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Data Delivery Address

Data Submission:

Postal address

New Zealand Petroleum & Minerals
PO Box 1473
Wellington, 6140
New Zealand

Street address

25 The Terrace
Te Puāwai o te Aroha – Pastoral House
Wellington
New Zealand

If data submission file size is less than 20 MB it can be emailed as an attachment to data.submissions@mbie.govt.nz Subject: Data Submission

Freephone (Within New Zealand): 0508 263 782

International Calls: +64 3 962 6179

Facsimile: +64 4 471 0187

Email: nzpam@mbie.govt.nz

Website: www.nzpam.govt.nz

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Authorised by: Richard Garlick, Manager Information Services

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1. Background

The minerals exploration industry in New Zealand generates a vast amount of geoscientific and resource information each year. The Ministry of Business, Innovation and Employment operating under the external brand New Zealand Petroleum & Minerals (**NZP&M**) is responsible for the collection, preservation and dissemination of all statutory information submitted by permit holders. This duty makes a significant contribution to promoting effective and efficient mineral exploration.

Acknowledgement: *Much of the technical information in this document is sourced from guidelines produced by the Australian Government Geoscience Information Committee (GGIC, formerly GGIPAC), Tasmanian and Northern Territory Governments reporting guidelines. The GGIC have developed a National Standard in regards to mineral and petroleum exploration reporting. These standards include guidelines in relation to the submission of digital data for mineral and coal related exploration datasets.*

2. Legislation

Statutory information is required to be reported in accordance with [Section 90](#) of the [Crown Minerals Act 1991 \(CMA 1991\)](#) (Amended on 4th April 2016) and the [Crown Minerals \(Minerals Other than Petroleum\) Regulations 2007 \(CMMR 2007\)](#) (Amended on 24th May 2013).

[Schedule 4](#) of the CMMR 2007 sets out the information that is to be included in reports on surveys undertaken in respect of prospecting, exploration or mining permits.

[Section 97A](#) of the CMA 1991 states that the chief executive may prescribe the form and electronic format of any documents if not otherwise prescribed in regulations.

The purpose of this document is to set out:

- NZP&M's expectations for the content of technical report submissions.
- information that is required under Schedule 4 CMMR 2007; and
- the form and electronic format of any documents not otherwise prescribed in regulations made under the Act, as prescribed for the purposes of section 97A;

The document does this by providing technical reporting guidelines, a list of acceptable data formats as well as prescribed templates including a report cover page to ensure all critical data and its associated metadata are captured.

By doing this, the document achieves three broad objectives, being to:

- maximise the amount of digital data submitted to New Zealand Petroleum & Minerals;
- maximise the usefulness of statutory digital data released to open file; and
- minimise the costs associated with acceptance, storage and release of submitted information.

3. Technical Report Availability

The confidentiality period of reports and associated data submitted for work carried out within a permit by a permit holder is prescribed in the CMA 1991. All material becomes publicly available when this confidentiality period expires and can be freely accessed by the public through the [NZP&M's Online Exploration Database](#) thus ensuring that exploration efforts are not duplicated and new models can be developed on the basis of earlier data.

Historic paper based collections have been scanned and made available to download via our exploration database.

4. Submission Requirements

NZP&M requires all submissions to be made in **digital format only** and recommend following these guidelines. This will enable critical information and metadata be captured into appropriate structured databases thereby making them searchable with maximum flexibility for users.

All reports submitted to NZP&M must cover the exploration, mining and other technical work undertaken within the permit area. The permit holder is required to comply with [statutory reporting requirements](#), even if the permit is being operated or managed by another party. Reports on separate activities (e.g. ore reserve statements, feasibility studies, geochemical analysis) prepared by consultants or bodies other than the permit holder, must be submitted as appendices to the annual report. Reports must be submitted in the English language only.

NOTE: Reports that do not comply with the law, including as clarified in this document, will be rejected. Failure to supply a compliant submission by the reporting due date be recorded as 'late', while further failure to supply a compliant submission will lead to non-compliance in respect to this obligation.

4.1. Reporting Types

The Regulations require permit holders to provide to NZP&M, all technical reports and records of any prospecting, exploration or mining activities created in the immediately preceding permit year. Detailed requirements are set out in the Regulations, which complement the reporting requirements for permit work programmes, so that all reports and records created in addition to those specifically required by permit conditions must also be submitted. [Table 1](#) outlines the types of reports required to be submitted under statutory obligations and their due date.

More details on reporting requirements can be obtained [here](#).

Table 1: Reporting requirements, statutory obligations and report submission dates.

Report type	Reporting format	Statutory obligation	Submission due date
Annual report (and data)	As specified in Section 4.2 of this document	Regulations 33, Schedule 4 Part1 – Part5 of the CMMR 2007 as applicable Section 90 (2) of CMA 1991	Within 40 working days following the anniversary date of commencement of the permit
Partial surrender or relinquishment report (and data)	As specified in Section 4.2 of this document	Regulations 40 (1) and 42 (Partial Surrender) of CMMR 2007 Sections 35A, 35B and 35C of CMA 1991 (Relinquishment of and following the grant of an appraisal extension of duration)	Within 40 working days from the date of the partial surrender or relinquishment
Report type	Reporting format	Statutory obligation	Submission due date
End of permit term report (Final report / Surrender report) (and data)	As specified in Section 4.2 of this document	Regulation 40 (Surrender/Expiry) of CMMR 2007 and section 40 of the CMA 1991 Regulation 41 of CMMR 2007 and Section 39 of CMA 1991 (Revocation)	Within 40 working days from the end of permit term.
Core facility sampling report (and data)	As specified in Section 4.2.3.13 of this document	Terms and Conditions for Sampling at the Core Store	On the analysis and return of any samples, residues or thin sections within 6 months of initial removal of the samples from the core store.

4.2. Technical report format

This section sets out the form for technical reports that has been prescribed under section 97A of the CMA 1991.

All digital text based reports of any kind should retain a well-established structure and must include the following information:

- a title and contents pages
- an abstract;
- a body of text structured under meaningful headings;
- a conclusion and if appropriate recommendations for further work;
- references and appendices as appropriate; and
- data sets structured and formatted as specified in Appendix 1.

The report should be bookmarked to reflect the contents page/pages and to assist navigation

through the document.

4.2.1. Title Page

A PDF form is now supplied to standardise the title page of a report and is included in this document as [Appendix 3](#). All fields in that form are mandatory and the title page should be combined with the main technical report into a single PDF. If combining the two documents is not possible ensure that the title page is supplied as a separate document along with the report submission.

Within that form:

- The title of the report should include:
 - the report type using specific terms “Annual”, “Partial relinquishment”, “Final surrender”, “Annual and Final “, “Core facility sampling report”
 - the title and project names as appropriate
- For commodities, regions, coal fields and report types entries, we recommend using the parameters provided in the [Appendix 4](#) as they serve as keywords for searching technical reports within the NZP&M Online Exploration Database.

Contents Page

A detailed contents page should include:

- all individual sections of the report;
- all figures, tables and plates;
- all plans, maps, figures and any other attachments; and
- any appendices such as additional reports and tabular data.

Note: *Copies of journal extracts or any published items should only be included if the author owns the copyright for the work. Otherwise copyright-protected material should be fully referenced with standard bibliographic information.*

4.2.2. Abstract

The summary must include details on the permit operator name and the permit number, its regional location, prospect name (if applicable), reporting period, exploration rationale, exploration activities completed during the reporting period and the main results and conclusions.

It should clearly quantify the work undertaken, e.g. the wording should be “Drilling programme consisted of 5 RC holes for 1600 m”. Aerial geophysical surveys must be described with the total line kilometres, line spacing and flying height specified. Where data relevant to the report has been submitted previously, for example airborne geophysical data, this must be explicitly stated in the abstract. The results of any completed surveys can be included in the abstract in plain English. Partial relinquishment and final reports must clearly state why the area is no longer being retained by the permit operator.

