the notice period (submission date) for HHU5 Intention to seal underground coal mining operation.

Submission	Due date	Regulation
HHU5 Intention to seal underground coal mining operation	All cases except in the case of emergency sealing • Not less than one month before the sealing takes place If the sealing method described in the notice becomes impracticable • Promptly by any method and • Confirm the notice in writing as soon as reasonably practicable Emergency sealing • The site senior executive must notify WorkSafe of the intention to seal the part or the whole of the underground parts of the mining operation • The notice must be confirmed in writing as soon as reasonably practicable	185(2) 187(3)

For further information about this and other notifications, see the WorkSafe website:

http://www.business.govt.nz/worksafe/information-guidance/guidance-by-industry/extractives/notifications/notifications-about-the-operation

4.4.4 WorkSafe Review Calendar

Note that any updates made to the plan may need to be submitted to WorkSafe (see *HHU3 Significant change*).

HHU6 Firefighting, rescue and emergency facilities does not have an update schedule; rather it must be updated immediately if any changes are made to the matters shown.

Ref	Submission Type	Update requirements	Regulation
Rev1	Hold on site (ref HHU3)	**Points of access, exits and refuges review** Parts of the plan that identify points of access, exits, and refuges must be reviewed and, if necessary, updated at least once every 3 months	213(2)(a)
Rev2	Hold on site (ref HHU3)	**Significant change review** The plan must be reviewed and, if necessary, updated whenever there has been a significant modification to the mining operation	213(2)(b)
Rev3	Hold on site (ref HHU3)	**Recommencement review** The plan must be reviewed and, if necessary, updated before mining operations recommence after any suspension of operations	213(2)(c)
Rev4	Hold on site (ref HHU3)	**Six-monthly review** The plan must be reviewed and, if necessary, updated in any case at least every six months.	213(2)(d)
Rev5	Hold on site (ref HHU3)	**Cessation of duties of the mine surveyor** Before permanent cessation of duties of the Mine Surveyor, the mine workings should be surveyed in accordance with this Guide up to the date of cessation of the Mine Surveyor. The Mine Surveyor would show the date of the workings at the time of cessation on these plans in a similar manner to that of the annually submitted Mine Plan.	N/A

4.4.5 Old workings[13]

HSW regs stipulate that the Site Senior Executive must ensure that a suitably qualified and experienced person reviews mine plans (including relevant historical mine or survey plans) of the mining operation. The review must include identifying and locating old workings that may be in the vicinity of the proposed activities to be undertaken at the mining operation. This is to ascertain whether the old workings contain accumulation of any matter that may flow into other workings or locations, including those in a solid, liquid, or gaseous state. Old workings could be located in the working seam or the upper/lower seams or levels.

Where old workings are known, they must be clearly shown on the plan[14] and annotated as to whether they contain water, fill or gas, or have the potential to do so. The annotation should be amended if this initial assessment is updated. If they contain water, the maximum actual or potential hydraulic head of pressure should be taken into account and noted on the plan when establishing the barrier width.

All old survey plans should be treated with caution until their accuracy has been verified. Reasonable efforts should be made to obtain all existing information about old workings and, once obtained, to ensure that they are recorded on the plan in accordance with this Guide.

[13] *HSW reg 73 Consideration of whether inundation and inrush is a principal hazard*
[14] *HSW reg 217 Details to be included in plans 1(e)*

4.4.6 WorkSafe Checklists

Operators are required to provide the necessary detail relevant to the operation for each of the checklists in this section.

If in doubt, you must include the information or contact the regulator for clarification **before** submitting the plan. Please provide a list of layers that have been excluded with an explanatory note (see section 3.3 Supporting information checklist).

Checklist 1 – Commencement, Annual, Significant Change and Suspension or Abandonment

The checklist below provides required layers (where such detail exists for the operation) for the following submissions

- HHU1: Commencement
- HHU2: Annual Submission
- HHU3: Significant Change
- HHU4: Suspension or abandonment

If a requirement listed in this table is defined in the regulations, it will be found in *HSW reg 217 Details to be included in plans.*

Additional information can also be provided by the operator and/or requested by WorkSafe.

