WESTERN AUSTRALIAN GOVERNMENT Gazette
ISSN 1448-949X (print) ISSN 2204-4264 (online)
PRINT POST APPROVED PP665002/00041

PERTH, MONDAY, 15 FEBRUARY 2016 No. 24 SPECIAL

PUBLISHED BY AUTHORITY JOHN A. STRIJK, GOVERNMENT PRINTER AT 12.00 NOON

MINING ACT 1978
MINING REGULATIONS 1981

GUIDELINES FOR MINERAL EXPLORATION REPORTS ON MINING TENEMENTS

GEOLOGICAL SURVEY OF WESTERN AUSTRALIA

Contents

I hereby authorize the publication in the *Government Gazette* of these Guidelines in accordance with Regulation 96B of the *Mining Regulations 1981.*

RICHARD SELLERS, Director General,
Department of Mines and Petroleum.

PART A
STATUTORY REQUIREMENTS

Purpose of the Guidelines

The guidelines are designed to assist holders of mining tenements in Western Australia in the preparation and submission of mineral exploration reports that comply with *section 115A of the Mining Act, 1978*.

Under the Mining Act, mineral exploration reports must be submitted to the Department of Mines and Petroleum (The Department) containing the information required, in the formats and standards as set out in these guidelines to substantiate, to the satisfaction of the Minister, the expenditures claimed, and the activities undertaken on a mining tenement as reported in summary on the Form 5 Operations Report.

The guidelines are gazetted with the approval of the Director General and replace the previous guidelines gazetted on 8th December 2006.

The guidelines are updated from time to time and it is the responsibility of the tenement holder/operator to ensure that the latest version of the guidelines is used when preparing a mineral exploration report.

Online submission of mineral exploration reports was introduced in March 2015 and will become compulsory mid-2016.

Tenements for which exploration reports are required

It is the responsibility of the tenement holder/operator to ensure that full details of all exploration activities carried out on the following tenement types are included in the reports irrespective of whether the exploration was undertaken by the holder/operator, a consultant, joint venture partner or any other party.

- Exploration Licences (E)
- Mining Leases (M)
- Prospecting Licences (P)
- Retention Licences (R)
- Residual 1904 Mining Act tenure

Exploration reports not required

A mineral exploration report may not be required where only general prospecting activities have been undertaken on Prospecting Licences and Mining Leases; and the expenditure has been claimed under “Prospecting and/or Small Scale Mining Activities”, on Attachment 2 of the Form 5 Operations Report.

Types of mineral exploration reports

Annual report

An annual report for each tenement must be submitted each year, by the due date, where exploration has taken place.

The exploration activities and data submitted in the annual report MUST substantiate, in detail, the expenditure claimed on the annual expenditure statement, Form 5 Operations Report (see the Form 5 Guidelines).

Company prospectuses and annual financial reports will not be accepted as mineral exploration reports.

Partial surrender report

A partial surrender report must be submitted whenever part of a tenement is surrendered either voluntarily or compulsorily and must contain all exploration work, or mining activities, undertaken on the surrendered portion(s) of the tenement since the date of grant.

Written authorization to release previous annual reports containing information on the whole tenement may be submitted in lieu of a partial surrender report.

If no exploration or mining activities have been carried out on the surrendered area since grant, then a letter confirming this is required in lieu of the report.

For a tenement that forms part of a combined reporting group, failure to submit a partial surrender report by the due date can result in all relevant annual reports being released to the public, including information on live tenure.

Surrender report

A surrender report must be submitted when a tenement is surrendered, has expired or is forfeited, and must contain all exploration work carried out and data collected on the tenement since the date of grant.

A surrender report is not required where a portion of an exploration licence (E), or a prospecting licence (P), has been converted to a mining lease (M).

However, if the underlying tenement is surrendered prior to the date of grant of the overlying mining lease, a surrender report must be submitted as there is a break in tenure and the conversion application is no longer valid.

Written authorization to release previous annual reports containing information on the surrendered tenement(s) will be accepted in lieu of a surrender report. This may also apply to tenements that form part of a combined reporting group.

If no exploration has been carried out on the surrendered tenement since the date of grant, then a letter confirming this is required in lieu of the report.

If any part of a combined reporting group is surrendered, a separate surrender report must be submitted detailing all work undertaken on the surrendered portion of the group. If more than one tenement is surrendered at the same time, a single written report describing the work undertaken on those tenements will suffice.

For a tenement that forms part of a combined reporting group, failure to submit a surrender report by the due date can result in all relevant previous annual reports being released to the public, including information on live tenure.

If diamond drilling has taken place on a surrendered tenement, the report must contain the storage location and current ownership of the drillcore as the Department of Mines and Petroleum may request some of the core as reference material for the Core Library. Companies are encouraged to donate historic core from surrendered tenements, but agreement must be reached with the Department first.

Combined reporting

The holder of, or agent for, a group of granted tenements may apply for Ministerial approval to submit one combined annual mineral exploration report on a common date for a group of contiguous tenements that are being worked as one exploration project.

As approval for combined reporting establishes a group for the purpose of applying for expenditure exemptions under Section 102(2)(h) of the Mining Act 1978, the expenditure history of individual tenements may be taken into account when a combined reporting request is being considered.

A combined mineral exploration report will not be accepted unless prior approval has been given in writing.

Application for combined reporting

An application for combined reporting must be submitted on the form overleaf, and must be accompanied by the relevant information as detailed on the form. The combined reporting form is also available on the Department of Mines and Petroleum website.

An application for combined reporting may be approved if:

- there is a common geological target;
- the tenements are contiguous (or nearly contiguous) and do not extend over large areas;
- all tenements have the same holder; or the holder/operator has the legal ability to acquire at least a controlling interest in all tenements in the group;
- all overdue reports on individual tenements have been submitted.

Applications to include additional tenements into granted groups, or vary reporting dates, must be made using the form, and will be considered in the same way as new applications. Removal of tenements from a group may be requested by the holder or operator at any time.

An approval for combined reporting does not remove the obligation to complete the Form 5 Operations Report (annual expenditure statement) for each individual tenement in the group. The Form 5 must be submitted to the Department within 60 days after the anniversary date of each individual tenement.

Cancellation of a combined reporting group

Combined reporting for a group may be cancelled for the following reasons:

- combined annual reports are not submitted by the due date;
- combined groups no longer meet the requirements;
- administrative purposes (e.g. a new number will be issued).

Application Form for Combined Reporting

☐ **New Application** ☐ **Amendment to group No.** _____ /_____

Name of operator: _____

Address: _____

Name of contact: _____

Telephone No: _____ **Email address:** _____

Name of tenement group/project: _____

12 month period covered by the combined report: **From:** _____ **To:** _____

Submission date for combined report: _____

No later than 90 days after end of reporting period

Target commodity:

☐	Gold	☐	Iron
☐	Copper/Lead/Zinc	☐	Nickel
☐	Uranium	☐	Mineral Sands
☐	Coal	☐	Other (specify) _____

List of tenements and holder(s):

Tenement No.	Holder	Tenement No.	Holder

Attach list if insufficient space

To be attached:

☐ **Map showing all tenements in group and generalized geology**
(also showing pending tenements if inclusion may be applied for after grant)

☐ **Proof of common ownership**
(if the operator is different from tenement holder or if the tenements are held in different names)

☐ **Justification,** if tenements are not contiguous

☐ **Justification of group size**
(if the group is >300 km^2 in designated mineralized area – or >1000 km^2 in non-mineralized areas)

☐ **Any overdue reports on individual tenements**

Consent is requested to submit a combined mineral exploration report each year for the group of tenements described above.

Signed: _____

Date: _____

Send application: Via email to: **wamex.combinedreport@dmp.wa.gov.au**
Via post to: The Director
Geological Survey of Western Australia
Department of Mines and Petroleum
100 Plain Street
East Perth WA 6004

Submission dates

An **Annual Report** must be submitted no later than 60 days after each anniversary of the tenement.

A **Partial Surrender Report** must be submitted no later than 60 days after the surrender date of part of the tenement.

A **Surrender Report** must be submitted no later than 60 days after the surrender, expiry or forfeiture of a tenement.

A **Combined Annual Report** must be submitted on the agreed combined reporting date.

An extension of time to lodge a mineral exploration report will not be granted.

Report compliance

Any report that does not comply with these guidelines must be corrected by the tenement holder within 30 days of a request from the Director of the Geological Survey of Western Australia (GSWA).

Reporting requirements will not have been met until the corrections, and any missing data, have been received and accepted by the GSWA.

Forfeiture and fines in lieu of forfeiture

Where a tenement holder has not complied with the requirements of Section 115A of the Mining Act 1978 in respect to submission and/or content of reports, forfeiture proceedings may be initiated. These proceedings may result in forfeiture, or in the imposing of a fine in lieu of forfeiture.

In the case of combined mineral exploration reports, all tenements in the group may be liable for forfeiture if requirements have not been met.

Form 5 Operations Report

The Operations Report, or expenditure statement, is submitted on a Form 5. A Form 5 must be submitted for each tenement held within 60 days after the anniversary date of the tenement. The Form 5 is NOT the annual mineral exploration report.

An annual mineral exploration report is not required when only prospecting and/or small-scale mining have been claimed on Attachment 2 of the Form 5.

Confidentiality

All information in annual mineral exploration reports will remain confidential for 5 years, at which point the report is eligible for release to open file under regulation 96(4) (the Sunset clause); or until 3 months after the surrender, forfeiture, expiry or cancellation of the tenement.

All partial surrender and surrender reports will be released to open file 3 months after the date of surrender, forfeiture, expiry or cancellation of the tenement.

Failure to submit a surrender report will result in the release to open file of all previous annual mineral exploration reports on the combined reporting group.

Copyright

Regulation 96A relates to the tenement holder authorizing or attempting to obtain authorization from the copyright owner for release of information contained in a mineral exploration report.

State government use of copyright material is authorized in Australia under a statutory licence (*Copyright Act 1968*, sections 182B–183E).

Regulation 96A(2)(c) already provides that if appropriate authorization cannot be obtained from the copyright owner, then those sections of the report where the holder does not own copyright should be clearly marked.

In addition, reports should not include any material that is prohibited from release by other laws (e.g. some aerial photos, some satellite imagery or data from technology embargoed by the US International Traffic in Arms Regulations).

Drillcore

It is a condition of mining tenure that all drillcore from exploration drilling must be preserved and not disposed of. The Department must be given a minimum of 3 months written notice before the disposal of any core. Once notice of the intention to dispose of core has been received, the Department may request acquisition of the core for storage at one of the core libraries.

Upon the relinquishment or cancellation of a tenement, all drillcore no longer needed by the tenement holder must be offered to the Department.

The core libraries contain a selection of representative drillcore for the benefit of explorers and other researchers.

Offers of core should be directed to: corelibrary.submissions@dmp.wa.gov.au or discussed with the core library coordinator.

The Guidelines for the Submission and Delivery of Drillcore are available on the website.

Thin sections and paleontological specimens

The Geological Survey maintains a collection of thin and polished sections as well as paleontological specimens. The submission of company samples for inclusion in this collection is optional. Samples no longer required by the company should be offered to the Department, provided the location coordinates of the specimens are known.

For further information contact the core library coordinator.

The Guidelines do not apply to certain reports

Note that the guidelines do not apply to the following types of report:

- Mandatory environmental reports. For information on environmental reporting refer to the Environmental Guidance & ProFormas page on the Department's website.
- Aboriginal survey reports — include a citation in the list of references only.
- Mineralization reports under Section 74A of the Mining Act 1978.

PART B
GENERAL REQUIREMENTS

Reports and all supporting data must be submitted in digital form. Details of types of information, data required, and formats accepted are given in Part D.

All files must be virus free, and must have security settings allowing copying from, but not editing of, the document.

Reports must be written in English to acceptable Australian standards.

Online submission & acceptable media

- **Online submission of reports is now available via the DMP website. See the WAMEX page on the department's website - WAMEX Report Lodgement**

Online submission of reports will be compulsory mid-2016.

For reports not produced online acceptable media are:

- CD–DVD ROM, no multi-session, read only
- DVD–ROM, no multi-session, read only
- Hard drives (non-returnable) for datasets larger than 4GB.

Hardcopy or paper reports, and those sent by Email will not be accepted.

A digital backup copy of all the information submitted should be kept by the licensee to cover the possibility of information corruption during transfer to the Department.