4.2.3. Body of text

The report must be as comprehensive as possible and must detail the work undertaken during the reporting period in sufficient detail to substantiate expenditure claims. Such work may include, but is not limited to, literature studies, remote sensing, geological mapping, petrological studies, isotopic studies, age dating, microprobe work, geophysical surveys, reprocessing of data, drilling, costeaning, surface geochemical surveys, underground investigations, and determining ore resources and reserves. Geotechnical work may include,

but is not limited to, topographic surveys, rock quality designation, geomechanical logging and other engineering studies, metallurgical testing, sterilisation drilling, drilling bore fields, hydrogeological studies, metallurgical and mineral processing studies, mining feasibility, mine design studies, pilot plant testing, marketing studies etc.

The report submissions must comply with Part 3 Regulations 33 & 34 or 40 / 41 / 42 (whichever applies) of CMMR 2007 and the report content must comply with Parts 1 to 9 (whichever applies) of the Schedule 4 of CMMR 2007.

Please refer to [Section 4.3](#) for guidelines on submitting reports and their associated data collected under various survey obligations

4.2.3.1. Photographs other than those in the body of the text

Submissions of outcrop, mine face and core photographs are encouraged. These must be high-quality colour photos and must clearly be labelled so as to be able to relocate the material photographed. Photographs of core both wet and dry are encouraged.

For core photographs, no more than two core trays per photograph are encouraged.

4.2.4. Conclusion and recommendations

This section summarises and discusses the significant findings and interpretation of results obtained. This should be done in the context of exploration rationale, mine planning or future mining as appropriate. If a work programme for the next reporting period is proposed, this needs to be briefly described here along with any other recommendations for further work. If no further work is planned, the reasons need to be stated. Any plans for partial or complete surrender or change of tenure should be described.

4.2.5. References

References should be cited. References to previous technical reports should include the relevant mineral or coal report numbers (MRXXXX or CRXXXX) assigned by NZP&M and should adhere to the following format.

Author/Operator, Year. Title. NZP&M, Ministry of Business, Innovation & Employment (MBIE), New Zealand, Unpublished Mineral/Coal Report MRXXXX/CRXXXX.

4.3 REPORTING GUIDELINES FOR SUBMISSION

Section 90 of the CMA 1991 requires each permit holder to keep detailed record and reports of all prospecting, exploration and mining activities conducted in accordance with the permit and the regulations, and to provide a copy of those records and reports to the chief executive.

This section provides guidelines for preparation of those records and reports. The guidelines represent NZP&M's expectations for the records and reports, based on the most common survey methods used in mineral exploration, consistent with industry best practice. The guidelines have been compiled based on recently revised international reporting standards and the increasing uptake of emerging technologies and tools in the exploration industry. They also include other information that is not specifically noted in [Part 1 to 9 of Schedule 4 of CMMR2007](#).

4.3.1. Location, title history, physiography and access

This section should include discussion of permit location, general physiography, permit grant date and details on any corporate dealings e.g. transfers or joint venture agreements.

All reports should include a scaled map detailing the permit boundaries. Any partial relinquishments of lands must be stated and the report must contain a scaled map showing the area(s) relinquished in relation to the area retained.

4.3.2. Geological setting, exploration /mining history and exploration rationale

The geological setting should be described in both regional and local context and named occurrences, prospects or mines are to be located on a map. Any relevant historical exploration and mining history should also be described.

For greenfield exploration, describe the exploration philosophy, generic, genetic, conceptual or exploration models, targeting criteria (e.g. minimum target size and/or grade), the locations of known exploration targets, and exploration rationale. In the case of brownfields exploration, the philosophy behind the work (e.g. testing the lateral continuation of an orebody) must be stated.

4.3.3. Exploration index map

All reports must contain a scaled location map showing sample points and surveys in relation to the permit boundary.

4.3.4. Geological activities and desktop studies

Any literature searches should be demonstrated by the inclusion of a list of the references consulted. References to previous company reports should include NZP&M's MR/CR report numbers. Maps, GIS datasets, images or 3D models showing the results of all interpretations of existing data or reprocessed data (e.g. images of gravity and interpreted faults) must be provided.

Any area mapped geologically must be shown on a located, scaled map in relation to the permit. The geological maps must be provided digitally at an appropriate scale, with a legend and accompanied by a discussion of the results. Geological maps must distinguish between geological 'fact' and interpretation by symbol or by separate maps. Other examples of geological work include structural studies, petrographic or petrological description.

4.3.5. Remote sensing

Briefly describe the intention of the survey or the purchased dataset (e.g. LANDSAT, airborne multispectral surveys, TMI, Bouguer images or radar) and its specifications. Describe the results and interpretations. Images produced should be submitted as a georeferenced digital file (see [Section 4.3](#)).

LiDAR data must be presented as both original basic data (e.g. .las files) and as processed data (e.g. DTM rasters).

NOTE: The submission of images does not exempt permit operators from submission of the data from which the images were derived.

4.3.6. Geophysical activities (other than seismic)

This section should quantify the geophysical exploration or interpretation undertaken. The following information should be provided:

- a location plan which shows the boundaries of the data acquisition in GIS data format;

- an acquisition report stating all pertinent and quantitative survey details (such as line km flown, elevation, line number, sample position, terrain clearance, type of aircraft used, geophones spacing, line and tie lines spacing, instrument details etc.) must be included ;
- transverse lines, and station intervals on lines, should be presented on maps showing geographic features together with significant cultural features which may affect results (e.g. power lines);
- if a field note book is used for ground based geophysical surveys, it must be appended;
- discussion of what constitutes an anomaly; and how anomalies relate to geochemistry, geology and drilling results and also how anomalies are used as a drill target for future drill programmes should be stated;
- a processing report must also be submitted detailing each processing step taken including all corrections and filters applied;
- interpretations of results, including a selection of key profiles and plans;
- all digital data (both processed and unprocessed data) should be in accordance with ASEG – GDF2 or GFX technical standards as appropriate. Should the ASEG format be inappropriate for a particular survey type, the digital data should be delivered in a format complying with those listed in Table 4 and/or in data templates provided as appendix in this document;
- all original data files provided to the permit holder by the contractor;
- data should be presented both as original basic data (tabulated, line profiles) and as processed data;
- data on each medium should be free from error.
- gravity surveys are to include details of position (NZTM preferred), elevation and observed gravity for each station; and
- All drift/diurnal/tie corrections should have been made and location and geophysical data merged.

NOTE: Although the text templates are designed for capturing geochemical metadata and data, the same format can be used for any geological or geophysical ASCII data too.

4.3.7. Geochemical activities

Describe geochemical investigations undertaken, programme rationale, results and their relationship to other components of the exploration programme. These must be described in sufficient detail and in a format to allow the results to be reproduced or reinterpreted.

NOTE: Geochemical data, with survey details, standards and blanks information must be submitted in the appropriate templates (See [Appendices 1 and 2](#))

The following information is to be provided in the description of geochemical investigations:

- the types of surveys, e.g. rock chip, stream sediment sampling, soil sampling, isotopic age dating, microprobe analysis etc., must be quantified;
- the programme rationale and survey design parameters e.g. general location, determining the number of samples, sample depth, sample spacing or grid orientation as well as, sampling procedures such as sample weight, method of collection, and sample type;
- a brief written statement of the sample preparation, such as sieving and the size fraction analysed, any concentration of sample (e.g. heavy mineral separation, magnetic or non-magnetic fraction, panned concentrate); and
- a description of analytical procedures, including:

- name of analytical laboratory;
 - analytical method and code, limits of detection;
 - method of extraction/digestion, where applicable;
 - values for repeat samples and standards.
- a list or table of elements, oxides, isotopes etc. analysed or other work undertaken;
- details of quality control including the use of blanks and duplicates as appropriate;
- advanced data processing and/or methods employed along with their associated processed data(e.g. gridded and contoured);
- geological interpretation of the results and methods employed (statistical techniques used, parameters used to define threshold and/or background), highlighting and quantifying anomalous values, areas etc.; and
- sample locations (with sample numbers) on plans shown in relation to relevant geological and cultural features.

4.3.8. Drilling

Description of drilling activities should include a statement on the aim and targets for the drilling programme and a summary of all drilling work undertaken (including any drill-holes in progress at the time of submission). This section of the report must also include a scaled map or plan showing drill collars in relation to the permit boundary and graphic cross sections. All digital data including drill-hole locations, orientation surveys, and assay results must be provided in the appropriate format using templates (See [Appendix 1](#)).

