Guidelines E1

Government of Sierra Leone

Ministry of Mineral Resources

Mines and Minerals Act 2009

Guidelines for preparing work programmes and technical reports for reconnaissance and exploration licences

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CONTENTS

1. Introduction

These guidelines are intended to help applicants for, and holders of, reconnaissance and exploration licences issued under the Mines and Minerals Act 2009 prepare and submit compliant work programmes and technical reports.

Applications for new reconnaissance and exploration licences, and renewals of licences, must be accompanied by a proposed programme of work and an expenditure commitment. For existing licences, six-monthly and annual technical reports are the basis for assessing progress, and for ensuring that the results of exploration are preserved for the benefit of future explorers and researchers (in the event that the current holders surrender the licence). All reports relating to a reconnaissance or exploration licences are kept confidential so long as a licence is extant but become the property of the Government of Sierra Leone once the licence terminates.

It should be stressed that the licence holder is responsible for, and thus must ensure compliance with, all conditions of the licence. One of the main obligations is that there is full disclosure of the results of all exploration carried out, irrespective of whether the exploration is undertaken by the holder, a consultant, a joint venture partner, or any other agent of the licence holder.

NOTE: ***Exploration*** is used as a general term throughout these guidelines to refer to all stages of work carried out in the search for minerals, including regional reconnaissance and prospecting.

1.1 Work programmes

A work programme must accompany any application for a new licence and for licence renewals. Once approved, the work programme becomes a condition of the licence. The work programme should describe in detail the plan for year ahead together with an outline for the following year.

1.2 Technical reports

Technical reporting is a condition of reconnaissance and exploration licences. Reports must be submitted to the Mining Cadastre Office together with the prescribed form (see Third Schedule). The reports described in these guidelines include:

- Annual report
- Airborne survey report
- Surrender report
- Final report

An ***Annual*** report is a detailed technical report covering all work carried out during the year in accordance with the approved programme of work. It is required at the end of each year of the licence. The report should be accompanied by Form C3 or C4 of the Third Schedule.

An ***Airborne Survey*** report is a full and detailed technical report on any remote sensing or geophysical survey conducted, and must be submitted not later than six months after data

acquisition is completed. It must include a digital copy of all raw, processed and interpreted data and imagery. It should be accompanied by Form C6 of the Third Schedule.

A ***Surrender*** report is a detailed technical report required when a portion of a licence area is given up. It is a detailed technical report summarising all work undertaken in or over the area being surrendered since the licence was first granted. A surrender report must accompany any application to surrender ground or when renewal of only part of an existing licence is requested. It should be accompanied by Form B8 of the Second Schedule.

A ***Final*** report is a variant of the surrender report required at termination or on surrender of an entire licence. It must include a detailed summary of all work undertaken in or over the entire licence area from the outset of the licence. It should be accompanied by Form B8 of the Second Schedule.

In addition to the above reports, a ***six-monthly report*** on progress is required midway through every year that an exploration licence is held. It is an interim statement, briefly summarising the work undertaken up to that point together with expenditures incurred, and is submitted by completing the prescribed form (C2 of the Third Schedule). In the case of an airborne survey, a ***weekly progress report*** must also be supplied on the prescribed form (C5 of the Third Schedule).

1.2.1 Submission requirements for technical reports

Two hard copies of every technical report must be provided. Reports other that the six-monthly and weekly progress reports (referred to above) should be permanently bound such that pages cannot be easily removed. All text pages, figures, tables, maps and plots should be sequentially numbered and listed in the contents. Any loose maps may be contained in a pocket at the back or in a separate volume or volumes. They should include a reference to the report they relate to (e.g. report number and date). Where a single volume would be excessively large, it may be subdivided into separate volumes, e.g. where the amount of data requires it, or there are subcontractor reports to be included, or where a separate folder is required to hold large format maps/plans.

In addition to the paper copies, a digital read-only copy must be provided in PDF format on CD or DVD. This file should not be protected by password and must be virus-free. It should be clearly labelled with the report title and date, and the data format indicated. In addition to the scanned report, all quantitative data (e.g. analyses) must be provided in digital readable form such as an Access database or Excel spreadsheet. Large images and other plots/maps may be provided as raster, JPEG or TIFF files. The digital data provided should be fully described and characterised in the accompanying hard-copy report.