Media labelling

The media (discs) submitted to the Department must be labelled with the following information both on the disc itself and on the cover:

- company name;
- project name/tenement number/combined reporting number;
- type of report; and
- The period covered by the report.

Delivery address

Reports and data must be sent to the attention of the "Statutory Exploration Information Group" (SEIG) and sent via post or delivery to:

The Director
Geological Survey of Western Australia
Department of Mines and Petroleum
100 Plain Street
East Perth WA 6004

Recommended file-naming convention

The Department recommends that digital data should be submitted using the following file-naming convention. The file name should be no longer than 20 characters excluding the suffix.

The **Report file** should include the following elements (see Table 1):

- the project initials, tenement or combined report number (e.g. KP - Kryptonite Project, E63_200, or C316_99);
- type of report (e.g. A – annual, P – partial, S – surrender);
- year of report (e.g. 2014);
- the file extension (e.g. .pdf).

The **Tabular data files** should include the following elements (see Table 1):

- project initials (e.g. KP, KP_E63_200 or KP_C316_1999);
- template name (e.g. WASL4, WADG4, WADL4, WADS4, or WASG4);
- data type initials (e.g. COLL – collar, ASS – assays, SURV – survey, GEO – lithology, WATER – water, or appropriate abbreviations for other down hole events, SURF – surface geochemistry);
- year of report (e.g. 2014);
- type of report (e.g. A – annual, P – partial, S – surrender).

Table 1: Examples of the File-naming Convention

Description of file	Project name or tenement / combined reporting numbers	File name
Suggested file names for reports		
Kryptonite 2014 Annual Report	Kryptonite project	KP_2014A.pdf
Annual report for a tenement	E63/200	E63_200_2014A.pdf
Partial surrender report for a tenement	E63/200	E63_200_2014P.pdf
Surrender report for a tenement	E63/200	E63_200_2014S.pdf
Annual report for a combined reporting group	C316/1999	C316_99_2014A.pdf
Suggested file names for tabular data		
Drilling location file for 2013/2014 data	Kryptonite project	KP_WASL4_COLL2014A.txt
Geochemical analysis for the drillholes	Kryptonite project	KP_WADG4_ASS2014A.txt
Downhole survey data for the drillholes	Kryptonite project	KP_WADS4_SURV2014A.txt
Downhole geological data for the drillholes	Kryptonite project	KP_WADL4_GEO2014A.txt
Surface sampling data including geochemistry and mineralogical data	Kryptonite project	KP_WASG4_SURF2014A.txt
Data on water intersected whilst drilling	Kryptonite project	KP_WADL4_WATER2014A.txt
Geological codes for downhole lithology	Kryptonite project	SmallTimeLithCodes.pdf

PART C
STRUCTURE OF REPORTS

Annual reports

Annual reports must contain information of sufficient standard and detail to substantiate, to the satisfaction of the Minister, the expenditures claimed and all the exploration or mining activities undertaken on a tenement, as reported on the Form 5 Operations Report for each reporting year.

A mineral exploration report shall consist of the following parts:

a) The written text of the report in Portable Data Format (see Part D) describing all the activities undertaken on the tenement during the reporting period. This section may also include tables, plans and figures.
b) Digital data (in the prescribed format – see Part D) of any geoscientific activities undertaken. This includes, but is not limited to, drilling, geochemical or geophysical surveys, geological mapping, computer modelling, and resource calculations.
c) Other appended material; for example reports detailing petrography, mineral resources, or reports written by independent geological consultants.
d) Verification List of all documents submitted to the Department (see Appendix 3).

Partial surrender reports

Partial surrender reports have the same basic structure as Annual Reports. However, they must contain a detailed account of all the exploration/mining activities undertaken over the area(s) being surrendered since the grant of the tenement.

The tenement location map must also clearly indicate which part, or parts, of the tenement(s) are being surrendered, and which are being retained.

Surrender reports

Surrender reports have the same basic structure as Annual Reports, and must contain a detailed account of all the exploration/mining activities that have been undertaken during the life of the tenement(s).

Where a single tenement, or number of tenements, is surrendered from a combined reporting group, all data acquired during the life of the tenement(s) to be surrendered must be submitted with the surrender report.

The written text of the report

The written text of the mineral exploration report must clearly identify which type of report it is; an Annual, a Partial Surrender or a Surrender report. It must include the project name, the tenement numbers being reported on, including the Combined Reporting Number (if applicable), and the period of time that the report is covering; e.g. 15 April 2013 to 14 April 2014. It should also include the operator's name, author, and date written.

The text of the report should contain the following section headings:

A. Bibliographic data sheet
B. Table of contents
C. Introduction
D. Location and access
E. Tenement details
F. Geology
G. Previous exploration activities

H. Current exploration activities
I. Conclusions and recommendations
J. List of references
K. Appendices

A verification list of all the files that make up the report must accompany the report if the report is submitted on CD.

A. Bibliographic data sheet

A completed bibliographic data sheet is mandatory.

For an example of a bibliographic data sheet, see Appendix 1.

B. Table of contents

The table of contents must list all sections within the written report. It should also include:

a) a list of figures/plans,
b) a list of tables, and
c) a list of appendices.

C. Introduction

Give an introduction to the project tenement(s), the exploration rationale and objectives; e.g. the commodity sought, and the reasons the area is considered prospective for such mineral deposits.

D. Location and access

A brief description should be given of the location of the tenement in relation to the nearest town, and how to access the tenement(s). Include a location map showing the relationship between the nearest town (or other major landmark) and the tenement.

E. Tenement details

A table setting out the details of the tenement(s) including tenement number(s), holder, joint venture details, area, grant date, expiry date and expenditure commitment is required.

Tenement number	Holder/JV details	Project name	Area (blocks)	Grant date	Expiry date	Expenditure
E04/1234	Jack Frost	Iceberg	20	12/08/2010	11/08/2015	$20,000
P04/1234	L. Spring	Iceberg	75 hectares	23/05/2011	22/05/2015	$3,000

A map showing the location and outline of the tenement(s) must be included.

F. Geology

Describe the geological setting of the tenement(s) regionally and locally. Include a geological map showing the geology within the tenement(s), including the outline of the tenement(s).

G. Previous exploration activities

Include a brief history of all exploration that has taken place in the area where the tenement is located, both by the current holder; and previous explorers where known. A table format is acceptable.

H. Current exploration activities

Provide a detailed description of all exploration activities that have been carried out on the tenement(s) during the reporting period, including but not limited to:

1. office studies including data review, geological interpretation, assessment, and target generation;
2. geological mapping;
3. geophysical surveys;
4. surface sampling;
5. drilling;
6. resource estimations (or revisions);
7. mining; and
8. any other activities for which expenditure has been claimed on the Form 5.

The information supplied must be supported by detailed figures and plans; e.g. a drill hole location plan.

Include a **Table of Activities** setting out in summary what exploration was carried out on each tenement.

The table must include, but is not limited to, drilling, sampling, geological mapping, and geophysical surveys where these have been carried out. For drilling and sampling include the following:

- for drilling
  - the type of drilling
  - number of holes
  - number of metres drilled
  - number of samples;
- for surface sampling
  - the type of sample
  - the number of samples taken;
- and the grand total.

An example of a table of activities is given below.

Table 2: All Exploration Activities

Tenement	Drilling			Geochemistry	Geophysics		
	Diamond	RAB	Reverse circulation	Surface samples	Airborne EM	Gravity	Ground EM
M99/999	1 hole for 122.2 m (NQ)	26 holes for 1046 m		234 soil	477.7 line km	Approx 21 km^2	-
E99/2023		1 hole – 48 m	33 holes for 4489 m	12 rock chip		-	Approx 15 km
Totals	1 hole for 122.2 m	27 holes for 1094 m	33 holes for 4489 m	246 samples	477.7 line km	Approx 21 km^2	Approx 15 km

Provide results of all work undertaken. Include significant intercepts from drilling and any anomalous results considered worthy of note.

Where significant mineralization is discovered a section must be included in the report describing it and its geologic setting in more detail.

I. Conclusions and recommendations

State the conclusions drawn from the exploration undertaken and recommendations for future work.

J. List of references

List all documents referred to in the report.

For example:

Smith, F. 2010: *Flora and Fauna of the Chrysanthemum Region*, Environ Surveying Company.

K. Appendices

Submit reports on mineral exploration activities prepared by consultants as appendices to the annual report; preferably as separate documents that are not part of the text of the report itself.

Verification list

A verification list is only required for reports submitted on CD. This is a check list of all files submitted to the Department that make up the report. See Appendix 3 for an example of a verification list. Ensure that all files submitted to the Department with each report are included. NB: A verification list is generated when the Free MRT software is used.

PART D
REQUIRED INFORMATION AND FORMATS

Report text

Documents, including figures, tables and appendices, must be submitted in Portable Data Format - PDF (e.g. Adobe Acrobat), with security settings allowing copying from, but not editing of, the document. The file must be a text (not image) PDF.

PDF files created by software other than Adobe Acrobat must be able to be read by Adobe products. Only provide PDF files that are legible, using common standard fonts and maps and images that are readable. Avoid use of non-standard fonts as viewers of the documents may not be able to display them.

NB: Some software will create a PDF which looks correct in Adobe Reader, but the special fonts will turn to meaningless characters when the text is copied and pasted.

Do not embed any files as attachments within the text PDF. All associated files must be separate.

Locational information and maps

The GDA94 datum has been adopted to allow for closer integration with international navigational systems such as GPS. For grid-based map coordinates (Eastings and Northings), the Map Grid of Australia (MGA) is related to the GDA94 datum and replaces the previous Australian Map Grid (AMG) coordinates that related to the AGD66 and AGD84 datums.

All maps and locational **raw data** must therefore record the following:

- Geodetic datum (GDA94)
- whether coordinates are geographic (latitude and longitude), or projected (Eastings and Northings)
- zone for projected coordinates; e.g. 51
- the projection; e.g. Universal Transverse Mercator (UTM)
- all azimuths in directional downhole surveys must be given in relation to True North (i.e. gyro) or Magnetic North (i.e. compass). (See Appendix 2, Example 5).

Locational data given in **local grids** only will not be accepted.

For more information concerning geographic datums, see the GEOSCIENCE AUSTRALIA website.

Maps, plans, figures and photographs

All maps, plans, figures and photographs to be included within the text of the report for online submission, must be in Joint Photographic Group (JPEG or JPG), or Portable Network Graphics (PNG) format.

All maps, plans, figures and photographs submitted as separate appendices should be in Portable Data Format (PDF) (refer to Table 3). They must be readable, and of good print quality and colour. The integrity of the original plan, or image, must be maintained. The resolution must be at least 300 dots per inch (dpi).

For larger plans, or where PDF is not considered appropriate, then the raster image formats of Joint Photographic Group (JPEG or JPG) or Tagged Image File (TIFF or TIF) are acceptable.

All maps and plans that accompany a report must include the following:

- a metric scale bar
- the Geodetic Datum used – GDA94 (Eastings and Northings; or latitude and longitude)
- location coordinates on the axes of the map.

For a geology map, a clear and comprehensive legend and identification symbols for all rock units displayed (preferably GSWA symbols) are required.

Acceptable formats

The following table lists the most common components of an exploration report and formats that are acceptable.

Table 3 is not an exclusive list. With the rapid advancement of technology, other formats will inevitably become available in the future, or may already exist. If unsure, contact the Department of Mines and Petroleum.