The following information must be included in the description of drill programmes:

- a typed cover sheet for each drill hole with details of:
 - the type of drilling (e.g. percussion/diamond coring/reverse circulation), drill rig and drilling company;
 - co-ordinates, survey method and accuracy, grid reference and collar elevation for each drill-holes;
 - orientation of the drill hole (declination and direction at collar, and the results of, and instruments used in, any downhole surveys); and
 - a very brief summary log, including significant assay results.
- a detailed geological log of the core, cuttings, etc. in SI units, and the name of the geologist who logged the core;
- details of any drilling difficulties recorded: collar blowout, lost circulation, broken ground or instrument, major water inflow etc;
- full results of any downhole geophysical logging, including raw data (e.g. LAS file of gamma logs, DLIS files etc.);
- details of any samples taken, sampling procedure, its rationale and full results of testing of the samples (geochemical, petrological, geophysical, metallurgical, etc.);
- full results of any drill core logging, including raw data (e.g. hyperspectral or Petrophysical);
- the physical location of drill core and cuttings at the time the report was written and also the location (and ownership) of the same following completion of the current drilling programme; and
- any photos taken of drill core, as specified in [Section 4.2.6](#)

Include a summary table of all drilling during the reporting period, and significant intersections as per the following examples. Ensure that all drill-hole numbers are shown on plans.

Table 2. Summary drilling table example

Hole type	Hole number range	No of holes	Total metres
RAB	OMGRAB 21-30	10	324
RC	GCRC 1-2	2	122
Diamond	OPLDDH 18-23	5	200
Grand Total	-	17	646

Table 3. Significant intersections summary table example

Sample			Location			Drilling sample statistics (intersection thickness / true thickness)			
Hole no.	Hole dip	Hole azimuth	NZTM East (m)	NZTM North (m)	Sample interval (m)	Significant intersections		Total depth (m)	Comments
						From (m)	Cut-offs: 0.5 g/t Au, 5 g/t Ag		
CHRC 2	60	180	4977480	1395094.5	0.5	20	3m at 3.4 g/t Au	60	Quartz Vein from 18 m to 24 m (intersection thickness)
OPLDDH 21	55	200	4977530	1395481.9	1	45	4m at 4.1 g/t Au	286	High sulphide zone from 46 m to 69 m (true thickness)

NOTE: In the event that it is impractical to list all significant intercepts then list the best intersections giving the selection criteria, such as >5m and >1 g/t Au.

[Appendix 2](#) provides examples of tabular data associated with the submission of drilling and downhole analytical data.

4.3.9. Trenching, Costeaming, Pitting or bulk sampling

Describe the activity undertaken, the rationale of the programme and results along with the spatial distribution of the activity on a plan shown in relation to relevant features (e.g. permit boundary, geological formations etc.). These must be described in sufficient detail and in a format to allow the results to be reinterpreted.

The following information must be provided in the description of the report:

- the co-ordinates of the trenches, pits, bulk samples etc. along with their co-ordinate systems used.
- the location within the trench or pit of the spot or channel samples collected;
- for pits and costeaming – the dimensions and depth details;
- for trenches – the depth, length and direction/bearing/azimuth of the trench;
- for bulk sampling – the size of the sample;
- for channel sampling – the interval width details;
- the geological description of all formations exposed with a mention of units assayed if any;
- the assay results of sample or grade of mineral per bank cubic metre of alluvial material;
- the assaying methods used e.g. for alluvial gold – the type of test screen used;
- the size/volume of the material assayed; and
- an interpretation of the data collected and the conclusions reached;

4.3.10. Geotechnical Studies

All geotechnical work should be quantified in the body of the report. The spatial distribution of such studies or samples must be shown on a map in relation to the permit boundaries. Separate detailed studies should be appended and all data must be provided digitally in an acceptable formats.

4.3.11. Ore resources and reserves

Ore reserves and/or resource estimations are to be reported in full (including the method(s) used for calculating ore reserves) together with plans and section showing ore blocks and ore outlines, and included as separate appendices or volume to the technical reports. Major revisions of mineral resources or ore reserves should also be reported in full. However, annual updates and minor revisions of resource or reserve estimates may be provided in the Annual Summary and Expenditure Reports on prospecting and exploration ([Form 13](#)) and the Annual Summary Report on mining activities for Tier 1 permits or licences ([Form 14](#))

For technical reporting, NZP&M does not require the resource estimates to be reported in accordance with a recognised resource classification codes (Joint Ore Reserves Committee Code ([JORC](#)) or Canadian National instrument ([NI 43-101](#)) or South African Code for Reporting of Exploration Results ([SAMREC](#))), unless the permit's work programme explicitly states that a resource estimate must meet those requirements.

Detailed NZP&M guidelines for resource and reserve reporting for annual summary reports can be accessed from [here](#).

4.3.12. Scoping, pre-feasibility and feasibility studies

Scoping or Conceptual Studies should include but are not limited to:

- initial drilling results and/or informed assumptions (if any);
- an elementary mine plan;
- information that should determine whether, and how much, further pre-development efforts are warranted; and
- information that should determine the key project risks.

Pre-feasibility studies should include but are not limited to:

- assessment of reserves and saleable product from the delineated resources
- generic mine design;
- non-detailed, staged life of mine planning and production scheduling;
- assessment of the mining methods, treatment routes and cut-off factors identification, recoveries, dilution and losses in both mining and treatment;
- outline of probable plant, infrastructure, services and other facilities;
- a summary development structure and timetable;
- assessment of capital and operating costs;
- specification and marketability of the commodity evaluation;
- information on the deterministic economic evaluation model ; and
- financial viability assessment.

Feasibility studies should typically include but are not limited to:

- the proven and probable reserves;
- assessment of project alternatives and selection of the desired development route;
- proof of the technical viability of the mine and extraction methods;

- identification of the mine’s plant, equipment and infrastructure requirements and capacities;
- details on resource consent and other legal/governmental conditions and requirements for approvals to proceed;
- details on the management control and timing of the project development and construction;
- details on the commissioning of the project, recruiting and training of the management team and crew and hand over at the conclusion of construction;
- estimation of the development, capital and operating costs of the mine over the economic life of the resource;
- identification of the market for the commodity;
- assessment of project risk areas, economic sensitivity to those areas and action that may be used if the risk becomes a problem;
- evidence of economic assessments of the selected project configurations completion
- development of financial models; and
- details on the framework setup for the implementation of the capital investment in the mine development phase.

For more information on this section, refer to the NZP&M guideline available from the mineral guidelines page of our website [here](#).

4.3.13. Core facility sampling report

NZP&M requires reports describing any chemical, physical, geophysical, bio-stratigraphic or other studies done on material at, or removed from its core facilities. The results of any non-destructive testing or assaying (e.g. handheld XRF, spot chemical tests) undertaken on the premises must also be reported.

The report must be a text PDF as described in [Section 4.3](#).

The report must contain a title page with the following information:

- permit holder (where they are a part of authorized activities on a mineral or coal permit);
- project operator (if different from above);
- report title including the report type (e.g. Petrography studies from Greymouth coal core – a core facility sampling report), and current permit number, if relevant;
- date of sampling;
- either a corporate, or personal author, or both; and
- a date of compilation and/or submission.

The report should clearly state the rationale behind the sampling and summarise the results and interpretations. Details of the sampling, processing and analytical methods should be included. Reports that merely present data will be rejected. Numerical tabular data (assays etc.) must follow the same digital data formats described in [Appendix 1](#).

Note: Any core sampling report will be immediately available for public unless otherwise negotiated with NZP&M prior to its submission.

4.4. Data formats and specifications

This section specifies acceptable data formats for the different types of data. The table below provides a summary and further explanation is available under the appropriate headings following the tables.

