DANMARKS OG GRØNLANDS GEOLOGISKE UNDERSØGELSE RAPPORT 2002/112

DRAFT FINAL REPORT
Consultancy for the Design of a Mining Cadastre Development Strategy

RFP#MSD-TA/NDF-277-2

Prepared by GEUS 20th of December 2002

GEOLOGICAL SURVEY OF DENMARK AND GREENLAND
MINISTRY OF THE ENVIRONMENT

GEUS

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ANNEXES

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Technical Assistance to the Ministry of Energy and Minerals
United Republic of Tanzania
Mineral Sector Development
Technical Assistance Project
Component E: Mining Cadastre

Prepared by GEUS 20 December 2002
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GEOLOGICAL SURVEY OF DENMARK AND GREENLAND
MINISTRY OF THE ENVIRONMENT

G E U S

CONSULTANCY FOR THE DESIGN OF A MINING CADASTRE DEVELOPMENT STRATEGY

RFP#MSD-TA/NDF-277-2

DRAFT FINAL REPORT

December, 2002

Executive Summary

Foreword

This report concludes a period of intensive work during the period from May 15th through October 12th, 2002. It is a pleasure to present our recommendations based on many discussions and analyses, and we are convinced that the results presented here clearly points towards ways to fulfil the goals set out in the Mineral Policy.

The Danish representatives of the Consultant have been present in Dar es Salaam from May 15th to September 10th, and in the spirit of the WB participation principle we have actively sought the co-operation and involvement of the staff of the Ministry. We have received constructive support from members of the Core Team, Ms. L. Mnzava, Head of Licensing and Registry Sub-Section, Dr. P. D. Kafumu, Head of Promotion and Statistical Sub-Section, Mr. K.P. Lupindu, Assistant Project Manager, PMU, and Mr. A. Tesha, Technical Officer, PMU. Further, Mr. F. Makyao, Senior Geologist, LU, and Mr. J. Sarota, Senior Geologist, LU, have provided valuable support and information. We wish hereby to express our sincere thanks for their collaboration in the project.

Special thanks are due to Mr. H.H. Mruma, Project Manager, PMU, for fruitful discussions, the organising the project and for providing office facilities and logistic support to the project.

On behalf of the Consultant – GEUS, KAMPSAX and SEAMIC,

Per Kalvig,
Team Leader , GEUS

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Head of Department, GEUS

Executive Summary

Consultancy for the design of a mining cadastre development strategy

RFP # MSD-TA/NDF-277-2; Technical Assistance to the Ministry of Energy and Minerals

Draft Final Report Ver. December 2002

Introduction

This report concludes a period of intensive work during the period from 15 May 2002 to 12 October 2002. Version 1 of the Draft Final Version of the report was presented at a meeting in Dar es Salaam on 24 October 2002. Subsequent to this meeting the Consultants agreed to a restructuring of the content of the report according to a request from the PMU. Version 2 of the report can now be presented here.

According to the TOR and the work plan for the project the Consultants divided the work into a number of tasks. These – and the relevant subtasks - were carried out as planned with one exception - see below. The following tasks were included

Task 0:	Inception
Task 1:	Assessment of MEM's Mandate and the Current Licensing System
Task 2:	Assessment of the Legal and Regulatory Framework
Task 3:	Inventory of Existing Mineral Rights
Task 4:	Recommended Technical Design Specifications for a Mining Cadastre Information Management System (MCIMS)
Task 5:	Specification of Information System and Information Technology Requirements
Task 6:	Assessment of Institutional Capacity and Preparation of Training Programme for Mineral Cadastre
Task 7:	Proposal for a Mining Cadastre Development Strategy
Task 8:	Reporting and Presentation

Version 1 of the Draft Final Report was submitted to the Client on October 15th 2002. The report was structured according to the tasks above. It was during the presentation of the project agreed with the Client to restructure the report in three parts: (1) Analysis, (2) Recommendations and suggested strategy, and (3) Implementation.

The Executive Summary does not contain a complete description of the system as it is, but focuses on the issues and problems revealed and of special relevance for the development of an efficient future cadastre system. **Operational use of the results of this project presumes careful study and understanding of the details as presented in the report proper.**

Analysis and findings

Institutions

The current organisation of the Mineral Division encompasses two sections, both headed by an Assistant Commissioner: (1) The Mines Section, encompassing the Sub-Sections, (i) Inspector of Mines; (ii) Co-ordination and Monitoring; (iii) Explosives, (iv) Environmental Management, and (v) the Zonal Mines Offices (ZMO) and the Resident Mines Offices (RMO). (2) Mineral Development Section encompassing the sub-sections: (i) Promotion and Statistics; (ii) Legal and Fiscal Affairs, and (iii) the Licensing and Registry Sub-Section (LU).

All sub-sections are involved in and have responsibilities in relation to the administration of the Mining Act and the Regulations. The Licensing and Registry Sub-Section is responsible for mineral rights applications and the Mining Cadastre. Moreover the Zonal Mines Offices and the Resident Mines Offices are undertaking local LU duties.

The present system for the handling of licenses is based on the existing law. The Licensing and Registry Sub-section of the MEM is in control of the handling of applications, preparation of draft licences, registration and archiving of licenses granted. However, several authorities and offices in MEM are involved in the process, and external institutions and non-institutional offices are stakeholders in the processes involved in licensing.

The zonal offices constitute a special problem. They appear to receive many applications but only a relatively low percentage of the results in a licence granted. They often manage a large number of PMLs and face many rushes in many areas and the associated legal issues, including also many kinds of disputes between licensees, farmers, villagers and districts. They complain of non-complete communication of licenses granted by the LU.

Offices in other Ministries express concern about the weak communication with the MEM and point to the necessity for permanent consultation on issues, the need for fair compensation of legal holders of rights, and that there must be consistency between the laws administered by different ministries.

The mining sector as such has serious concerns, such as the difficulty in obtaining up-to-date information on existing licenses and vacant areas, the numerous conflicts between licensees, the existence of illegal mining and the tolerance thereof by administration, and the non-transparency of procedures for the granting of licensees. The unclear activity and role of the Association of Miners also caused some speculations.

The consultants have analysed and described the License Application Process in detail. The flow charts show clearly that files and information are moving constantly between the LU, different MEM offices and the applicant (but apparently not always reach the ZMO/RMOs). Security simply cannot be ensured under these conditions. Practical improvements can be suggested, such as:

- Define a unique, accessible index to retrieve the status of each application;
- Equip the Licensing Unit with adequate office equipment inclusive a photocopier;

- Minimise the number of transfers of files between various offices;
- Improve information to the applicants;
- Ensure the security of official and confidential documents.
- Additional improvements come from amendments of the Act.

Some copies of licenses are non-existent in the Archives for undefined reasons. Improvements are necessary to ensure consistency between applications / licenses stored in archives and entries in Application Registers and in the computer files. Implementing a better numbering system and a complete verification plan can solve this.

The archives of LU contain a copy of all Division A and B Licenses and booklets with the applications for PPL/PML. Applications for Division A/B Licenses are stored in the confidential file of the Ministry with another index. Zonal Mines Offices are not fully informed. Archives are too scarce and security of access to applications and Licenses cannot be ensured.

The duration of the process for granting a License is not regulated and depends not only on the complexity of the application, but also on the permanent contact between LU and applicant. A service-provider approach of MEM should be implemented to ensure that applications are processed in an acceptable time.

The Consultants have assessed the MEM's mandate in the view of major issues, such as: (i) Reporting from licensees; (ii) Inspections; (iii) Conflicts; (iv) Information to the applicant; (v) Non active licenses; (vi) Illegal mining; (vii) Overlapping rights; and (viii) Communication with regions. A number of issues must be taken care of in order to reach a stage where the co-operation between the various institutions and the applicant can be said to be satisfactory:

- ZMOs receive only a very small percentage of the Reports and consequently cannot act. The Environmental Assessment is not always provided, and not controlled by professionals. The consequence of the "polluter pays" statement of the Policy cannot be systematically applied.
- Recent mine accidents demonstrate the necessity for a better control of security and environmental norms. It is possible to amend the Act to decentralise some penalty applications at the Zonal Mines Office and to train inspectors in the control functions to carry out and generally how to operate.
- The Act does not provide the methodology necessary to calculate the amount of the compensation. Clear instructions should be provided to the Zonal and Resident Mines Office to clarify the processes. The definition of the "lawful occupier" is not fully in accordance with the newly promulgated Land Law. Another issue is the demand for taxation of licensees by the District where the mines are located, not defined in the Act.
- The applicant cannot be easily informed on the progress of the application. The lack of a general index, the numerous steps of transfers of the application from one office to another, the absence of complete and up-to-date accessible legal information concerning existing rights reinforce the opacity. The solution is the implementation of a MCIMS

with a change in the approach; changing from bureaucratic management mode to service to the customer mode is necessary.

- The provisions of the Act cannot ensure that operation starts as soon as the Prospecting or Mining License is granted. Inversely, the obligation to ZMO / RMO to report on founded dormant licenses during inspections is not followed by any legal action, including cancellation of the license.

- Illegal mining is widespread in the country. Some attempts to tolerate illegal mining if they accept and apply some security standards are not justifiable because it contradicts the objective of the Mineral Policy of "rationalising the licensing system" and "upgrading artisanal mining into organised and modernised mining". The Law must be enforced.

- The non-overlapping is not ensured because of weaknesses of the current computer system and inspections. It may soon create a very negative impact on potential investors if not addressed instantly and adequately. The rapid implementation of a modern mining cadastre system is a priority.

- Demarcation of the boundaries of the licenses must be done in accordance with the regulations in order to facilitate field surveys and dispute solving.

- The difficult communication between Licensing Unit, Zonal and Resident Mines Offices was often pointed out with demand of equipment, telephone and Internet connection in order to improve co-ordination, control and information to the public. Improving communication with Zonal /Resident Mines Offices requires not only modern equipment, but also introduction of manuals describing the procedures to be followed, directions and training courses in general administration.

Based on these analyses, the Consultants have identified and evaluated several obstacles for the efficient work of Zonal and Resident Mines Offices:

- The difficult application of some legal and regulatory constraints, as seen in the sssessment of the Legal and Regulatory framework, see below;

- The non-existance of instant, complete information on existing applications and licenses;

-) The lack of resources for transport, inspection;

- Poor infrastructure, no safe storage rooms, facilities, no appropriate archives;

- Insufficient skill to improve and limited human resources.

The Consultants feel that improving security, transparency and efficiency necessitates the training of employees, the purchase of minimum necessary equipment to Zonal and Resident Mines Offices, the installation of modern and adequate archives, and the enhancement of the registration operations.

A future, modern mining cadastre information management system can solve problems in providing a legal database of the prospecting and mining areas in use and make the status of these accessible to the Licensing Unit and all national offices, but a MCIMS cannot operate at all without changing the approach of the administration, so that it conforms with the

stated Policy, providing service and information to the applicants and licensees, limiting bureaucratic constraints to the minimum required by an amended Act, ensuring transparency, access for the public, but also security and confidentiality.

Authorities with overlapping interests and responsibilities related to MEM

With the assistance of the MEM core team, the Consultants took special care to identify all authorities, which could have overlapping interests and which should therefore be taken into account in the analysis. In order to identify potential stakeholder interest with regard to the development of the Mining Cadastre Information Management System, interviews have been held with (i) seven offices within MEM, (ii) eleven government institutions and (iii) eight private stakeholders:

- The interviews held with MEM staff revealed a communication gap between the various sections that needs to be addressed, enabling Zonal Mines Offices (ZMO), Resident Mines Offices (RMO), and the Environmental Management Sub-Section to act in accordance with the intentions of these bodies. As stated elsewhere this constraint is caused mainly be the lack of adequate resources and instructions.
- The National Environment Management Council (NEMC) conveyed the view that this office shall assess *all* granted licenses with respect to their potential environmental impact. However, it is the opinion of the Division of Environment, Vice Presidents Office, that MEM is responsible for informing NEMC about all mining projects requiring an EIA and further that all PML operations are in general exempted from environmental assessments. Clear definitions of the respective roles/authority of NEMC and MEM with regard to the various phases of mining projects must be worked out, and an appropriate system for communication should be organised.
- Disputes between wildlife interests and mining interests are observed. An appropriate communication routine should be established to the Ministry of Natural Resources and Tourism, governing forestry and wildlife areas, ensuring that all applicants are aware of their obligations with regard to the application for a license to work within a reserved forest or wildlife area.
- Ministry of Land Use and Settlements has experienced many disputes between mineral rights holders and villagers or other lawful occupiers. The boundaries between the various acts influencing such situations need clarification and the appropriate communication lines should be established.
- The topographical map sheets are in general more than ten years old, some even more than forty years old. The maps are based on a UTM projection and a 1992 datum WGS. Ministry of Land Use and Settlements has the copyright for all 1:50,000 scale maps.

- The Ministry of Regional Administration and Local Government conveyed the view that revenues from mining activities should benefit the local areas, and further finds that their organisation should be in charge of monitoring the environment. There is a strong need for clarification on these two issues.
- The private organisations find that the administrative system in the Licensing Unit is inadequate and that processing of applications is delayed beyond any reasonable standard, and moreover claim to have experienced corruption, fraudulent activities and conflicts of interests.
- The implementation of a proper MCIMS will eliminate complaints like those expressed by the private organisations. However, in addition hereto the importance of tight communication lines/routines to the institutional stakeholders should be addressed.

The Mining Act (1998) and Regulations (1999)

For a complete picture of how the present system can be improved, it is also necessary to study the Mining Act (1998) and evaluate how this defines and influences the practices of offices and applicants. The Consultant carried out a detailed assessment of the legal and regulatory framework for the mining sector.

In general, the Mining Act, 1998 and attached Regulations, 1999 are in accordance with the Mineral Policy, 1997. However, the practical experience during several years has shown some limitations and difficulties of application that may result in consequences opposing the objectives stated in the Policy when applying the Act and Regulations.

The legal and regulatory framework was scrutinised according to a list of topics representing an inventory of major issues: (i) the application processes with the shortcomings and bottlenecks resulting in negative consequences; (ii) the applicant for aspects concerning foreign investor, eligibility and conflicts of interest; (iii) the different types of licenses and specificities; (iv) the definition of different type of minerals and justifications; (v) the conditionality for granting a Licenses; (vi) the reporting obligations; (vii) the different rights and limitations; (viii) the exclusivity and problems of overlapping rights; (ix) different constraints and obligations related to the obligation of activity, cancellation, change of area, safety and insurance; (x) the demarcation and the co-ordinate system; (xi) the institutional arrangements; (xii) the relations with other stakeholders.

Based on the analysis, the Consultants points to a number of topics of importance for the objectives of the project. They are briefly summarised here:

- It appears that the "first come, first served" principle is not properly applied, and that the Minister has a discriminatory role in some cases. The duration for the processing of an application is not regulated except for some rare exceptions. The responsibility of the Licensing Unit and of the Registrar, as well as the administration, is not considered in a customer-oriented approach. Finally, the bidding process for granting licenses in a va-

cant area defined by the Minister for this purpose is not following international standards.

- The limitation of foreign applicants for Mining Licenses is very easily overcome by the application for a SML. Then the definition of the eligibility of the applicant does not take into consideration conflicts of interest.
- The types of licenses defined in Divisions A, B, D of the Act creates a complex matrix to take into consideration for all cases. Moreover the use of specificities for gemstones is questionable.
- Minerals are classified in categories according to lists where several exceptions make the application problematic, like gold, but also with other minerals included or not in the Act like petroleum, radioactive minerals.
- Type of license and type of mineral define conditions of duration of a license, duration of renewals, maximum area, and obligation of relinquishment. The complex matrix is not entirely defined in the Act and Regulations and many specific conditions make the LU management very complex.
- The reporting obligations are weak, incomplete, with discriminatory power to the Minister to exempt on the obligations. EIA, or similar, simplified environmental requirements are not defined for many types of licenses, with possible exemption in other cases.
- Rights of transfer licenses are allowed, but applications shall be submitted in advance.
- Compensation rules are not fully detailed and may contradict articles of the new Land Law. Finally, rights of lawful occupiers should be managed in a simpler way without involving the Minister.
- Overlaps and exclusivity rules between existing rights and a new application must take into consideration all possible cases of license crossed with type of application. It provides for a very complex matrix where not all cases are defined in the Act and Regulations.
- The obligation of activity is not regulated as an incentive for the holder to start activity. The process of surrendering part of the whole area covered by a license is not easy to implement and needs useless authorisations. Cancelling a license is a very heavy and centralised process that has proved inefficient. Finally, safety rules are not similar for all Licensees.
- Demarcation is possible without doubt if the same co-ordinate system is used. However, the regulation does not define the projection to use.
- The role and responsibility of the Minister shows that he is involved in decisions at the operational level, that he has a discriminatory power eliminating many of the requirements of the Act, than he cannot act as a promoter. A better balance of responsibilities between Commissioner and Minister is recommended. Finally the role and even the existence of the Mining Advisory Committee should be considered. Resident Mines Offices are not defined in the Act.

- The new Land Act, enacted after the Mining Act, uses new concepts of land right and land use holders that may contradict some definitions of lawful occupier and vacant land defined in the Mining Act. This should be corrected in co-operation with the Ministry of Lands. There is no provision in the Act and Regulations concerning the exchange of information with other administrative stakeholders.

The Consultants feel that the following conclusions are warranted:

- The detailed analysis shows that some data are missing or incomplete and that amendment of the Mining Act is needed. Some articles are incomplete, sometimes unclear or contradictory – like the application of the principle of "first come, first served". Finally, some articles related to the discriminatory role of the authorities, special conditions for some licenses - gemstones for example -, specific restrictions or limitations – pre-conditions, minimum expenditures - should be limited or suppressed when not necessary to improve transparency and efficiency.
- Some sections of the Act are not in line with the statements of the national Policy – harmonising all statutes, small- and large-scale operations, simple and transparent procedures, harmonising with other land statutes, grouping minerals for facilitating targeting of incentives, skill development or administration. These sections should be clearly amended. The proposed amendments are divided into two types: (i) the revision of certain sections in order to clarify, unify and simplify the Law; (ii) the complements and adjustments in some sections in order to complete missing or correct inconsistent information.
- Some aspects of the Act represent an old concept of mining acts with respect to the prescribed discriminatory procedures. The complex matrix structure of the Mining Act, 1998, does not reflect the concepts in the international mining law reforms, aiming at simplifying the legal framework, transparency, applying non-discriminatory principles, and as a consequence increasing efficiency in processing applications.