Table 3: Examples of Acceptable Formats for Digital Data

Data Type	Description	Format	Parameter	Suffix
Report text	Text, documents, figures, etc.	Portable document format (PDF) with thumbnails (e.g. Adobe Acrobat)	Normal, allow copy but not edit	.pdf
Maps, plans, figures	Files of maps, plans, figures Maps must be at original scale	PDF (preferred)	Reproducible at 300 dpi, 24 bit	.pdf, .tif, .jpg, .jpeg, .gif .png
Photographs not embedded in report text	Core photographs, aerial photographs, etc.	GEOTIFF/TIFF (colour) PDF JPEG PNG	Reproducible at 300 dpi	.tif .pdf .jpg .png
Tabular data	Point locations, geochemistry, heavy mineral, diamond indicator and drilling data	Tab-delimited ASCII	Zip files by activity, e.g. Drilling.zip	.txt
GIS data	Data in GIS format	ESRI shape files MapInfo tab files		.shp, .shx .tab, .map, .id, .dat
Video clips	Fly-throughs, etc.	Video standards MPEG AVI		.mpg .avi
3D models	3D model data	Export model in CSV format	Must include: Block model origin in X, Y and Z Block model parent cell size in X, Y and Z Minimum sub-cell sizes in X, Y and Z	.csv
Geophysics (other than seismic)	Located raw and processed data (corrected and levelled)	Fixed column ASCII with description and processing report	Includes ASEG GDF2 or ASEG-ESF	.dat, .asc, .gdf, .esf
Geophysical and other remotely sensed images	Images derived from geophysical / remote sensing surveys (e.g. TMI, Bouguer, radiometrics, Landsat 5 or 7)	GEOTIFF/TIFF (colour) TIFF (greyscale) Compressed ER Mapper JPEG, GIF, PDF, EPS, PNG	Reproducible at 300 dpi, 24 bit Reproducible at 300 dpi, 8 bit Best quality (least loss) Quality as above, 8 bit	.tif, .ecw, .jpg, .gif, .pdf, .eps, .png

Data Type	Description	Format	Parameter	Suffix
Seismic data (Refer to Petroleum Data Submission Guidelines for further information on the Department of Mines and Petroleum website.)	Raw Shot Data – correlated and uncorrelated	SEG D		.sgd
	processed data	SEG Y		.sgy
	Navigation data	UKOOA P1/90		.uka
	Processed sections Images of processed sections	PDF, TIFF or CGM+ with metadata Geophysical image formats as above	(line number, shot point number)	.pdf .tif .cgm .jpg .gif
Petrophysical and geophysical log data (refer to Petroleum Data Submission Guidelines for further information on the Department of Mines and Petroleum website.)	Raw and processed wireline and MWD data (downhole geophysical logging)	DLIS LIS LAS delimited ASCII (format must be explained) WELLOGML (POSC standard)	As defined by latest Industry Standard	.dlis .lis .las .asc .xml
	Log plots	PDF, TIFF, JPEG, GIF PDS.	Normal+ Quality as above	.pdf, .tif, .jpg, .gif, .pds, .mta
	Processed downhole velocity data	SEG Y		.sgy
Hyperspectral/ Remote Sensing data				
Point data	Reflectance data	Georeferenced FOS, ASD, SDF, SDS		fos, asd, sdf, sds
Image data (see definition in Spectral section)	Reflectance data	Georeferenced BSQ, BIL or BIP image format		bsq, .bil, .bip
LIDAR data	Raw data	Georeferenced LAS,CSV or xyz files		.las, .csv .xyz

Raw tabular data, metadata and templates

Any tabular data including, but not restricted to, drilling, surface geochemistry, and mineralogical observations must be submitted **in tab-delimited ASCII .txt files that include their "metadata" at the top of the ASCII file**.

In **Example 1** (opposite), the metadata for the surface samples is the information recorded on lines H0002 through to H1007. It is data that enables the raw data to be imported into a database. The raw data is identified by the 'D' for data in the first column under line H1007.

Lines H1000 to H1007 refer to the individual column headers for the data. Note that the H1000 (column headings), H1001 (units of measure) and H1002 (assay type, where appropriate) are mandatory.

The H1000 row contains all the raw data column headings. In the case of the assay files, each element analysed must be listed across the H1000 row. It is not acceptable to list all the elements vertically in a single column.

Where a report is submitted online, zip all tabular data files by activity, e.g. Drilling.zip.

Free MRT software

Free software is available from the Department of Mines and Petroleum website at the Data and Software Centre. It is called the Mineral Exploration Reporting Templates (MRT) software, and it will generate the necessary metadata headers for the exploration drilling and geochemical tabular data. The software imports the raw data from an Excel spreadsheet and appends the data to the metadata headers, saving the output file as tab-delimited ASCII .txt. It also provides a listing of all the files that make up the report (the Verification List).

Compliant files of tabular data can be modified manually using any text editor. Users may add additional fields (columns) of data to the mandatory fields in the data section of any template file. This will require addition of header fields to the H1000 series of column headers.

Drilling

Details of the metadata headers required for the drilling templates are explained in Table 5. For examples of how the drilling data looks in the various templates see Appendix 2. The four main templates are as follows:

1. SL4 **S**urface **L**ocation (Collar)
2. DG4 **D**ownhole **G**eochemistry (Assay)
3. DL4* **D**ownhole **L**ithology (Geology, or other downhole event)
4. DS4 **D**ownhole **S**urvey

*Note the DL4 template is also used for other downhole events such as magnetic susceptibility, water, veining, weathering, etc.

Surface geochemistry

Surface sampling data must indicate sample type and sampling method; e.g. sieved -80 mesh, etc.

For Surface Geochemistry, the SG4 Template is used. The same metadata headers are required (see Table 5, and Example 1). Note that for surface geochemistry only, the sample locations and assays must be submitted in the same text (.txt) file.

Example 1 Surface Geochemistry Template — SG4

H0002	Version	4 *	*This refers to the Template version							
H0003	Date_generated	12-Nov-14								
H0004	Reporting_period_end_date	28-Sept-14								
H0005	State	WA								
H0100	Tenement_no/Combined_report_no	E70/314								
H0101	Tenement_holder	Big Time Mining Ltd								
H0102	Project_name	WA Kryptonite								
H0106	Tenement_operator	Small Time Mining NL								
H0150	250K_map_sheet_number	SH 51-9								
H0151	100K_map_sheet_number	3036	3136							
H0152	50K_map_sheet_number									
H0153	25K_map_sheet_number									
H0200	Start_date_of_data_acquisition	29-Sept-13								
H0201	End_date_of_data_acquisition	28-Sept-14								
H0202	Data_format	SG4 *	***Mandatory, e.g. SG4 - Surface Geochemistry.***							
H0203	Number_of_data_records	6 *	***Must match number of Data rows (D) below***							
H0204	Date_of_metadata_update	12-Nov-14								
H0305	SurfGeochem_Data_File	KP_WASG4_SURF2014A.txt								
H0308	File verification List	KP_Verification_List_2014.txt								
H0319	SURFQAQC_data_file									
H0500	Feature_located	Surface Sample								
H0501	Geodetic_datum	GDA94	*Location data must be included in H0500's rows*							
H0502	Vertical_datum	AHD								
H0503	Projection	UTM								
H0508	Local Grid Name									
H0530	Coordinate_system	Projected								
H0531	Projection_zone	51*	*Zone is Mandatory with projected co-ordinates.*							
H0532	Surface_location_Survey_Instrument	GPS								
H0533	Surface_Location_Survey_Company	Small Time Mining NL								
H0538	Surface_Geophysical_Survey_Instrument									
H0539	Surface_Geophysical_Survey_Company									
H0600	Sample_Code	SOI	RKC							
H0601	Sample_Type	Soil	Rock Chip							
H0602	Sample_description	Soil Sample	Rock chip sample							
H0700	Sample_Prep_Code	SO31								
H0701	Sample_Prep_Desc	SO31:Fine pulverise to 75um								
H0702	Job_no	B40985								
H0800	Assay_code	AR	ICP-OES							
H0801	Assay_company	PH:Phlogiston Laboratories	BR:Brimstone Laboratories							
H0802	Assay_description	Aqua regia digest	Inductively coupled plasma – optical emission spectrometry							
H0900	Remarks	***Below: Headings - Sample ID, MGA_E, MGA_N and Sample_type are Mandatory. Others optional.***								
H1000	Sample ID	MGA_E*	MGA_N*	Sample Type	Au	Ag	As	Cu	Pb	Zn
H1001	*units of measure*	metres	metres	NA	ppm	ppm	ppm	ppm	ppm	ppm
H1002	assay code from H0800				AR	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES
H1003	lower detection limit				0.01	0.01	5	0.1	0.1	0.1
H1004	accuracy	1	1	0	0.01	0.01	5	0.1	0.1	0.1
H1005	upper detection limit									
H1006	preferred laboratory result									
H1007	assay company id - when more than one lab is used				PH	BR	BR	BR	BR	BR
D	KPS001	392200	6589600	SOI	0.01	0.04	13	0.27	0.18	0.4
D	KPS002	392843	6581542	SOI	0.02	0.06	5	0.16	0.12	0.5
D	KPS003	392280	6584510	SOI	0.03	0.04	13	0.24	0.14	0.4
D	KPRK001	391954	6588800	RKC	0.01	0.03	12	0.24	0.17	0.4
D	KPRK002	391790	6588791	RKC	0.02	0.03	11	0.3	0.13	0.3
D	KPRK003	392306	6589861	RKC	0.01	0.03	36	0.19	0.17	0.3
EOF *	***EOF=End of File.***	*Add extra rows for data before EOF as needed.*								

Portable XRF analyses

Where portable XRF data has been collected, the following information should be supplied:

- Analytical data as downloaded from the pXRF (i.e. uncorrected data)
- Quality control data that can be used to validate pXRF data (i.e. analysis of reference materials, sample duplicates and analytical blanks).
- Spectral data as an attachment.

A discussion of the QAQC results should also be included in the report and should be in a separate file.

Data must be submitted on the appropriate template. For examples of downhole and surface portable XRF data files see Appendix 2, Examples 7 and 8. Text in bold indicates either additional information required for portable XRF files, or data that must be provided.

Costeans

For costeans, the data obtained can be accommodated in the MRT templates either by considering the costean as a horizontal drillhole and using the drilling templates (SL4, DG4, DL4, etc.); or by giving locations for each individual sample along the costean and using the surface geochemistry template (SG4).

Mineralogical activities

In the course of diamond and mineral sands exploration, certain geochemical or mineralogical observations are made that do not conform to the normal drilling or surface geochemical practices. Wherever possible, the results of these observations must be reported on the standard reporting templates (see Appendix 2) and the following information should also be included:

- mineralogy
- grain size fraction
- analysis of indicator or other minerals
- the results of bulk sampling.

For diamond exploration, the laboratory data sheets containing the results of the visual observation of heavy mineral concentrates from surface samples must be included as an appendix to the report. Sample material (such as loam, alluvial, paleochannel, and bedrock), sample method (such as hand-sample, drill core) and sample weight (kg) or sample volume (litres) must be reported for each sample. Observed concentrate weight (g) and size fraction (maximum, minimum, mm), and the results of indicator mineral counts recovered must also be recorded (whether positive or negative) in the standard reporting template (SG4 – see Appendix 2, Example 9).

Microprobe or other quantitative analyses of individual indicator mineral grains obtained from heavy mineral concentrates must be reported using the surface geochemistry (SG4) template. Each grain needs to be numbered individually and the analytical method and associated sample location coordinates must be included.

In the event that diamonds have been recovered, their size, whether micro- or macro- and the definition used must be reported. Where known, a physical description of each diamond crystal should be provided.

Where drilling has been carried out during the course of diamond or mineral sands exploration, the usual drilling templates must be used.

Coal

Coal exploration also includes observations that vary from the usual drilling or surface geochemical practices. Wherever possible, the results of these observations should be reported on the standard reporting templates; but where that is not possible, the data will be accepted in other formats.

It should be noted that there is an Australian Standard, **AS 2519-1993**: "*Guide to the technical evaluation of higher rank coal deposits*" and a proposed Australian Standard for coal logging, "*CoalLog – The Australian Coal Logging Standard v1.1*", both of which should be consulted prior to submitting coal data in annual or surrender mineral exploration reports.

The CoalLog standard should be used for the logging of the drillcore, particularly the lithology and associated information, but the data must be submitted as ASCII tab-delimited text files with metadata headers as set out in the templates in Appendix 2 of these Guidelines.

Quality control

Analyses of field and laboratory duplicates, standards, and blanks must be included in a separate QA/QC file. The inclusion of analytical results of named standards, duplicate analyses of samples and laboratory blanks will assist in the evaluation of the quality of the data.

The QG4 template has the same structure and metadata as the geochemistry files SG4 and DG4 but should include:

Table 4: Quality Control

Field Name	Code	Description
Lab Job Number		a unique number used by the laboratory to identify a particular job
QA/QC Type:	FDup	field duplicate submitted to the laboratory
	LDup	duplicate generated and reported by the laboratory
	Std	general and certified standards
	Blk	laboratory blank
Standard ID		name of standard
Original Sample Number		original sample number for field duplicate

Results pending

Where downhole drilling **assay** results are not available at the time of reporting, they must be submitted in the following year's annual report, and **must** be accompanied by the associated **collar file** containing hole locations.

Surface geochemistry results that are not available at the time of reporting, must be included in the following year's report.