1.2.2 Confidentiality

Six-monthly, weekly reports on airborne surveys, and annual reports are confidential and, after assessment and approval by the Director of Mines and the Director of Geological Survey, will be entered into a digital database in the Mining Cadastre Office. Both the paper copies and the digital data will be stored securely with access restricted to the Director of Mines, the Director of Geological Survey and officers authorised by them who have relevant business under the Act.

Annual reports once they cease to be confidential, and all final and surrender reports upon submission, shall be transferred to the Geological Survey and entered into the database of open-file reports. They shall be made available for inspection by the general public and copies provided upon payment of a fee.

Any environmental report is, by definition open to public scrutiny and is therefore non-confidential.

1.2.3 Expenditure statements

A statement of expenditure incurred in carrying out the approved programme of work must be entered onto the form that accompanies the annual report (Form C3 or C4 of the Third Schedule). Only spending directly related to the exploration programme are allowable. Refer to Table A4 of the First Schedule for qualifying expenditures. In addition to the statement with the annual report, an audited statement of detailed expenditure directly incurred under the licence must be submitted not later than ninety calendar days after the end of each licence year (accompanied by Form C22 of the Third Schedule).

1.3 Drill core

Drill core and cuttings from an exploration licence must be preserved and made available to officers of the Geological Survey for inspection and sampling, if required.

The licence holder should advise the Director of Mines and Director of Geological Survey when drill cores and cuttings are no longer needed. If required, the Directors may request within thirty days that they be handed over.

1.4 Airborne remote sensing or geophysical surveys

Information and data from any airborne remote sensing or geophysical survey must be provided separately from the annual report within six months of completion of the survey. The submitted data must include full-size plots of all raw, processed and interpreted data or imagery, together with flight plans, and corresponding digital data on each and every dataset, in an industry-standard format and on industry-standard media. The data must be accompanied by a report or reports providing full details of the survey and a discussion of the results and of any interpretation. A digital read-only PDF copy of the report should also be provided on CD/DVD. The report(s) must in addition clearly list the digital data provided and provide all necessary information on formats used so that the data to be read and processed using standard or specialist software. The technical reports and data should be accompanied by Form C6 of the Third Schedule.

2. Work programmes

2.1 Work programme to accompany application for a new reconnaissance or exploration licence

An application for a reconnaissance licence (Form B1 of the Second Schedule) or exploration licence (Form B3 of the Second Schedule) must be accompanied by a detailed proposal describing the work to be carried out together with an estimated (minimum) expenditure commitment. The proposal must include sufficient information to enable the Director of Mines and the Director of Geological Surveys to decide on its appropriateness in relation to what is already known of the area. It is recommended that the structure of the work programme follows that suggested in this guide. This will ensure that all necessary information is provided at the expected level of detail, and is presented in a logical and consistent manner. Moreover, the suggested format is consistent with that proposed for the preparation of the subsequent technical reports. Once approved, the work programme and expenditure commitment will be attached to the licence and become a condition of it.

A work programme in support of an application for a new licence will be judged against what geological information is already available from past surveys, and thus whether the proposed activities build upon it and advances the state of knowledge. The applicant will need demonstrate that he has properly considered the available information and has designed a programme that is likely to significantly advance geological understanding. Applications will be rejected if the work programme and/or the minimum expenditure commitment are considered insufficient or inappropriate. Table A4 of the First Schedule sets out minimum levels of expenditure. These are minimal and are based on the assumption that the area is one where the mineral potential is poorly known. It should be stressed, however, that the actual proposed expenditure must be commensurate with the intended work programme and so will often be significantly higher, even in the early years.

The work programme should provide a detailed plan for the first year together with an outline plan for the subsequent year.

A checklist and template for preparation of a work programme is provided in Annex 1.