The strategy proposed (see later), Strategy B: Mining Act Simplification, induces a reformulation of several sections, and in order to achieve the objectives, amendments consider the following: (i) reducing the number of titles; (ii) rights granted according to objective criteria; (iii) exclusivity of the mineral rights; (iv) adjustment of the Regulations accordingly.

The Consultants worked out a draft proposal for legal and regulatory amendments as listed below. This was part of the background that the Strategy Meeting held on 18th July 2002 approved the selection of Strategy "B", named "Simplification of the Act" based on the following principles: (i) Simplification and reducing the number of type of rights; (ii) Objective criteria (non discriminatory decisions); (iii) Exclusivity of all mineral rights; (iv) Adjustments of the regulation according to the amended act. Main suggestions for amendments encompass the following:

- This selection induced that the amendments proposed relate to some major issues: (i) reduce the number of licenses to a minimum; (ii) re-define the role and responsibility of all decision-makers (Minister, Commissioner, Licensing Unit, Zonal Offices, Mining Advisory Committee); confirm the role of the State as defined in the National Mining Policy; (iii) standardise the process of application for license, renewals, cancelling; standardise the rights and obligations; (iv) ensure the compatibility of the definitions in the

Act and with other stakeholders; (v) improve the efficiency of the administration by clear, unambiguous and comprehensive rules; (vi) clearly define large-scale and small-scale operations, rights and charge in order to promote prospecting and mining activity by locals; (vii) complete the Act with missing information, clarify some uncertainties, add necessary requirements.

- General changes include: (i) reducing the type of minerals in "building material" and "minerals"; (ii) reducing the type of License by "prospecting license, mining license and small-scale (or primary) license; (iii) replacing "Minister", "Commissioner" or "licensing Authority" by simply "Licensing authority" with an extended and clear definition; (iv) adding in Part II general principles of application, applicants, granting, cancelling License and completing the definitions; (iv) ensuring co-ordination with other stakeholders, especially the Ministry of natural Resource and the Ministry of Lands, to clarify overlapping rights issues and compensation rules; (v) clarify reporting requirements.
- More specifically, the structure of the Act is still the same: 11 Parts, 5 Schedule, Part IV divided into 4 divisions with a revised title: (A) Prospecting License; (B) Mining License; (C) Supplementary provisions affecting Mineral Rights under Division A and B; (D) Primary Licenses.
- The reduction of type of License to building materials and Minerals aims at simplifying and standardise the processes, clarifying interaction issues, avoiding inconsistencies and contradictions in the current Act (gold mines). It is proposed that there is no Prospecting License granted for Building Material or for any search activity without operation (equivalent to a primary prospecting license without demarcation).
- Conditions of granting Licenses, rights and obligations are the same for each type of License with a minimum of exceptions, and limited requirements for small-scale miners. The control of the financial capacity, the deposits of minerals, the profitability of a mining activity by the State is replaced by agreed contractual requirements that the holder of license must fulfil. The granting by Tender process is revised to fit with international standards.
- The "Licensing Authority" is defined clearly initially, and the tasks of the Minister, Commissioner, Zonal Offices clarified. It is proposed that the Mining Advisory Committee is disbanded, but that Evaluation Committees are created to evaluate proposals of Tenders, or large-scale applications. The Zonal and Resident mines Offices are defined and their involvement in the approval processes consolidated in order to better co-ordinate.
- Principles are clarified and completed. Definitions of Section 4 are completed when appropriate and basic principles applicable to all the Licenses grouped in Part II, in order to ensure a maximum of standardisation and simplification in the management of the applications and Licenses by the Licensing Authority.
- A simplified application process of granting unique Primary Licence, including right of prospecting or mining, automatic renewal when paying fees supports the support of artisanal and small-scale miners. Inversely, cancelling licenses is not justified by the in-

eligibility of the applicant only, but by freezing activity or non-payment of fees, with clear rules.

- An improved involvement of other stakeholders is ensured by the compatibility of the definitions on land rights and lawful occupiers, compensation rules, report dispatching, maps and co-ordinates common regulation.
- Reporting processes and requirements are the same for all applicants and holders of Mineral Rights, with simplified requirements for small-scale operations. Environmental issues are especially more detailed and consistent. Other report requirements are also standardised in order to simplify the tasks of the administration and make them controllable. The result should be a better management of the Mining sector and an increased efficiency of the administration.
- The Strategy Meeting held on 16th July 2002 approved the selection of Strategy "B", named "Simplification of the Act" based on the following principles: (i) Simplification and reducing the number of type of rights; (ii) Objective criteria (non discriminatory decisions); (iii) Exclusivity of all mineral rights; (iv) Adjustments of the regulation according to the amended act.
- This selection induced that the amendments proposed relate to some major issues: (i) reduce the number of licenses to a minimum; (ii) re-define the role and responsibility of all decision-makers (Minister, Commissioner, Licensing Unit, Zonal Offices, Mining Advisory Committee); confirm the role of the State as defined in the National Mining Policy; (iii) standardise the process of application for License, renewals, cancelling; standardise the rights and obligations; (iv) ensure the compatibility of the definitions in the Act and with other stakeholders; (v) improve the efficiency of the administration by clear, unambiguous and comprehensive rules; (vi) clearly define large-scale and small-scale operations, rights and charge in order to promote prospecting and mining activity by locals; (vii) complete the Act with missing information, clarify some uncertainties, add necessary requirements.
- General changes include: (i) reducing the type of minerals in "building material" and "minerals"; (ii) reducing the type of License by "prospecting license, mining license and small-scale (or primary) license; (iii) replacing "Minister", "Commissioner" or "licensing Authority" by simply "Licensing authority" with an extended and clear definition; (iv) adding in Part II general principles of application, applicants, granting, cancelling License and completing the definitions; (iv) ensuring co-ordination with other stakeholders, especially the Ministry of natural Resource and the Ministry of Lands, to clarify overlapping rights issues and compensation rules; (v) clarify reporting requirements.
- More specifically, the structure of the Act is still the same: 11 Parts, 5 Schedule, Part IV divided into 4 divisions with a revised title: (A) Prospecting License; (B) Mining License; (C) Supplementary provisions affecting Mineral Rights under Division A and B; (D) Primary Licenses.
- The reduction of type of License to building materials and Minerals aims at simplifying and standardise the processes, clarifying interaction issues, avoiding inconsistencies and contradictions in the current Act (gold mines). It is proposed that there is no Pros-

pecting License granted for building material or for any search activity without operation (equivalent to a primary prospecting license without demarcation).

- Conditions of granting licenses, rights and obligations are the same for each type of License with a minimum of exceptions, and limited requirements for small-scale miners. The control of the financial capacity, the deposits of minerals, the profitability of a mining activity by the State is replaced by agreed contractual requirements that the holder of license must fulfil. The granting by tender process is revised to fit with international standards.
- The "Licensing Authority" is defined clearly initially, and the tasks of the Minister, Commissioner, Zonal Offices clarified. It is proposed that the Mining Advisory Committee is disbanded, but that Evaluation Committees are created to evaluate proposals of Tenders, or large-scale applications. The Zonal and Resident mines Offices are defined and their involvement in the approval processes consolidated in order to better co-ordinate.
- Principles are clarified and completed. Definitions of section 4 are completed when appropriate and basic principles applicable to all the licenses grouped in Part II, in order to ensure a maximum of standardisation and simplification in the management of the applications and licenses by the Licensing Authority.
- A simplified application process of granting unique Primary Licence, including right of prospecting or mining, automatic renewal when paying fees supports the support of artisanal and small-scale miners. Inversely, cancelling licenses is not justified by the ineligibility of the applicant only, but by freezing activity or non-payment of fees, with clear rules.
- An improved involvement of other stakeholders is ensured by the compatibility of the definitions on land rights and lawful occupiers, compensation rules, report dispatching, maps and co-ordinates common regulation.
- Reporting processes and requirements are the same for all applicants and holders of Mineral Rights, with simplified requirements for small-scale operations. Environmental issues are especially more detailed and consistent. Other report requirements are also standardised in order to simplify the tasks of the administration and make them controllable. The result should be a better management of the Mining sector and an increased efficiency of the administration.

The present Mineral Rights Inventory

The Consultants' assessment of the current system –'database' – for administration of mineral rights, which is based on Microsoft Excel and MapInfo files and stored on several non-linked PC's, revealed severe problems making it impossible to base the project on the existing system:

- The system consists of about 160 data files, not ordered and without coherence. Moreover back-up procedures are undertaken randomly and no safe storage is available.

- The data entry procedures are inadequately described, and applications and granted licenses are not systematically entered.
- The 'database' does not contain all licenses/records, and key data are frequently not entered or erroneous.
- The 'database' and set-up of the system cannot guarantee that the granted licenses are not overlapping. The major additional problems with the existing computer system used for controlling overlaps are, (i) data are not structured in a database; (ii) no unique co-ordinate system is applied; (iii) procedure manual and verification routine are not fully in place.

The conclusion is that a clean database has to be established and that implementation of a new database and Mineral Rights Inventory is urgently needed to provide a facility, which can be used until the new MCIMS have been delivered.

After thorough discussion with MEM counterparts an alternative work plan for the project was agreed on. The Consultants have developed a new database for use as a Mineral Rights Inventory, and at the end of the project it is made available for the immediate use of LU. The structure of the database was developed in close co-operation with the Client to ensure that the database is tailor-made to suit the Clients present needs, and considering also the requirements for the later implementation of a new MCIMS. The database can be briefly characterised by the following information:

- The database is programmed in MS Access, part of the MS Office Professional suite of programs in combination with MapInfo, a GIS programs. In addition the use of Access will allow easy migration of data to other platforms in the future, i.e. SQL Server technology.
- The database is constructed as a relational database, ensuring that modifications and additions of the database structure are possible as the needs change over time.
- The documentation of the database is provided as a schematic presentation of the data relationships – the data structure, and as descriptions of database.
- The user interface is by database forms on-screen, which automatically pops up when the program opens. "Enter License Data" opens the main data entry form. "Add new license holder" displays a form for entering all relevant data on the applicant and data related to transfer of license. The database provides sub-forms for entering detailed information (such as fees, addresses, co-ordinates etc.) drop down menus.
- The sub-form "Co-ordinates" allows for entering of an unlimited number of co-ordinates. For new application the co-ordinate is set to "Applied for", and later when the license is granted the status us changed to "Granted and Verified", and further changes is then disabled.

- Queried information can be printed through standard Access Report Generator. Moreover some search and reports menus are developed to support the most commonly used search and report criteria.
- The database is provided to the Client as a CD, and is installed on the Project Compac Desk Top PC.
- Three different types of Data Entry Forms are developed ensuring that all relevant information for each license is systematically recorded and systematically validated before being entered to the Mineral Rights Inventory; it also allows keeping track of any amendments made to each license.

Plan of verification of existing licenses

The Consultants must strongly recommend that all possible efforts be used to verify the existing record of all licenses, and that a thorough work is done on building a new mineral rights inventory. This is necessary simply to carry out the administration of the present system and it is necessary as a first step towards the creation of a new modern MCIMS with correct data depicting the real situation in the country.

- Due to the fact that both the confidential files and the Mineral Rights 'database' are characterised by data errors, missing records and missing key information, alternative sources have to be established for the development of a clean database/clean Mineral Rights Inventory (MRI).
- To establish the clean MRI it is deemed unavoidable to notify – zone by zone - all license holders via the Gazette and the press requesting them to submit license documents and receipts of fees paid.
- Based on the information submitted, co-ordinates and other relevant data must be updated and entered by special registration forms, for later assessment and registration in the new Mineral Rights Inventory.
- All overlapping co-ordinates must be identified and corrected considering the types of licenses involved in the overlap, and if they have the same strength priorities must be made based on date and time of application.
- It is recommended that for a pre-defined period during the establishment of the clean inventory no applications should be accepted and no applications should be granted. The appropriate legal measures for such a graze period should be ensured by MEM.
- Subsequently the licensee shall submit a Surveyors certificate of beacon positions proving that the actual beacon position in the field is in accordance with the new license certificate.
- It is assumed that up to about 4,000 license holders will comply with the notice, thus about five parallel offices is required, each staffed with not less than three professionals, two technicians and secretaries. Moreover each office should be equipped with e.g. PC, photocopier, printer, telephone and filing cabinets.

- It is estimated that the duration for undertaking all phases of the Verification Plan for all zones is about 14 months. The first zonal area could be ready after about five months, and the additional zonal areas to follow successively

Technical design specifications for the development of a new MCIMS

The Consultants have put together and analysed plans for three possible configurations of a future Mining Cadastre Information Management System (MCIMS). These are all based on necessary common technical design specification and are detailed in the report: (i) Configuration A without direct access to the database by the ZMO; (ii) Configuration B with the minimum configuration to make this access possible in the existing conditions, and (iii) Configuration C with a modern system ensuring future extensions.

- Irrespectively of which configuration is selected, the implementation plan should go with the development of the training plan, tender for MCIMS, amendments of the Law and Regulations, equipment and office supply.
- The co-ordinates should be measured using the WGS-84 datum or Arc 1960. The Universal Transverse Mercator Projection (UTM), 36th zone South, should be used as projection, preferable using meters as units. Central Meridian 33.
- The integration with other databases is not appropriate because inducing fully co-ordinated decisions. Modern developments use more co-ordination than integration, allowing links and independent developments. The MCIMS is one of the first high-tech developments in the land administration in Tanzania, and it is recommended to organise institutional co-ordination before developing common access keys.
- The database maintenance cannot be ensured before the verification plan is implemented and migration to the new system cannot be done otherwise.
- It is recommended by the Consultants to select the B Configuration, which (i) ensure that future improvements are implemented; (ii) can be implemented in an acceptable time, minimising the risk of long-term work with two systems in parallel. The risks are: (i) necessity of implementing a long-term plan, including not only MCIMS technology but also institutional strengthening and amendments of the Law; and (ii) shortage of available budget.

Recommendations on future information and system technology

Based on the analysis, the Consultants add the following comments to the choice of Configuration B for the future MCIMS:

- The pros and cons of each configuration are listed in the report in order to propose the best configuration to the needs and constraints in Tanzania, MEM, the LU and ZMOs. It was considered that Configuration B is the most suitable in Tanzania, and Technical Specifications and Tenders are made accordingly.

- The MCIMS consists of hardware, standard software, application system, and network installation, based on the configuration selected and the resultant list of equipment and services will be part of the Technical Specifications of the Tender Document
- The MCO and the ZMOs should share the same up-to-date information on applications and licenses. The Information System and Information Technology Architecture are based on a network installation, which allows for communication between the Mining Cadastre Office (MCO) and the ZMOs, with databases providing registration access to MCO and information on the right location to ZMOs. Major issues as security, control of external access to the database or queries, possible future extensions are taken into consideration.
- The hardware and standard software are listed in the Report. Suggestions are Microsoft products on 5 desktop computers with Windows 2000 and Windows Office XP. The server software is Microsoft Windows Server 2000 and ISA Server 2000 to handle the firewall and external communications (Proxy server).
- The database environment is also Microsoft (Access or SQL), where Access is opted for, being the best choice at the moment and an SQL Server at a later stage. The database handles all entries and the data is only kept in the database.
- The GIS should be a component of the database and MapInfo software is proposed, being the GIS responding best to the present needs and database environment.

Institutional capacity

The current organisation appears not to favour an effective administration of the Mining Cadastre functions. Moreover the LU is not staffed adequately with respect to numbers and qualifications. The Consultants therefore suggest quite radical changes to the structure of the organisation, the level of training of personnel as well as the addition of new equipment already mentioned above.

- It is recommended to establish a Mining Cadastre Office (MCO) under the Permanent Secretary, MEM, ensuring an independent and efficient organisation, encompassing the following offices: (1) Registry, (2) License application processing; (3) Mineral Rights administration; (4) Archive; (5) Information; (6) MRI and MCIMS; and ZMO/RMO Mining Cadastre administration.
- The staff involved in Mining Cadastre applications and administrations are in general not adequately trained with regard to basic computer skills, databases and data validation, GIS applications, and basic administrative procedures for a Mining Cadastre Office.
- Training programs for the following topics are given: Basic Computer Training; MS Access and MRI; MapInfo; Mining Cadastre Office procedures and routines; Woking principles of the MCIMS, and Basic Management. The numbers and levels of the courses are estimated on the basis of the current staff, inclusive the ZMO/RMO staff.

- Planning of the training courses should consider the timing of the implementation of the Verification Plan, ensuring that the key staffs to be involved in this phase are provided the necessary skills prior to the implementation of the project.
- Study tours are recommended to supporting the task force writing the Mining Act B with the necessary background information and to facilitate valuable discussions with sister organisations about some of the new principles being the basis for the new mining legislation. In order to gain experience from both the "old" type of mining legislation and from the modern system, it is recommended to arrange two study tours: (a) Visit to Ghana and (2) visit to either Australia or Madagascar.

Recommendations and proposal of three mining cadastre development strategies

The Consultants in co-operation with the MEM Core Members in the project have discussed three strategies for implementing a new Mining Cadastre Information Management system, including the necessary improvements mentioned already and taking international best practices into account.

The long term goals for the mineral and mining industry in Tanzania are given by the Mineral Policy (1997), stating that, (i) the industry shall contribute in excess of ten percent of the GDP; and (ii) the development of the legal, regulatory, fiscal and institutional environment for investments should be kept in focus.

- The key principles dominating the international mining act reforms are such as: open mining cadastre and title registry; mineral rights granted on objective criteria; first-come-first-served basis; exclusive title rights; security of the tenure; free transferability of mineral rights; simple financial maintenance requirements; and environmental protection adapted to the various phases of a project. Only some of these principles are considered in the Mining Act, 1998.
- The findings from assessment of Task 1 – 6 form the basis for the strategies. It is observed that:
    - The legal framework possesses some weaknesses, giving raise to ambiguous interpretations and individual practises.
    - The administrative set-up has some weaknesses and the resources and equipment allocated are inadequate.
    - The current Mineral Rights Inventory is not complete and contains errors; moreover some licenses are overlapping.
    - Training and capacity building is urgently needed.
- The three strategies set up and discussed are all based on the following components, (1) Changes of the legal framework; (2) Reorganisation of administrative practice; (3) Introduction of an open MCIMS system; (4) Resource requirements; and (5) A capacity building and training program.