Table 5: Required File-header Information

Header number	Header field name (explanation in italics)	Examples of values
H0002	Version *(Refers to template version.)*	4
H0003	Date_generated	10/01/2015
H0004	Reporting_period_end_date	31/12/2014
H0005	State	WA
H0100	Tenement_no/Combined_report_no *(When Combined_rept_ no is used, individual tenement numbers must be included in the H1000 and D series, i.e. linking each record to a tenement.)*	E70/314 or C316_2004
H0101	Tenement_holder	Big Time Mining
H0102	Project_name	Kryptonite
H0106	Tenement_operator	Small Time Mining
H0150	250K_map_sheet_number	SH5109
H0151	100K_map_sheet_number	3036, 3136
H0152	50K_map_sheet_number	3036 2, 3136 3
H0153	25K_map_sheet_number	
H0200	Start_date_of_data_acquisition *(NB-do not use colons in dates)*	01/01/2015, or 01-Jan-15 **NOT** - 01:01:2015
H0201	End_date_of_data_acquisition	31/12/2014
H0202	Data_format *(the number refers to the template name & version.)*	SL4 (no spaces)
H0203	Number_of_data_records *(in this file)*	7
H0204	Date_of_metadata_update	10/01/2015
H0300	Related_data_file *(pointers to other files directly related to this file)*	Title only, no file name in this record - **leave blank**
H0301	Location_data_file *(H0301 must always contain the name and type of the file in which it is contained as a check against inadvertent file-name changes)*	KP_WASL4_COLL2014A.txt
H0302	Lithology_data_file	KP_WADL4_GEO2014A.txt
H0303	Assay_data_file	KP_WADG4_ASS2014A.txt
H0304	Survey_data_file	KP_WADS4_SURV2014A.txt
H0305	SurfGeochem_data_file	KP_WASG4_SURF2014A.txt
H0307	Lithology_code_file	KP_DrillingCodes.txt
H0308	File verification List	KP_Verification_List_2014.txt
H0310	Water_data_file	KP_WADL4_WATER2014A.txt
H0311	Water data incl in lithology file	Yes/No
H0313	Alteration_data_file	KP_WADL4_ALT2014A.txt
H0314	Magsusc_data_file	KP_WADL4_MAG2014A.txt
H0315	Vein_data_file	KP_WADL4_VEIN2014A.txt
H0316	Recovery_data_file	KP_WADL4_CORE2014A.txt
H0317	Weathering_data_file	KP_WADL4_WEAT2014A.txt
H0318	DHQAQC_data_file	KP_WAQG4_DQAQC2014A.txt
H0319	SURFQAQC_data_file	KP_ WAQG4_SQAQC2014A.txt
H0320	Other event_data_file *(Name appropriate to file content and numbering to be confirmed with GSWA if additional files are required)*	KP_Other_data_file

Header number	Header field name (explanation in italics)	Examples of values
H0400	Drill_code *(All drilling codes used must 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)*	RAB, AC, RC, DD
H0401	Drill_contractor *(Drilling contractor used. If more than one, they must also be included in the H1000 and D series, i.e. identifying each row of data as applying to a particular driller)*	Drill Faster Pty Ltd, Drill Well Pty Ltd
H0402	Description *(Describe the drilling codes in the order they are shown in the H0400 record)*	RAB: rotary air blast AC: aircore RC: reverse circulation DD: diamond drilling
H0500	Feature_located	Hole collar, Sample point
H0501	Geodetic_datum *(datum used must be stated.)*	GDA94 or AGD84 or WGS84
H0502	Vertical_datum *(If an arbitrary vertical datum has been used then this must be stated as Nominal.)*	AHD or Nominal
H0503	Projection *(Detailed as at right for a projected coordinate system — 'Non_Projected' for a geographic (Lat/Long) coordinate system.)*	UTM , or MGA (if H0501 is GDA94 or WGS84); or AMG (if H0501 is AGD66 or AGD84); or Non-Projected (if Lat/Long)
H0508	Local Grid Name *(not accepted alone, datum must also be included at H0501)*	Neutron grid
H0530	Coordinate_system *(Projected – e.g. GDA94, AGD84, or Geographic i.e. Latitude/Longitude)*	Projected or Geographic
H0531	Projection_zone *(Zone specified for UTM; or 'non-projected' for geographic)* *(If more than one UTM zone is specified and this template file contains coordinates, an additional column specifying UTM zone must be included in the H1000 and D series, i.e. identifying each row of data as belonging to a particular zone) (NB – Zone number must match map sheet code.)*	51 or Non-Projected
H0532	Surface_Location_Survey_Instrument *(Where more than one 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)*	DGPS
H0533	Surface_Location_Survey_Company	Super Surveying Pty Ltd
H0600	Sample_Code	Ssed, RAB, DD, COST
H0601	Sample_Type	Ssed: Stream sediments, RAB: RAB chips, DD: Diamond core, Cost: Costean
H0602	Sample_description *(Describe field and pre-lab dispatch sampling methods)*	Quarter core, half splits of cuttings
H0700	Sample_Prep_Code *(Codes used for laboratory sample preparation for assaying)*	S031
H0701	Sample_Prep_Desc *(The description of lab sample preparation for each code. Where more than one laboratory is specified in H0801, list sample preparation details in order of H0801 lab listing, assuming one sample preparation method per laboratory. If more than one sample preparation method is used per laboratory, this must be indicated in metadata header and in H1000 series.)*	S031: Fine pulverize to 75µm

Header number	Header field name (explanation in italics)	Examples of values
H0702	Job_no/Batch_no *(The laboratory job number. Where more than one laboratory is used, show job numbers in the order corresponding to the laboratories in H0801. If more than one job number has been assigned, this must be indicated in metadata header and in H1000 series.)*	G37215, ADL20406
H0800	Assay_code *(All laboratory assay codes used must 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)*	FA50, IC587, AAS
H0801	Assay_company *(The name and location of laboratory. Where more than one laboratory is used, each laboratory name must be preceded by an abbreviation code which is then used in the H1007 record to identify assay_code against laboratory)*	PLP: Phlogiston Laboratories, Perth
H0802	Assay_description *(Description of assay process in order of codes specified in H0800)*	FA50=Aqua regia digest, fire assay determination, AAS=HClO4+HNO3+HF, atomic absorption spectrometry determination
H0900	Remarks *(Free text comments and remarks)*	
	Note that, in the H1000 series, the record name is not shown after the H1000 designator. Each record passes directly into field names, units and so on.	
H1000	*(Data field names)*	MGA_E, Au1, Cu, Zn
H1001	*(Units of measure for each dimensioned field — 'N/A' for fields where this is null)*	m: metres; ppb: parts per billion; ppm: parts per million; %: percent
H1002	*(Assay_code — specify for each analyte)*	FA50
H1003	*(Lower detection limit as units specified in H1001)*	0.01
H1004	*(Accuracy — specify for each dimensioned field using the units in H1001)*	0.01
H1005	*(Upper detection limit as units specified in H1001)*	1000
H1006	H1006 *(Preferred assay indicator (P) for preferred assay where several values are presented for a single sample, null for others. The "preferred assay" field must also be the first listed for that analyte)*	P
H1007	*(Assay_company_ID: where more than one laboratory is used, a code specified in H0801 identifies assay_code against laboratory)*	PLP
D	*(Raw Data)*	

Geological activities

Geological activities could include, but are not limited to, data review/project evaluation, geological interpretation, consultants' studies, geological mapping (fact or interpretive), petrological/mineralogical studies, geochronology, paleontology, and target generation.

If a data review or project evaluation is claimed on the Form 5, then results to substantiate this work must be provided. Where open-file searches have been conducted, a table listing all WAMEX reports consulted must be provided. Copies of open-file reports must not be submitted.

If historical drilling or surface geochemistry results obtained from open file reports are included in a report, they must be clearly labelled as historic to avoid confusion with any drilling or geochemical surveys undertaken during the current reporting year.

Geological mapping

Geological maps must be provided at the original scale and contain a legend. They should be provided as .pdf files separately as an appendix. Original mapping should be provided in GIS format. Acknowledge the source of all geological information that is not the result of original work.

Petrography and mineralogy

Reports detailing petrographic, mineragraphic or other studies should be provided as separate appendices. The MGA or latitude/longitude locations of all samples must also be provided.

GIS

GIS data will be accepted in the proprietary formats. ESRI shape files and MapInfo tab files are preferred.

Where practical, the symbology of the GIS displayed data must be provided (e.g. ESRI layer files or legend file, or MapInfo suite of files (.map, .tab, .dat, .id) and .jpg files where images are rectified.

Metallurgical studies

Any metallurgical studies undertaken should be described in summary in the text of the report, but not included in full. A citation to any documents detailing the work undertaken must be included in the List of References.

Remote and proximal sensing

Spectral data

For **Point data** from:

a) Drill core, chip, or grab samples; e.g. HyLogger, HyChips
b) ASD, Terraspec and PIMA surveys;

the following data are required:

- reflectance data (in FOS, ASD, SDF, SDS formats);
- metadata
  - instrument name, model number
  - sample medium
  - integration time
  - drillhole collar coordinates, survey and depth
  - sample location coordinates, and
- product summary table shown below.

Product name	Feature/s extracted	Feature extraction type	Geological/mineralogical significance
e.g. White mica composition	2205 +/- 20 nm	Minimum wavelength	Mineralization lies adjacent to compositional gradient

For **Image data** from:

a) Airborne imaging, satellite imaging, multispectral remote sensing,
b) Drillcore imaging from proximal sensors including Specim (SisuRock), Hyspex (e.g. Short Wave Infrared SWIR320m- e) and Corescan (HCI-2)

the following data are required:

- reflectance data (in BSQ, BIL or BIP image format);
- ENVI or ER Mapper header files;
- instrument response function file (band centre wavelengths and full-width at half-height widths (if available);
- metadata:
    - instrument name, model number
    - image/profile specifications:
        - ◊ pixel size
        - ◊ number of pixels
        - ◊ number of lines
        - ◊ number of runs
        - ◊ number of blocks; and
    - area covered:
        - ◊ latitude/longitude coordinates of the block boundaries of large remotely sensed surveys; or
        - ◊ drillhole collar coordinates, survey and depth
    - data quantisation (byte, Integer *2, real, floating point, etc.)
    - calibrated units (e.g. reflectance *100, *10000)
    - gain conversion factors (if applied)
    - radiative transfer code (RTC) used to convert from radiance-at-sensor to reflectance/emissivity
    - assumptions used in RTC, including
        - ◊ aerosols (visibility in km)
        - ◊ EFFORT smoothing (yes/no)
    - geometric data:
        - ◊ along flight-line-only GPS information; and/or
        - ◊ NS-GPS roll-pitch-yaw image information (GLT files)
        - ◊ datum/projection
    - gain conversion factors (if applied)
    - date/time (GMT) of acquisition;
- Product summary table (example above).

Where copyright prevents inclusion of data, maps or images, this must be stated and a representative stitched image or scaled interpretative plan included in lieu of the prohibited content.

Geophysical activities

Geophysical activities include, but are not limited to, airborne and ground magnetic, gravity, radiometric, electric and electromagnetic surveys as well as aerial photography, ‘airborne reflectance surveys’ such as LiDAR and hyperspectral scanning.

The following information must be supplied so that another operator can use the data:

- specifications of the survey and instruments;
- units of measurement and order of accuracy;
- conversion factors if any units are outside the SI system;
- date of survey;
- details of any contractor;

- location map showing the tenements, the survey lines, and cultural features that may affect the results (e.g. power lines); and
- copies of any contractor or logistics reports.

Basic data must be located, corrected and levelled, if appropriate, together with processed images. All geophysical observations and images must be georeferenced to the GDA94 datum with MGA coordinates, or latitude/longitude.

Raw and processed located data must be provided in ASEG GDF2 (preferred) format (or ASEG-ESF format for electrical survey data). However, fixed column ASCII with descriptions of format is also acceptable, as is Electrical Data Interchange (EDI) format for electrical surveys.

Gridded data should be submitted preferably in ER Mapper format. If the original data are in a different format contact the geophysicist on (08) 9222 3154

For EM images, state which channels were used, or include channel number as part of the file name.

Gravity survey data files must include observed corrected and levelled gravity and associated data for each gravity station. Reports on these surveys must specify the field and processing procedures as well as the methods and parameters used to calculate the Bouguer anomalies.