2.2 Updated work programme to accompany annual report on a exploration licence

An exploration licence may be awarded for up to four years initially, and may be renewed subsequently for up to three years on first renewal and for a further two years on second renewal. Nevertheless, the holder is required at the end of each year to submit for approval an updated annual work programme and expenditure commitment for the year ahead. This should be submitted via the Mining Cadastre Office for the attention of the Director of Geological Survey in the first instance. This subject to approval and then becomes part of the licence. The format should be similar to the original work programme (Annex 1) except that it is not necessary to repeat all of the background information each time. The updated work programme should logically follow on from the previous year's annual report and should again be designed to build upon the results achieved to date. It must include a minimum expenditure commitment for the year ahead subject to the incremental requirements described in Table A4 of the First Schedule.

2.3 Work programme to accompany an application to renew a reconnaissance or exploration licence

The work programme to accompany an application for renewal of a reconnaissance or exploration licence (on Form B2 or B4 of the Second Schedule, respectively) should follow a similar format to a new application (Annex 1). The background section should briefly summarise the results achieved in the previous year(s) over that portion of the licence area for which renewal is requested. In the case of a reconnaissance licence, only one renewal is permitted under the Act so a clear objective in year two will be to identify one or more target areas for follow up under an exploration licence.

For an exploration licence, the focus will be on building upon the earlier results with the aim of advancing knowledge to the next stage, always with the intention of discovering and developing an economic ore deposit at the earliest time. Unless the presence of a very large ore body can be demonstrated, the renewal of an exploration licence after the first four years would be for a maximum area of 125 km^2. In the case of the second renewal, a detailed work programme is required covering the entire period of the renewal (maximum 2 years). A second renewal of an exploration licence is not automatic and will depend on significant results having been achieved in the first seven years, including the discovery of a mineral deposit of potential economic significance. Again, it would be exceptional to grant renewal for an area greater than 125 km^2. The work programme for the second renewal must include detailed proposals for a feasibility study and an environmental impact assessment leading, it is hoped, to a mine plan and environmental management programme in support of a mining licence application. Details of the feasibility stage work programme required for a second renewal of an exploration licence is given in Guidelines E2 of the Fifth Schedule. (Note: no further renewals of an exploration licence are permitted under the Act: maximum duration nine years). As ever, all work programmes and expenditure commitments will be judged against the state of knowledge at the time and what is appropriate to advance the prospect to the next stage.

3. Technical reports

All technical reports follow the same general format, with some variations. They are expected in every case to provide a complete account of the work done and of the results obtained. A template is given in Annex 2; this provides a checklist and guidance to assist authors and is in the same format as the work programme. The suggested contents are indicative and not intended to be exhaustive; the template should not prevent or limit the inclusion of any other relevant information according to the work actually done. Indeed, notwithstanding this guidance, it is a general requirement that the licence holder must report on *all* work undertaken and the results obtained.

A technical report must relate to a single licence only, even where a holder has carried out a parallel or associated programmes in two or more licence areas. It is acceptable to repeat relevant sections of the text in each report as appropriate but the specific results (and expenditures) must relate only to the licence reported on.

3.1 Annual reports

An annual report must be submitted at or before the end of each twelve month period of a licence. It is a full technical report covering all exploration activities conducted in the previous year. An annual reports should contain:

- general background to the exploration operations including the general geology and mineral potential (based on previous work by the holder and/or others);
- the exploration philosophy and strategy followed;
- full details and results of all studies, surveys, sampling or drilling programmes, or other operations conducted;
- full geographical details of the locations of activities, samples etc;
- accompanying maps, plans, sections, figures or other graphics with geographic coordinates sufficient to identify the locations, and a legend to explain the symbols used;
- discussion of results, conclusions and recommendations; and
- expenditures incurred during the reporting period (in accompanying form).

(The report should be accompanied by a separate, updated, detailed work programme covering the next twelve month period).

Where large surveys, such as a regional geochemical survey, are ongoing at the time of submission of an annual report, it is acceptable to indicate the progress of such surveys to date, and to submit the full results, data and conclusions in the subsequent annual report following completion of the work.