- The legal framework is the hub of any mining cadastre strategy. Three options are discussed in the report:
  - Model A: Amendments of the current act – adding missing and incomplete information.
  - Model B: Simplification of the current act – and introducing modern mining act principles.
  - Model C: Formulation of a new mining act, considering the implementation of liberal free market principles (e.g. Peru; Madagascar).
- All strategies are leading to the goals for the mineral sector set out in the Mineral Policy, but the changes of the legal framework determines the type of strategy and the additional components sets the speed.
- It is anticipated that a complete implementation of the Strategy A, B and C will be respectively two years, three years and five years.
- The Consultants recommend the Strategy Model B as the most appropriate. Strategy Model A carries the risk that it will be necessary to call for a second round of amendments within a few years time. Strategy Model C involves a very liberal mining act, which would be in near conflict with the general administrative approach in Tanzania.
- In a Strategy Meeting held July 16th, 2002, the representatives from MEM were in favour of the Strategy Model B and this is the model chosen for implementation.

Implementation plans for the recommended strategy

- The consultants have worked out a suggestion for the implementation of the recommended strategy. The Implementation Plan describes implementation of Strategy Model B, as detailed in the report, encompassing six Strategy Components Strategy Component 1 - Writing Mining Act B and Regulations B. It is recommended to organise a task force composed by four MEM staff members, one external legal expert and one external consultant with expertise in international mining laws. The estimated duration of for this task is eleven months, inclusive of the approval by the Parliament.
- Strategy Component 2 - Changes of institutional framework and the administrative practise. It is recommended to re-organise the LU as the Tanzania Mining Cadastre Office (MCO), with the sole responsibilities to grant mineral licenses and to administer such rights. To ensure an independent status it is recommended to organise MCO directly under the Permanent Secretary, MEM. New administrative principles for the MCIMS to be applied by the MCO for Mineral Right applications are detailed. The proposal details the respective functions and responsibilities of MCO and the decentralised functions to be undertaken by the ZMO/RMO. In general the Head of MCO is authorising all licenses by his signature; a Head of ZMO/RMO may authorise PPL and PML only and provided prior approval by the Head of MCO.

- Strategy Component 3 – Establishment of a mineral rights database - the MCIMS. It is recommended to implement the MCIMS, hardware, software, application system and network installation based on Configuration B, encompassing fifteen desktop PC with Windows 2000 and Windows Office XP. The server software is Microsoft Windows Server 2000 and ISA Server 2000. The database environment is MS Access or SQL. The GIS component should be MapInfo.
- Strategy Component 4 – Verification plan for the mineral rights database.
- Implementation of the Mineral Right Inventory and the Verification Plan. The establishment of a new Mineral Rights Inventory is urgently needed. The existing inventory is not found adequate, nor is the confidential file archive. It is therefore recommended to establish a new Mineral Rights Inventory (MRI) based on a nine-step implementation project. The duration of this Component is estimated to about fourteen month. The estimated human resource requirements for the individual sub-phases are detailed.
- Strategy Component 5 – Establishment of a transparent MCIMS system (Open title registry).
- Human Resource Requirement for MCO. It estimated that the staff requirements are about eighteen people encompassing the head and assistant head. In addition the some estimates are made for the office area size requirements.
- Strategy Component 6 – Institutional strengthening and training programs. The following topics are recommended for the Training Program: Basic Computer Training; Databases (Access and MRI); GIS (MapInfo); MCIMS; Mining Cadastre Office working principles and routines, and basic management courses. Planning of the training courses should consider the timing of the Verification Plan, ensuring that the staffs involved in this project are all provided the necessary skills prior to the implementation of the Verification Plan.
- Strategy Component 7 – Resource requirements. It is estimated that a minimum of twenty-two months period is require for the implementation of the Mining Cadastre Strategy – without considering any delays. A breakdown table provides the details.
- The procurement comprises three groups: (1) MCIMS including hardware, software, development and related users' training; (2) Equipment, furniture, locally provided; and (3) Consultancy services for institutional strengthening, training, and study tour. It is recommended to prepare one Tender document for the whole MCIMS. The procurement process is a "Procurement of Goods" standard Tender. It is recommended to use local shopping for providing necessary equipment in domestic shops; this procurement process can be implemented in two years.
- It is recommended that a Service Contract be signed with an international company with a proven record in administration of mineral rights, MCIMS, and training.
- It is recommended that domestic training in IT software, systems or basic computer skills is organised by the Service Contractor and in co-operation with local provider.
- The following detailed costs are estimated:
  - MCIMS: USD 300,000

- Institutional training USD 300,000
- Furniture, supplies, facilities USD 160,000
- 10% margin for the total costs USD 80,000
- *TOTAL estimated costs* *USD 840,000*

Tender Documents

- Complete Tender Documents in compliance with what is recognised by WB and used by a majority of donors, including African Development Bank, and IDA. NDF officially recognises this Tender document format as valid.
- A comprehensive list, encompassing the goods and services described in the Report is provided.

CONSULTANCY FOR THE DESIGN OF A MINING CADASTRE DEVELOPMENT STRATEGY
RFP#MSD-TA/NDF-277-2

DRAFT FINAL REPORT
December, 2002

Part I

ASSESSMENTS, FINDINGS AND ANALYSIS

Table of Contents – Part I

1 Introduction

An assessment of the legal, institutional, procedural and technical status of the MEM is made in this Part of the Report. According to the TORs, the aim is to analyse the legal framework, targeting on issues and items of direct or indirect relevance for the establishment of a Mining Cadastre Information Management System (MCIMS); the institutional set up checking if efficient for the purpose of granting and managing Mining and Prospecting applications and License; the evaluation of the existing procedure focusing on its capacity to fulfil the requirements of the mining Policy, the existing available information, access, confidentiality, completion, updating.

The major conclusions are:

- The Act and Regulation should be amended, in order to clarify, simplify and complete missing information.
- The existing organisational structure should be changed in order to clarify responsibility and ensure transparency.
- The procedures are complex, opaque and must be simplified in accordance with amended Act and Regulations, taking into account new institutional organization.
- The status of the license inventory necessitates a complete checking based on a comprehensive survey.

2 Assessment of the Legal and Regulatory Framework

2.1 The Current Legal and Regulatory Framework

The exploration and exploitation of mineral resources (excluding hydrocarbons) and dealing in minerals in Tanzania is governed by the Mining Act, 1998 and the Regulations, 1999.

2.1.1 The Mineral Policy of Tanzania, 1997

It is important to keep in mind that the fundamental principles for any proposals made in this report are the principles spelled out in the Mineral Policy of Tanzania, 1997. The comments made on the Mining Act, 1998 are referring to the Mineral Policy and are never contradictory to this.

The vision for 25-30 years is based on (i) a well-organised private sector; (ii) a large and small-scale mining industry conducted in a safe and environmentally sound manner; (iii) contributing in excess of 10% of the GDP; (iv) a well-developed gemstone cutting and jewellery industry; and (v) providing dependable employment.

The Mineral Policy is based on two goals:

- Establish an internationally competitive legal and regulatory framework to attract investment;
- Deter information on new discoveries, fight freezing of exploration for speculative purpose and tax evasion.

The strategy to reach this goal is based on some statements that are to be reflected in the Act:

- Harmonisation of all statutes with clear, transparent procedures for granting rights and transfers,
- Harmonisation of small- and large scale mining ensuring transparency and fairness practised by applying "first come, fist served" principles,
- Ensuring exclusivity of the licensed areas,
- Encouraging active exploration, discouraging hoarding for speculation,
- Grouping minerals in categories for facilitating targeting of incentives, penalties, skill development and administration,
- Harmonising the Mining Act with other statutes administrated by other institutions.

This strategy is the basis for the comments to the Act as well as some other essential objectives spelled out in the Mineral Policy:

- The entire mining industry must adhere to the same environmental standards, with requirements to meet established standards varying according to the scale of operations.
- The Government's role is to be a regulator, promoter, facilitator and service provider.

2.1.2 The Mining Act, 1998

With respect to exploration and mining, the Mining Act, 1998, recognises the following types of licenses, dealt with in three main groups,

Division A:
Prospecting License (PL)
Prospecting License Recognisance (PLR) and
Retention License (RL)

Division B:
Special Mining License (SML),
Mining License (ML) and
Gemstone Mining License (GML)

Division D:
Primary Prospecting License (PPL) and
Primary Mining License (PML).

The above rights – except GML – are specific for one of the following mineral commodity groups:

i) All mineral except building materials and gemstones (AOBG)
ii) Building materials (BM)
iii) Gemstone (GEM).

Thus the structure of the mineral rights forms a matrix structure composed by (a) the type of license and (b) the type of mineral group

Table I-1 shows the possibilities of multiple combinations of licenses.

Table I-1*: Possible combinations of licenses.*

License	AOBG	BM	GEM
PPL	yes	yes	yes
PL	yes	yes	yes
RL	yes	no	no
SML	yes	no	yes
ML	yes	yes	yes
GML	no	no	yes
PPL	yes	yes	yes
PML	yes	yes	yes

Mineral rights are granted under the authority of the Ministry of Energy and Minerals (MEM), and applications are processed at the Minerals Development Section (MD), the Licensing and Mineral Rights Registry Sub-section ("Licensing Unit" in the text). A comprehensive analysis of the capacity and mandate of MEM is given in Report P1.

The overall aim of the reform of the 1979 Mining Act, leading to the Mining Act, 1998, was to allow the mining sector to operate under free market economy schemes.

A great number of the elements and intentions considered in modern mining acts - i.e. first come first served; transferable rights, and free access to the registry of mineral rights, are implemented in the Mining Act, 1998. However, the complexity of the Mining Act, 1998, caused on a matrix structure, in which the various combinations have various rights and exceptions, hampers the design and implementation of an efficient application process

A general overview of the main structure of the Mining Act, 1998 is outlined below.

Part I, Preliminary provisions:

- The Act governs all land of the United Republic, though the Act does not apply to the search for or exploitation of petroleum.

Part II, The general principles of the Mining Act, 1998:

- No exploration or exploitation can be undertaken except a Mineral Right is granted;
- Division in eight main types of mineral rights: RL, PL, PRL, PPL, PML, ML, GML, SML,;
- Restrictions on grant of mineral rights; (some rights reserved to Tanzanian citizens: PPL, PML, and GML);
- Mineral rights are transferable and mortgage able;
- The Minister may enter into a development agreement;
- First come first served principles;
- The Minister may designate any vacant area for tender for PL, ML, GML;
- The Minister may designate any vacant area as an area reserved for operations under Division D (Primary Licenses).

Part III, Administration:

- The appointment of a Commissioner for Minerals and Deputy Commissioner;
- The geological services to be undertaken;
- The appointment of the Mining Advisory Committee (MAC);
- The establishment of the Zonal Mines Offices (ZMO).

Part IV, Mineral Rights:

- Division A: Prospecting License (PL), Prospecting Recognisance, (PLR) and Retention License (RL);
- Division B: Special Mining License (SML), Mining License (ML); Gemstone Mining License (GML);
- Division C: Supplementary provisions affecting Mineral Rights under A and B;
- Division D: Primary Licenses (PPL, PML).

Part V, Licenses for dealing in raw gold, gemstones and other minerals:

- Dealer's license, including application, grant, duration, renewal, rights, obligations;
- Broker's license, including application, grant, duration, renewal, rights, obligations.

Part VI, Financial Provisions:

- Royalties (fixed percent) and charges.

Part VII, Restriction reports and the right of entry:

- Security of gold and gemstone mining operations;
- Restriction of rights of entry of the license holder;
- Holders of PL and PPL shall not remove minerals;
- Reports and information;
- Authorised officer's power of entry.

Part VIII, Disputes:

- The Commissioner may decide disputes (on overlaps, constructions, payments;
- Enforcement of the Commissioner's orders;
- Appeals.

Part IX, Registration of Mineral Rights:

- The Commissioner shall maintain a central register of all Mineral Rights, and cause similar registers to be maintained in each Zonal Mines Office;
- Evidentiary provision.

Part X, Miscellaneous:

- Restrictions on export and import on radioactive minerals;
- Transfer of control over company (written consent of the licensing authority is requires);
- Insurance and indemnity;
- Regulation – the Minister may make regulations for the better carrying into effect the Mining Act, encompassing i.e. application forms, fees, charge, rent, due, royalty, procedures for tenders, allocations of reserved land for PML, proper, efficient working and avoidance of wasteful practices, safety standards and practices, inspections.

Part XI, Repeals, savings, transitional and temporary provisions:

Repeal of the Mining Act, 1979.

Schedule 1: Made under Section 20:

Mining Advisory Committee.

Schedule 2: Made under Section 94:

Saving of existing controlled areas and diamond protection areas.

Schedule 3: Made under Section 99:

Part I: Reports and records;

Part II: Provisions for obtaining information.

Schedule 4: Made under Section 114

Savings and transitional provisions in respect of the repeal of the Mining Act, 1979.

Schedule 5: Made under Section 115

- Part I: Repeated laws;
- Part II: Transitional and savings provisions.

2.1.3 The Regulations, 1999

The following general description of the Regulations encompasses only the Mining Regulation, 1999 (Sect. 1 through 18), referred to under Section 110 of the Act. This encompasses mainly duties and obligations to be followed by an applicant of a mineral right and thus the list of obligations for the applicant may be regarded as a checklist for the application procedures. The following are provided:

Sections	
3	Mode of application
4	Shapes of areas
5	Size
6	Demarcation and pegging
7	Renewal
8	Minimum expenditures
9	Account requirements
10	Fees and rents
11	Suspension
12	Amalgamation (merging of areas of two or more contiguous licenses)
13	Conversion of PML to other licenses
14	Surrender of PML
15	Information and reports
16	Reserved areas
17	Assignment of Mineral Right
18	Overlapping applications

The First Schedule of the Regulation provides the fees and rents to be paid by mineral right registration applicants and license holders.

The Second Schedule lists the Application forms and some of the license certificates.

2.2 Findings - commented by topic

This chapter inventories all comments concerning the Mining Act and Regulations. For clarity reasons, the comments are classified by topics as follows:

- The application process, related to the sections describing the licensing applications procedures
- The applicants, related to the nationality and eligibility;
- The types of license, commenting on the classification of the differnet Licenses;
- Conditionality for granting a license
- Reporting obligations;
- Rights for Building Material Licenses
- Compensations issues
- Exclusivity and overlap of the various types of licenses
- Obligations of the Licensee
- Demarcation and coordinates
- Institutional arrangements and responsibility of different officers and offices in MEM concerning License management
- Relations with other stakeholders

It is obvious that the different Licenses are treated differently in the Act and Regulation and that this complexity is the reason of inconsistencies, missing information and heavy monitoring processes. Moreover, it does not appear that it is justify by any statement of the National Mining Policy.

An overview of the Licensing system is shown in the following summary table. The table I-2 gives only a general indication with references to sections where limitations are described. Some options are described as x OR y. It means that different options exist depending of the type of mineral. More detail is provided in the next chapters.

Table I – 2. *Overview of the Licensing system*

License	PL	RL	SML	ML	GML	PPL	PML
Direct application	yes	no	yes(38)	yes(38)	yes (38,51)	yes	yes(6
Specificity	24-33	34-37	38-45	46-50	51-55	65-66	67-72
Type of minerals	all	only AOBG	no BM	no GEM	GEM	all	all
Exclusivity	conditions		yes	yes	yes	yes	yes
Duration	3y or 2y	5y AOBG	25y AOBG	10y	10y	1y	5y
Renewal	2y+noGEM	5y	25y	10y	10y	1y++	?
Maximum size	200or1or10	?	?	10or1or0.5	10or1or0.5	10or2or?	10or2
Relinquishment	AOBG50%						
Report	3 m	?	year	no, or ?	no, or ?	?	?
EIA	no	no	yes 64	yes	yes or no	no	no

The following description does not intend to be an exhaustive and detailed account of all the topics developed in the Mining Act, 1998 and Regulations, but focuses on the issues which have an impact on the implementation of the Mining Act amendments aimed for Strategy B.

The reference to sections is given as "Section x" or "Section x(y)", x being the section and y the sub-section numbers.

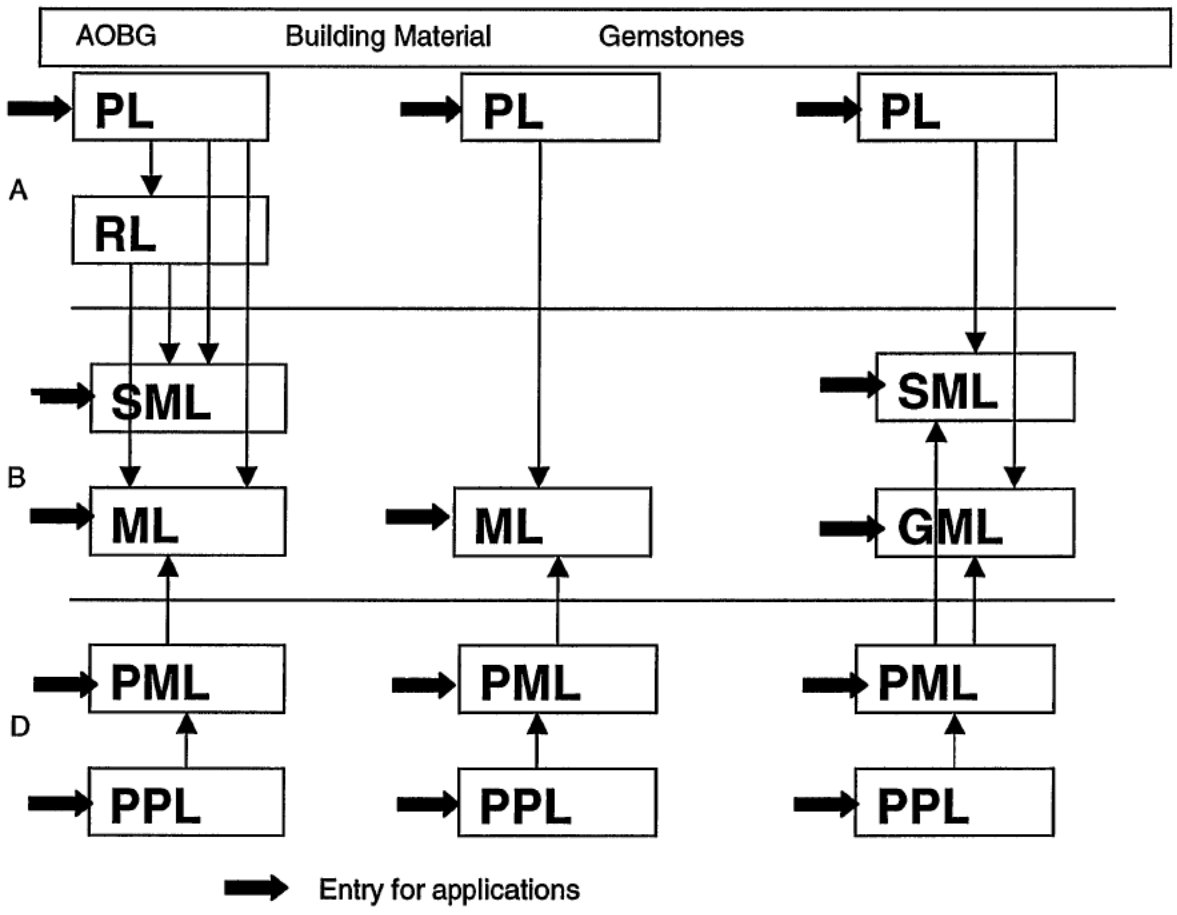
2.2.1 The application processes

This chapter deals with the general description of the application procedures as defined in the Act. Some essential aspects are specifically studied: (i) "First come, first served" principle, (ii) The constraints and responsibility of the Licensing Unit, and (iii) The bid process in case of tenders.