Seismic

When a seismic survey has been carried out, the following data should be supplied:

- Raw shot data – correlated and uncorrelated (in SEG-D format)
- Processed data (in SEG-Y format)
- Observation logs
- Navigation files
- Acquisition and processing reports.

Where seismic data that has previously been acquired is reprocessed, the following data should be supplied:

- Reprocessed data (in SEG-Y format)
- Navigation files
- Reprocessing report.

Airborne geophysical or other remote surveys

It is the preferred option of the Department of Mines and Petroleum that the data from any airborne or remotely sensed survey, including aerial photography, be submitted in their entirety.

Companies or persons who are obliged under the Mining Act to submit airborne survey data as part of a statutory exploration report have the option to register the survey(s) under '**Reporting Policy'** conditions rather than including the data in the report under strict '**Mining Act'** conditions.

For full details see the "*Airborne Geophysical Survey Reporting Policy"* on the department's website.

Airborne survey reporting options

1. Reporting Policy

The main features of registration under 'Reporting Policy' conditions are:

- submission of the survey in its entirety
- once-only survey reporting regardless of tenements covered

- transferable registration number
- fixed total confidentiality period regardless of tenement situation
- Multi-client conversion option.

No further data submission will be required to comply with Mining Act reporting requirements in respect of an airborne survey registered under Reporting Policy conditions. A reference to the registration number in each statutory report will suffice.

2. Mining Act conditions

Under strict Mining Act conditions, the data from any airborne or remotely sensed survey must be submitted with the statutory report for each tenement. Such data will be released to open file when the report is released; and it will be necessary to re-submit a subset of the data for each partial-surrender or surrender report.

3. Data Repository Only

Registration of surveys in the data repository is also available to owners of surveys that are not required to be included in statutory tenement reports (i.e. have not been claimed on the Form 5 expenditure statement). Complete survey datasets may be submitted with confidentiality periods specified by the owner. Companies are encouraged to submit data from surveys that have not previously been reported, or that may not normally be reported.

Registration of a survey

To register a survey, submit the registration form together with the complete digital dataset and any accompanying contractor or logistics reports. *Airborne Geophysical Survey Registration Form* is available on the department's website.

Downhole geophysical logging

Details of downhole geophysical logging must be included in the section of the report which deals with drilling. The raw and processed wireline logs (gamma, resistivity, etc.) and MWD data must be provided in DLIS, LIS, LAS, tab-delimited ASCII or WELLOGML (POSC standard) formats. Where possible the downhole lithology/geological event template (DL4) should be used.

Log plots must be submitted in one of PDF, TIFF, JPEG, GIF, PDS, or MTA formats.

Computer modelling

For all 3D modelling carried out, all modelling files must be provided. These may include, but are not limited to, geological, geophysical and resource/reserve models. Mine planning and financial modelling (including financial assumptions) are not required. Visual PDF models alone are not acceptable.

The following information is required:

- sufficient files and associated files to redraw the models (that is, the ability to redraw the final resultant model, rather than regenerating the model)
- details of software and version used
- observations and images must be geo-referenced to the GDA94 datum with MGA coordinates or latitude/longitude
- local grid transformation data, if required.

The 3D block model should be exported and submitted as a .csv file to allow the data to be viewed and/or imported into any 3D modelling package.

The following information should also be provided:

- block model origin in X, Y and Z
- block model parent-cell size in X, Y and Z
- minimum sub-cell sizes in X, Y and Z
- number of cells in X, Y and Z
- a description of the fields in the file and any coding used.

Consultants' reports must be supplied with the data.

For **estimates** of **mineral resources and reserves** all mineralization and/or geological Digital Terrain Models (DTMs) that were used to control or constrain the 3D model must be submitted. These surfaces and/or solids must be in 3D DXF format. The topographic surface must be submitted in 3D DXF format.

Mineral resources and reserves

Mineral resource estimates — estimates of mineral resources or ore reserves are to be provided deposit by deposit, including a total estimate for the project. When estimates of mineral resources or ore reserves **are first estimated**, full details must be included as a separate appendix including:

- plans and sections showing significant results and ore blocks and ore outlines
- a description of the method(s) used for estimating mineral resources and ore reserves including:
  - the software used
  - geostatistical techniques used for the grade interpolation
  - physical or chemical properties used and how they were derived
  - details of, and quantification of, the type of drillhole intercepts or pits or bulk sampling used
  - the basis of ore reserve estimation and
  - any other determining factors used in the estimation; e.g. specific gravity, etc.

Resource estimates must be submitted regardless of whether they are JORC compliant or not, providing there is a statement to that effect.

Updates and revisions of mineral resource or reserve estimates should be provided only in a summary table in the report. However, when extensions of the mineralization have been identified and the updated mineral resources and ore reserves have been estimated, the additional data used for the updated estimations must be provided.

Reference should be made to the most recent version of the "*Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves*", the JORC Code, as issued by the Joint Ore Reserves Committee (JORC) of The Australian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and the Minerals Council of Australia.

Mining operations

Where a mine is located in the midst of exploration tenements then statements of the annual production figures and current ore reserves should be included deposit by deposit in a table in the text of the report.

If a mining operation is proposed, the geological components of the completed feasibility study (e.g. geological, geophysical, hydrogeological, geotechnical) should be attached to the annual report as an appendix. All other studies must be listed in the reference section of the report.

Appendix 1

GSWA bibliographic data sheet

Project Name	Kryptonite
Combined Reporting Number	C123/2013
Tenement Numbers	E77/1234-E77/1256; M77/123: P77/1234
Tenement Holder	Big Time Mining Ltd
Tenement Operator	Small Time Mining NL
Report Type	Annual
Report Title (as on cover)	Annual Report on the Kryptonite Project, C123/2010 for the period 1 January to 31 December 2014
Report Period	1 January to 31 December 2014
Date of Report	1 February 2015
Author/Position (writer's name, not company name)	Jones, C. H., Senior Geologist
Operator Contact Details	Telephone: 08 9123 4567
Address:	21 Main Street, Suburbia, Majorton, WA 6012
Email:	chjones@smalltime.com.au
1:250 000 Map Sheet	Cue (SG50-15)
1:100 000 Map Sheet	Cue 2443
Geodetic Datum	GDA94
Project Zone	50 (same as in 1:250 000 Map Sheet code)
Target Commodity(s)	Gold, Nickel
Prospects Drilled	Finch, Swallow
PoW Number	12345
Geophysical Survey Registration Number	R70548
List of Assays	Ag, As, Au, Fe, Ni, Pb, Zn (alphabetical)

ABSTRACT

Location: The Kryptonite project is 100 km south of Cue, Western Australia on the Cue (SG50-15) 1:250 000 map sheet.

Geology: The project area covers part of the Meekatharra–Mt Magnet greenstone belt. The main rock types are banded iron-formation, basalt, komatiite, dolerite and andesite.

Work done: Exploration in 2014 comprised geological mapping, an airborne magnetic survey, and aeromagnetic interpretation, the collection of 96 soil and 18 rock chip samples and RAB drilling.

Results: The RAB drilling tested 2 anomalous areas, the Finch and Swallow prospects, where the best intersections were 2 m @ 1.4 g/t Au from 18 m in drillhole number F018, and 3 m @ 1.2 g/t Au from 25 m in drillhole number F032.

Conclusions: The results were encouraging and further drilling was planned.

Drilling Summary:

Hole Type	Number of Holes	Total Drilled (m)
RAB	35	650

Surface Geochemistry Summary:

Sample Type	Number of Samples
Soil	96
Rock chip	18

Surveys Completed:

Survey Type
Heritage Survey
Flora Survey
Fauna Survey
Ground Geophysical Survey
Airborne Geophysical Survey
Other (specify)

Appendix 2

Examples of the mineral reporting templates

NB. *Grey italic text is there for instruction only. Do not include it in your data files.*

To ensure that column headings line up correctly, view the data files using a spreadsheet such as Microsoft Excel, then save the files as “Text (Tab delimited)(*.txt). The column headings for the location coordinates must match the Geodetic Datum used; e.g. GDA94 uses MGA_N, whereas AGD84 used AMG_N.

Example 1 Surface Geochemistry Template — SG4

H0002	Version	4 *	*This refers to the Template version							
H0003	Date_generated	12-Nov-14								
H0004	Reporting_period_end_date	28-Sept-14								
H0005	State	WA								
H0100	Tenement_no/Combined_report_no	E70/314								
H0101	Tenement_holder	Big Time Mining Ltd								
H0102	Project_name	WA Kryptonite								
H0106	Tenement_operator	Small Time Mining NL								
H0150	250K_map_sheet_number	SH 51-9								
H0151	100K_map_sheet_number	3036	3136	Tab across, do not repeat headers						
H0152	50K_map_sheet_number									
H0153	25K_map_sheet_number									
H0200	Start_date_of_data_acquisition	29-Sept-13								
H0201	End_date_of_data_acquisition	28-Sept-14								
H0202	Data_format	SG4*	*Mandatory, e.g. SG4 - Surface Geochemistry.							
H0203	Number_of_data_records	6*	*Must match number of Data rows (D) below							
H0204	Date_of_metadata_update	12-Nov-14								
H0305	SurfGeochem_Data_File	KP_WASG4_SURF2014A.txt								
H0308	File verification List	KP_Verification_List_2014.txt								
H0319	SURFQAQC_data_file									
H0500	Feature_located	Surface Sample								
H0501	Geodetic_datum	GDA94	Location data must be included in H0500's rows							
H0502	Vertical_datum	AHD								
H0503	Projection	UTM								
H0508	Local Grid Name									
H0530	Coordinate_system	Projected								
H0531	Projection_zone	51*	Zone is Mandatory with projected co-ordinates.							
H0532	Surface_location_Survey_Instrument	GPS								
H0533	Surface_Location_Survey_Company	Small Time Mining NL								
H0538	Surface_Geophysical_Survey_Instrument									
H0539	Surface_Geophysical_Survey_Company									
H0600	Sample_Code	SOI	RKC							
H0601	Sample_Type	Soil	Rock Chip							
H0602	Sample_description	Soil Sample	Rock chip sample							
H0700	Sample_Prep_Code	SO31								
H0701	Sample_Prep_Desc	SO31:Fine pulverise to 75um								
H0702	Job_no	B40985								
H0800	Assay_code	AR		ICP-OES						
H0801	Assay_company	PH:Phlogiston Laboratories		BR:Brimstone Laboratories						
H0802	Assay_description	Aqua regia digest		Inductively coupled plasma – optical emission spectrometry						
H0900	Remarks	***Below: Headings - Sample ID, MGA_E, MGA_N and Sample_type are Mandatory.*** *Others optional.*								
H1000	Sample ID	MGA_E*	MGA_N*	Sample Type	Au	Ag	As	Cu	Pb	Zn
H1001	*units of measure*	metres	metres	NA	ppm	ppm	ppm	ppm	ppm	ppm
H1002	assay code from H0800				AR	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES
H1003	lower detection limit				0.01	0.01	5	0.1	0.1	0.1
H1004	accuracy	1	1	0	0.01	0.01	5	0.1	0.1	0.1
H1005	upper detection limit									
H1006	preferred laboratory result									
H1007	assay company id - when more than one lab is used				PH	BR	BR	BR	BR	BR
D	KPS001	392200	6589600	SOI	0.01	0.04	13	0.27	0.18	0.4
D	KPS002	392843	6581542	SOI	0.02	0.06	5	0.16	0.12	0.5
D	KPS003	392280	6584510	SOI	0.03	0.04	13	0.24	0.14	0.4
D	KPRK001	391954	6588800	RKC	0.01	0.03	12	0.24	0.17	0.4
D	KPRK002	391790	6588791	RKC	0.02	0.03	11	0.3	0.13	0.3
D	KPRK003	392306	6589861	RKC	0.01	0.03	36	0.19	0.17	0.3
EOF *	***EOF=End of File.*** *Add extra rows for data before EOF as needed.*									

View the file in Microsoft Excel to check the alignment of the columns, then "Save As" - "Text (Tab delimited) (.txt)" from the pull down menu.*

** Ensure location column headings match the Geodetic datum, e.g.* ***GDA94 uses MGA_N,*** *whereas* ***AGD84 uses AMG_N***

NB *- The grey italic text is for instruction only. Do not include in your data file.*

Example 2 Surface Location Template — SL4 (Collar)