Table 4 – Table showing the acceptable formats for digital reporting

Data type	Description (examples only)	Format	Parameter	Suffix
Tabular data	Point locations, geochemistry, heavy mineral, velocity data, drilling data	Tab delimited ASCII	Standard as described in Appendices 1 and 2	.txt
Report text	Documents, figures etc.	Portable Document Format (PDF)	Converted to text based PDF (not image based) from original digital version where possible. Document security method to be set to “No” Security and preferably bookmarked.	.pdf
Maps, plans (including historic mine plans), figures and photos not embodied in report text	Files of maps, plans, historic mine plans, figures, core photographs, aerial photographs etc.	PDF (preferred) GEOTIFF/TIFF (colour) JPEG PNG	As above Reproducible at 300 dpi, 24 bit Q>95 reproducible at 300 dpi	.pdf .tif .jpg .png
New Mine Plans	All proposed or recently acquired mine plans Extent of workings of an opencast or underground mine.	Standard PDF 2D Layered PDF 3D Layered PDF (Refer to Mine Plan Guidelines available on NZPAM website for the additional information to be accompanied) GIS	Converted to text based PDF (not image based) from original digital version where possible. Document security method to be set to “No” Security and preferably bookmarked. See below description under GIS Data	.pdf .shp + support files
GIS data (including GIS layers used to construct	GIS vector data	MapInfo tables ESRI shapefiles XML/GML	Must be accompanied by metadata describing the spatial reference system (Datum and projection if	.tab + support files

Data type	Description (examples only)	Format	Parameter	Suffix
historic Mine Plans)			applicable). Only include data to which the Author owns copyright. NZGD2000 and WGS84 are preferable datums.	.shp + support files .xml
	GIS raster data (see also remotely sensed image formats)	ASCII grid ER Mapper JPEG GEOTIFF/TIFF		.asc .ecw / .ers .jpg (jgw) .tif (.tfw)
GIS projects	GIS project files	ESRI map documents MapInfo World files	Data included in same directory as project file, or organised into logical subdirectories. Links to data based on relative pathnames. Only include data to which the author owns copyright.	.mxd .pmf .wor
Geophysics (other than seismic)	Raw and processed located data, gridded data, magnetics, radiometrics, DTM and gravity data	ASEG GDF2 ASEG GXF ER Mapper grid XML (including schema) GEOTIFF (real value) TAB delimited ASCII with header	Raw data should be accompanied by any observation logs and any ancillary data such as sound velocity profiles, calibration data etc. For those ground based surveys that cannot fit into ASEG Standard formats	.dfn, .des, .dat .prj .gdf .gfx .grd, .ers .xml, .xsd .tif .txt
Geophysical processing and other remotely sensed images	Images derived from geophysical / remote sensing surveys, e.g. TMI, Bouguer radiometrics, Landsat 5 or 7	GEOTIFF/TIFF (colour) GEOTIFF/TIFF (greyscale) Compressed ER Mapper JPEG GIF PDF, PNG	Reproducible at 300 dpi, 24 bit Reproducible at 300 dpi, 8 bit Best quality (least lost) Quality as above 8 bit	.tif .tif .ecw .jpg .gif pdf .png
Seismic data	Raw and processed data	SEG D SEG Y (Rev.1) (.sgy)(32bit IBM Floating Point only)		.sgd .sgy
	Navigation data	UKOOA P1/90 3D Bin Grid		.uka
	Stacking velocities	Western format		.wgf

Data type	Description (examples only)	Format	Parameter	Suffix
	Processed sections	CGM, CGM+ format with metadata (line number, shot point number) Geophysical Image formats as above		.cmg .tif, .jpg, .gif, .pdf, .png
Petrophysical and geophysical log data	Raw and processed wireline and MWD or LWD log displays	DLIS LIS LAS Delimited ASCII (format must be explained) WELLOGML (POSC standard)		.dlis .lis .las .asc
Petrophysical and geophysical log data Video clips	Log plots	Adobe Acrobat TIFF (colour) TIFF (greyscale) JPEG GIF PNG	See section 5.3.9 Quality as above Quality as above Quality as above 8 bit	.pdf .tif .tif .jpg .gif .png
	Processed down-hole velocity data	SEG Y, Preferably Rev. 1		.sgy
	Fly-throughs', ground truthing etc.	Any standard formats that can play without the need of any proprietary applications	Preferred MPEG, AVI, MP4 and MOV proprietary formats	.avi .mp4 .mov

Table 5 - Summary of most commonly used 3D model data types

Data Type	Description	Format	Suffix
3D Model Objects	3D spatial datasets including pit and underground design, mine development, geology and resources plus metadata	<p>Attributed dxf export files. ASCII xyz export files <i>(preferred)</i></p> <p><u>Native software formats:</u></p> <p>Datamine</p> <p>Earth Vision</p> <p>GemCom</p> <p>GoCAD Pointset</p> <p>Leapfrog Attributed mesh</p> <p>Micromine</p> <p>Surpac Block</p> <p>Vulcan Block model <i>(preferred)</i></p>	<p>.dxf .txt</p> <p>.asc .dm .dmb .dm *tr.asc & *pt.asc *tr.dm & *pt.dm</p> <p>.2grd</p> <p>.dat .nvflt .3dr</p> <p>.tri or .bt2 .vs .pl .ts .vs .sg</p> <p>.msh</p> <p>.dat, .sec, .stp, .str, .svy .dat .out geol.par .grd .tdb, .dmp .msr .mdl .str .dtm</p> <p>.inp .bdf & *.bmf_asc .svg_dgd1.dbl & .scd .00t .00t_asc</p>

NOTE: .TSG or FOS files are only accepted if accompanied by an equivalent ASCII fil. Other proprietary forms for the 3D models are welcome only when the software, parameters considered and the processing details are clearly stated in the body of the report.

Appendix 1: Metadata and templates

1. Metadata

Metadata are defined as "data about data" and should provide sufficient information about a dataset for it to be used again. The standard recommended by [ANZLIC](#) for metadata should be used where appropriate. NZP&M recognise that some data requires additional information for expert use, and some data require specific metadata covered under other international standards.

The issue of metadata is by far the most critical for digital data. In the past, companies submitted the metadata as part of the text of a printed report – the current standard specifies that critical metadata are included in the “header” of the real data. The objective of including the metadata with the "real" data is to remove the reliance on having to search for other data packages (i.e. the report plus the digital data) to build a complete set of data.

While there are many data types used in industry that can be presented in digital form, seven common types have been identified as requiring templates to assist in the submission of digital data:

- **SL1 Data files for drill collars:** a format providing all necessary data involved in hole collar locations;
- **SG1 Data files for surface geochemistry:** a full format allowing the inclusion of geographical location information along with the assay data;
- **DG1 Data files for downhole geochemistry:** is designed for the submission of either down-hole analysis or surface geochemistry results where a variable elevation (z component) is included (e.g. vertical channel sampling in a mine pit);
- **QG1/QG2 Data files for geochemistry QA/QC:** is designed for coal quality analysis and also to capture analyses of standards, duplicates and blanks of the surface or downhole samples in a separate file;
- **DS1 Data files for downhole surveys:** used for submission of down hole deviation survey data;
- **DL1 Data files for lithological logging data:** used for downhole lithology descriptions; and
- **VL1 File verification listing:** a listing of all digital files in the exploration report.

These above files must be generated as **Comma Separated Values (CSV) ASCII** files and the format for each has been described further below in the appendix of this report.

All the above files have metadata presented in a file header at the top of the file of related tabular data. Details of the metadata file headers (“templates”) are in the following sections. The header templates are also available to download from the New Zealand Petroleum & Minerals website at <http://www.nzpam.govt.nz/our-industry/rules-regulations>.

NOTE: As the templates are comma separated, extra care must be taken with the usage of commas in the text within these templates.

2. File header format

The required file header format has a generic numbering format for flexibility. The file header will be TAB delimited ASCII, The main rules with these file headers are:

- the header record/line identifier (e.g. “H0100”) and descriptor (e.g. “Permit_no”) are mandatory for data supplied and will be placed in the first and second field positions respectively in each header record/line. Exceptions are the H1000 series in which only the header record/line identifiers appear, followed by the header data fields.
- header data fields will be delimited and allow for several separate pieces of information for each header type where necessary.
- numbering within a category will be consecutive.
- where a header row is not relevant to the type of data in the file, it should be omitted, e.g. H0800 series (assay information) and H1002 (assay code) would be omitted from a file of type SL1.