In the following table:

- *Underground* has the meaning provided in the glossary for underground mining operation
- *Opencast* has the meaning provided in the glossary for opencast mining operation
- *Tunnelling* has the meaning provided in the glossary for tunnelling operation

Ref	Layer name	Description	Operation Type	✓
L_13	Survey_marks	Control stations and calibration points	All	
L_14	Tenure_boundary_*permit #* Where permit # exists	Tenure boundaries and mining permit boundaries	All	
L_15	Features	Natural features surrounding the operation	All	
L_16	Emergency_facilities	Location of firefighting, rescue, and emergency facilities, including: • Emergency egresses • Changeover stations • Refuges • First-aid stations • Separation distances between shafts	All	

Ref	Layer name	Description	Operation Type	✓
L_17	Communication	Location of every device that provides for oral communication between the underground parts of the mining operation and the surface	All	
L_18	Historic_workings	For every known **old workings**, provide: • Direction • Extent • Location Annotations must • include whether they contain water, fill or gas, or • have the potential to contain water, fill or gas, and • be updated if the initial assessment is updated If old workings contain water or have the potential to do so • the hydraulic head of pressure should be taken into account and noted on the plan when establishing the barrier width.	All	
L_19	Boreholes Drillholes Shafts	For every borehole/drillhole or shaft, provide: • Depth • Orientation • Elevation • Co-ordinates • Angle of inclination and azimuth • Location (collar height relative to mean sea level and to the ground surface (if the hole or shaft is collared to the surface)) For underground workings include • Diameter • Filled/grouted or open and capped • Lined/unlined and lining type Note: The last three points are required to assist Mine Rescue Services to identify or determine: • Suitable boreholes for gas sampling/ temperature readings, cameras and laser scanners • If the boreholes that intersect with underground mine workings were filled/grouted or open • The diameter of the borehole/shaft, which would assist in the use of cameras, laser scanners as the size of the hole is critical in determining the size of the equipment that can be used.	All	

Ref	Layer name	Description	Operation Type	✓
L_20	Barriers	For every known **barrier**, provide: • Purpose • Direction • Extent • Location	All	
L_21	Washout	For every known **washout**, provide: • Direction • Extent • Location	All	
L_22	Water_accumulation	For every known **water accumulation**, provide: • Direction • Extent • Location	All	
L_23	Aquifer	For every known **aquifer**, provide: • Direction • Extent • Location	All	
L_24	Traverse_station	Floor levels and location of every traverse station	All	
L_25	Level Lode	Cross and longitudinal sections of every level and lode	All	
L_26	Electrical	Location of electrical installations, including: • Route and voltage of all conductors (excluding trailing cables) • Position of all major switchgear	All	
L_27	Water_dams Tailings_dams Tip_heads	Water dams, tailing dams, and tip heads	All	
L_28	Traffic_management	Roads and other key features of the traffic management system within the mining operation, for example • Call-up locations • Traffic lights • LV parking areas • HV-only roads • Any other notable feature	All	
L_29	One or more* Planned_development Planned_stoping Planned_drilling Planned_resource_extension	Indication of every location at which it is proposed to develop the mining operation with the next 12 months * This can be provided as a separate plan	All	

Ref	Layer name	Description	Operation Type	✓
L_30	Timing_planned	Timing and sequence of planned development	All	
L_31	Faults	For every known **fault**, provide: • Direction • Extent • Location	All	
L_32	Intrusives	For every known **intrusive dyke**, provide: • Direction • Extent • Location	All	
L_33	Coal_seam_(name if applicable)	For every known **coal seam**, provide: • Angle of dip • Dip direction • Depth of cover • Thickness	All	
L_34	Inrush_control	Location of inrush control zones	All	
L_35	Spontaneous_combustion_locations	Areas where spontaneous combustion has occurred, including sealed areas	All	
L_36	Hydrocarbons	Places where hydrocarbons are stored	All	
L_37	Explosives	Places where explosives are stored	All	
L_38	*Hazards* Please annotate this layer as appropriate	Any other identified hazards present at or close to the mining operation	All	
L_39	Methane *Gas** * where Gas is the name of the detected gas	For tunnelling and underground metalliferous mining operations, everywhere methane has been detected. For tunnelling and all underground mining operations, everywhere other gases have been detected.	Underground Tunnelling	
L_40	Backfill	Indication of every location where it has been backfilled • Pit shell contours – no greater than 5m intervals	Opencast	
L_41	Explosion_zone	Every explosion risk zone	Underground Tunnelling	
L_42	Vent	Horizontal and vertical sections of the ventilation system, including details of: • Direction, course, and volume of air flow • Location and description of every device used to regulate or distribute air	Underground Tunnelling	