H0002	Version			4*	*This refers to the Template version - currently 4.			
H0003	Date_generated			12-Nov-14				
H0004	Reporting_period_end_date			28-Sept-14				
H0005	State			WA				
H0100	Tenement_no/Combined_report_no			E70/314				
H0101	Tenement_holder			Big Time Mining Ltd				
H0102	Project_name			WA Kryptonite				
H0106	Tenement_operator			Small Time Mining NL				
H0150	250K_map_sheet_number			SH 51-9				
H0151	100K_map_sheet_number			3036	3136	*Tab across, do not repeat headers*		
H0152	50K_map_sheet_number							
H0153	25K_map_sheet_number							
H0200	Start_date_of_data_acquisition			29-Sept-13				
H0201	End_date_of_data_acquisition			28-Sept-14				
H0202	Data_format			SL4*	*Mandatory, e.g. **SL4** - **S**urface **L**ocation*			
H0203	Number_of_data_records			3*	* Must match number of Data rows (D)			
H0204	Date_of_metadata_update			12-Nov-12				
H0300	Related_data_file							
H0301	Location_data_file			KP_WASL4_COLL2014A.txt				
H0302	Lithology_data_file			KP_WADL4_GEO2014A.txt				
H0303	Assay_data_file			KP_WADG4_ASS2014A.txt				
H0304	Survey_data_file			KP_WADS4_SURV2014A.txt				
H0305	SurfGeochem_Data_File			KP_WASG4_SURF2014A.txt				
H0307	Lithology_code_file			SmallTime_data_dictionary				
H0308	File verification List			KP_Verification_List_2014.txt				
H0310	Water_data_file							
H0311	Water_data_included_in_lithology_file			No				
H0313	Alteration_data_file							
H0314	Magsusc_data_file							
H0315	Vein_data_file							
H0316	Recovery_data_file							
H0317	Weathering_data_file							
H0318	DHQAQC_data_file			KP_WAQG4_DQAQC2012A.txt				
H0319	SURFQAQC_data_file							
H0320	Other event_data_file	*If more files are to be included, add extra rows as needed numbering from H0321*						
H0400	Drill_code			DD	RC			
H0401	Drill_contractor			Drill Faster Pty Ltd	Drill Well Pty Ltd			
H0402	Description			Diamond drilling	Reverse Circulation Drilling			
H0500	Feature_located			Drillhole_collar				
H0501	Geodetic_datum			GDA94	*Location data must be included in H0500's rows*			
H0502	Vertical_datum			AHD				
H0503	Projection			UTM				
H0508	Local Grid Name							
H0530	Coordinate_system			Projected				
H0531	Projection_zone			51	*Zone is Mandatory with **projected** co-ordinates.*			
H0532	Surface_Location_Survey_Instrument			GPS				
H0533	Surface_Location_Survey_Company			Small Time Mining				
H0900	Remarks	*Column headers from Hole_id to Drill_code listed below are mandatory. Others may be added.*						
H1000	Hole_id	MGA_E *	MGA_N*	Elevation	Total_Depth	Drill_Code	Dip	Azimuth_true
H1001		metres	metres	metres	metres	NA	degrees	degrees
H1004		1	1	1	1	0	1	1
D	KPDD001	392200	6589600	320	210	DD	-90	270
D	KPDD002	391900	6588800	320	129	DD	-90	270
D	KPRC001	392300	6589600	320	24	RC	-60	270
EOF *	*Add extra rows for data before EOF as needed.							

View file in Microsoft Excel, check column alignment, 'Save As', 'Text (Tab delimited) (.txt)' from the pull down menu.*
** Check column headings match Geodetic datum (H0501), e.g. **GDA94** uses **MGA_N;** whereas. **AGD84** uses **AMG_N***

The grey italic text is for instruction only. Do not include in your data file.

Example 3 Downhole Geochemistry Template — DG4

H0002	Version	4 *	*This refers to the Template version - currently 4.*									
H0003	Date_generated	12-Nov-14										
H0004	Reporting_period_end_date	28-Sept-14										
H0005	State	WA										
H0100	Tenement_no/Combined_report_no	E70/314										
H0101	Tenement_holder	Big Time Mining Ltd										
H0102	Project_name	WA Kryptonite										
H0106	Tenement_operator	Small Time Mining NL										
H0150	250K_map_sheet_number	SH 51-9										
H0151	100K_map_sheet_number	3036	3136	*Tab across, do not repeat headers*								
H0152	50K_map_sheet_number											
H0153	25K_map_sheet_number											
H0200	Start_date_of_data_acquisition	29-Sep-13										
H0201	End_date_of_data_acquisition	28-Sep-14										
H0202	Data_format	DG4*	*Mandatory, e.g. **DG4** - **D**ownhole **G**eochemistry*									
H0203	Number_of_data_records	3*	*Must match number of Data rows (D) below.*									
H0204	Date_of_metadata_update	12-Nov-14										
H0300	Related_data_file											
H0301	Location_data_file	KP_WASL4_COLL2014A.txt										
H0302	Lithology_data_file	KP_WADL4_GEO2014A.txt										
H0303	Assay_data_file	KP_WADG4_ASS2014A.txt										
H0304	Survey_data_file	KP_WADS4_SURV2014A.txt										
H0305	SurfGeochem_Data_File	KP_WASG4_SURF2014A.txt										
H0307	Lithology_code_file	SmallTime_data_dictionary										
H0308	File verification List	KP_Verification_List_2014.txt										
H0318	DHQAQC_data_file	KP_WAQG4_DQAQC2014A.txt										
H0319	SURFQAQC_data_file											
H0320	Other event_data_file											
H0400	Drill_code	DD	RC									
H0401	Drill_contractor	Drill Faster Pty Ltd										
H0402	Description	Diamond	Reverse circulation									
H0500	Feature_located	Drillhole_collar										
H0501	Geodetic_datum	GDA94										
H0502	Vertical_datum	AHD										
H0503	Projection	Map Grid of Australia (MGA)										
H0508	Local Grid Name											
H0530	Coordinate_system	Projected										
H0531	Projection_zone	51										
H0532	Surface_Location_Survey_Instrument	GPS										
H0533	Surface_Location_Survey_Company	Small Time Mining										
SH060	Sample_Code	DDC				RCC						
H0601	Sample_Type	Diamond core				RC Chips						
H0602	Sample_description	¼ core	Reverse Circulation chips									
H0700	Sample_Prep_Code	SO31										
H0701	Sample_Prep_Desc	SO31:Fine pulverise to 75um										
H0702	Job_no	G37215 *	*Include Job_no/Batch number here*									
H0800	Assay_code* *record also at H1002*	AR		BLEG			ICP-OES					
H0801	Assay_company	PH:Phlogiston		BR:Brimstone Labs		BR:Brimstone Laboratories						
H0802	Assay_description	Aqua regia digest		Bulk leach extractable gold		Inductively coupled plasma –optical emission spectroscopy						
H0900	Remarks	*The column headers from Hole_id, to Sample_type, are mandatory. Others optional*										
H1000	Hole_id	Sample_id	From	To	Sample _type	Au	Au	As	Cu	Pb	Zn	
H1001	*(units of measure)*		m	m	NA	ppb	ppm	ppm	ppm	ppm	ppm	
H1002	*(assay code from H0800)*					BLEG	AR	ICP-OES	ICP-OES	ICP-OES	ICP-OES	
H1003	*(lower detection limit)*					1	0.01	5	0.1	0.1	0.1	
H1004	*(accuracy)*					1	0.01	5	0.1	0.1	0.1	
H1005	*(Upper detection limit)*											
H1006	*(Preferred laboratory result)*						P					
H1007	*(assay company id - where more than one laboratory*					BR	PH	BR	BR	BR	BR	
D	KPDD001	KP32001	0	1	Diamond core	1	0.01	13	0.27	0.18	0.4	
D	KPDD001	KP32002	1	2	Diamond core	2	0.02	5	0.16	0.12	0.5	
D	KPDD002	KP32003	0	1	Diamond core	1	0.01	12	0.24	0.17	0.4	
D	KPRC002	KP32004	0	4	4 metre comp.	3	0.03	5	0.01	0.13	0.2	

EOF * **Add extra rows for data before EOF as needed.*

View file in Microsoft Excel to check column alignment, then use 'Save As' and choose 'Text (Tab delimited) (.txt)' in the pull down menu. Ensure that all data starts in the second column next to the D.*

The grey text is for instruction only. Do not include in your data file.

Example 4 Downhole Lithology Template — DL4

NB: This template is also used for other downhole events such as geophysics, alteration, water, etc.

H0002	Version	4 *	*This refers to the Template version - currently 4.*				
H0003	Date_generated	12-Nov-14					
H0004	Reporting_period_end_date	28-Sept-14					
H0005	State	WA					
H0100	Tenement_no/Combined_report_no	E70/314					
H0101	Tenement_holder	Big Time Mining Ltd					
H0102	Project_name	WA Kryptonite					
H0106	Tenement_operator	Small Time Mining NL					
H0150	250K_map_sheet_number	SH 51-9					
H0151	100K_map_sheet_number	3036	3136	*Tab across, do not repeat headers*			
H0152	50K_map_sheet_number						
H0153	25K_map_sheet_number						
H0200	Start_date_of_data_acquisition	29-Sept-13					
H0201	End_date_of_data_acquisition	28-Sept-14					
H0202	Data_format	DL4 *	*Mandatory, e.g. **DL4 - Downhole Lithology***				
H0203	Number_of_data_records	6 *	** Must match number of Data rows (D) below.*				
H0204	Date_of_metadata_update	12-Nov-14					
H0300	Related_data_file						
H0301	Location_data_file	KP_WASL4_COLL2014A.txt					
H0302	Lithology_data_file	KP_WADL4_GEO2014A.txt					
H0303	Assay_data_file	KP_WADG4_ASS2014A.txt					
H0304	Survey_data_file	KP_WADS4_SURV2014A.txt					
H0305	SurfGeochem_Data_File	KP_WASG4_SURF2014A.txt					
H0307	Lithology_code_file	SmallTime_data_dictionary					
H0308	File verification List	KP_Verification_List_2014.txt					
H0310	Water_data_file						
H0311	Water_data_included_in_lithology_file	No					
H0313	Alteration_data_file						
H0314	Magsusc_data_file						
H0315	Vein_data_file						
H0316	Recovery_data_file						
H0317	Weathering_data_file						
H0318	DHQAQC_data_file	KP_WAQG4_DQAQC2014A.txt					
H0319	SURFQAQC_data_file						
H0320	Other event_data_file						
H0400	Drill_code	AC	RC				
H0401	Drill_contractor	Drill Faster Pty Ltd	Drill Well Pty Ltd				
H0402	Description	Aircore Drilling	Reverse Circulation Drilling				
H0500	Feature_located	Drillhole_collar					
H0501	Geodetic_datum	GDA94					
H0502	Vertical_datum	AHD					
H0503	Projection	Map Grid of Australia (MGA)					
H0508	Local Grid Name						
H0530	Coordinate_system	Projected					
H0531	Projection_zone	51					
H0532	Surface_Location_Survey_Instrument	GPS					
H0533	Surface_Location_Survey_Company						
H0536	Downhole_Geophysical_Survey_Instrument						
H0537	Downhole_Geophysical_Survey_Company						
H0900	Remarks	*Below: column headers Hole_id, Depth_from & Depth_to, are mandatory. Others may be added.*					
H1000	Hole_id	Depth_from	Depth_to	Rock1	Rock2	Rock3	Veins
H1001	*units of measure*	metres	metres	NA	NA	NA	NA
H1004	*accuracy*	1	1	0	0	0	0
D	KPDD001	0	4	Gbr	gns		
D	KPDD001	4	8	gn	sed		
D	KPDD002	0	4	ba	sst	vc	
D	KPDD002	4	8	tl			
D	KPRC001	0	4	rc	v		
D	KPRC001	4	8	sch	t		
EOF *	**Add extra rows for data before EOF as needed.*						

The grey text is for instruction only. Do not include it in your data file.