Some contradictions or incomplete information are identified and amendments suggested.

General procedures

Figure I- 1. *General processes for application of a mineral right.*



SML and ML can be directly granted to a non entitled applicant (meaning that the applicant is not holder of a Prospecting License for the applied area) if the applicant for the Mining License provides additional information required for a PL when he applies for the ML or SML (sections 38 (3) and 47 (2)b). In other terms, an applicant can directly apply for a Mining License if he has collected enough information concerning mainly financial resources.

It is noted that according to section 66, a PML can be granted not only to a holder of a PPL, which is in accordance with international standard practise, but can be granted to any eligible Tanzanian individual not holding a prior prospecting license on the same ground. This latter case implies that the PML holder is obliged to initiate mining activities without having any information about mineralisation in terms of shape of the orebody, the grade, tonnage rentability etc. Moreover such person may not possess any knowledge about mining technology, mineral processing, and mining- and environmental safety. Such cases may explain the observed large number of dormant and non-economic PMLs

An applicant can apply for 8 different types of Licenses. Conversions from Prospecting License to Mining License or from Division D Licenses to Mining Licenses are authorised according to the figure I-1 (see arrows).

The processes are subdivided into Building Materials (BM), Gemstones (GEM) and All Other Minerals but Building Materials and Gemstone (AOBG) (See definitions chapter 3.4). Each of the eight types of licenses, including GML, is granted with the required additional specification of the type of mineral (see details chapter 3.3).

The diagram fig. I-1 does not describe the event that a holder of a Prospecting License applies for a Mining License of a new type of mineral, since this is not considered as conversion of a license, but rather a new application for a new License.

Some details in the application processes are commented in the next chapters. They relate to the "first come, first served" principle, the duration of the application process, the responsibility of the Licensing and Mineral Rights Registry Unit (called "Licensing Unit" in the text), and the Bidding process on area declared vacant by the Minister.

First come, first served

The Mining Act Section 12 (2) states that two applications are deemed to have been received simultaneously if they have been received the same day by an authorised officer or by an officer appointed by the Commissioner. The Minister shall determine the priority. This basic principle of 'first come, first served' as stated in the Mineral Policy, is not incorporated clearly from this section.

The justification for such a section may be the effect of communication constraints between LU and the ZMO, as well as the administrative practice to "register the next day".

Moreover, the application of the principles of Section 24 creates several problems:

- Section 24 requests the registration of the date and time. It is therefore inexpedient to determine the priority by day only. The "first come, first served" should be applied;

- The decision of the Minister to determine the priority is a discriminatory power to high-level authorities that does not guarantee the granting of rights on objective criteria. That must be replaced by a clearly defined standard process (date and time);
- Section 24 (4) and (5) defines the process of registration of the application as "registered in the register maintained for such application". There is no clear description of this register neither in the Act nor in the Regulations and the administration uses generally the Entry Register in MEM. There is no indication if a registration in a Zonal Mines Office is valid, and if the registration date/time is the one recorded in the ZMO or Licensing Unit.

Duration of the application process

The Mining Act and Regulations do in general not provide any indication or obligation of duration in the processing of an application. Section 30 is an exception where it is stated that four weeks and six weeks respectively, are the maximum duration for the administration to grant a PL and for renewal of a PL:

- Section 30 (1). No later than 4 weeks from the date on which the PL application is registered, the Licensing Unit shall grant the license or inform the applicant that the application has been rejected;
- Section 30 (2). No later than 6 weeks from the date on which the renewal application is registered, the Licensing Unit shall grant the renewal or inform the applicant of the rejection, or request additional information as defined in the Act.

It is expected that this maximum duration should not to be limited to one type of license only. It must be a restriction relevant for all types of licenses.

There is no legal description of what happens in the event that the licensing authority is not granting the License in the prescribed time. Is the License then automatically granted? Can the applicant commence prospecting without the license?

Inversely, the license holders have in some specific cases to comply with a timetable to present a renewal application:

- Section 42: A holder of a SML may, not later than one year before the expiry, apply for renewal.
- Section 69: Not later than 3 months before expiry, the holder of a PPL may apply for renewal.

Similar comments apply:

- The statement should be defined for all conversion of licenses identified by vertical arrows in Fig. I-1 and in renewals identified in the duration / renewals of Table I-6.
- It must not contradict the preceding statements. For example, why ask for three months in advance if the Licensing Unit should grant the right in 6 weeks?

Responsibility of the Licensing Unit

The preceding sections relate to the responsibility of the Licensing Unit to act according to the Act and Regulation. In a more general view, an essential statement in Section 22 says that: "No officer of the Ministry shall be liable for anything omitted to be done bona fide".

Some countries have a totally different approach to this; i.e. the Mining Act of Peru defines "administrative silent" (the non-action of the administration), which is not suppressing the responsibility of the civil servant in charge of realising the required functions.

In a traditional Registration System (like the property rights registration system), the security is provided to the customer by extracts certified by the Registrar engaging the responsibility of the Registration Authority. In case of error "bona fide", the applicant is compensated.

For example, concerning the issues of maximum duration to grant a license, Section 22 gives the possibility to the officials to overcome this restriction without any consequence. In other terms, it is of no use to define time limits for the administration without clarifying the limits of the responsibility of this administration.

Bidding process

The Mining Act, 1998 provides the possibility for the Minister to declare a vacant area subject to one or several Tenders for granting prospecting or mining license. The issue of the definition of a vacant area is described in the chapter related to the interface with other stakeholders.

Sections 62 (3) defines a process of evaluating the proposals and granting the right which is fully at the discretion of the Minister. The role of the Mining Advisory Committee (MAC) is only to propose a report to the Minister who shall decide based on three criteria:

- The program of prospecting or mining and the commitments of the bidder;
- The financial resources of the bidder;
- The previous experience of the bidder in this activity.

This process is based on the discretion of the Minister. It is not clearly following international standards and principles of selecting proposals based on tenders like full transparency, avoiding conflicts of interest, fair and open competition, information to all bidders.

The bid process should follow international standards with public opening, nomination of an Evaluation Committee, evaluation report based on pre-defined criteria, proposal of granting license, approval (Minister, Commissioner…) and starting negotiation based on the proposal.

2.2.2 Applicants

This paragraph details the conditions of the Act concerning the foreign investors, the eligibility of the applicant, and the conflict of interest.

Foreign investors

Table I-3. *Minimum share of Tanzanian citizens (grey field means not applicable)*

License	AOBG	BM	GEM
PL			
RL			
SML			
ML/GML			25%(1)
PPL	100%	100%	100%
PML	100%	100%	100%

(1) for GML only; not applicable for ML

Generally, the Mining Act, 1998 allows foreign investors to apply for prospecting and mining licenses except in two cases:

- PPL and PML, considered as small-scale mining or prospecting licenses limited to Tanzanians. It is supposed that this category of licenses was created to define and implement specific support to local small-scale miners –so-called artisanal miners (Given in Division D)
- Section 8 (3), Division B defines a limitation for foreigners to share a maximum of 75% for a Gemstone Mining License. This restriction on potential foreign investment in gemstone mining using a ML necessitates foreign companies to apply for a SML for Gemstones. A SML is negotiated individually and hence it may be difficult to satisfy the terms offered by the Minister.

The restriction on foreigners with regards to gemstone mining is not justified in statements of the Mineral Policy, but aims at promoting local activity, developing local skills and supporting joint ventures. But it is not clearly in accordance with the Mineral Policy that recommends standardisation.

The SML process to be followed by foreign investors to overcome this restriction provides non-standards contracts, creating opacity and inducing future difficult monitoring, and thus possible conflicts with the aim of transparency.

Conflicts of interest

The general conditions of non-eligibility are described in Section 8:
For individuals:

- If under 18 years old;
- In bankrupt or using rights to compensate creditors.

For body corporate:

- In liquidation
- Order of dissolution by a court, and
- Making arrangement with creditors.

Some complements are provided in the appropriate sections concerning limited rights to foreigners.

The non-eligibility of persons or body corporate making arrangement with creditors is certainly justified by the will to grant a right to the person or body having the financial capacity of prospecting or mining and avoiding to use this right for a speculation purpose.

The important issue of Conflict of Interest is not dealt with in the Mining Act, 1998 – as opposed to all modern Mining Acts in the World, prescribing that officials of the issuing authorities and bodies involved are not considered eligible applicants and can not hold a license.

The Commissioner is defined as a Land Judge in Section 101 and consequently should not be an eligible applicant. Further both the Commissioner and the Minister (or persons appointed by them) are involved in all parts of processes where it is up to the discretion of either of them, and thus such persons should not be eligible applicants. Moreover – staff having access to confidential files and register should not be eligible applicants.

It is necessary to add such an article to avoid conflicts of interest with officials who could be judge and party in the licensing process.

2.2.3 Types of license

OBS!! We will have to introduce their own definition of "vacant land" and the sections defining the rights against another right - because it proves that the three types of minerals are not justified!!!!

Categories of licenses
The licenses are divided into three categories:

- Prospecting licenses and Retention Licenses (Division A)
- SML, ML and GML (Division B)
- Primary Licenses (Division D).

Division A defines Prospecting License (Section 24-33), Reconnaissance Prospecting License (Section 25), and Retention License (Section 34-37)

Division B defines Mining License (Section 46-50), Special Mining License (Section 38-45) and Gemstone Mining License (Section 51-55).

Division D defines Primary Prospecting License (Section 65-66) and Primary Mining License (Section 67-72).

Each type of license is defined for one of the three types of minerals: Building Materials (BM), Gemstones (GEM) or All Other Minerals but Building Materials and Gemstones (AOBG), defined in Section 4 and commented in chapter 3.5.

Section 39 states that a Special Mining License is granted for the mining of minerals, excluding gemstones other than gemstones included in the program of mining operations. It means that a license

can be granted not only for one of the three types of minerals, but also for one specific mineral. The rules of exclusivity of the rights means that another mineral will not be exploited in an area where a type of mineral (or one specific mineral) is specifically authorised to be mined.

The Act organised on types of licenses and types of minerals result in very complex matrix where all possible cases has to be taken into consideration, with the risk – demonstrated in the Chapters (related to Conditionality and Exclusivity – of missing information or undefined rules. A simplification is recommended to ensure exclusivity and to ensure that effective monitoring of the exploration and mining activities can be maintained.

Specificities for gemstones
Special rules apply to the activity of prospecting and mining gemstones.

Sections 51 - 55 define the Gemstone Mining License. It is remarkable that these sections are very similar to Sections 46 - 50 concerning Mining Licenses, with few adjustments and different presentation or sequential order. Hence it appears meaningful to merge the GML with the ML adding just some special conditions to mining gemstone if deemed appropriate. A recommended solution is to define different Royalties and fees for different commodities in the Regulation.

The GML is the only License, which cannot be renewed, Section 29(3). This appears not justified by technical explanation or by the Mineral Policy.

Section 32 (3) provides the holder of a GML a unique right of selling gemstones discovered during the prospecting phase without applying for a Mining License. This provides the possibility to achieve a cheep license (PPL fees are low comparing to SML/GML fees) in order to sell gemstones without getting the more expensive and restrictive GML.

The aim of Section 32 (3) is to support the artisanal (legal) miners to initiate mining activities, but the legal aspect is questionable because it does not clearly comply with the Mineral Policy of harmonising Licensing systems.

2.2.4 Types of minerals

Definitions
The types of minerals are defined in Section 4 of the Act.

The definition is based on a list of minerals. The Consultant has no specific comment on the suitability of this list. However, in general, a list is not the best way to define a legal term. In the case of minerals, several problems are identified:

1. The subdivision in multiple cases increases the difficulties of administrating the Act and monitoring the activities by the Licensing Unit staff.

2. A list is always incomplete and update will be required once in a while. The changes in the list are decided by notice of the Minister with publication in the Gazette. This process is probably slow compared with the business activity that requires urgent actions;
3. The proposed classification creates different and inappropriate classifications of the term "diamond" depending on the geological occurrence of the diamonds (kimberlite versus alluvial);
4. Changes in the list of definitions may have an impact on some licenses already granted (for example a license for "other mineral" is changed to a license for "gemstone");

The Mineral Policy proposes: "...grouping minerals into categories for facilitating targeting of incentives, penalties, skill development and administration". The subdivision in categories must be justified by one of these four targets, not by technical considerations.

It seems that the final objective of facilitation is not reached when the subdivision imposes that all cases must be legally treated without special target. For example, Section 32 is very complicated, with many administrative constraints (the license applies to specific minerals with some exceptions, the exclusive right not extendable to any minerals, selling authorised for a prospecting license for gemstones). These exceptions make the monitoring of all types of licenses and their interaction heavy, with the risk of absence of instruction or definition for several cases (see Exclusivity chapter 3.9 for example)

The classification in different types of Mineral in order to grant specific Licenses creates complications related to the administration of the Licenses without justified advantages based on appropriate incentives. Moreover, the exclusivity rule induces that a holder of a right is strictly limited to mine one type of Mineral and cannot change or extend exploitation to another type without cancelling his license and processing a new application.

Petroleum Prospecting and Exploitation Licenses

Section 4 defines the term "Petroleum" as referring to the "Petroleum Exploitation and Production Act 1980".

The Mining Act, 1998 does not apply to areas on which a search or production of petroleum is taking place (Section 3). Overlapping rights are regulated by section 95 (1-g) where it is stipulated that the holder of the License cannot exercise his rights within 100m of a site for drilling of a well in connection with exploring of petroleum which has been notified by a licensee.

It follows that a petroleum license has a priority against any type of mineral license. The case of authorisations to prospect /mine at a minimum distance from a petroleum plant confirms this priority. The question – not studied here – is processing this priority when oil or gas is discovered in a prospecting or mining area (is the license updated and its area reduced by the area allocated in prospecting / exploiting il?). In absence of studying this Act, there is a need of co-ordination to solve issues of overlapping rights of the same nature and defining priorities and exclusivity.

However, petroleum licenses are not part of the current Mineral Rights Inventory, and then this type of information is not directly available to the Licensing Unit.

Radioactive minerals
Section 107 refers to the definition of "radioactive mineral". It is defined as a percentage of weight of defined radioactive minerals in a combination of minerals. It is in this case easy to mix the radioactive mineral in with more other minerals in case of reaching the tolerance. It could be useful to co-ordinate with experts to define a maximum tolerance in radioactivity units.

Moreover the definition uses the term uranium/thorium; normally these elements are measured as oxides.

The application defined in Section 107 (2) applies exclusively to import / export License. It is supposed to be identified for safety reasons. In this case the limitations or controls should be extended to mining activity.

If the motivation is strategic, it should be defined in a national text, not in the Mining Act.

No details concerning prospecting or mining are given in the Section 107. It is supposed that these minerals enter the group AOBG.

2.2.5 Exclusivity and overlaps

The complexity of the type of licenses and their interactions made necessary the description of many legal cases of possible overlap that have no relevance to the objectives of the Mineral Policy. The risk of missing cases is important. As a consequence, it makes the management of these articles opaque, complex and finally it impedes the implementation of clear statements of the Mineral Policy:

- "Clear, simple and transparent procedures";
- "Harmonising small-scale and large-scale mining operations";
- "Ensure exclusivity of licensed areas".

The main example is shown in Table I-3, describing the very complicated combinations of exclusive rights, which may occur between various types of applications and various types of existing rights for the same area.

An application can be submitted for an area for which a license has already been granted or for which an application has already been submitted (covering for the whole area or a part of it). The overlap of the new application and existing rights (including another application for the same area where the right "first come, first served" applies) should be solved by the "exclusivity" rules. It must be defined clearly if the application or the existing license has the priority (exclusivity), or if overlaps are authorised in certain cases.

In table I-4, three scenarios are listed, based on the scattered information given by the Act:

- The application has the priority, and the existing right is cancelled for the area applied for by the applicant. (Y)

- The application must be modified and the area reduced according to the boundaries of the existing rights. (N)
- In many cases such information is not provided by the Act.

Table I-4. *Exclusivity of licenses: Applications versus granted licenses. The table is based on information of the sections 13, 14, 28, 37, 48, and 58.*

Application	PL Recon	PL AOBG	PL BM.	PL GEM	RL	SML	ML	GML	PPL	PML AOBG	PML BM	PML GEM	Tender
PL recon													
PL AOBG	Y(1)		Y	Y					Y (2)	Y (2)			N
PL BM.	Y(1)												N
PL GEM	Y(1)												N
RL													
SML		Y	Y	Y	Y	N	N	N	Y	Y	Y	Y	N
ML		Y	Y	Y	Y	N	N	N	Y(2,3)	Y(2,3)	Y(2,3)	Y(2,3)	N
GML		Y	Y	Y	Y	N	N	N	Y(2,3)	Y(2,3)	Y(2,3)	Y(2,3)	N
PPL													
PML													

Y: *Application overrules existing license in terms of exclusivity.*
N: *Application does not overrule existing license.*

(1) – Provided it is not demarcated
(2) – Provided it is not designated as an area reserved for primary Licenses PPL, PML (Division D)
(3) – Not if the area is designated as an area for which applications shall be invited by tender

The column called "Tender" means that the area is declared vacant and reserved for tender processes. For example, an applicant may apply for a Mining License on an area declared for Tender process.

An application submitted for a tender process must refer to a declared vacant area. However, it is possible that rights were not identified at the declaration of the vacant area. This case is not studied here because though theoretically possible, it does not legally exist, according to the definition of the vacant area.