Ref	Layer name	Description	Operation Type	✓
L_43	Sealed_backfill	Indication of every location that has been sealed or backfilled • Type of seal (e.g explosion proof) Accompany the type of seal with the appropriate symbol (e.g. explosion proof – Type B, C, D or E).	Underground	
L_44	*Layer** * name the layer as appropriate	Any other feature or layer as deemed appropriate or important by the operator / permit holder	All	

Checklist 2 – Intention to seal underground coal mining operation

The requirements in this table are defined in *HSW reg 185 Notice of intention to seal underground coal mining operation.* Additional information can also be provided by the operator and/or requested by WorkSafe.

The plan showing proposed seals must be submitted to WorkSafe a minimum of 1 month prior to any action to seal underground coal mining operation.

Ref	Layer name	Description	Operation Type	✓
L_45	Survey_marks	Control stations and calibration points	All	
L_46	Seals	The proposed locations of the seals to be installed	Underground	
L_47	*Layer** * name the layer as appropriate	Any other feature or layer as deemed appropriate or important by the operator / permit holder in order to convey the following information (the following must be provided but not necessarily in the mine plan) • the proposed sealing method; and • a summary of hazards identified and how they will be managed; and • any evidence of the presence of an ignition source in a part or the whole of the underground parts of the mining operation; and • predictions of the rates at which methane and other gases will accumulate in the underground parts of the mining operation; and • the gas monitoring procedures to be carried out during and after the sealing.	Underground	

Checklist 3 – Firefighting, rescue and emergency facilities

The requirements in this table are defined in *HSW reg 218 Plan showing firefighting, rescue and emergency facilities to be posted.*

Additional information can also be included by the operator and/or requested by WorkSafe.

Ref	Layer name	Description	Operation Type	✓
L_48	Survey_marks	Control stations and calibration points	All	
L_49	Emergency_facilities	Location of firefighting, rescue, and emergency facilities, including: • Emergency egresses • Changeover stations • Refuges • First-aid stations • Separation distances between shafts	All	

5 Appendix 1: Contact Details

5.1 NZP&M

NZP&M's postal address is provided below.

New Zealand Petroleum and Minerals
PO Box 1473
Wellington 6140
New Zealand
Attn: Mine Plans Advisor

NZP&M's physical address for courier services is provided below.

New Zealand Petroleum and Minerals
15 Stout Street
Wellington 6011
New Zealand
Attn: Mine Plans Advisor

Contact NZP&M by phone on

- 0508 263 782 (within New Zealand)
- +64 3 962 6179 (from overseas)

Contact NZP&M by email to nzpam@mbie.govt.nz

5.2 WorkSafe

WorkSafe's postal address is provided below.

WorkSafe New Zealand
PO Box 165
Wellington
New Zealand 6140
Attn: High Hazards Unit - Extractives

WorkSafe's physical address for courier services is provided below.

WorkSafe New Zealand
National Office
Level 6, 86 Customhouse Quay
Wellington 6011
New Zealand
Attn: High Hazards Unit - Extractives

Contact WorkSafe by phone on

- 0800 030 040 (within New Zealand)
- +64 4 897 7699 (overseas)

Contact WorkSafe by email to hhu.extractives@worksafe.govt.nz

6 Appendix 2: Glossary

The following definitions and terms are used in or are related to the content of this Guide.