Users may add specific data fields in addition to the mandatory fields, to the data section of any appropriate template file. This will necessitate addition of header fields to the appropriate records of the H1000 series, corresponding to the additional data fields.

Table 6 - Metadata file header information

Header number	Header field title	Examples of values
H0001	Date_generated	15.10.2014
H0002	Reporting_period_end_date	30.09.2014
H0100	Permit_Number	EP55555
H0101	Permit_Operator	Kereru Mining
H0102	Project_Name	Rua
H0103	Prospect_Name	Cathedral
H0104	Region	Waikato
H0200	Start_date_of_data_acquisition	01.09.2014
H0201	End_date_of_data_acquisition	30.09.2014
H0202	Template_format	SL1
H0203	Number_of_data_records (<i>in this file</i>)	7
H0204	Date_of_metadata_update	15.10.2014
H0300	Related_data_filenames	<i>Label only, no data in this record</i>
H0301	Location_data_file	EP55555_2009_DrillCollars.csv
H0302	Downhole_lithology_data_file	EP55555_2009_Lithologs.csv
H0303	Downhole_geochem_data_file	EP55555_2009_DownholeGeochem.csv
H0304	Downhole_survey_data_file	EP55555_2009_DownholeSurveys.csv
H0305	Surface_geochem_data_file	EP55555_2009_SurfaceGeochem.csv
H0306	Lithology_code_file	EP55555_2009_LithologyCodes.csv
H0307	Alteration_data_file	EP55555_2009_Alteration_data_file.csv
H0308	Other_data_file (<i>name appropriate to content</i>)	EP55555_2009_Variant_data_file.csv
H0309	Other_data_file (<i>name appropriate to content</i>)	EP55555_2009_Variant_data_file.csv
H0400	Drill_code <i>(All drilling codes used should be stated here. Where more than one type of drilling is used, an additional column stating the drilling type must be included in the H1000 and D series, i.e. identifying each row of data as applying to a particular drilling type.)</i>	RAB ACR DIA

Header number	Header field title	Examples of values
H0401	Drill_contractor <i>(Drilling contractor used. If more than one, they should also be included in the H1000 and D series, i.e. identifying each row of data as applying to a particular driller.)</i>	Drill Faster Pty Ltd Drill Well Pty Ltd
H0402	Description <i>(Describe the drilling codes in the order they are shown in the H0400 record, with code/description paired and items separated by the standard delimiter.)</i>	RAB Rotary air blast ACR Aircore DIA Diamond bit – coring
H0500	Feature_type	Hole_collar
H0501	Geodetic_datum	NZGD2000
H0502	Vertical_datum <i>(If an arbitrary vertical datum has been used then this must be stated.)</i>	NZVD2016
H0503	Coordinate_system <i>[Geographic Projected]</i>	Projected
H0504	Projection <i>(Detailed as at right for a projected coordinate system, “None for a geographic coordinate system.)</i>	NZTM
H0505	Surveying_instrument <i>(Where more than 1 instrument applicable to this particular template file is used, an additional column stating the instrument type must be included in the H1000 and D series, i.e. identifying each row of data as applying to a particular survey method.)</i>	GPS Differential Generic GPS Survey Grade
H0506	Surveying_company	Super Surveying Pty Ltd
H0600	Sample_code	DC CT CS
H0601	Sample_type <i>(sample source type code/description pairs, in the order they are showing in the H0600) record.)</i>	DC Drill core CT Drill cuttings CS Core sludge

Header number	Header field title	Examples of values
H0602	Sample_description (<i>Describe field and prelab dispatch sampling methods</i>)	Quarter core Half splits of cuttings
H0700	Sample_preparation_code (<i>Codes used for laborator sample preparation for assaying.</i>)	S031
H0701	Sample_preparation_details (<i>Lab sample preparation code/description pairs. Where more than one laboratory is specified in H0801, list sample prep details in order of H0801 lab listing, assuming one sample prep. method per laboratory. If more than one sample preparation method per laboratory, results should be presented in separate files.</i>)	S031 Fine pulverise to 75µm
H0702	Job_no (<i>Laboratory job number. Where more than one laboratory is used, show job numbers in the order corresponding to the laboratories in H0801.</i>)	G37215 ADL 20406
H0800	Analysis_code (<i>All laboratory assay codes used should be stated in the metadata. Where more than one type of assay is used the assay code must also be included in the H1002 row.</i>)	FA50 IC587
H0801	Analysis_company (<i>Lab code/name pairs, name including location. Where more than one laboratory is used, each laboratory name should be preceded by an abbreviation code which is then used in the H1007 record to identify assay_code against laboratory.</i>)	PLP Panea Laboratories, Auckland CAL Capital Laboratories, Wellington

Header number	Header field title	Examples of values
H0802	Analysis_description (<i>Analysis code/description pairs, in order of codes specified in H0800.</i>)	FA50 Aqua regia digest, Fire assay determination IC587 HClO4 + HNO3 + HF digest, Inductively coupled plasma mass spectrometry determination
H0900	Comments (<i>Free text comments and remarks, enclosed in quotes.</i>)	"Various general comments, remarks, observations etc."
H1000 onward	<i>Note that, in the H1000 series, the record name is not shown after the H1nnn designator. Each record passes directly into field names, units etc.</i>	
H1000	(<i>Data field names</i>)	X coordinate Au SiO2 Zn
H1001	(<i>Units of measure for each dimensioned field –ensure that a delimiter is present as a placeholder for fields where this is null</i>)	metres ddd.ddddddddmmss.sss ppm %
H1002	(<i>Assay_code - specify for each analyte</i>)	FA50
H1003	(<i>Lower detection limit as units specified in H1001</i>)	0.01
H1004	(<i>Accuracy - specify for each dimensioned field using the units in H1001</i>)	0.01
H1005	(<i>Upper detection limit as units specified in H1001</i>)	1000
H1006	(<i>Preferred assay indicator (P) for preferred assay where several values are presented for a single sample, null for others. The preferred assay field should also be the first listed for that analyte.</i>)	P
H1007	(<i>Assay_company_ID: where more than one laboratory is used, a code specified in H0801 identifies assay_code against laboratory.</i>)	PLP
D	(<i>Data</i>)	

3. Description of file templates for tabular data

All headers require the Field type, e.g. “H0100”, to appear in the first field of each header row to enable transcription software to upload the metadata correctly.

All data records are to contain the character “D” in the first field to allow transcription software to distinguish data from metadata on upload.

An end of file marker “EOF” must immediately follow the last data record as the final line of the file.

Table 7 - Templates

Template	Data type	Mandatory dependent / related templates	Dependent / related templates	Appendix 1 examples
SL1	Surface point locations, drill collars		DG1, DL1, DS1 (when downhole data collected)	Example 1
SG1	Surface geochemistry		Lithology_code_file (when lithology is specified for each sample)	Example 2
DG1	Downhole geochemistry	SL1	Lithology_code_file (when lithology is specified for each sample)	Example 3
QG1	QA/QC file for Coal	SG1 &/or DG1		Example 4
QG2	QA/QC file for capturing laboratory/field duplicates, standards and blanks.	SG1 &/or DG1		Example 5
DS1	Downhole directional survey	SL1		Example 6
DL1	Downhole lithological logs	SL1 Lithology_code_file		Example 7
VL1	File verification listing			Example 8

SL1: Surface point locations, drill collars

Drillhole collar and sample point locations require the additional parameters of geodetic datum, coordinate system, projection and spatial accuracy to ensure completeness, unambiguity and longevity of data. Detailed explanations of these concepts are available from a number of sources, and are outside the scope of this document.

H1001 should include the datum for the azimuth as a suffix to the units of measurement, i.e. _M (Magnetic) or _T (True).

SG1: Surface geochemistry

A complete file of surface geochemistry contains both location and assay data and will therefore require metadata on both the spatial and analytical components. Spatial metadata are treated as in the SL1 header template. The H0600, H0700 and H0800 series contain metadata related to sample collection, preparation and analysis respectively. H1002, H1003, H1005, H1006 and H1007 are brought into use for analytical metadata.