The right of exclusivity is not always guaranteed (see table) and overlaps between applications and existing rights are not legally defined in all the cases. In order to define if the new application overrules existing mineral rights, it is necessary to complete the regulation because many cases are not identified in the Act and Regulations, and the conditions of exclusivity not clarified, shown as empty fields in the table.

In the event two different mineral commodities both are mine-able within the same area, ore even being part of the same ore-body - one company only most conveniently mines such mineral occurrences. Consequently, from a resource administration point of view the grouping of several mineral types are not justified.

Many of the unsolved cases stems from the complexity of the Act. The completion of this table should be done as follows:

- In the heading of the Act, indicate clear principles of exclusivity (or non-exclusivity);
- For each type of application, clarify the exclusivity rules against all type of licenses.

The easiest way to solve the issue is to simplify the Act and reduce the number of combinations of Licenses / types of minerals to a minimum.

2.2.6 Conditionality

Duration of a license

Table I-5 details the maximum duration of each type of license and Table I-6 details the possibility of renewal and the maximum duration of renewals of each type of license. The tables are based on information from Sections 29, 35, 40, 42, 46, 50, 51, 55, 65, 68, and 69. The tables indicate that certain combinations are not catered for in the Act.

The duration for a license or its renewal is 1, 2, 3, 5, 10 or 25 years, depending on the combination of License and the type of minerals and the process. Renewal is allowed once only, or several time or not allowed at all. It must be concluded that such complexity makes the administration of the Act very difficult.

Table I-5. *Maximum duration for licenses. Legend: Bold - maximum duration in years for the type of license. Normal - maximum duration in years for the renewal of the license. Grey colour: Not applicable.*

License	AOBG	BM	GEM
PPL	2 y	2 y	2 y
PL	3 y	3 y	2 y
RL	5 y		
SML	25 y		25 y
ML/GML	10 y	10 y	10 y
PPL	1 y	1 y	1 y
PML	5 y	5 y	5 y

Table I-6. *Maximum duration of renewals*

License	AOBG	BM	GEM
PL	2 y+2 y+ n y [1]	2 y+2 y+ n y [1]	No[3]
RL	5 y [5]		
SML	25 y[5]		25 y[5]
ML/GML	10 y[5]	10 y[5]	10 y[5]
PPL	1 y+1 y+...[4]	1 y+1 y+...[4]	1 y+1 y+...[4]
PML	?[2]	?[2]	?[2]

1. N: no fixed duration in the Act or Regulations
2. ?: duration not defined
3. No renewal
4. Unlimited number of renewal
5. One renewal only

The complexity of the rules creates useless administrative constraints rather than being an incentive to develop mining in Tanzania. For example the Prospecting License for AOBG has a three-year duration and an indefinite number of renewals of two years (each with 50% relinquishment). A Prospecting License for gemstones is granted for two years instead of three years for AOBG. A Primary Prospecting License is granted for one year but can be renewed annually.

In the case of a Prospecting License (Preliminary reconnaissance) renewal is limited to a period not exceeding two years, and is restricted to AOBG only (Section 25). Another special case is defined in Section 31 (2) with a possible prior "period of preparation" of 6 months. This shows that the duration, even technically well defined, cannot take into consideration all specific problems and that regulating by variable length of duration is an unfeasible and unrealistic exercise.

It is noted that renewal of Primary Mining Licenses may be granted, but that no section or regulation defines the maximum of years.

In summary these technical restrictions are providing administrative constraints, and it appears that nothing is gained in return.

A simplification and standardisation will facilitate the monitoring and control of licenses – even with a small number of skilled staff.

Maximum area and shape of area

The Regulations define maximum area, but is incomplete with respect to defining all combinations of licenses, as shown in the Table I-7.

The information in Table I-7 is extracted from Regulation no 5 Part I Section 5.

Table I- 7. *Maximum area size authorised by type of license*

License	AOBG	BM	GEM
PRL	5000km2		
PL	200km2	1km2	10km2
RL	?		
SML	?		?
ML/GML	10km2	0.5km2	1km2
PPL	10ha	2ha	?
PML	10ha	2ha	10ha

There is no indication of a maximum size for (1) Retention License; (2) Special Mining License in any case; and for (3) Prospecting License concerning Gemstones.

The maximum area varies from one type of license to another, based on administrative estimation based on operational assumptions. This bureaucratic definition cannot take into consideration practical and specific cases and is not a tool to promote activity.

It has not been proved by international experience that the way to avoid large-size dormant licenses is to fix a maximum size of the license. A market economy uses financial incentives (increasing fees with the area) and / or activity obligations.

The Act, Section 67 stipulates that a minimum area is prescribed for PML to be defined in Regulations, but Regulation, 1999 does not indicate any minimum area.

The Act prescribes that any license should be a regular rectangle (Regulations Sect. 4). However, applying this rule means that certain irregular shapes of land situated in between several licenses may not be utilised, unless subdivided in to a number of smaller rectangular licenses. Modern GPS technique and computer facilities are developed to a stage where such administrative limitations are no longer justified. For convenience it is suggested to reformulate Reg. Sect 4 to allow polygons defined by East-West/North-South lines. Moreover it should be observed that the definition of a license area should also state the co-ordinates of the areas situated inside the license (i.e. other licenses), i.e. PML's inside a PL etc.

Relinquishment

The relinquishment obligation applies at the renewal of a Prospecting License. The information of this Table is defined in Section 29 (3-b ii).

Table I -8. *Relinquishment requirements at the stage of renewal*

License	AOBG	BM	GEM
PL	50%		No renewal
RL			
SML			
ML/GML			
PPL			
PML			

The relinquishment applies exclusively to the renewal of Prospecting Licenses for AOBG exclusively, nothing is stated concerning PL for building material. The relinquishment rule is used to avoid freezing area for potential mining activity. Modern mining acts usually do not use this restriction. Alternatively, increasing fees could make an incentive.

In the event a license holder wants to proceed from exploration to mining, the relinquishing rule may create a problem, because the holder in such case certainly would like to keep a prospecting area around the ML area to cover potential mineralised areas. But due to the relinquishing rule it is not possible to sustain such a 'buffer' area.

The Regulations proposes a different fee per km^2 depending on the type of license of MEM is estimating the profitability of mining before granting a license. Fees can be used as an incentive or disincentive replacing relinquishment obligations not in addition to it.

Section 29(3-b-(i)) defines that the 50% relinquishment rule applies to the initial prospecting area or the remaining prospecting area in case of renewal. However, it is not very clear if the remaining area includes to total PL area or the PL area after deducting the area being applied for a mining license.

2.2.7 Reporting obligations

Legal requirements
The Mining Act Section 99 refers to Part I of the 3d schedule to define the legal reporting requirements.

The information in Table 1-9 is extracted from Schedule 3 part I (section 1,2,3), and sections 49 and 54 of the Mining Act.

Table I- 9. *Reporting requirements (except Environmental Reports)*

License	AOBG	BM	GEM
PL	3 months	3 months	3 months
RL	?		

SML	Year (*)		3 months
ML/GML	No frequency	?	After 21 months
PPL	?	?	?
PML	10 ha	?	?

* Financial report

It is obvious from Table I-9 that the conditions are inconsistent and ambiguous, making the administration and control of the reporting activity unmanageable. The different periodicity or requirements makes the control of delivered reports in time extremely complex.

Moreover the required content of these company reports (Schedule 3) are different. The reports are – among other things - meant to be used for inspection purposes. It is noticed that the Mining Act insists more on the need of permanent availability of the documentation at the request of the Commissioner or any authorised person than on the reporting constraints.

Schedule 3, Part I,1b requires that reports are submitted to the Commissioner only, and that the Minister can dispense on these requirements at the demand of the applicant (1b). This makes the reporting management very difficult.

Company Reports should be dispatched to a selected group of stakeholders in accordance with the "harmonisation" statement in the Mineral Policy. The requirements – detailed content of the report, periodicity – should be adapted to the phase of exploration and mining but the basic requirements should be the same – general content, recipient institution.

Table I-9 shows that many data are missing, such as: No requirements for Retention License, Mining Licenses, Primary Prospecting Licenses and Primary Mining License of Building Materials, Primary Prospecting Licenses and Primary Mining License for Gemstones, Primary Prospecting Licenses for AOBG. No frequency is indicated for Mining License for AOBG and no periodicity for Mining License for Gemstones.

It is recommended to amend the Act and Regulation filling in incomplete information and ensuring standardisation of reporting activity and requirements.

Environmental Impact Assessment Reporting

This paragraph focuses exclusively on the legal requirements of providing reports. An assessment of the studying the environmental Regulations, is considered out of the scope of the TOR.. The information referred to is provided in Section 38.

Table I - 10. *Environmental Impact Assessment Reporting*

License	AOBG	BM	GEM
PL	**No**	**No**	**No**
RL	**No**		
SML	Yes (*)		Yes (*)
ML/GML	Yes (*)	**No**	Yes (*)
PPL	**No**	**No**	**No**
PML	**No**	**No**	**No**

(*) exemption possible by the Minister (Sect. 64(2))

A detailed regulation of environmental requirements exists, but report control processes are not defined. Moreover, many articles of this regulation should refer to an "Environment Act" or if not existing, to regulations edited by the Ministry in charge of Environment. It is understandable that that absence of complete environmental regulations, the Ministry of Energy and Minerals has prepared standards appropriate to mining activity. Co-operation with the Ministry or other body responsible for the environment could ensure a broader and more comprehensive approach at the national level.

Another example of a discriminatory power of the Minister, which is studied in chapter 3.12.1, is found in Section 64(2), in which the Minister can decide whether or not a Prospecting License, Mining License, Special Mining License and Gemstone Mining License should be exempted to submit EIA reports. It is not clear according to which criteria such decision is made, but the environment is a major issue and such a self-directed ministerial decision induces that other important Ministries (Environment, Natural Resources...) are not involved and then will not be informed of the impact on the environment.

Naturally the environmental impact varies according to type of activity, and e.g. mining makes at stronger impact than does prospecting activities. Hence EIA should be adapted not only to the scale but also to the type of activity. Thus reports concerning exploration need not be very comprehensive as to EIA, whereas at a later stage the content should be more comprehensive and focus on all relevant topics. Clarifications hereto should be part of the Act and Regulation.

The scarcity of requirement of EIA contradicts the Mineral Policy that states: "The entire mining industry must adhere to the same environmental standards". It is clear, as said in the Mineral Policy, that: "the requirements for meeting established standards vary according to the scale of operation", which is not the same as saying that companies involved in exploration and mining are exempted with respect to delivering Environmental Report.

2.2.8 Other rules

Transfer of prospecting- and mining rights

Section 9 states the right to transfer mineral license from a holder to another person, provided a written consent of the Licensing Authority (Section 9(2)) for a transfer of a Mining License related to Division B (ML, SML, GML).

The limitation and controls (the "consent") seems to be the only ones stated in Section 8, related to the eligibility of the applicant. These conditions were discussed in Chapter 2.2.2.

Section 9(4) states that the consent shall not be "unreasonably withheld or delayed". This condition relates to the responsibility of the MEM that is discussed in Chapter 2.2.1. In summary, if no timing is given, if the administration is not liable for any missing information, and if no action or decision is defined in the case of "unreasonable delay", this article has no impact.

Compensation

Section 96 states that the rights under a Mineral Right be exercised reasonably. In details, some compensation rules are defined:

- Disturbance of the right of the "lawful occupier" or damages caused, should be financially compensated "in respect to the disturbance or damage"
- If the value of the land is enhanced by the mining operation, compensation is payable based on the value without enhancement.
- The Commissioner may be referred to decide in case of dispute. But, according to section 101 (2), he can "refuse to decide".

The Mining Act, 1998 gives basic rules to evaluate compensations but is not providing a methodology to evaluate the amount, which is the subject of the majority of disputes. This is partly due to the fact that before the new Land Law, 1999, the land had no value, was owned by the State and that consequently no official land market was operating in the country. The new Land Law sets up the principles of valuable Land, but still does not accept permanent property (only long-term leases). The Land Law is very recent and the land market is not yet fully in operation. In absence of an operating land market, evaluation skill is not developed (there is no Land Valuation Board or equivalent) and no valuation methodology has been developed and tested.

In absence of clear regulation, the Mining Act should be as clear as possible on the methods of evaluation, compensation, the procedures and the solving of disputes.

Another compensation issue relates to the responsibility of the administration in case of errors in the registration (co-ordinates for example) that causes financial damage to the holder of the right when discovered. That should be clearly regulated.

Erecting buildings by the occupier

Section 96(2) states that lawful occupiers are not authorised to erect any building or structure in an area covered by a Division A and B licenses without the consent of the holder of the Prospecting or Mining Right, except if the Minister decides. This decision is coming from an "unreasonably withheld" consent.

It is an important statement that construction by the lawful occupier is not authorised in an area covered by any Minerals Right. However, it is said that: (i) the Minister may decide. It seems not necessary to involve the Minister in such a decision and such a decision should be decentralised with possibility of appeal; (ii) coming from an "unreasonable withheld" consent of the holder. The definition of "unreasonable" is not clearly made; (iii) all Minerals Licenses are concerned. Special cases could be defined for Reconnaissance Prospecting Licenses, which often cover a large area with little activity. The difference between prospecting and mining could be taken into account, with a simplified process in case of prospecting, for example.

2.2.9 Activity

Activity is not an obligation as such, but the Mineral Policy clearly states that the Mining Act must be an incentive to prospect or mine, avoiding a license being used for a speculation purpose.

Section 63 supposes that there is an obligation to mine in accordance with the plan submitted - but this is requested only for Mining Licenses for minerals other than gemstones. This very special case should be extended to all other types of mining licenses, or be deleted to ensure consistency.

A license can be terminated at the initiative of the Mining Advisory Committee (MAC), with the signature of the Minister. The ZMO/RMO usually makes the controls. There is no indication of the co-ordination process and what is the condition and flow chart of such a decision. It appears that a well-defined involvement of ZMO / RMO in the decision-process is requested by the ZMO/RMO being involved in the inspection activity.

Section 60 defines the procedure for a holder of a Special Mining License to suspend or stop mining activities. It is noted that the Licensing Unit must approve this cessation of activity and may direct to continue mining operations in compliance with the program. This statement is difficult to apply, as holders of SMLs are mainly large companies working in a free market environment that minimises interventions and orders from the administration. It is suggested to impose financial compensations, compliance with a minimum of requirements before leaving (as Environmental conditionality stipulated in the contract) and declare the area vacant open to Tenders or free of Rights open to new applications.

It is important that the Act reflects this need of activity, but the best way is not to implement bureaucratic controls or administrative requests, being difficult and expensive to manage. Alternatively, it would probably be better to consider the introduction of financial penalties or targeted incentives. Another key penalty would be to define an easy-to-implement and well-defined cancellation process of the License. This issue is discussed in 3.10.2.

2.2.10 Surrendering part or whole of / enlarging area covered by the license

Changing the area of the License at the request of the holder is described in two sections:

- Section 56 describes the possible changes or cancellation by the holder of the License, surrendering part or whole of an area covered by the License;
- Section 59 describes the possibility of enlargement of a license area at the request of the holder.

Concerning the process of cancellation at the request of a holder, the process should be as simple as possible, in order to discourage holders to freeze a license instead of asking for cancellation. The same comments as for 3.10.1 apply, concerning financial compensations, minimum requirements and declaration of vacant or free area.

Some comments apply to section 59:

- The enlargement of an area cannot be granted if the prospecting area exceeds the maximum area prescribed (section 59(2)). There is no indication for SML for which this section applies, but according to 3.6.2 (Maximum area) there is no indication in the Act concerning a maximum area for a SML.
- This enlargement applies exclusively to SML and PL. There is no possibility for other mining licenses.

2.2.11 Cancellation of a license

Section 57 defines the possibility for the Minister to cancel a license. The section applies to Divisions A and B, excluding PPL and PML. Cancellation of PPL and PPL defined in Division D is described in section 72

For licenses under Division A and B, section 57 states that the Mining Advisory Committee is advising the Minister, with respect to cancellation. This option is questionable, as they are not official beneficiaries of any report or information from the Zonal Mines Offices or from the Licensing Unit. Inversely, the Zonal Mines Offices may face cases of non-compliance with the Act as defined in section 57(1). But there is no description of the action that can be taken by the ZMO before involving directly the Minister and no co-ordination is defined.

A redefinition of the roles and a to this fitted institutional arrangement would improve the efficiency of the Licensing System. Basic rules are to separate administration, assessment and decision. The LU is a Registration office, issuing and monitoring licenses. A ZMO is a control office, with duties related to inspections and administration of the Act, and is not making decisions. Independent bodies should be used for assessment of Reports and Technical issues (i.e. the Geological Survey).

Concerning licenses under Division D, there is no description of cases of non-compliance with the provision of the Act that justifies a cancellation, except in the event that the holder is ineligible. There is no description of a process of written notice to the holder, in the contrary to Division A/B licenses where the holder has 60 days to comply with the request (Section 57 (2b)).

Again, the ZMOs are not involved in the process, though they are in charge of the inspections and can easily identify the defaults of the holders.

In summary, the cancellation of a license should follow a clear and easy process provided that: (i) ZMOs have a possibility to initiate legal actions when identifying the non-compliance; (ii) involving inspection offices (ZMO); and (iii) same process extended to PML, PPL.

2.2.12 Safety and insurance

The regulation on safety is not commented in this report because it is not related directly or indirectly to the Mining cadastre.

It is just noted that Section 109 states that insurance is mandatory to cover all risks inventoried in 109.2. But this insurance applies exclusively to Prospecting Licenses (PL) and Division A/B Licenses (ML, GML, and SML), not to Division D Licenses (PPL and SML). The insurance requirement with respect to PPL and PML are exclusively at the discretion of the Commissioner.

It is assumed that the Security regulation applies for everyone and that in case of accidents Section 109 (4) applies where the holder of the right is responsible for any accident resulting from any act or omission in the conduct of mining operation. It is clear that the limited financial asset of small-scale and artisanal miners (PPL and mainly PML) caused poorly ensured activity against accidents, even the most risky. It is doubtful if they can afford to pay fees or compensations in case of misconduct of mining operations without insurance. The Policy statement defining one of the functions of the Government as "supporting small-scale miners to adopt safe and environmental-sound processes" should be applied and solution founded to better ensure security of miners in providing for example financial support and insurance as an incentive for providing safe processes.