Term	Definition
2D layered PDF	Layered pdf files are PDF documents that contain two or more layers within a single page. Layers are common in other graphics files, especially map documents, and provide the ability to overlay different sets of data, maps, images or annotations onto the same area. Layers can be made visible or invisible in any combination, which is a powerful tool for analysing geospatial data, and maps in particular.
3D layered PDF	Three-dimensional Portable Document Format. 3D PDF files enable users to select layers within a diagram and rotate images 360 degrees.
Abandoned	**Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016** *Regulation 3: Interpretation* *(2)* For the purpose of these regulations, abandoned, in relation to the whole or, as the case may be, a part of a mining operation, means: *(a) in relation to a mining operation other than a tunnelling operation:* *(i) that the whole or, as the case may be, the part of the mining operation has been closed or sealed; and* *(ii) that the activities described in clause 2(a) to (c) of Schedule 3 of the Act are no longer being carried out in the whole or, as the case may be, the part of the mining operation and any hazards associated with the carrying out of those activities in that place have been eliminated or isolated; and* *(b) in relation to a tunnelling operation:* *(i) that the tunnel or shaft has been completed or that the whole or, as the case may be, the part of the tunnelling operation has been closed or sealed; and* *(ii) that tunnelling activities are no longer being carried out in the whole or, as the case may be, the part of the tunnelling operation and any hazards associated with the carrying out of those activities in that place have been eliminated or isolated*
Appointed mine surveyor	The mine surveyor who has been appointed under *HSW reg 28: Mine surveyor*.
Borehole	**Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016** *Regulation 3: Interpretation* *Borehole -* *(a) means a hole of any diameter that has been bored or drilled for any purpose (including exploration, quality control, geological investigation, or geotechnical investigation in the mining operation) either from the surface or from an underground location; but* *(b) does not include a drill hole that has been drilled for the purpose of blasting operations.*
Care and maintenance	The processes and conditions imposed on a closed mine site where there is potential to recommence operations at a later date During a care and maintenance phase, production is stopped but the site is managed to ensure it remains in a safe and stable condition.

Term	Definition
CMA	*Crown Minerals Act 1991* The Crown Minerals Act 1991, referred to throughout this document as the CMA, administers the allocation of Crown-owned minerals. NZP&M is responsible for this administration on behalf of the Crown. The Act requires that permit holders must comply with relevant obligations under the Act and the regulations.
CMA regs	*Crown Minerals (Minerals Other than Petroleum) Regulations 2007* These regulations are referred to throughout this document as the CMA regs. They apply to operators of mining activities relating to crown-owned minerals other than petroleum. Note that there are other regulations supporting the CMA, however they are not relevant to this Guide and have not been referenced within.
Datum (Official Datum)	A datum is a particular type of reference system in which coordinates are defined in terms of a specified reference surface. NZGD2000 is the official datum and this must be used to prepare plans submitted to NZP&M or WorkSafe. If data has been collected in a different datum it may be transformed under the conditions provided in this Guide – see 3.1.4 Converted Plans Checklist.
GIS	Geographic information system (GIS) GIS is a system designed to capture, store, manipulate, analyse, manage, and present all types of spatial or geographical data
The Guide	This document. The full title is The Guide to Completing and Submitting Plans for Mines and Tunnels.
Height datum (official height datum)	The height or depth of a reference point is its distance above or below a reference surface, which is the vertical datum (or height datum). Mine plans should be prepared using NZVD2016.
HSWA 2015	*Health and Safety at Work Act 2015* The Health and Safety at Work Act 2015, referred to throughout this document as the HSWA 2015, applies to workplaces including mining, tunnelling and exploration operations.
HSW regs	*Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016* These regulations are referred to throughout this document as the HSW regs. These regulations apply to all mining operations, including private, tunnelling and coal exploration. Note that there are other regulations supporting the HSWA 2015, however they are not relevant to this Guide and have not been referenced within.
Inundation and Inrush	**Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016** *Regulation 72: Inundation and Inrush* 1. *In these regulations, inundation and inrush refers to the sudden and unplanned entry into workings of a mining operation of liquid, gas, or other materials or substances.*
Local grid system, Local mine grid	A Local Mine Grid is a local grid specific to the mine which creates and uses it and has a definite scale, rotation and translation offset from a geodetic or national grid. Typically the mine grid is aligned with the main axis of the ore body.