The H0800 record should contain the assay method code as specified by the laboratory, rather than that used by the client. Description of each analytical method in H0802 should specify sample digestion as well as final analytical determination method.

When an assay result for a particular analyte is below detection limit, it should be shown as the negative of the detection limit e.g. “-10”.

When an analyte was not assayed for a particular sample, it should be shown in the data record as not assayed “na”.

Each file must be consistent in its usage of “below detection limit and “not assayed”.

QA/QC data (laboratory/field duplicates, standards, blanks) should be included in a separate QA/QC file. See QG1 below.

DG1: Downhole geochemistry

Downhole geochemical data files require sample location data and metadata to be provided in separate files, i.e. in the SL1 file. In the DG1 file, only the drillhole identifier, sample code, downhole interval and assay data are provided for each sample in the data records, with pointers to the relevant SL1 file.

If downhole lithological logs (DL1) are not presented, it is recommended that the lithology of each sample be specified as an extra data field in the DG1 file.

QA/QC data (laboratory/field duplicates, standards, blanks) should be included in separate QA/QC file. See QG2 below.

QG1: QA/QC file for coal geochemistry results (Coal Quality Analysis)

Along with other necessary header details on the analysis, this QG1 template should have (but not limited to) the sulphur, swelling, moisture, volatiles, ash and fixed carbon percentages to be able to determine the quality of coal.

QG2: QA/QC file for duplicates, standards and blanks etc.

It is considered that in addition to the metadata covering analytical method, laboratory, sample preparation, units of measure, and upper and lower detection limits, (all of which are required in the various geochemistry templates) inclusion of analytical results of named standards as well as results of analyses of duplicate samples and blanks will assist in evaluating the quality of the data.

The QG2 template has the same structure and metadata as the Geochemistry files (SG1 & DG1) but will include:

- Lab and Job Numbers – as provided by analytical laboratory,
- QA/QC type examples:
 - FDup = field duplicate submitted to laboratory
 - LDup = duplicate generated and reported by laboratory,
 - CRDup = Coarse reject duplicates,
 - PDup = Pulp duplicates,
 - WSADup = Wet Sieve Analysis duplicates,
 - Standard = General and certified standards, and
 - Blank = Laboratory blanks
- Standard ID – certified general standard name(s), and
- Duplicated Sample Number (original sample number for field duplicate).

NOTE: The template should clearly distinguish between internal lab QC, company QC and check lab QC results. Where appropriate, create individual templates for each.

DS1: Downhole directional survey

H1001 should include the datum for the azimuth as a suffix to the units of measurement, i.e. _M (Magnetic) or _T (True).

DL1: Downhole lithological logs

Only the drillhole identifiers, depth intervals and lithological data are provided in this file, with pointers to the relevant SL1 file and lookup / authority / validation / namespace files. In most cases, lithologies are presented as abbreviation codes. A delimited ASCII file showing abbreviation code against full lithology name must be provided if this is the case, Lithology_code_file.

VL1: File verification listing

This file should include the list of all the files that constitutes the data submission.

Appendix 2: Template Examples

This appendix sets out digital data submission templates, which reflect the form for technical reports that has been prescribed under section 97A of the CMA 1991.

In the following digital data submission template examples, those fields in **bold** are mandatory and those fields *italicised* are recommended. Grey shaded fields must be retained and must not be altered.

Additional fields must be appended to the end of the retained fields in grey.

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SL1 - SURFACE LOCATIONS.

Example shows drilling using multiple drilling methods.

Filename EP55555_2010_DrillCollars.csv

H0001	Date_generated	15.10.2010									
H0002	Reporting_period_end_date	30.09.2010									
H0100	Permit_number	EP55555									
H0101	Permit_Operator	Kereru Mining									
H0102	Project_name	Rua									
H0103	Prospect_name	Cathedral									
H0104	Region	Waikato									
H0200	Start_date_of_data_acquisition	01.09.2010									
H0201	End_date_of_data_acquisition	30.09.2010									
H0202	Template_format	SL1									
H0203	Number_of_data_records	7									
H0204	Date_of_metadata_update	15.10.2010									
H0300	Related_data_filenames										
H0301	Location_data_file	EP55555_2009_DrillCollars.csv									
H0302	Downhole_lithology_data_file	EP55555_2009_LithoLogs.csv									
H0303	Downhole_geochem_data_file	EP55555_2009_DownholeGeochem.csv									
H0304	Downhole_survey_data_file	EP55555_2009_DownholeSurveys.csv									
H0400	Drill_code	"RAB, DIA" ←									
H0401	Drill_contractor	Drill FASTER Pty Ltd & Drill Well Pty Ltd									
H0402	Description	RAB Rotary Air Blast DIA Diamond Bit – Coring									
H0500	Feature_located	Hole_collar									
H0501	Geodetic_datum	WGS84									
H0502	Vertical_datum	AHD Arbitrary RL500 Nominal									
H0503	Coordinate_system	Geographic									
H0504	Projection	None									
H0505	Surveying_instrument	GPS Multi Base Wide Area Differential									
H0506	Surveying_company	Super Surveying Pty Ltd									
H1000	Hole_ID	Xcoordinate	Ycoordinate	Zcoordinate	Max_Depth	Start_Date	End_Date	Collar_Azimuth	Collar_Inclination	Drill_Code	Collar_Location
H1001		ddmss.sss	ddmss.sss	metres	metres	DD.MM.YYYY	DD.MM.YYYY	degrees	degrees		
H1004		0.001	0.001	0.5	0.1	10.03.1987	12.03.1987	1	1		
D	RD01	1350804.553	-302927.212	243.5	88.6	13.03.1987	16.03.1987	0	-90	RAB	As planned
D	RD/DD02	1350806.376	-302933.853	230	120.4	26.12.1995	28.12.1995	275	-73	"RAB,DIA" →	As planned
D	RD03	1350809.987	-302938.002	211.5	35.3	15.06.1998	20.06.1998	0	-90	RAB	Source surveyed
D	RD04	1350811.701	-302940.066	181.5	225	21.06.1998	23.06.1998	0	-90	RAB	Source surveyed
D	RD/DD05	1350815.552	-302943.949	279	186.6	24.06.1998	26.06.1998	36	-82	"RAB,DIA" →	As planned
D	DD06	1350816.153	-302948.508	222	105.4	30.08.2000	02.09.2000	0	-90	DIA	As planned
D	RD07	1350818.454	-303050.351	211.5	12.5	06.09.2000	10.09.2000	0	-90	RAB	Source surveyed

Please note inverted quotes for the text containing “,”

QG1 - QA/QC FILE FOR COAL GEOCHEMISTRY RESULTS (COAL QUALITY ANALYSIS)

Filename EP55555_2010_CoalQuality.csv

H0001	Date_generated	15.10.2010											
H0002	Reporting_period_end_date	30.09.2010											
H0100	Permit_number	EP55555											
H0101	Permit_operator	Kereru Mining											
H0102	Project_name	Rua											
H0103	Prospect_name	Cathedral											
H0104	Region	Waikato											
H0200	Start_date_of_data_acquisition	01.09.2010											
H0201	End_date_of_data_acquisition	30.09.2010											
H0202	Template_format	DG1											
H0203	Number_of_data_records	7											
H0204	Date_of_metadata_update	15.10.2010											
H0300	Related_data_filenames												
H0301	Location_data_file	EP55555_2009_DrillCollars.csv											
H0600	Sample_code	PLY											
H0601	Sample_type	PLY Coal Ply											
H0602	Sample_description	Approx 100g sample of Coal ply											
H0700	Sample_preparation_code	ASTM D2013											
H0701	Sample_preparation_details	ASTM D2013 Air dried and crushed											
H0702	Job_no	ADL12345 02A1234											
H0800	Analysis_code	P U											
H0801	Assay_company	"PLP Phlogiston Laboratories, Perth AAL Aardvark Laboratories, Adelaide"											
H0802	Analysis_description	Proximate and Ultimate analysis											
H1000	Hole_ID	Sample_ID	Depth_From	Depth_To	Intersection	Sample_Type	Sulphur	Swelling	Moisture	Volatiles	Ash	Fixed_Carbon	
H1001			metres	metres	metres		%	%	%	%	%	%	
H1002							IC587	IC587	IC587	IC587	IC587	IC587	
H1003							0.1	0.1	0.1	0.1	0.1	0.1	
H1004							0.1	0.1	0.1	0.1	0.1	0.1	
H1005							100	100	100	100	100	100	
H1006													
H1007							PLP	AAL	PLP	PLP	PLP	PLP	
D	RD111	B11-01	111.45	111.75	0.3	PLY	0.27	1	2.5	27.9	55	27.9	
D	RD111	B11-02	111.75	112	0.25	PLY	0.26	0.5	1.3	25.5	56.7	25.5	
D	RD111	B11-03	112	111.2	0.2	PLY	0.58	8.5	1.2	37.6	39.9	37.6	
D	DD112	B11-01	110.25	111.75	0.5	PLY	0.46	4.5	0.9	26.8	54.3	26.8	
D	DD112	B11-02	110.75	111	0.25	PLY	0.46	5	1	33.5	47.7	33.5	
D	DD113	B11-01	268.45	268.6	0.15	PLY	0.94	4	1.2	28	52.4	28	
EOF													