Example 5 Downhole Survey Template— DS4

H0002	Version	4 *	*This refers to the Template version - currently 4.	
H0003	Date_generated	12-Nov-14		
H0004	Reporting_period_end_date	28-Sept-14		
H0005	State	WA		
H0100	Tenement_no/Combined_report_no	E70/314		
H0101	Tenement_holder	Big Time Mining Ltd		
H0102	Project_name	WA Kryptonite		
H0106	Tenement_operator	Small Time Mining NL		
H0150	250K_map_sheet_number	SH 51-9		
H0151	100K_map_sheet_number	3036	3136	*Tab across, do not repeat headers*
H0152	50K_map_sheet_number			
H0153	25K_map_sheet_number			
H0200	Start_date_of_data_acquisition	29-Sept-13		
H0201	End_date_of_data_acquisition	28-Sept-14		
H0202	Data_format	DS4 *	*Mandatory, e.g. **DS4** - **D**ownhole **S**urvey	
H0203	Number_of_data_records	6 *	* Must match number of Data rows (D) below.	
H0204	Date_of_metadata_update	12-Nov-14		
H0300	Related_data_file			
H0301	Location_data_file	KP_WASL4_COLL2014A.txt		
H0302	Lithology_data_file	KP_WADL4_GEO2014A.txt		
H0303	Assay_data_file	KP_WADG4_ASS2014A.txt		
H0304	Survey_data_file	KP_WADS4_SURV2014A.txt		
H0305	SurfGeochem_Data_File	KP_WASG4_SURF2014A.txt		
H0307	Lithology_code_file	SmallTime_data_dictionary		
H0308	File verification List	KP_Verification_List_2014txt		
H0310	Water_data_file			
H0311	Water_data_included_in_lithology_file	No		
H0313	Alteration_data_file			
H0314	Magsusc_data_file			
H0315	Vein_data_file			
H0316	Recovery_data_file			
H0317	Weathering_data_file			
H0318	DHQAQC_data_file	KP_WAQG4_DQAQC2014A.txt		
H0319	SURFQAQC_data_file			
H0320	Other event_data_file			
H0400	Drill_code	DD	RC	
H0401	Drill_contractor	Drill Faster Pty Ltd	Drill Well	
H0402	Description	Diamond Drilling	Reverse	
H0500	Feature_located	Drillhole_collar		
H0501	Geodetic_datum	GDA94		
H0502	Vertical_datum	AHD		
H0503	Projection	Map Grid of Australia (MGA)		
H0508	Local Grid Name			
H0530	Coordinate_system	Projected		
H0531	Projection_zone	51		
H0532	Surface_Location_Survey_Instrument	GPS		
H0533	Surface_Location_Survey_Company			
H0534	Downhole_Direction_Survey_Instrument	Single shot camera - SS		
H0535	Downhole_Direction_Survey_Company	Small Time Mining NL		

H0900 Remarks *Below: the column headers from Hole_id, to Dip are Mandatory.*

H1000	Hole_id	Surveyed_Depth	Azimuth_True#	Dip	Survey_instrument	Drill_code
H1001	*units of measure*	metres	degrees	degrees	NA	NA
H1004	*accuracy*	1	0	0		
D	KPDD001	0	272	-60.3	SS	DD
D	KPDD001	4	263	-61	SS	DD
D	KPDD002	0	180	-60	SS	DD
D	KPDD002	4	180	-62	SS	DD
D	KPRC001	0	175	-61.4	SS	RC
D	KPRC001	4	0	-90	ns	RC

EOF * *Add extra rows for data before EOF as needed.*

 # Whereas Azimuth_true is preferred, Azimuth_mag will be accepted; but Azimuth_grid will not be accepted.

View file in Microsoft Excel to check alignment, then use 'Save As' and choose 'Text (Tab delimited) (.txt)' in the pull down menu.*

Example 6 Quality Control Template — QG4

H0002	Version	4*	*This refers to the Template version - currently 4.	
H0003	Date_generated	12-Apr-14		
H0004	Reporting_period_end_date	28-Feb-14		
H0005	State	WA		
H0100	Tenement_no/Combined_report_no	E70/314		
H0101	Tenement_holder	Big Time Mining Ltd		
H0102	Project_name	WA Kryptonite		
H0106	Tenement_operator	Small Time Mining NL		
H0150	250K_map_sheet_number	SH 51-9		
H0151	100K_map_sheet_number	3036	3136	*Tab across, do not repeat headers*
H0152	50K_map_sheet_number			
H0153	25K_map_sheet_number			
H0200	Start_date_of_data_acquisition	01 Mar-13		
H0201	End_date_of_data_acquisition	28-Feb-14		
H0202	Data_format	DG4 *	*Mandatory, e.g. DG4 - Downhole Geochemistry	
H0203	Number_of_data_records	4*	*Must match number of Data rows (D) below	
H0204	Date_of_metadata_update	12-Apr-14		
H0300	Related_data_file			
H0301	Location_data_file	KP_WASL4_COLL2014A.txt		
H0302	Lithology_data_file	KP_WADL4_GEO2014A.txt		
H0303	Assay_data_file	KP_WADG4_ASS2014A.txt		
H0304	Survey_data_file	KP_WADS4_SURV2014A.txt		
H0305	SurfGeochem_Data_File	KP_WASG4_SURF2014A.txt		
H0307	Lithology_code_file	SmallTime_data_dictionary		
H0308	File verification List	KP_Verification_List_2014.txt		
H0318	DHQAQC_data_file	KP_WAQG4_DQAQC2014A.txt		
H0319	SURFQAQC_data_file			
H0320	Other event_data_file			
H0400	Drill_code	DD	RC	
H0401	Drill_contractor	Drill Faster Pty Ltd		
H0402	Description	Diamond	Reverse circulation	
H0500	Feature_located	Drillhole_collar		
H0501	Geodetic_datum	GDA94		
H0502	Vertical_datum	AHD		
H0503	Projection	UTM		
H0508	Local Grid Name			
H0530	Coordinate_system	Projected		
H0531	Projection_zone	51		
H0532	Surface_Location_Survey_Instrument	GPS		
H0533	Surface_Location_Survey_Company			
H0600	Sample_Code	DDC	RCC	
H0601	Sample_Type	Diamond core	RC Chips	
H0602	Sample_description	¼ core	Reverse Circulation chips	
H0700	Sample_Prep_Code	SO31		
H0701	Sample_Prep_Desc	SO31:Fine pulverise to 75um		
H0702	Job_no	G37215 *	*Include laboratory/Job/Batch No.*	
H0800	Assay_code* *record also at H1002*	AR	BLEG	ICP-OES
H0801	Assay_company	PH:Phlogiston Labs	BR:Brimstone Labs	BR:Brimstone Laboratories
H0802	Assay_description	Aqua regia digest	Bulk leach extract gold	Inductively. coupled plasma Optical emission spectroscopy

H0900	.Remarks *The H1000 column headers Hole_id, Sample_id, are mandatory*									
H1000	Hole_id	Sample_id	QAQC_type	QAQC_desc	Original_id	Au	As	Cu	Pb	Zn
H1001	*(units of measure)*		m	m	NA	ppb	ppm	ppm	ppm	ppm
H1002	*(assay code from H0800)*					BLEG	ICP-OES	ICP-OES	ICP-OES	ICP-OES
H1003	*(lower detection limit)*					1	5	0.1	0.1	0.1
H1004	*(accuracy)*					1	5	0.1	0.1	0.1
H1005	*(upper detection limit)*									
H1006	*(preferred laboratory result)*									
H1007	*(assay company id - where more than one laboratory used)*					BR	BR	BR	BR	
D	KPDD001	KP32001	Ldup			1	13	0.27	0.18	0.3
D	KPDD001	KP32002	ST	KG1 standard		2	5	0.16	0.12	0.5
D	KPDD002	KP32016	Fdup		KP32003	1	12	0.24	0.17	0.4
D	KPRC002	KP32004	Blank			0	0	0.00	0.00	0.0

EOF * *Add extra rows for data before EOF as needed*.

NB *– Do not include QAQC data in DG (downhole geochemistry) or SG (surface geochemistry) files.*

Example 7 – Portable XRF Surface Geochemistry – SG4_PXRF

H0002	Version	4
H0003	Date_generated	12-Nov-12
H0004	Reporting_Period_end_date	28-Sep-12
H0005	State	WA
H0100	Tenement_no/Combined_rept_no.	E77/1374/C20_2005
H0101	Tenement_holder	Big Time Mining Ltd
H0102	Project_name	Kryptonite
H0106	Tenement_operator	Small Time Mining NL
H0150	250K_map_sheet_number	SH 50-12 Jackson
H0151	100K_map_sheet_number	2736 Bullfinch
H0200	Start_date_of_data_acquisition	29-Sep-11
H0201	End_date_of_data_acquisition	28-Sep-12
H0202	Data_format	SG4
H0203	Number_of_data_records	7263
H0204	Date_of metadata_update	12-Nov-12
H0301	Location_data_file	
H0302	Lithology_data_file	
H0303	Assay_data_file	KP_WASG4_PXRF_SURF2012A.txt
H0304	Survey_data_file	
H0305	SurfGeochem_data_file	
H0307	Lithology_code_file	
H0318	pXRF_QAQC_data_file	KP_WASG4_PXRF_QAQC_SURF2012A.txt
H0500	Feature_located	Surface Sample Point
H0501	Geodetic_datum	GDA94
H0502	Vertical_datum	AHD
H0503	Projection	UTM
H0530	Coordinate_system	Projected
H0531	Projection_zone	50
H0600	Sample_Code	Rock chip
H0601	Sample_Type	Rock Chip
H0602	Sample_Description	
H0700	Sample_Preparation_Code	NA
H0701	Sample_Preparation_Details	NA
H0702	Assay_Job_No	NITON_2012_05_22
H0800	Assay_Code	pXRF
H0801	Assay_Company	Small Time Mining NL
H0802	Assay_Description	Test all geo(TAG)mode, 3 filters set to 15 sec each, Light metals 45 sec
H0803	**XRF_ time_elapsed**	90 seconds total
H0804	**XRF_beam_time**	Main 15 sec Low 15 sec High 15 sec Light 45 sec
H0805	**XRF_Errors_Sigma**	2
H0806	**XRF_Instrument_Type**	NITONXL3t_GOLDD #6
H0807	**XRF_Instrument_Serial_No**	1234567
H0900	Remarks	

H1000	**Id_No**	**Sample_No**	**MGA_E**	**MGA_N**	**N_SAMPLE**	**Reading No**	**Sequence**	**Mode**	**Duration**	**Cu**	**Cu_error**	**Pb**	**Pb_error**
H1001	**Units of measure per field**				**N/A**	**N/A**	**N/A**	**N/A**	**sec**	**ppm**	**ppm**	**ppm**	**ppm**
H1002	**Assay code per field**									**N/Bulk**		**N/Bulk**	
H1008	**Calibration m factor**									**1**		**1**	
H1009	**Calibration c factor**									**0**		**0**	
H1010	**Correlation R**									**1**		**1**	
D	18	SRDD0001	392200	6589600	SRD 001 .5	3	Final	TAG	90	68	34	< LOD	12
D	19	SRDD0001	392843	6581542	SRD 001 1	4	Final	TAG	90	250	55	79	18
D	20	SRDD0001	392280	6584510	SRD 001.5	5	Final	TAG	90	54	17	< LOD	8
D	21	SRDD0001	391954	6588800	SRD 001 2	6	Final	TAG	90	77	17	< LOD	9
D	22	SRDD0001	391370	6588791	SRD 002.5	7	Final	TAG	90	47	10	< LOD	8
D	23	SRDD0001	392136	6589861	SRD 001 3	8	Final	TAG	90	27	10	< LOD	8
D	24	SRDD0001	392214	6589911	SRD 003.5	9	Final	TAG	90	35	22	< LOD	8