Term	Definition
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*
Local Circuit (1949 Datum)	The Local Circuit (1949 Datum) coordinate system is based on New Zealand being divided into 29 local circuits, with each circuit having an Initial Point (based on a Trig Station) which is assigned false origin coordinates of 300000 easting and 700000 north. This was designed to remove the need to deal with westings and southings, as was the case in the Old Cadastral system. Hence the coordinates of points are unique only to the circuit in which they are located.
Mine manager	The Mine manager is the person appointed under HSW reg 13 to manage the mining operation and supervise the health and safety aspects of the mining operation on every day on which any mine worker is at work. **Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016** *Regulation 13: Manager of mining operation* *1. The mine operator of a mining operation must appoint a person to-* *(a) manage the mining operation; and* *(b) supervise the health and safety aspects of the mining operation on every day on which any mine worker is at work.*
Mine surveyor	This term is defined in *HSW reg 28: Mine surveyor*. In summary, a mine surveyor must be appointed by the site senior executive for any underground mining operation or tunnelling operation. The mine surveyor for an underground mining operation must hold a current certificate of competence as a mine surveyor. The mine surveyor for a tunnelling or opencast mining operation must hold a current certificate of competence as a mine surveyor or be a licensed cadastral surveyor. Unless expressly authorised by WorkSafe, no underground mining operation or tunnelling operation may operate for longer than 28 days without a person holding the position of mine surveyor. This definition also applies to appointed mine surveyor.

Term	Definition
Mine plan, plan, map	In this document, 'mine plan' and 'plan' refers to both mine plans and tunnel plans. 'Mine plan' is defined in the CMA regs as part of the definition provided for 'map'. **Crown Minerals (Minerals other than Petroleum) Regulations 2007** *Regulation 4: Definition of map* *In these regulations, unless the context otherwise requires, map,—* *(b) in any other case, means a map or plan that includes—* *(i) a graticule relating to the co-ordinates used; and* *(ii) a scale that uses an appropriate standard metric representative fraction or a metric graphic bar scale; and* *(iii) direction or compass indicators; and* *(iv) title and reference information, including—* *(A) a note identifying the datum and projection used for the map or plan; and* *(B) a descriptive title; and* *(C) the publisher's name and the place and date of the map's or plan's publication; and* *(D) the source and currency of any reference, derived, or interpreted data (for example,* *(E) cadastral, topographic, or photographic data); and* *(F) a legend; and* *(v) any relevant permit area boundaries; and* *(vi) any other information that will aid in the relocation of the area to which the map or plan relates.* Further detail is provided throughout both sets of regulations via instructions for information to include on the plan (or map). These instructions are detailed in this Guide in section 4 Plan content and layers.

Term	Definition
Mining Operation (HSWA 2015)	This term is defined in the Health and Safety at Work Act 2015 and in the Crown Minerals Act 1991. The definition provided here is from the HSWA 2015. **Health and Safety at Work Act 2015** *Schedule 3: Health and safety in mining sector.* *Part 1: General provisions.* *1. Interpretation* *In this schedule, -* ***Alluvial mining operation** means a mining operation carried out above ground and associated with—* *(a) the extraction of gold from river deposits of sand or gravel:* *(b) the extraction of ironsand from sand or gravel* *2. Meaning of mining operation* *In this schedule, **mining operation** -* *(a) means the extraction of coal and minerals and the place at which the extraction is carried out; and* *(b) includes any of the following activities and the place at which they are carried out:* *(i) exploring for coal:* *(ii) mining for coal or minerals:* *(iii) processing coal or minerals associated with a mine:* *(iv) producing or maintaining tailings, spoil heaps, and waste dumps:* *(v) the excavation, removal, handling, transport, and storage of coal, minerals, substances, contaminants, and wastes at the place where the activities described in subparagraphs (i) to (iv) are carried out:* *(vi) the construction, operation, maintenance, and removal of plant and buildings at the place where the activities described in subparagraphs (i) to (iv) are carried out:* *(vii) preparatory, maintenance, and repair activities associated with the activities described in subparagraphs (i) to (iv); and* *(c) includes—* *(i) a tourist mining operation:* *(ii) a tunnelling operation; but* *(d) does not include—* *(i) exploring for minerals:* *(ii) an alluvial mining operation:* *(iii) a mining operation wholly on or under the seabed on the seaward side of the mean high-water mark:* *(iv) a quarrying operation.*