DS1 - DOWNHOLE DIRECTIONAL SURVEY.

Filename EP55555_2009_DownholeSurveys.csv

H0001	Date_generated	15.10.2010							
H0002	Reporting_period_end_date	30.09.2010							
H0100	Permit_number	EP55555							
H0101	Permit_operator	Kereru Mining							
H0102	Project_name	Rua							
H0106	Region	Cathedral							
H0200	Start_date_of_data_acquisition	01.10.2010							
H0201	End_date_of_data_acquisition	30.09.2010							
H0202	Template_format	DS1							
H0203	Number_of_data_records	4							
H0204	Date_of_metadata_update	15.10.2010							
H0300	Related_data_filenames								
H0301	Location_data_file	EP55555_2009_DrillCollars.csv							
H0304	Downhole_survey_data_file	EP55555_2009_DownholeSurveys.csv							
H0532	Surveying_instrument	Eastman multishot camera							
H0533	Surveying_company	Drill Faster Pty Ltd							
H1000	Hole_ID	Depth	Inclination	Azimuth					
H1001		metres	degrees	degrees_M					
H1004		0.1	0.1	0.1					
D	DD112	10	-89.9	285.2					
D	DD112	120	-87.3	276					
D	DD112	275	-82.1	273.4					
D	DD112	445.3	-79.7	268.9					
EOF									



VL1 - SAMPLE FILE VERIFICATION LISTING

Filename EL99999_2009_FileListing.csv

Exploration Work Type	Filename	Format
DESKTOP STUDIES		
Literature Search	EP99999_2011_A_01_ReportBody.pdf	pdf
Database compilation		
Computer modEPLing	EP99999_2011_A_01_ReportBody.pdf	pdf
Reprocessing of data		pdf
General research	EP99999_2011_A_01_ReportBody.pdf	pdf
Report preparation	EP99999_2011_A_01_ReportBody.pdf	pdf
Other (specify)		
AIRBORNE EXPLORATION SURVEYS		
Aeromagnetics	EP99999_2011_A_03_Aeromag.gdf EP99999_2011_A_04_Aeromag.ecw EP99999_2011_A_05_Aeromag.ecw	"gdf, ecw"
Electromagnetics		
Gravity		
Digital Terrain model	EP9999_2011_A_05_DTM.dfn EP9999_2011_A_05_DTM.dat EP9999_2011_A_05_DTM.des	ASEG-GDF2
Other (specify)		
Remote Sensing		
Aerial Photography		
LANDSAT		
SPOT		
MSS		
Radar		
Other (specify)		
GROUND EXPLORATION SURVEYS		
Geological Mapping		
Regional		
Reconnaissance		

Prospect	EP99999_2011_A_02_ProspectGeology.tiff	tiff
Underground		
Costean		
Ground Geophysics		
Magnetics		
Gravity		
DTM		
Electromagnetics		
SP/AP/EP		
IP		
AMT		
Resistivity		
Complex resistivity		
Seismic reflection		
Seismic refraction		
WEPI logging		
Geophysical		
Other (specify)		
Geochemical Surveying		
Drill sampling	EP99999_2011_A_09_DownholeGeochem.csv EP99999_2011_A_06_DrillCollars.csv	csv
Surface sampling	EP99999_2011_A_10_SurfaceGeochem.csv EP99999_2011_A_11_SurfacEPocations.csv EP99999_2011_A_13_SurfaceGeochem.csv EP99999_2011_A_15_SurfacEPocations.csv	csv
Other (specify)		
Drilling		
All drilling	EP99999_2011_A_06_DrillCollars.csv EP99999_2011_A_07_DrillCollars.csv EP99999_2011_A_08_Lithologs.csv EP99999_2011_A_12_Lithologs.csv EP99999_2011_A_14_DownholeSurveys.csv EP99999_2011_A_16_LithologyCodes.csv EP99999_2011_A_17_DrillingSummary.csv	csv
File Verification Listing	EP99999_2011_A_18_FilePisting.csv	csv

Appendix 3: Title/Cover page example



NEW ZEALAND
PETROLEUM & MINERALS

Report No: CR1234

No. of Enclosures: 11

Date Received: 12.05.2016

Official use only

All fields are mandatory

Report Title	ML35206 Annual technical report			No. of Pages	12
Author	Raja Sekhar Vadlamannati				
Operator	IM Private Limited				
Work Program Obligations (WPO) covered in this report	WPO numbers	Description of WPO	Due dates	Page References	
	1a	Complete a literature review and GIS data compilation	15.10.2016	1	
	1b	Complete a programme of reconnaissance field work	15.10.2016	4	
	1c	Complete detailed river mapping using high definition sonar equipment	15.10.2016	8	
	1d	Other Activity: Provide the Secretary with a report detailing work completed during the phase of exploration	15.10.2016	11	
Reporting period	Start Date:	10.01.2015	dd.mm.yyyy	Report generated date:	
	End Date:	15.10.2016	dd.mm.yyyy	30.11.2016	
				dd.mm.yyyy	
Permit / Licence	MML 35206			Eg. MPP 12345 / CEP 23456 / MMP 34567 / CML45678	
Region	West Coast			Eg. Coromandel, Waikato, etc	
Prospect / Field	Karamea			Eg. Buller, Longwood	
Report Type (Comma separated)	Drilling, Geochemical, Geophysical			Eg. Drilling, Geochemical, Geological, Geophysical, Summary, Feasibility, Resource Estimate, Partial Relinquishment, Relinquishment	
Commodities Assayed / exploring for	Gold (Epithermal), Lead (Pb), Tungsten (W), Cobalt (Co), Zinc (Zn), Copper (Cu), Few major Oxides			Eg. Gold (Alluvial), Gold (Mesothermal), Cobalt (Co), Tungsten (W), Platinum Group Minerals (PGM), Coal, All precious metals, All major oxides	
Data included in the report	<input checked="" type="checkbox"/> Drilling <input checked="" type="checkbox"/> Geophysics <input checked="" type="checkbox"/> Geochemistry <input type="checkbox"/> Seismic <input checked="" type="checkbox"/> PDF report complies with Section 4.2 of Digital Data Submission Standards? <input checked="" type="checkbox"/> Data reported in appropriate template format?				
Description of Attachments	ML35206_2015_Drilling.zip, ML35206_2015_VulcanModel.zip, ML35206_2015_LiteratureReview.zip, ML35206_2015_GISData.zip, ML35206_2016_AssayData.zip				

This report has been compiled from material submitted to the New Zealand Government under legislation or voluntarily by exploration industry or academic organizations. An acknowledgment of this work in the following bibliographic format would be appreciated:

Author/Operator, Year. Title. NZP&M, Ministry of Business, Innovation & Employment (MBIE), New Zealand, Unpublished Mineral/Coal Report CR1234



MINISTRY OF BUSINESS,
INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

New Zealand Government

NOTE: This form should be embedded within the main pdf report as cover sheet; otherwise it may be attached as a separate document in conjunction with the digital report submission.