3.2 Surrender report

An application involving surrender of part only of a reconnaissance or exploration licence must include a surrender report. This is required in addition to the annual report for the year (which will cover all work over the *entire* licence area, including the ground being given up). The surrender report is again a full and detailed technical report describing all work undertaken in the surrendered part of the licence *since commencement*. It should reproduce all original data, information, interpretation and discussion contained in earlier annual reports. Similarly, any digital data previously submitted must now be supplied for the surrendered ground. After a short period, the surrender report will be treated as non-confidential and therefore should not include any confidential information or data relating to the retained area.

3.3 Final report

A final report is a type of surrender report which is required upon surrender or expiry of a reconnaissance or exploration licence (Section 55 of the Act). Like a surrender report, it will be regarded as non-confidential. It should summarise all work carried out over the entire licence area for the entire period of the licence. It must include the principal results and conclusions of each phase of operations. A final report is required in addition to the annual report for the final year. Whereas it is not necessary to present all the detailed data again (where these have been fully reported in previous annual reports – since these too will become open-file documents), the relevant annual reports should be listed and referenced in the text as appropriate. The final report

should outline the exploration strategy and objectives, and discuss the final conclusions arising out of the reconnaissance or exploration.

4. Annexes

ANNEX 1: CHECKLIST FOR PREPARING ANNUALWORK PROGRAMME

Licence No. (in the case of licence renewals)
Name of licence area
Location – (incl. Province, District), blocks & geographical coordinates plus location map
Area size (km^2)
Geological setting & any known mineral occurrences
Summary of past work and discoveries (by applicant and/or others)
Outline of exploration strategy including techniques to be employed and timetable
Logistics (equipment, staff, local employment etc)
The programme for the year ahead should be described in terms of A and/or B, and/or C (below) as appropriate to the stage of exploration.
A. Regional reconnaissance (applicable to both reconnaissance and exploration licences where grass-roots or other regional studies are planned)
Remote sensing studies (optical or radar, satellite or airborne imagery/photography)
Regional geochemical sampling (rocks, stream, panned concentrates, soils) including proposed analyses
Reconnaissance geological mapping
Other reconnaissance studies (including computer/desk studies)
B. First-stage follow-up work (building upon the previous work of the current licence holder or of others)
Follow-up stream sediment sampling (including panned concentrates)
Follow-up soil sampling
Systematic rock sampling
Pitting and trenching
Geochemical analysis of samples (details of analytical methods; elements etc)
Exploratory drilling/augering
Down-hole geophysics;
Ground geophysics (e.g. IP; resistivity; EM);
Semi-detailed geological mapping
Other work
C. Detailed follow-up (on identified mineral prospects aimed at defining the extent and economic viability of discovered mineralisation).
Systematic, geochemical (sub)soil sampling;
Pitting and trenching
Shallow drilling/augering
Diamond drilling programme
Downhole geophysics
Petrographic studies and ore mineralogy
Geochemical analysis of samples (details of analytical methods; elements etc)
Surface and subsurface detailed geological mapping
Geological modelling & orebody definition
Preliminary economic evaluation
Other work
Details of equipment to be used
Details of people to be employed including for each: name, nationality, qualifications, and position in team

Expenditure commitment for year ahead
Outline work plan for the subsequent year(s) – this should describe in general terms the anticipated programme assuming a successful outcome to the current programme

ANNEX 2: CHECKLIST FOR PREPARING TECHNICAL REPORTS (ANNUAL, SURRENDER, FINAL)