Term	Definition
Mining Operation (CMA 1991)	This term is defined in the Health and Safety at Work Act 2015 and in the Crown Minerals Act 1991. The definition provided here is from the CMA 1991. **Crown Minerals Act 1991** *Section 2: Interpretation* *(1) In this Act, unless the context otherwise requires,—* **Mining operations –** *(a) means operations in connection with mining, exploring, or prospecting for any Crown owned mineral; and* *(b) includes, when carried out at or near the site where the mining, exploration, or prospecting is undertaken,—* *(i) the extraction, transport, treatment, processing, and separation of any mineral or chemical substance from the mineral; and* *(ii) the construction, maintenance, and operation of any works, structures and other land improvements, and of any related machinery and equipment connected with the operations; and* *(iii) the removal of overburden by mechanical or other means, and the stacking, deposit, storage, and treatment of any substance considered to contain any mineral; and* *(iv) the deposit or discharge of any mineral, material, debris, tailings, refuse, or wastewater produced from or consequent on the operations; and* *(v) the doing of all lawful acts incidental or conducive to the operations; and* *(c) includes any activities relating to the injection into and extraction of petroleum from an underground gas storage facility*
NZGD2000	New Zealand Geodetic Datum 2000. NZGD2000 is the official datum used to define the positions of points in New Zealand. It relates the physical location of a point with a coordinate in terms of latitude, longitude, and ellipsoidal height. Plans submitted to the regulators must be prepared using, or be converted to, NZGD2000[15]. http://www.linz.govt.nz/data/geodetic-system/datums-projections-and-heights/geodetic-datums/new-zealand-geodetic-datum-200-0
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.
NZTM2000	New Zealand Transverse Mercator 2000 In 2001, Land Information New Zealand (LINZ) adopted New Zealand Transverse Mercator (NZTM or NZTM2000) as the official projection for general mapping in New Zealand. http://www.linz.govt.nz/data/geodetic-system/datums-projections-and-heights/projections/new-zealand-transverse-mercator-2000

[15] *HSW reg 213: Plans of mining operation (3)(a), CMA reg 4: Definition of a map (a)*

Term	Definition
NZVD2016	New Zealand Vertical Datum 2016 NZVD2016 is defined by the NZGeoid2016 geoid. Heights in terms of NZVD2016 are in the normal-orthometric height system. The NZVD2016 datum covers the New Zealand continental shelf area between 160°E –170°W and 25°S – 60°S. The datum also defines relationship grids that enable heights to be consistently transformed from the 13 existing major LVD to NZVD2016 (and also NZGD2000 ellipsoidal heights if required). The values in the LVD relationship grids vary with horizontal position. NZVD2016 is consistent with NZGD2000. This means that normal-orthometric NZVD2016 heights can be transformed to ellipsoidal NZGD2000 heights and vice versa. http://www.linz.govt.nz/data/geodetic-system/datums-projections-and-heights/vertical-datums/new-zealand-vertical-datum-2016-nzvd2016
Old workings	**Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016** *Regulation 3: Interpretation* *1. In these regulations, unless the context otherwise requires, -* **Old workings** in relation to a mining operation, (mining operation A)— *(a) means the workings or any part of the workings of an abandoned or a suspended mining operation that are above, below, or within 200 metres of the boundary of mining operation A; and* *(b) includes roadways, voids, and goafs that were created as part of the abandoned or suspended mining operation*
Opencast (also commonly known as opencut or open pit)	Defined in *HSW reg 3: Interpretation*, an open cast mining operation is one in which no person works underground.
Operator	In this document the term 'operator' means the person or entity who holds responsibility for the action referenced. This may be • the permit operator, if the operation holds a permit under the Crown Minerals Act 1991, • the permit holder under that Act, or • the entity carrying out those activities, if the operation does not require a permit under that Act.
Permit holder	**Crown Minerals Act 1991** *Section 2: Interpretation* *(1) In this Act, unless the context otherwise requires,—* ***permit holder** means the person who is the sole permit participant, or all of the permit participants, as the case may be.*
Permit operator	**Crown Minerals Act 1991** *Section 27: Permit holder must have a permit operator* *(3) For the purposes of the permit, this Act, and the regulations, the permit operator is responsible, on behalf of the permit holder, for the day-to-day management of activities under the permit.*