The form is available to download from “Digital Data Submission Standards and templates” section of our webpage: <http://www.nzpam.govt.nz/our-industry/rules-regulations>

Appendix 4: List of Commodities, Regions, Coal fields, Report types to be used in Title/Cover page form

Mineral Commodities	Gold (Epithermal)	Potash
	Gold (Mesothermal)	Potassium (K)
Aggregate	Gold (Orogenic)	Praseodymium (Pr)
All NZ Commodities	Gold (Placer)	Quartz (Qz)
All Precious Metals & Minerals	Gold (Porphyry)	Rare Earth Elements (REE)
Aluminium (Al)	Greywacke	Rhenium (Re)
Andesite	Gum (Resin)	Rhodium (Rh)
Antimony (Sb)	Hafnium (Hf)	Rubidium (Rb)
Arsenic (As)	Heavy Minerals	Ruthenium (Ru)
Asbestos	Holmium (Ho)	Rutile (TiO ₂ Mineral)
Barium (Ba)	Ilmenite (FeTiO ₃)	Samarium (Sm)
Bentonite (Clay Mineral)	Indium (In)	Sand (Green Sands)
Beryllium (Be)	Iridium (Ir)	Sand (Ironsands)
Bismuth (Bi)	Iron (Fe)	Sand (Silica Sands)
Boran (B)	Lanthanum (La)	Sand (Titanomagnetites)
Bowenite (Serpentine Mineral)	Lead (Pb)	Scandium (Sc)
Bromine (Br)	Leucoxene (TiO ₂ Mineral)	Scheelite (CaWO ₄)
Cadmium (Cd)	Limestone (CaCO ₃)	Schist
Caesium (Cs)	Limonite (FeO(OH))	Seaborgium (Sg)
Calcite (CaCO ₃)	Lithium (Li)	Selenium (Se)
Calcium (Ca)	Lutetium (Lu)	Serpentine
Carbonaceous Sediment	Magnesite (MgCO ₃)	Silica (SiO ₂)
Cerium (Ce)	Magnesium (Mg)	Silicon (Si)
Chlorine (Cl)	Magnetite (Fe ₃ O ₄)	Siltstone
Chromite (FeCr ₂ O ₄)	Major Oxides (All)	Silver (Ag)
Chromium (Cr)	Major Oxides (Few)	Smectite (Clay Mineral)
Clay	Manganese (Mn)	Sodium (Na)
Coal	Marble	Stone (Decorative)
Cobalt (Co)	Mercury (Hg)	Stone (Dimension)
Copper (Cu)	Mercury Sulphide (HgS)	Stone (Quarry)
Diamond	Mica	Stone (Sand)
Diatomite	Molybdenum (Mo)	Strontium (Sr)
Dolomite (CaMg(CO ₃) ₂)	Monazite (Phosphate containing REE)	Sulphates
Dunite	Neodymium (Nd)	Sulphides
Dysprosium (Dy)	Nephrite	Sulphur (S)
Erbium (Er)	Nickel (Ni)	Talc
Europium (Eu)	Niobium (Nb)	Tantalum (Ta)
Feldspar	Non-Exploration Reports	Tellurium (Te)
Fluorine (F)	Not Specified	Terbium (Tb)
Gadolinium (Gd)	Osmium (Os)	Thallium (Tl)
Gallium (Ga)	Palladium (Pd)	Thorium (Th)
Garnet (Gemstone)	Perlite	Thulium (Tm)
Gemstones	Phosphate	Tin (Sn)
Germanium (Ge)	Phosphorus (P)	Titanium (Ti)
Glaucanite (Greensand)	Platinum (Pt)	Titano-Magnetites
Gold (Alluvial)	Platinum Group Minerals (PGM)	Tuff

Tungsten (W)
Tungsten trioxide (WO₃)
Uranium (U)
Vanadium (V)
Vanadium-Titano-Magnetite (VTM)

Wollastonite (CaSiO₃)
Xenotime (YPO₄)
Ytterbium (Yb)
Yttrium (Y)
Zeolite

Zinc (Zn)
Zircon (ZrSiO₄)
Zirconium (Zr)

Mineral / Coal Report Regions

Auckland
Bay of Plenty
Canterbury
Chatham
Coromandel
Gisborne
Hawkes Bay
Manawatu-Whanganui
Marlborough
Nelson
Northland
Offshore Auckland
Offshore Bay of Plenty
Offshore Canterbury
Offshore Chatham
Offshore Coromandel
Offshore Gisborne
Offshore Hawkes Bay
Offshore Kermadec
Offshore Manawatu-Whanganui
Offshore Marlborough
Offshore Nelson
Offshore Northland
Offshore Otago
Offshore Southland
Offshore Taranaki
Offshore Tasman
Offshore Waikato
Offshore Wellington
Offshore West Coast
Otago
Southland
Taranaki
Tasman
Waikato
Wellington
West Coast

Mineral Report Types

Drilling
Feasibility
Final Report
Geochemical
Geological
Geophysical
Literature Review
Relinquishment
Resource Estimate

Summary

Coal Report Types

Activity
Drilling
Expenditure
Feasibility
Final Report
Geochemical
Geological
Geophysical
Literature Review
Relinquishment
Resource estimate
Summary

Coal Fields

Acheron
Acheron Deposit
Aratika
Aria
Ashers-Waituna
Avoca
Awanui
Awarua
Baton
Benhar
Birchfield
Broken River-Avoca
Buller
Charleston
Chatham Islands
Clutha
Collingwood
Croydon
Drury
Edendale
Flat Creek
Fox River
Garvey Creek
Geraldine - Fairlie
Glen Massey
Gore
Green Island
Greymouth
Hawkden
Heaphy
Hikurangi
Home Hills
Huntly
Huntly East

Idaburn
Inangahua
Kaitangata
Kamo
Karamea
Kawakawa
Kawhia
Kiripaka
Maitland
Makarewa
Malvern Hills
Mangapehi
Manuherikia
Maramarua
Mataura
Mokau
Morton-Mains
Mt Somers
Murchison
Nevis
Ngapara - Herbert
Ohai
Ohura-Tangarakau
Orepuki
Paringa
Picton
Pike River
Pomahaka
Pukekawa
Punakaiki
Puponga
Rakaia Gorge
Rakaia Gorge Deposit
Reefton
Retaruke
Richmond Hills
Rotowaro
Roxburgh
Shag Point
St Bathans
Takaka
Tangarakau-Ohura
Te Kuiti
Tihiroa
Upukuroa Valley - Princhester
Creek
Waihao
Waikare
Waimatua



Appendix 5: Checklist

Technical reports:

- A title page – pdf form as shown in [Appendix 3](#)
- A detailed contents page listing:
 - all figures, tables and plates
 - all plans, maps, figures and any other attachments
 - any appendices such as additional reports and tabular data

Media contains:

- Data successfully transferred to media
- Annotated on media label
 - Company name
 - Project/survey name
 - Permit number
 - Year
 - Table of content if space permits

Metadata:

- data submissions and projects must only include data to which the author owns copyright; and
- data submitted must be in the original grid it was collected in. If this is not an official datum or projection approved by the surveyor general converted locations in an approved projection must also be included.
- **Tabular data:**
 - ASCII files have been included formatted as in accordance with the Header templates described in Appendices 1 and 2; and
 - lithological code dictionary must be included for deciphering the lithology log.
- **GIS Data:**
 - must be accompanied by metadata describing the spatial reference system (Datum and projection); and
 - data included in same directory as project file, or organised into logical subdirectories.
- **Geological data:**
 - appropriate maps showing the reconnaissance surveys and/or sampling locations
 - lithological / stratigraphical data for pits and drillholes are presented along with their locations
- **Geophysical Data:**
 - raw data should be accompanied by any observation logs and any ancillary data such as sound velocity profiles, calibration data etc.;
 - datasets are supplied in suitable format (ASEG-GDF2, ASCII or in text templates whichever is appropriate); and
 - any acquisition, processing and interpretation reports (if generated) have been supplied.
- **Geochemical Data:**
 - Data provided in suitable text templates; and

- Includes a sample location map, showing the permit boundary is supplied in GIS format.