EOF

Example 8 – Portable XRF Downhole Geochemistry – DG4_PXRF

H0002	Version	4
H0003	Date_generated	12-Nov-12
H0004	Reporting_Period_end_date	28-Sep-12
H0005	State	WA
H0100	Tenement_no/Combined_rept_no.	E77/1374/C20_2005
H0101	Tenement_holder	Big Time Mining Ltd
H0102	Project_name	Kryptonite
H0106	Tenement_operator	Small Time Mining NL
H0150	250K_map_sheet_number	SH 50-12 Jackson
H0151	100K_map_sheet_number	2736 Bullfinch
H0200	Start_date_of_data_acquisition	29-Sep-11
H0201	End_date_of_data_acquisition	28-Sep-12
H0202	Data_format	DG4
H0203	Number_of_data_records	7263
H0204	Date_of metadata_update	12-Nov-12
H0301	Location_data_file	KP_WASL4_COLL2012A.txt
H0302	Lithology_data_file	KP_WADL4_GEO2012A.txt
H0303	Assay_data_file	KP_WADG4_ASS2012A.txt
H0303	Assay_data_file	KP_WADG4_PXRF_ASS2012A.txt
H0304	Survey_data_file	KP_WADS4_SUR2012A.txt
H0307	Lithology_code_file	KP Lithological_Codes
H0311	Water_data_included_in_lithology_file	YES
H0314	Magsusceptibility_data_file	KP_WADL4_MAGSUS2012A.txt
H0316	Geotec_data_file	KP_WADG4_GEOTEC2012A.txt
H0318	QAQC_data_file	KP_WADG4_QAQC2012A.txt
H0318	PXRF_QAQC_data_file	KP_WADG4_PXRF_QAQC2012A.txt
H0400	Drill_code	DDH
H0401	Drill_contractor	Drill Faster
H0402	Drill_description	Diamond
H0500	Feature_located	Portable XRF analysis point
H0501	Geodetic_datum	GDA94
H0502	Vertical_datum	AHD
H0503	Projection	UTM
H0530	Coordinate_system	Projected
H0531	Projection_zone	50
H0600	Sample_Code	DDH & RC
H0601	Sample_Type	HQ & NQ core
H0602	Sample_Description	Spilt quarter NQ core
H0700	Sample_Preparation_Code	NA
H0701	Sample_Preparation_Details	NA
H0702	Assay_Job_No	NITON_2012_05_22
H0800	Assay_Code	p XRF
H0801	Assay_Company	Small Time Mining NL
H0802	Assay_Description	Test all geo(TAG)mode, 3 filters set to 15 sec
H0803	**XRF_elapsed_time**	90 seconds total
H0804	**XRF_beam_time**	Main 15 sec Low 15 sec High 15 sec Light 45
H0805	**XRF_errors_sigma**	2
H0806	**XRF_Instrument_Type**	NITONXL3t_GOLDD #6
H0807	**XRF_Instrument_Serial No**	1234567
H0900	**Remarks**	

H1000	**ID_No**	**Hole_No**	**From**	**To**	**SAMPLE**	**Reading No**	**Seq.**	**Mode**	**Duration**	**Cu**	**Cu error**	**Pb**	**Pb Error**
H1001	*Units_*		m	m		N/A	N/A	N/A	sec	ppm	ppm	ppm	ppm
H1002	*Assay_code_per_field*									N/Bulk		N/Bulk	
H1008	*Calibration m factor*									1		1	
H1009	*Calibration c factor*									0		0	
H1010	*Correlation R*									1		1	
D	1	SRDD000	0.5	0.5	SRD 001 .5	3	Final	TAG	90	68	34	< LOD	22
D	1	SRDD000	1.0	1.0	SRD 001 1	4	Final	TAG	90	250	55	79	10
D	2	SRDD000	1.5	1.5	SRD 001 1.5	5	Final	TAG	90	54	17	< LOD	15
D	2	SRDD000	2.0	2.0	SRD 001 2	6	Final	TAG	90	77	17	< LOD	23
D	2	SRDD000	2.5	2.5	SRD 001 2.5	7	Final	TAG	90	47	10	< LOD	26
D	2	SRDD000	3.0	3.0	SRD 001 3	8	Final	TAG	90	27	10	< LOD	19
D	2	SRDD000	3.5	3.5	SRD 001 3.5	9	Final	TAG	90	35	22	< LOD	21

EOF

Example 9 Diamond Indicator Mineral Template — SG4

H0002	Version *				4	*This refers to the Template version - currently 4*					
H0003	Date_generated				12-Apr-12						
H0004	Reporting_period_end_date				28-Feb-12						
H0005	State				WA						
H0100	Tenement_no/Combined_report_no				E70/314						
H0101	Tenement_holder				Big Time Mining Ltd						
H0102	Project_name				WA Kryptonite						
H0106	Tenement_operator				Small Time Mining NL						
H0150	250K_map_sheet_number				SH 52-06	Dixon Range					
H0151	100K_map_sheet_number				4563	Turkey Creek					
H0152	50K_map_sheet_number										
H0153	25K_map_sheet_number										
H0200	Start_date_of_data_acquisition				01-Mar-11						
H0201	End_date_of_data_acquisition				28-Feb-12						
H0202	Data_format				SG4*	*Mandatory, e.g. **SG4** - **S**urface **G**eochemistry*					
H0203	Number_of_data_records				6*	*Must match number of Data rows (D) below*					
H0204	Date_of_metadata_update				12-Nov-12						
H0305	SurfGeochem_Data_File				KP_WASG4_SURF2012A.txt						
H0308	File verification List				KP_Verification_List_2012A.txt						
H0319	SURFQAQC_data_file										
H0500	Feature_located				Surface Sample						
H0501	Geodetic_datum				GDA94	*Location data must be included in H0500's rows*					
H0502	Vertical_datum				AHD						
H0503	Projection				UTM						
H0508	Local Grid Name										
H0530	Coordinate_system				Projected						
H0531	Projection_zone*				51	* Mandatory with projected coordinates (matches map sheet)*					
H0532	Surface_location_Survey_Instrument				GPS						
H0533	Surface_Location_Survey_Company				Small Time Mining NL						
H0538	Surface_Geophysical_Survey_Instrument										
H0539	Surface_Geophysical_Survey_Company										
H0600	Sample_Code				LOA	Str					
H0601	Sample_Type				Loam	Stream					
H0602	Sample_description				Loam sample	Stream sediment sample					
H0700	Sample_Prep_Code				HMC						
H0701	Sample_Prep_Desc				Heavy mineral concentration						
H0702	Job_no				B40985						
H0800	Assay_code				HMC						
H0801	Assay_company				In House (IH) – observation	KItech – processing.					
H0802	Assay_description				Heavy Mineral Concentrate						
H0900	Remarks	*The H1000 headings beyond Sample Type are suggestions only.*									
H1000	Sample_id	MGA_E	MGA_N	Sample_Type	Diamond	Pyrope	Cr-Diopside	Picro-ilmenite	Cr-Spinel	Final_Wt.	
H1001	*(units)*	metres	metres	NA	counts	counts	counts	counts	counts	gm	
H1002	*(assay code from H0800)*				HMC	HMC	HMC	HMC	HMC	HMC	
H1003	*(Lower mesh size observed.)*				+0.25mm	+0.25mm	+0.25mm	+0.25mm	+0.25mm	+0.25mm	
H1005	*(Upper mesh size observed.)*				+1.0mm	+0.8mm	+0.8mm	+0.8mm	+0.8mm	+0.8mm	
H1007	*(Processing lab if different to observing laboratory)*				KItech	KItech	KItech	KItech	KItech	KItech	
D	KPL0011	392200	6589600	LOA	0	1	1	0	18	45	
D	KPL0012	392843	6581542	LOA	0	0	0	1	12	50	
D	KPSS021	391790	6588791	Str	0	1	0	0	13	5	
D	KPSS022	392306	6589861	Str	0	2	3	1	117	38	
D	KPSS023	392345	6615451	Str	1	1	0	0	0	100	
D	KPSS024	392456	662986	Str	0	0	0	0	10	87	
EOF											

Appendix 3

Verification list

Exploration Work Type	File Name	Format
Office Studies		
Literature search		
Database compilation		
Computer modelling		
Reprocessing of data		
General research		
Report preparation	KP_2014A.pdf	.pdf
Other (specify)		
Airborne Exploration Surveys		
Aeromagnetic	KP_Aeormagnetic_survey_Logistics_Report.pdf	
Radiometrics		
Electromagnetics		
Gravity		
Digital terrain modelling		
Other (specify)		
Remote Sensing		
Aerial photography		
LANDSAT		
SPOT		
MSS		
Radar		
Other (specify)		
Ground Exploration Surveys		
Geological Mapping		
Regional	KP_GIS.zip	.map, .tab, .id
Reconnaissance		
Prospect		
Underground		
Costean		
Ground Geophysical Surveys		
Radiometric		
Magnetic		
Gravity		
Digital terrain modelling		
Electromagnetic		
SP/AP/EP		
IP	KP_IP_Data_2014A.zip	.gdd, .pdf
AMT		
Resistivity		

Exploration Work Type	File Name	Format
Complex resistivity		
Seismic reflection		
Seismic refraction		
Well logging		
Geophysical interpretation		
Other (specify)		
Geochemical Surveying		
Drill sample		
Stream sediment		
Soil	KP_WASG4_SURF_SOIL2014A.txt	.txt
Rock chip	KP_WASG4_SURF_ROCK2014A.txt	.txt
Laterite		
Water		
Biogeochemistry		
Isotope		
Whole rock		
Mineral analysis		
Other (specify)		
Drilling		
Diamond		
Reverse circulation		
Rotary air blast		
Aircore		
Auger		
Groundwater drilling		
All Drilling	KP_WASL4_COL2014A	.txt
	KP_WADS4_SURV2014A	.txt
	KP_WADL4_GEO2014A	.txt
	KP_WADG4_ASS2014A	.txt

Appendix 4

Glossary of terms

Abbreviation	Description	Used as
AMIRA	Australian Mineral Industry Research Association	Organization
ANZLIC	Australia and New Zealand Land Information Council	National organization
ASCII	American Standard Code for Information Interchange	International standard
ASEG	Australian Society of Exploration Geophysicists	Organization
AVI	Audio Video Interleave	File format
BIL	Band Interleaved by Line	File format
CGM	Concatenated Graphics Metafile	File type
CGGC	Chief Government Geologists Committee	Organization
CSIRO	Commonwealth Scientific and Industrial Research Organisation	Organization
DAT	Data file	File format
DATAMINE	Company name	Proprietary software mineral resource modelling
DLIS	Digital Logging International Standard	International standard
The Department	Department of Mines and Petroleum Western Australia	Organization
ECW	Enhanced Compressed Wavelet	File format
EPS	Encapsulated Postscript	File format
ER Mapper	Company name	Proprietary software, desktop image processing
ESRI	Company name	Proprietary software, geographic information system
GDF2	General Data Format (Version 2)	National standard
GEOTIFF	Geo-referenced Tagged Image File Format	File type
GGIPAC	Government Geoscience Information Policy Advisory Committee	Organization—advisory to CGGC
GIF	Graphics Interchange Format	File type
GML	Geography Markup Language	International standard
GSWA	Geological Survey of Western Australia	Organization
GXF	Grid Exchange Format	International standard
JPG, JPEG	Joint Photographic Experts Group	File type

Abbreviation	Description	Used as
JORC	Joint Ore Reserves Committee	Organisation
LAS	Log ASCII Standard	International industry standard
LIS	Logging International Standard (binary format)	International industry standard
LYR	ESRI layer file	File format
MapInfo	Company name	Proprietary map production software
MGA	Map Grid Australia	Spatial specification using UTM projection relative to the Geodetic Datum of Australia 1994
MPEG	Moving Pictures Export Group	File format
MRT	Mineral Exploration Reporting Templates	Preferred software for producing compliant metadata headers for tabular data files
MTA	MapInfo data file	File format
MWD	Measurement While Drilling	Logging technique
OGC	Open GIS Consortium	Organization (see http://www.opengis.org)
P1/90	Navigation data standard format	International standard
PDF	Portable Document Format	File format
PDS	Picture Description System	File format
PNG	Portable Network Graphics	File type
POSC	Petro-technical Open Software Consortium	Organization (see http://www.posc.org)
PPDM	Public Petroleum Data Model	International standard database model
SDTS	Spatial Data Transfer System	International standard
SEG	Society of Exploration Geophysicists	Organization
SGML	Standard Generalized Markup Language	International standard
SEG Y	Society of Exploration Geophysicists	File format
SHP	ESRI shape data file	File format
SIROTEM	CSIRO Transient Electro Magnetics	Geophysical method developed by CSIRO
SPS	Shell Processing System	International standard
SURPAC	Company name	Proprietary software for mineral resource modelling
TAB	MapInfo data file	File format
TEM	Transient Electro Magnetics	Geophysical technique
TIF, TIFF	Tagged Image File Format	File type
TMI	Total Magnetic Intensity	Geophysical measurement

Abbreviation	Description	Used as
TXT	Text	File format
UKOOA	United Kingdom Offshore Operators Association	International organization
UTM	Universal Transverse Mercator	International spatial specification / map projection
VULCAN	Company name	Proprietary software for mineral resource modelling
WOR	MapInfo workspace file	File format
XMML	Exploration and Mining Markup Language	Standard under development by CSIRO
XSD	XML schema definition	A method to describe and validate in extensible markup language (XML)