Term	Definition
Principal hazard	**Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016** *Part 4: Principal hazard management plans* *Regulation 65: Meaning of principal hazard* *In these regulations, principal hazard means—* *(a) any hazard arising at any mining operation that could create a risk of multiple fatalities in a single accident or a series of recurring accidents at the mining operation in relation to any of the following:* *(i) ground or strata instability:* *(ii) inundation and inrush of any substance:* *(iii) mine shafts and winding systems:* *(iv) roads and other vehicle operating areas:* *(v) tips, ponds, and voids:* *(vi) air quality:* *(vii) fire or explosion:* *(viii) explosives:* *(ix) gas outbursts:* *(x) spontaneous combustion in underground coal mining operations; and* *(b) any other hazard at the mining operation that has been identified by the site senior executive under regulation 66 as a hazard that could create a risk of multiple fatalities in a single accident, or a series of recurring accidents at the mining operation.*
Projection (Official Projection)	NZP&M and WorkSafe request that plans be prepared using the official national projection, Transverse Mercator 2000 (NZTM2000). More information about the official projection can be found here: http://www.linz.govt.nz/data/geodetic-system/datums-projections-and-heights/projections/new-zealand-transverse-mercator-2000
Scale	The scale of a map is the ratio of a distance on the map to the corresponding distance on the ground.
Scale bar	Scale bars provide a visual indication of the size of features and distance between features on the map. A scale bar is a line or bar divided into parts and labelled with its ground length, usually in multiples of map units, such as tens of kilometres or hundreds of miles. When a scale bar is added to the layout, it is associated with a map frame and maintains a connection to the map inside of the frame, so even if the map scale changes, the scale bar remains correct.

Term	Definition
Site senior executive (SSE)	**Health and Safety at Work Act 2015** *Schedule 3: Health and safety in mining sector.* *2. Interpretation* *In this schedule, -* ***site senior executive** means a worker appointed as the site senior executive by the mine operator* **Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016** *Regulation 3: Interpretation* *3. In these regulations, unless the context otherwise requires, -* ***site senior executive—*** *(a) has the meaning given in clause 1 of Schedule 3 of the Act; and* *(b) in relation to a particular mining operation, means the site senior executive for that mining operation*
Suspended	**Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016** *Regulation 3: Interpretation* *1. In these regulations, unless the context otherwise requires, -* **suspended** means,— *(a) in relation to a mining operation other than a tunnelling operation, that the activities listed in clause 2(a) and (b) of Schedule 3 of the Act are, for the time being, not being carried out, but the mining operation has not been abandoned; and* *(b) in relation to a tunnelling operation, that tunnelling activities are, for the time being, not being carried out, but the tunnelling operation has not been abandoned*
Tunnelling operation	**Health and Safety at Work Act 2015** *Schedule 3: Health and safety in mining sector.* *2. Meaning of tunnelling operation* *In this schedule, **tunnelling operation –*** *(a) means an operation involving extraction of fill with the purpose of creating a tunnel or shaft or enlarging or extending any tunnel or shaft; and* *(b) includes the place where an operation described in paragraph (a) is carried out; but* *(c) excludes any tunnelling operation of a kind declared under clause 5 not to be a tunnelling operation.* *3. Regulations excluding tunnelling operations from clause 4* *The Governor-General may, by Order in Council made on the recommendation of the Minister, make regulations declaring that certain operations or classes of operation are not tunnelling operations for the purposes of clause 4.*
Underground mining operation	Defined in *HSW reg 3: Interpretation*, underground mining operation means any mining operation, other than a tunnelling operation, where any person works underground.