General
Title, date and authors: The report cover and/or inner page should include a suitable title and other information including: licence area name; licence number; name of licence holder, name of operator (if different to holder), report type (e.g. annual, final, surrender), author(s), reporting period, and date of report. It may be also helpful to add a company report reference number.
Contents: A contents page should give a breakdown section by section, including appendices, together with page numbers. It should list tables, figures and maps including any loose maps contained in a sleeve at the back of the report or in a separate volume. Where a report comprises more than a single volume, each volume should be numbered, and sub-titled. Each should have its own contents page which should additionally refer to the other volumes.
Executive summary (ES): Reports should contain a summary (or abstract) of the work carried out and the results obtained. The ES should provide a synopsis aimed at the competent, non-specialist, avoiding jargon as far as possible. The ES should not normally need to exceed 1 to 2 pages. Where there is more than one volume, the ES to the main volume should cover all reports whilst the ES to each of the other volumes should cover only the work contained in that volume.
Main text (the content will depend on the type of report and year/stage of the licence)
Geological setting: This section should provide an overview of the geology based on previous work by the Geological Survey, the licence holder and/or others. It would normally include an outline of the stratigraphy, structure, known mineralistion and prospectivity of the area. It should also briefly describe the topography and physiology in so far as these are relevant to the potential for mineralisation and the design of the work programme. (NOTE: For annual reports, it is not necessary to repeat this information each year after the first year, although a brief summary might be useful).
Previous exploration work: Where previous prospecting has been carried out over all or part of the licence area, the report should summarise this (and give references). If this is the first annual report, then this should describe any work undertaken by previous licence holders. In subsequent annual reports only the previous work by the current licence holder needs to be summarised.
Strategy: The target mineralisation and exploration strategy should be briefly described.
Logisitics: Equipment employed, staff involved (foreign and local), access and dealings with land owners should be summarised.
*The following is a checklist of possible items for inclusion. In the case of **annual** reports, sections will correspond to the approved work programme for the year. F**inal** reports will comprise a summary of all the previous years' work together with the detailed results for the final year. S**urrender** reports (for part of an area), must contain full details and results of all work done in the surrendered area over the full period of the licence. In each case, figures, tables and maps should be included as necessary to fully describe and document the work.*
A. Regional Exploration:
Remote sensing (interpretation of aerial photographs, satellite imagery and other imagery) and airborne geophysics. Although this will be subject of a separate report, the main results and conclusions should be summarised
Geochemical sampling including geochemical analyses subdivided into
• rock samples
• streams sediments (including panned concentrates)
• soils
(NB: The geochemical results and their interpretation should be summarised in the main text together with maps/plots, but full analytical data must be provided in appendices)
Geological mapping (include copy(ies) of resulting map(s) at original scale)

Summary and conclusions, and implications for further work
B. Initial follow-up work.
Stream sediment sampling including panned concentrates
Soil sampling
Surface rock sampling
Pitting and trenching
(NB: Each of the above should include a summary of the results of mineralogical testing and geochemical analysis. The full data with locational information should be provided in appendices)
Shallow drilling/augering or diamond drilling and analytical results
Downhole geophysical logs
Ground geophysical surveys (e.g. IP; resistivity; EM) – full data and interpretation
Semi-detailed geological mapping (maps at original scale to be included)
Summary and conclusions, and implications for further work
C. Detailed follow-up work. (If more than one prospect has been investigated, each should be described separately).
Systematic, close-spaced geochemical (sub)soil sampling
Pitting and trenching
Shallow drilling/augering
Diamond drilling
Petrographic studies and ore mineralogy
(NB: Each of the above should include a summary of mineralogical testing and geochemical analysis. The full data with locational information should be provided in appendices)
Down-hole geophysical logs
Surface and subsurface geological mapping (maps at original scale to be included)
Geological modelling
Preliminary economic evaluation
Synopsis and conclusions, and outline of next stages
D. Summary & conclusions For annual reports, this should include implications for the discovery of economic mineralisation and a forward look covering the remaining period of the licence.
Appendices
A separate appendix should be provided for each dataset acquired and referred to in the main report. This will include, but not be limited to: geochemical stream sediment, soil and rock samples; drilling logs (qualitative, mineralogical, grade, geophysical etc); and geophysical datasets. These will normally be presented in tabular form and correspond to the data supplied in digital format.
All maps, plans, sections, logs, locational information etc must be clearly labelled
Maps and plans should be compiled and presented at standard scales (e.g. 1:1,000, 1:25,000; 1: 50,000) with a scale bar in metric units, and a north point (grid, true or magnetic). They should show full coordinates referenced to the UTM projection for Sierra Leone (Grids 28 & 29)
A copy of the approved work programme and expenditure commitment for the period reported on should be included as an appendix.
List of all digital data provided including details of data formats.
References
Next year's work programme
In the case of an annual report, or a renewal application, a proposed work programme for the following year, prepared according to Annex A, should be separately provided.