2.2.13 Demarcation and co-ordinates

A fundamental of any mining cadastre system is the application of a unique obligatory co-ordinate system defining the field boundaries without ambiguity and securing the possibility to retrieve limits even if beacons do not exist.

The Mining Act and the Regulations do not specify the technical requirements necessary for an unambiguous co-ordinate system. For example Section 24 (3) c defines the documents going with an application for a Prospecting License. The article requests only that the applicant "shall state the area and be accompanied by a plan of the area". A better description of the "plan" (scale, type of co-ordinate system and specifications, accuracy etc.) is necessary. Some countries have special regulations on mapping, co-ordinate system, map datum, and GPS measurements. This is especially necessary when the cadastre system is to rely on the use of digital databases and GIS.

Latitudes and Longitudes are indicated in the forms defined in the Regulation, but the co-ordinate system and the projection are not defined.

National standards defined by specialists - the Survey and Mapping Division of the Ministry of Lands and Settlements - with the aim to adapt the required accuracy and technical constraints to the minimum required for the purpose of granting licenses without overlap, should be applied.

Beacons and marks for identifying the limits on the field are defined in the Regulation: Section 6(1) for Licenses granted under Division A and B, Section 6(2) for Primary Mining Licenses. The demarcation for Primary Prospecting License is defined in Section 65 (7) but is optional in case of a very general prospecting activity over a larger area.

2.2.14 Authorisational arrangements

Role and obligations of the Minister

The Mining Act defines an essential role for the Minister. In summary, he is involved in major decisions, but also in minor issues. He has a discriminatory power to modify many requirements defined in the Mining Act and Regulations.

The decision-making activities are the following:

- Section 10. Enter into a development agreement for granting, conducting mining operations, financing, advised by MAC
- Section 13. Designate vacant area for PL, ML, GML, for PML after advice from the Mining Advisory Committee (MAC).
- Section 16. Appoint Zonal Mines Officers (advised by Commissioner)
- Section 20. Prepare Annual Ministry activity report to MAC.
- Section 34. Accept Retention License applications after advice from MAC.
- Section 35. Require assessment study from the holder of a RL for accepting renewal (advised by MAC)
- Section 48. Grant ML, renewal (not gemstones)
- Section 51. Grant GML
- Section 57. Cancel PL, RL, SML, ML, GML licenses after 60 days notice and consulting MAC.
- Section 78. Publish turnover requirements after consulting MAC.
- Section 94. Establish controlled area for gemstone mining. Amend existing diamond protection area (Diamond Industry Protection Ordinance)
- Section 95g. Authorise license < 100m from a point or within a development and production license area identified under the Petroleum Act, 1980
- Section 97 Accept appeal from holder concerning Commissioner notice on wasteful mining
- Section 107. Deliver import / export permit for radioactive mineral.

A more questionable activity relates to the involvement of the Minister in discriminatory decisions, sometimes modifying or even annihilating the general conditions defined in the Mining Act or in minor decisions that could easily be made by appointed officers using standard processes, such as:

- Section 12. Decide on priority between two applications that have been received the same day.
- Section 15. Extend provision for disposal, export mineral (except raw gold and gemstones).
- Section 26. Select the winner Bid after receiving report from MAC and inform the winner.

- Section 35. Grant Retention Licenses after consultation with the applicant.
- Section 36. After receiving applications for ML, SML, GML, decide whom to send copies to.
- Section 38. Decide on special requirements to applicant of SML
- Section 39. Grant SML and decide which mineral, duration or justify reject to the applicant.
- Section 42. Decide on renewal, changing conditions, after consultation with the applicant.
- Section 57(4). Decide on cancellation of License and inform the holder Section 64(2). Exempt ML or GML of Environmental Impact Assessment reporting
- Section 73. Grant Dealer's license (raw gold or gemstone, or another mineral if Minister Order)
- Section 86. After notice to a license holder that value is under-estimated, revise the value based on an agreement with the license holder
- Section 87 Defer royalties due or section 89. Determine provisional payment in place of royalties
- Section 91. Prohibit disposal of mineral of a dealer, unless payment or individual arrangement
- Section 95. Give written consent for exercise rights in area of public purpose, 100m from buildings or reserved area.
- Section 95b. Can dispense of written consent of lawful occupier for granting a right.
- Section 96. Consent building authorisation to lawful occupier in a license area if consent from holder of license withheld
- Schedule 3.1. Dispense holder of PL of production operation reports to the Commissioner
- Schedule 3.2. As he requires, demand for Operation, Technical or Financial Reports to ML, GML, ML

It is evident that the responsibility of the Minister is excessive in many aspects:

- Discriminatory decisions changing the terms of a contract should be avoided;
- A transparent arrangement should replace individual agreements between the Minister and the License holder.

In modern mining acts the role of the Minister is limited to support the action of the Government as promoter, facilitator, regulator and service provider, delegating current procedural decision to the Commissioner or other nominated and appointed officers.

Role and obligations of the Commissioner

The role of the Commissioner is defined in Section 16 (2):

- Exercise the functions defined in the Act
- Supervise and regulate the proper and effectual carrying out of the provision of the Act.

In other terms, he is the responsible person in charge of supervising the effective implementation of the Mining Act.

The Mining Act defines some functions to the Commissioner:

- Section 17: May delegate some functions except disputes resolution defined in Part VIII
- Section 18 a: Advise the Minister on geological matters
- Section 18 b: Undertake geological mapping
- Section 18 c: Provide data concerning geological resources to the Public

- Section 32(3): Receive gemstone sale reports from holders of PL for Gemstones
- Section 54: Receive GML report, not later than 21 months after granting the license
- Section 55: Receive application for Renewal of GML
- Sections 65, 68: Receive Applications for PPL, PML
- Section 80: Grant Broker's license
- Section 97: Authorise removal of any mineral from the prospecting area
- Section 98: Notice to holder for wasteful mining practices
- Section 101 (1): may inquire and decide disputes between miners or with a third party except Government concerning boundaries, disputed claim to erect mining construction, assessment and payment of compensation
- Section 101(2): May refuse to decide
- Section 105: Maintain Register of applications, grants and changes (assignments, transfers, suspension, cancellation)
- Section 106: Sign certificates (date of effect)

The Commissioners role and responsibilities are:

- Authorising the grants of Division D types of licenses;
- Very important concerning disputes, acting as a land judge, though he can refuse to decide;
- Acting as the Registrar for the Mining rights registration, he is directly involved in the Mining Cadastre.

A better balance of responsibilities between the Minister and the Commissioner is recommended. This redistribution of the tasks should take into consideration factors as the separation between decision-making and operations, transparency of decisions, delegations.

Role of the Mining Advisory Committee (MAC)

The role of the Mining Advisory Committee (MAC) is to advise the Minister on matters that under the provision of the Act must be referred to (Section 20).

The issues are not numerous:
Section 26: Receive proposal for PL by Tender, report to Minister
Section 34 (3): Study applications for RL and submit Report to the Minister

MAC also acts as an advisor to the Minister in some cases, which are not detailed.

The role of the Mining Advisory Committee is questionable. A Committee may be used for co-ordinating activities with other Ministries. Within the Ministry of Energy and Minerals, the participation of appointed officers to undertake certain activities appears to rule out the necessity of a Committee. In case of tender processes, the evaluation should be made by members nominated for this purpose only in short-term, not permanent members of an Advisory Committee.

Role of the Resident Mines Office (RMO)
Section 23 describes the establishment of Zonal Mines Offices (ZMO) by the Minister. The administration has afterwards established so-called "Resident Mines Offices" (RMO) which are under the responsibility of the Zonal Mines Offices; they are provided a set of responsibilities to undertake the responsibilities of ZMO within an allocated area. However RMO's are not defined in the Mining Act, and neither is their authority to undertake any activity.

The importance of the Resident Mines Offices, closer to the exploration and mining operations is evident. Their role and responsibilities, though must be defined in the Mining Act.

Co-ordination
The roles and responsibilities of the Minister, the Commissioner, the Mining Advisory Committee, and the Zonal Mines Offices (and Resident Mines Office) are not guided by any clear principles. Many examples of the involvement of one of the authority are questionable.

For example, Section 20 provides MAC a role of general advisor at the request of the Minister but at the same time it is the controller of the annual report to be prepared by the Minister. In the same time the MAC posses the role as judge and is involved as part of the deal with the Minister, hence MAC are not an independent body who providing independent opinion of Annual Reports.

Another example of necessary coordination relates to the processing of cancelling a license where the role and responsibility of the ZMO is limited to proposing an initial letter to the holder, all decisions and processing being under the only responsibility of the Minister with the advice of the MAC. This rigid and centralised process cannot in provinces react correctly and quickly to the urgent problems of prospecting and mining out of the rules (reporting, operations, environmental and safety regulations...) defined in the Law and Regulations.

Another issue is the necessity to define rules of co-ordination between all involved officers and institutions. The flow of information to the relevant officer / office should be clarified case by case.

2.2.15 Relations to stakeholders

Land Law
A new Land Law was promulgated in 1999, coming after the promulgation of the Mining Act. This new Land Law defines the status of all the land of the country, including the use and the holder of rights.

These definitions have a direct interference with the Mining Act, where definitions were provided because of lack of clear definition at the time of the preparation of this Act, with some reference to the old Act.

It is not the objective of this report to enter into a detailed study of the Lands Act, but we have identified some basic principles having a direct impact on the Mining Act, concerning essentially rules for

compensation and solutions of disputes. Final solutions should be developed in co-operation with the Ministry of Lands and Settlements.

According to the Lands Act, 1999, "land" includes the surface of the earth and the earth below the surface and all substances other than minerals and petroleum, things naturally growing on the land, buildings and other permanent structures. The Mining Act grants rights on using and exploiting minerals, not on land use rights or "surface rights".

The Land Law defines three types of Land:

- Village Land: Demarcated, where the Village Committee is in charge of managing land use;
- Reserved Land: List of land with limited private rights like forest, national park, wildlife, marine park, town and country planning, highway, recreation, subject to Land acquisition Act, 1967, drained parcel, reserve for public utilities, hazardous land;
- General Land: Owned and managed by the State, or public land, which is not reserved land or village land.

The definition of "vacant land" and "lawful occupier" should take these definitions into account.

Lawful occupier

Section 4 defines the "lawful occupier" as the actual user or possessor or a piece of land where damages are payable. In other terms, a lawful occupier can be compensated for the damages resulting of a Mining or Prospecting activity.
It seems that it is not exactly the rule used (see 3.7.2) where a lawful occupier is compensated for an estimated value of the land and construction that he claims the "ownership" of as farmer or villager.

In addition, this definition is different from the one coming from the list of section 95 b that includes many other categories:

- Inhabited, occupied or temporarily unoccupied house
- Land prepared for crop, or reaped last year
- Right of occupancy according to Land Law
- Title to the use and occupy land
- Occupying land in accordance with customary law

Consistency must be checked with the Ministry of Lands because it is a matter of many disputes between parties (some being regularly reported in newspapers and some mentioned in the stakeholder interviews).

Vacant area

Section 12 of the Mining Act defines the "vacant area" as an area free of pending or existing Mineral Right. The definition is not taken into account other rights related to the Land Law, reserves or Lawful occupiers.

A "vacant area" should be limited to General Land according to the Land Law. If extended to reserves or village areas, a re-classification process by the Ministry of Lands is necessary, in accordance with

the Land Law. A full integration of the two registration systems is not a solution because of the complexity. It is recommended, in accordance with international trends, to separate the two systems and develop co-ordination tools when appropriate.

It is clear that the Ministry of Energy and Minerals can be invested of the power to decide which area is "vacant" for Mining Rights exclusively. The compensation rules should clearly be applied for non-general land.

Flow of information to other stakeholders

There is no provision in the Act or Regulations concerning the information to other stakeholders or the general public concerning the License granted. In other words, other stakeholders are not informed that a right of prospecting or mining has been granted in some areas.

Either the Act or Regulations should indicate a list of stakeholders, to whom common information concerning the granted Licenses should be send. Such information could included co-ordinates (using a unique co-ordinate system), date of issue, date of expiry to the Mapping and Survey Division of the Ministry of Lands, so that they are able to inform the public and the Registrar on existing rights located on the maps, as well as who is responsible for this co-ordination.

Some countries include the registration of the mineral right in the Registry Office of the Ministry of Lands. This solution has an essential advantage to define in one system and to retrieve in one office all the information of overlapping land and mining rights, for compensation purpose for example. This induces a regulated flow of information between both ministries. Such a registration is not possible at short time, without agreement on the coordinate system and control and without regulating the process of registration in accordance with the Land Registration Ordinance 334.

2.3 Conclusions and recommendations concerning the Legal and Regulatory framework

2.3.1 Major issues

The selection of Mining Strategy B induces a specific approach in the implementation of different components. The Component 1 relates to the simpliofication of the Mining Act based on the following assumptions:

The basic structure of the Mining Act (1998) and the Regulations (1999) remains, but certain sections are to be reformulated and certain sections will be suppressed, considering, i.e.

- Amendments in accordance with Model A, where appropriate
- Reducing the number of types of rights (reducing types of licenses and reducing types of minerals)
- Rights to be granted according to objective criteria (as opposed to discriminatory criteria)
- Exclusivity of all mineral rights
- Open mining cadastre and title registry

- Environmental requirements adapted to phases various phases of a project
- Adjustments of the Regulations (1999) accordingly.

Amendments or completions of the Act and Regulations are focusing on three topics: (i) simplify and harmonise the requirements and the date; (ii) complete missing information; (iii) standardise the content and describe easy and efficient controls to do.

Also the following questions should be addressed,

- Is the grouping of minerals justified?
- Do the different types of Licenses attract investors and does it benefit to the country?
- Are the different conditions and processes for each type of license justified?
- Is the advantage of discrete decisions by the Minister/Commissioner as opposed to a non-discriminatory process justified?
- Is the current legal framework, as well as current processes, appropriate for "upgrading" artisanal mining into organised and modernised mining?
- Are other rights taken into account in the Mining Act?

The starting point for such amendments of the Act is the proposed simplifications, then adding and complementing missing information. Further details are provided in the Report P22: "Proposed amendment of the Act, 1998 and Regulations, 1999", and also outlined in brief below.

2.3.2 Simplification and clarifications

The simplifications relate to the following aspects:

- Minimise the number of combinations of various types of License and standardise the application procedures

The clarifications relate to:

- Clarify "first come, first served"
- Clarify rights of exclusivity
- Clarify compensation rules
- Better ensure co-ordination with other stakeholders
- Refer to the Lands Act without re-defining occupation
- Suppress the discriminatory processes
- Distribute role and responsibility of Minister, Commissioner, Zonal and Resident Mines Offices;
- Revise advice requirements by MAC;
- Ensure prospecting and mining activity by incentives or penalties;
- Specify non-eligibility of applicants in case of conflict of interest

These simplifications and clarifications induce changes in several sections without changing the structure of the Act.

2.3.3 Adjustments and completion

In addition to the simplifications and clarifications, some adjustments or completions are necessary:

- Definitions provided at the beginning of the Act
- Ensure that all cases are taken into account for limitations and conditions of Licenses (duration, area)
- Role of Resident Mines Office
- Clarify obligations of holders (Environment, safety, reporting)
- Dispatching information with other stakeholders;
- Defining co-ordinate system
- Adjust the process of cancellation of licenses
- Complete Environment reporting requirements;
- Complete reporting requirements
- Clarify Bid processes

The proposed amendments are detailed in Report 2.2: "Amendment of the Mining Act, 1998 and Regulations, 1999".

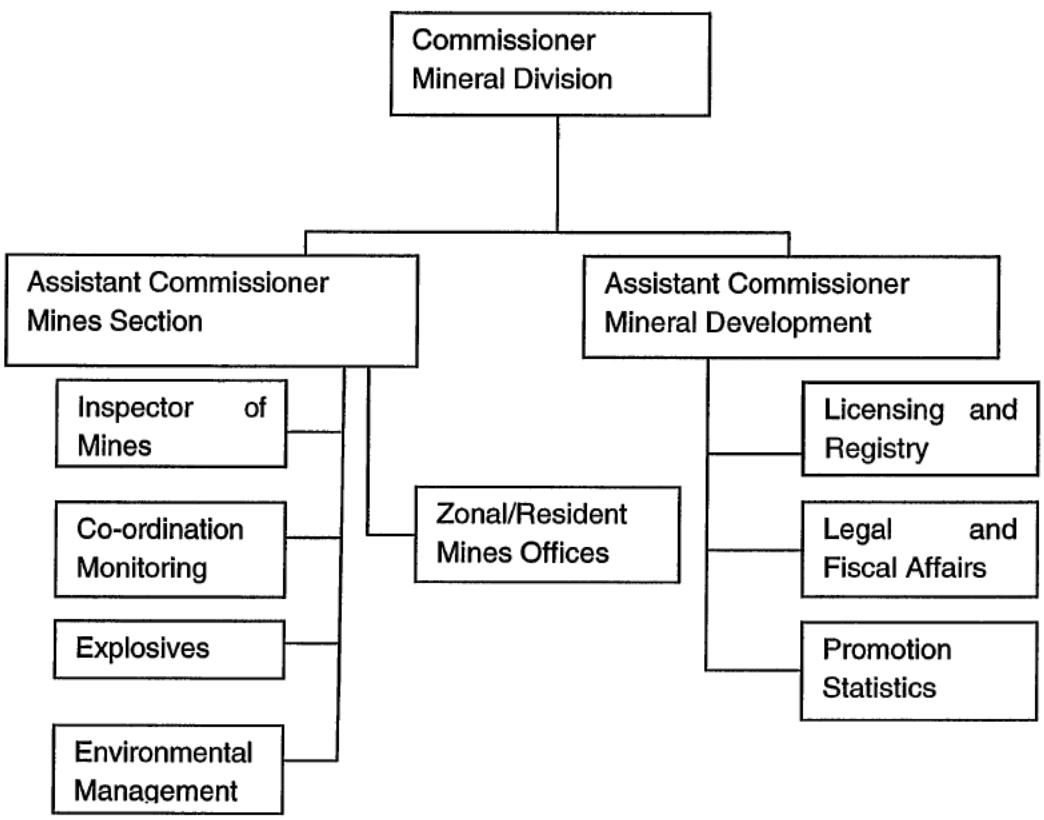
3 Assessments of the institutional capacity

3.1 The organisation and staffing

3.1.1 Mineral Division of MEM

The diagram, fig. I-2 shows the structure of the Minerals Division of the Ministry of Energy and Minerals. The Licensing Registry Sub-Section is responsible for the licensing system and co-operates with the Zonamal Mines Offices (ZMO) and Resident Mines Offices (RMO). This diagram is based on a diagram provided by MEM.

Figure I-2. *Structure of the Minerals Division of MEM*



The Mines Section encompasses the following sub-sections:

- Inspector of Mines Sub-Section. Not directly involved in the Mining Cadastre.
- Explosives Sub-Sedition. Not directly involved in the Mining Cadastre.
- The environmental Management Sub-Section. Not directly involved in the Mining Cadastre, though may be involved in assessing mineral rights applications with regard to environment assessments and involved in assessing EIA and EMP.
- The Co-ordination / Monitoring Sub-Section is in charge of the supervision of the implementation of guidance /decisions in ZMOs and RMOs, but not directly involved in the Mining Cadastre.
- The Zonal Mines Offices including the Resident Mines Offices, are involved in both the application processes for Mineral Rights and for parts of the administration and follow-up with respect to the Mining Cadastre.

The Mineral Development Section:

- Licensing and Registry Sub-Section (LU) is responsible for registration and administration of mineral rights. These duties are undertaken in co-operation with ZMO/RMO, though the latter are not part of the Mineral Development Section.
- Promotion and Statistics Sub-Section is not directly involved in the Mining Cadastre, although it has an important role to play for the implementation of the Mineral Policy.
- Legal and Fiscal Affairs is not directly involved in the Mining Cadastre.

3.1.2 Zonal Mines Offices (ZMO) and Resident Mines Offices (RMO)

The Zonal Mines Offices (ZMO) are located in the eight regions. Some ZMOs have opened Resident Mines Offices (RMO) located closer to areas with mining activities. The table I-11 shows the organisation structure for ZMO and RMO.

The table I-11 shows the Zonal / Resident Mines Offices visited during this project. In order to complete the information a questionnaire was sent to all offices with the aim to gather more information regarding the human resources and equipment available, and thus to evaluate their workload and to identify the major constraints for a smooth and efficient process. Table I-11 indicates the offices responding to the questionnaires.

Table I - 11. *Zonal and Resident Mines Offices*

Zonal Mines Office	Resident Mines Office	Visited	Quest. Response
Central Western			
	Kahama		yes
	Tabora		yes
Western – Mpanda			*yes*
Lake Victoria – Mwanza		*yes*	*yes*
	Kayanga		*yes*

	Tarime		
	Geita	*yes*	
	Musome		*yes*
Northern – Arusha		*yes*	*yes*
Southern – Mtwara			
	Songea		yes
	Tunduru		yes
South Western – Mbeya			*yes*
	Chunya		yes
Eastern – Dar es Salaam		*yes*	*yes*
	Morogoro		yes
	Handeni		
	Tanga		
Central - Singida			
	Dodoma		*yes*

The equipment and human resources available are detailed in the Report: "Questionnaire responses from Zonal Mines Offices and Resident Mines Offices" (Annex D).

On the basis of the questionnaire the following conclusions are made:

- On applications: ZMO/RMOs receive a large number of PPL and PML applications. The latter type is send to LU for granting, but the ZMO's are informed only about a minor part of the licenses granted, not enabling the office to undertake any follow-up inspections and administration of the licenses.
- On licenses: The ratio between the numbers of exploration licenses and exploitation licenses is very unusual, indicating that some areas are not comprehensively explored in advance of initiating mining operations. The effect of this is a large number of dormant/inactive PML's and investment failures.
- The workload on ZMO/RMO appears to be very high - due to the many PML's – considering the resources allocated to these offices.
- Illegal mining: Widespread rush areas are frequently observed, but only randomly reported to LU. .
- Communication: The communication between LU and the ZMO/RMO is inadequate to support the regional offices with the relevant information enabling them to undertake the duties they are responsible for.
- Disputes: ZMO/RMO experience frequent disputes between mineral right holders and farmers / villagers claiming surface rights, or districts claiming fees, between two mineral right holders on the same area, with illegal miners in reserves or vacant land.

ZMO/RMO's reports that their work is hampered due to inadequacy of (i) funding; (ii) the staff allocated for their tasks; (iv) the equipment and transportation facility; and (v) the communication facilities.

3.2 Assessment of the institutional capacity

This Chapter presents an overview of the institutional organisation of the Mineral Division of MEM. The assessment of the institutional capacity relates exclusively to the capacity of the parts of this Division directly involved in the management of the Mining Cadastre. A more comprehensive institutional assessment study would be required in order to come up with detailed restructuring of the entire Mineral Division.

3.2.1 Organisation of the Mineral Division of MEM

It appears that the justification of splitting the Mineral Division in two sections is to separate technical matters from administrative matters. Concerning the impact of this administrative structure with respect to the operation of a Mining Cadastre, it creates permanent transfer of confidential files and applications between both sections located at different location in the Ministry.

The ZMO/RMOs are partly working as local LU-offices and shall obey to standards and rules edited and applied by the LU. The absence of a line of command between the LU and the ZMO/RMOs, complicates the necessary priorities of work and flow of communication between the two bodies. Moreover, it appears necessary to have environmental and mining expertise (Inspector of Mine) expertise "in-house" in a mining cadastre office, to undertake preliminary screening of which license needs further and detailed environmental assessments, and for follow-up on technical issues related to applications.

Some aspects to be studied further improving the efficiency of the LU, is outlined below:

The registration function, including the application processes, is not separated from the follow-up of the Licenses, i.e. the more technical tasks like inspection, reporting, and project development. An option could be to separate the administrative function of processing applications and registration in a Mining Cadastre Office (MCO) undertaking registration, applications and archive functions, and another function (Technical Mining Unit) with the responsibilities of the follow-up and control of activities (Mine Inspection, Environment, Fiscal tasks, and Promotion).

Moreover it should be considered to divide the tasks of ZMO/RMO into operational tasks (Mine Inspection) and administrative (applications and co-ordination). If the line of command is within in the same unit, it is more straightforward to define the administrative instructions. In addition the responsibilities of the Promotion and Statistics Sub-Section should be separated, encompassing public campaign and information to the public, in one group; statistics in one group. The geological information should be considered to be the responsibilities of the Tanzania Geological Survey, which would be in good accordance with the current act.

3.2.2 Staff capacity in the Minerals Division

The staff capacity in the Minerals Division totals 30 persons, encompassing 20 in the Minerals Development Section and 10 in the Mines Section. The specialisation and capacities in the Sub-Sections are given in Table I-12. It is obvious from the Table I-12 – and it has also been observed by the Consultant - that the Heads of Sub-Sections are mainly involved with the specific activities being the responsibilities of the Sub-Section. The management tasks of the Sub-Section only take up a minor part of the time due to the heavy load of work on all staff members. We understand that none of the heads have attended basic management training courses – except one who is a MBA graduate.

Table I - 12. *Staff capacity in the Minerals Division*

Commissioner's Office

Staff (Title/Designation)	Profession	Capacity
Commissioner for Minerals	Geologist	1
Personal Secretary	Secretarial skills	1
Secretary	Secretarial skills	1
Office attendant	Secretarial skills	1

Minerals Development Section

Staff (Title/Designation)	Profession	Capacity
Assistant Commissioner	Geophysicist	1
Licensing and Mineral Rights Sub-Section		
Head, Licensing and Mineral Rights	Geologist	1
Geologist Mineral Rights Registry	Geologist/Mineral economist	1
Geologist Licensing	Geologist	1
Technicians	Technicians	7
Legal and Fiscal Affairs Sub-Section		
Head, Legal and Fiscal Affairs	Geologist/Business	1
State Attorney	Administrator, Lawyer	1
Promotion and Statistics Sub-Section		
Head, Promotion and Statistics	Geologist	1
Geologist – Promotion and Market	Geologist/Gemologist	1
Geologist – Statistics and Records	Geologist/Engineer	1

Mines Section

Staff (Title/Designation)	Profession	Capacity
Assistant Commissioner – Mines	Mining Engineer	1
Inspectorate of Mines Sub-section		
Chief Inspector	Mining Engineer	1
Mining Engineer - Inspection	Mining Engineer	1
Co-ordination and extension Services Sub-Section		
Head, Co-ordination and extension Services		
Mining Engineer	Mining Engineer	1
Geologist	Mining Engineer	1
	Geologist	1
Explosive Sub-Section		
Head of Sub-Section	Mining Engineer	1
Mining Engineer	Mining Engineer	1
Environmental Monitoring Sub-Section		
Head of Sub-Section	Geologist	1
Environmentalist	Process Engineer	1

3.3 Assessment of the staff qualifications

It is clear that the majority of the personnel of the Licensing Unit are very concerned by the responsibility they have in providing an efficient service to the customer and by the importance of their work for the MEM as well as for the development of the country. They face however the following problems with regard to training:

- Training activities are not undertaken on a routine basis due to the scarce resources, and new recruited employees are trained on-the-job only. This creates a depreciation of the quality of the work by absence of organised transfer of instruction in absence of overlap between resigning and newly recruited or appointed employees;
- It is difficult to recruit new personnel possessing the adequate training background for supporting the fast increasing activity of the LU. This causes work overloads, delays and probably also errors.

It is assumed that the number of employees is unlikely to increase in accordance with the fast growing development of the mining activities in the coming years. Moreover it is assumed that the organisation will experience problems in replacing employees and thus it is impossible to ensure organised transfer of knowledge from the leaving to the newly appointed staff.

3.4 Other stakeholders

3.4.1 Government stakeholders

The groups of governmental stakeholders having overlapping interests and responsibilities related to Mining Cadastre activities, were identified and interviewed with respect to the development of possible communication lines. The outcome of these interviews is detailed in the Report "Stakeholders meetings resume" (Appendix E).

Table I - 13. *Governmental stakeholders interviewed by the Consultant*

Ministry or National Office	***Office visited***
Ministry of Energy and Minerals	Environmental Management Sub-Section Legal and Fiscal Subsection
Ministry of Natural Resources and Tourism	Forestry and Beekeeping Division Wildlife Division
Ministry of Land use and Settlements	Land Use and Planning, Commission of Land Use
	Registry of Dar Es Salaam zone
	Mapping and Survey Division
Vice-President Office	NEMC (1) Directorate of Environment Impact Assessment Division of Environment (EIA)
Ministry of Regional Administration and Local Governments	Directorate of Local Governments

(1) NEMC: National Environment Management Council

The offices visited are located in four different ministries and two Divisions of the Vice-President Office.

3.4.2 Non-institutional stakeholders

The group of non-institutional Mining Cadastre stakeholders is identified. Several representatives of the private sector and of miners Associations were visited and interviewed. It is considered that the outcome of these interviews provides a representative overview of the concern expressed by the private and associated sector. The Non-Institutional Stakeholders are listed in the Table 14.

Table I - 14. *Non-Institutional stakeholders interviewed*

Private sector / Organisations	***Companies or organisations visited***
Private sector	Longido Gemstones
	Mabuki Diamond
	AFGEM Tanzanite
	Geita Gold
	Anglo Gold
	Resolute Ltd.
Organisations	Institute of Resource Assessment
	Chamber of Mines
	Miners Association Ramagasa
	Miners Association Nvarugusu

The Non-institutional stakeholders are divided into two categories: (i) The private sector of mining and exploration companies; (ii) Other organisations including the Chamber of Mines, the Associations of Miners and Institutes.

3.5 Conclusions and recommendations concerning the institutional capacity

It is recommended – even in the short-term program - to offer a two-string training package to the group of Head of Sub-Section, (i) Training for professionals and (ii) Training for managers, for upgrading both types of required skills.

Concerning the staff and under these prevailing conditions, the solutions can be to:

- Develop Training Program considering both long term and short term requirements.
- Develop clear written instructions / operation manuals to be dispatched both existing and new employees;
- Simplify the procedures for administration of the Mining Act – based on an amended Mining Act – enabling an efficient administration and fast procedures and ensuring that all requirements are fulfilled;
- Equip the Mining Cadastre Office with the adequate equipment, such as computers, printers, photocopiers, Internet, and archives; and

To implement a state of the art MCIM

The major conclusions of the interviews held with government bodies are as follows: (i) The communication between different stakeholders and the Ministry of Energy and Minerals is inadequate. (ii) There is a need for permanent consultation on common issues through Committees. (iii) The issue related to compensation to the legal holder of rights needs to be addressed. (iv) The inconsistency between the legal frameworks in different ministries needs to be addresses.

The major issues defined to the private sector are (i) The difficulty to get complete and up-to-date information on existing licenses and to get information on vacant areas; (ii) The overlapping licenses causes disputes between the Licensees; (iii) The illegal mining activities that are tolerated by the authorities; and (iv) The procedures to grant a license is opaque and takes too long time (in general in excess of three months).

It is noted that there is a full commitment from all the stakeholders on several needs: (i) The necessity of enforcing the legal provisions of the Act, including: (ii) The importance of an efficient Mining Cadastre Information System accessible by all customers; (iii) An improved service by the administration to the customers, as well as technical assistance to small-scale miners; and (iv) Transparency of the licensing processes.

The private sector suggested that the general evolution of the mining administration should involve: (i) amending the Law to simplify the types of License and give more flexibility to investors for renewing or extending Licenses; (ii) change the attitude of the administration to move towards a service provider activity.

4 Assessments of the MEM´s mandate and the licensing system

4.1 The current licensing process

This chapter describes the process applied by MEM for granting prospecting and mining licenses. The legal requirements defined in the Act and Regulation is described in Chapter 1, "Assessment of the Legal and Regulatory framework". The practical procedure followed by the administration is detailed below in order to identify difficulties, bottlenecks and to propose practical solutions to improve the efficiency of the administration.

Two different mineral right application process routes are identified:

- The process related to the granting of Division A (PL) and, B (ML, GML, SML and renewals) ;
- The process related to the granting of Division D Licenses (PPL, PML).

The design of the diagrams fig. I-4 and I-5 are based on a diagram provided by the LU and completed by use of detailed information coming from interviews. The diagrams give an overview of the procedures followed by MEM to grant licenses governed by the Division A and B of the Act. The first part of the process – from receiving the application to sending an offer - is shown in Fig. I-2, and fig. I-4 presents the process of granting the mineral right after the offer is accepted by the applicant. .

Figure I-2 presents an overview of the process of granting PML and PPL.

The three diagrams together give an overview of the process with the main principles in accordance with the present Act and Regulations, but they do not enter into detail for the practical operations, controls, archiving, and registration.

The process is followed step by step to identify the difficulties and bottlenecks and to provide a literal description of each step of the process. The internal controls of the validity of an application are not described in detail, as they may be different from one application to another. The major issues are identified and commented. The description mainly focuses on the operational steps of processing applications.

The diagrams fig I-2, I-4, I-5 focus the tasks of the Licensing Unit. However many other officers and offices of MEM are involved in the process, like the Minister, the Commissioner, the Assisting Commissioner, and MAC. Chapter 3.3 describes the data-flow between all the involved participating offices in MEM and the exchange of information with the applicant.

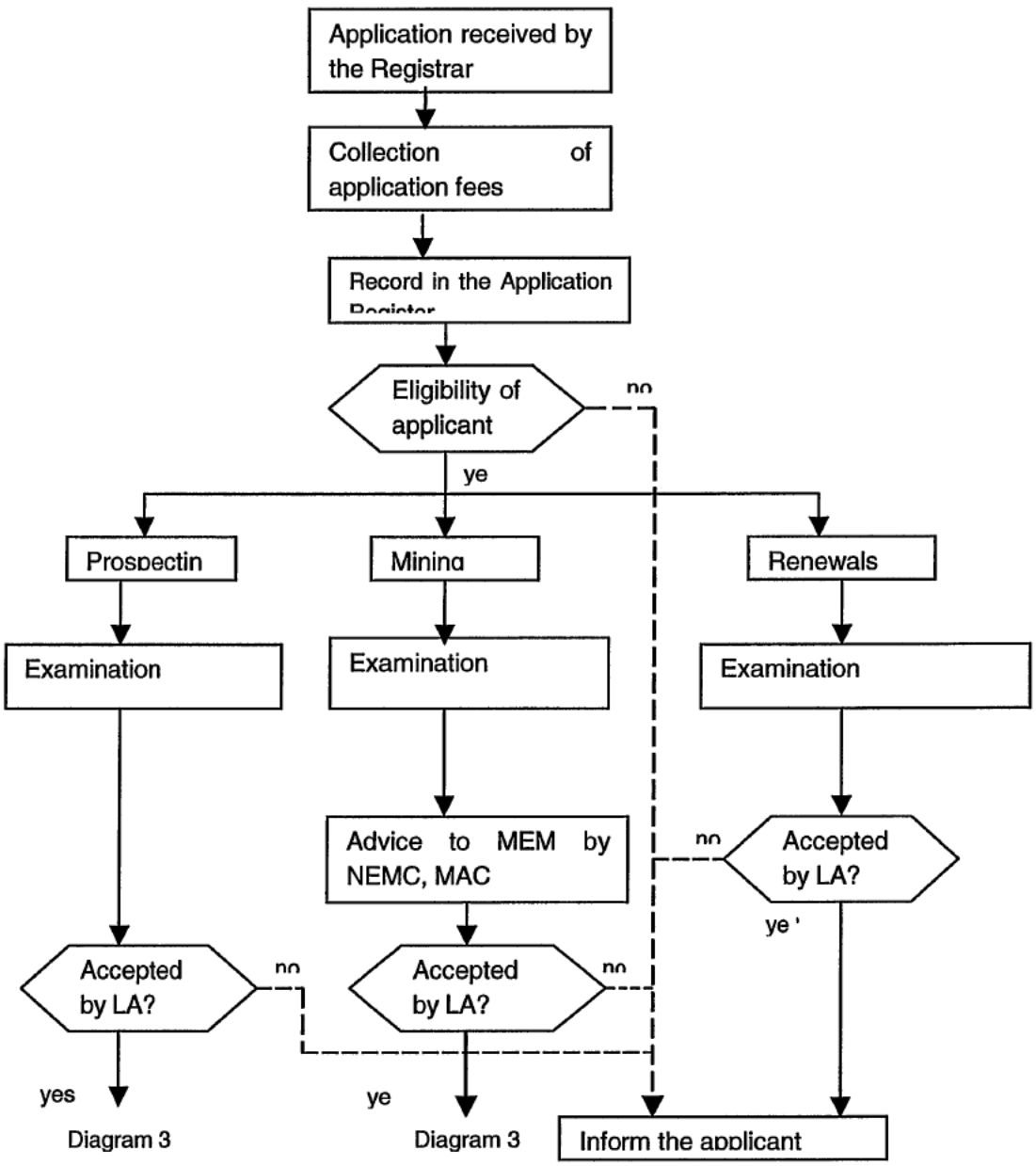
In Chapter 5 the system used for a graphic control of the overlaps between existing licenses and new applications is detailed further. This process is important as it has a direct relation with the future

MCIMS the principles of which are to be designed in this Project. The Archive and Filing system is described, and some crucial constraints are detailed.

4.1.1 Application process for Division A and B licenses until the 'Stage of Offer'

Diagram figure I-2 shows the tasks of the Licensing Unit to process prospecting-, mining- and renewals applications. The applications are divided into three different processes, referring to three different "examinations" undertaken by MEM and the acceptance procedures.

Figure I-2. *Licensing application processing until draft offer*



Notes: the processes "Prospecting" and "Mining" are continued on the figure I-4.

The examination step lists the controls made by the LU in accordance with the Act and Regulations,before providing their recommendation – proposed acceptance or rejection, change of co-ordinates. The controls are different for each type of application and relate to:

- The Licensing Unit studies an application for Prospecting License. The checking process involves the following steps: (i) study of the financial capacity of the applicant; (ii) check of possible overlap between the area applied for and existing licenses or prior applications; (iii) status of the company or the individual.
- Application for Mining License (ML)/Gemstone Mining License (GML) /Special Mining License (SML) involves checking the following: (i) valid PL if transfer from PL to ML; (ii) checking the overlap of the area covered by the application with an existing License or prior application (iii) checking if the Feasibility Study is acceptable (iv) existence of acceptable EIA (for SML) or EAP; (v) acceptable proposal of training of local miners.
- Renewals: (i) confirmation of 50% relinquishment for renewal of PL; (ii) existence of previous reports; (iii) annual rent paid.

The checking of overlaps of area obeys the rules defined in the Act. In the event that checking reveals an overlap, it may be necessary to change the co-ordinates of the boundaries of the application, or alternatively the co-ordinates of the boundaries of the existing overruled Licenses should be modified.

The advice of NEMC is required for the examination of the EIA and EAP. The advice of MAC is required for licenses granted by a Tender process.

The applicant is informed by 'Letter of Acceptation' or by 'Letter of Rejection'. It is noted that a process for providing the information to ZMO/RMO or other stakeholders is not organised.

The process of final acceptance involves several authorities, and is described further in Chapter 4.1.4 and in Figure I-4, I-5 and I-6.

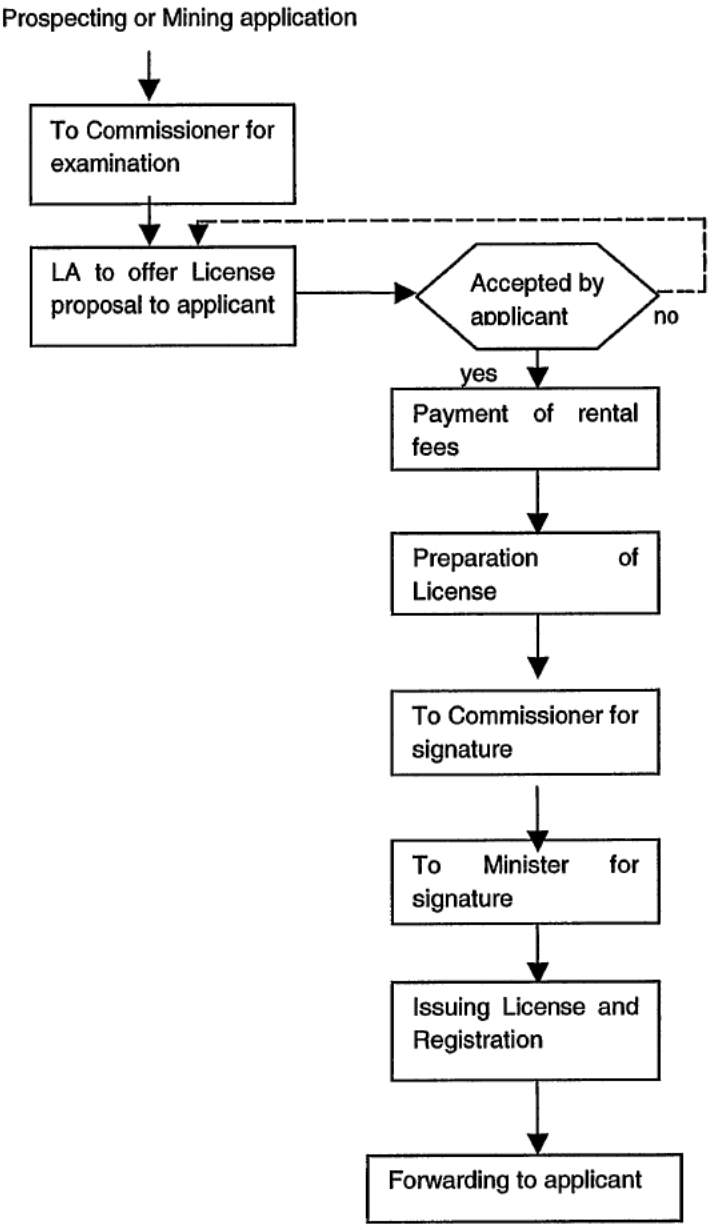
4.1.2 Granting Division A and B licenses after the 'State of Offer'

The process of final granting of an accepted application for a Division A and B License generally follows the same route. The data-flow between the Minister, the Commissioner, is detailed in Figure I-6. In addition to these also the Assistant Commissioner is involved in the examination process.

This figure shows that The Minister, the Commissioner, the Assistant-Commissioner or the MAC are involved at different stages of the process of granting License, and sometimes several times. Many weaknesses in the process are demonstrated: the Commissioner signs after the Minister the License; the Minister signs the License before payment of fees; the Commissioner signs several times.

The "Forwarding to Applicant" box in Figure I-4 means that the applicant is informed that the granted license is ready for collection in the LU. It is observed that in cases when a new license overrules an old license, such license holders are not informed properly and amended licenses are not issued.

Figure I-4. *Granting Division A, B Licenses after preparing "Draft Offer". The outlined process is identical for Prospecting and Mining Licenses*



The "License registration" step combines the archiving, copies to the confidential files and registration in the License Register and in the 'mineral rights inventory'.

4.1.3 Application process of Division D licenses

Figure I-5. *General flowchart for granting Division D licenses*

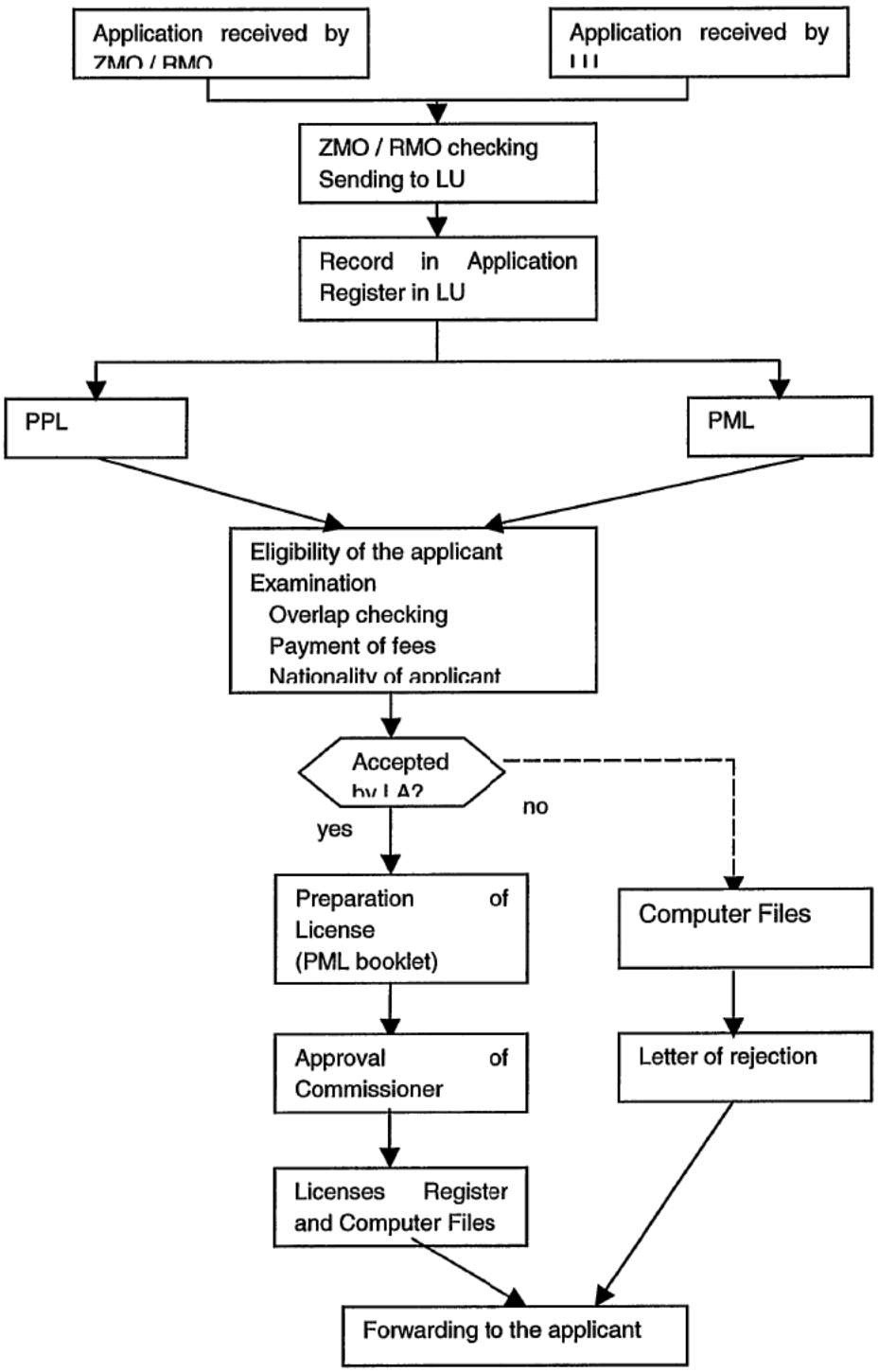


Figure I-4 describes the general process of granting PML and PPL. Reception of applications and information send to the applicant is monitored by the ZMO, even if the application is submitted directly to the LU office. The Licensing Unit takes care of the major controls, essentially the control of possible overlaps using the computer facility; such facilities are not available to the ZMO.

The "examination" box includes the control checks currently made by LU: (i) Eligibility and nationality of the applicant; (ii) Area overlapping an existing License or prior application and modification of boundaries of existing overruled license.

The "License Register and computerised files" includes two steps: (i) copy on the Registers of the final decision when accepted; (ii) storage in the computer of the decision to define the area covered by the application as granted (accepted) or vacant again (rejected).
+
The "Forwarding to Applicant" box means that the License is sent to the relevant ZMO / RMO where the applicant can collect the granted License (original page extracted from the booklet).

4.1.4 Detailed description of process for granting licenses

There are two different routes for granting Licenses:

(i) PPL and PML, defined in Division D of Part IV of the Act where the Zonal Mines Office can initiate the process, and

(ii) PL, ML, GML, SML, Renewals, defined in Divisions A, B, and C of Part IV of the Act for which applications are processed entirely by the LU.

The steps of processing Division A, B Licenses applications are the following (exact definition of the terms used, are provided in the List of Abbreviations):

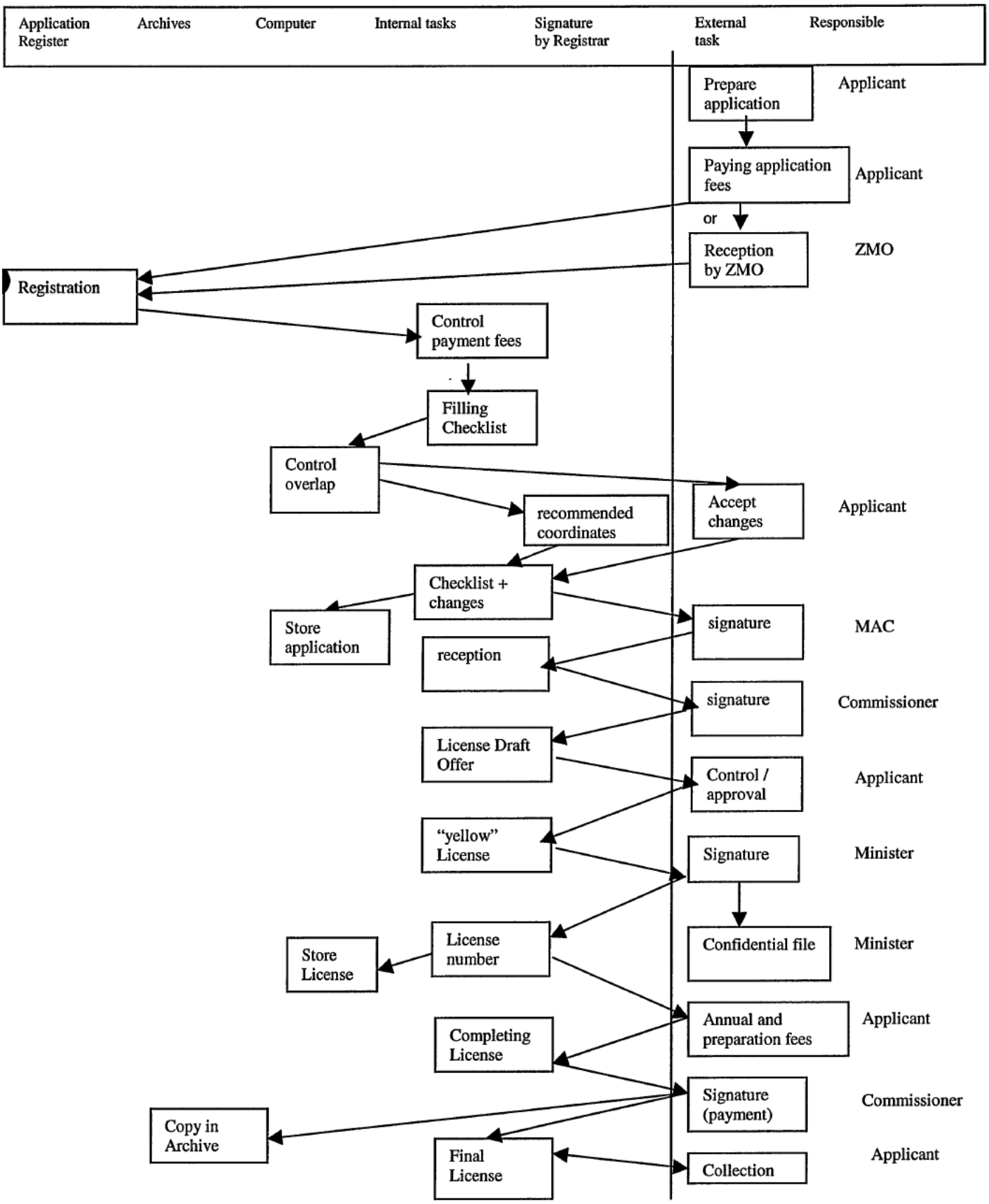
1. All applicants for a Mineral right have to fill in a standard "Application Form" issued by the MEM. Subsequently the application is submitted to the Registrar in the Licensing Unit.
2. The Registrar in the Licensing Unit register the application in different Entries (details are provided in Chapter 4.1.8: "Procedure for handling and filing data") each of which have chronological numbers, date and time. The "first come, first served" concept is ensured by the date and time of these entries. The Applicant receives a stamped receipt of the application with the date and time of reception by the Registrar.
3. The LU controls that application contains the Treasury receipt with appropriate number (the reference to the National Treasury accounting book is checked, but not registered) for payment of "Application fees".
4. Examination of the application follows the flowchart and a "Check-List Form" (Annex A) provided by MEM, (financial study, company status for PL, feasibility study, EIA, EMP for ML, previous reports, annual rents for renewals).
5. The Registry fills a "Follow-Up Form" (Annex B) with the submission date and uses it to follow the advancement of the different stages before granting the License. This form is divided in different steps, which are described in the following paragraphs.

6. Follow-up form, Stage 1, "Investigation". Recommendations and proposed modifications concerning exclusively literal information, not co-ordinates, are summarised at the end of this stage. Granting is "recommended" or "not recommended" in the follow-up form and the form is dated and signed by the LU.
7. Follow-up form Stage 2, "Check Up" concerns control of overlap using the computer system (MapInfo system) and the "map plan" submitted by the applicant. In case of identified overlap modifications of co-ordinates are proposed. The Checklist Form includes two pages referring to the appropriate sections of the Act. The Licensing Unit fills this form when granting is recommended. The conclusions are checked by a group of officers to ensure the validity of the data and reduce the risk of errors. The Checklist Form is signed by the MAC, and countersigned by the Commissioner.
8. Follow-up form, Stage 3, The LU approves the proposed modifications of co-ordinates after the computerised control. The proposed modified co-ordinates are sent to the applicant for acceptance prior to granting of the license.
9. Follow-up form, Stage 4, "Notification of Grant" includes 2 possibilities
    a. "Letter of Grant" supposed to be a confirmation that the License is granted fully in accordance with the application requests, or
    b. "Letter of Modification" after acceptance from the applicant of the modified co-ordinates and the recalculated size, signed by the applicant and the LU.
10. Follow-up Form, Stage 5, "Preparation". When the applicant has accepted the modification the application process continues and the LU prepares a Project of License (Offer) to be send to the applicant for his approval. A Draft License form is prepared at the same time.
11. Once the applicant accepts the Project of License in signing the Offer, the Licensing Unit prepares the final License on a special pre-stamped yellow paper made to prevent fraudulent copies of this original. At this stage, the complete application file is sent to the Minister with the yellow-paper License for signature of the original. The Minister signs when the Registrar, MAC and the Commissioner all have signed Checklist Form.
12. The application is then stored at the office of the Minister with a specific chronological number in the "confidential file" (Stage 5.2). Only the original yellow-paper License (one page with the signature of the Minister, one page with the co-ordinates, one page with basic general conditions, dates and the Follow-Up Form return to the LU.
13. At stage 5.3, the License is numbered in the LU and this number (sequential per year and per type of license) is copied on the original License (yellow-paper License). The stage 5.3 ends with the copy of the License number on the Follow-Up Form (line called "file no" on the form).
14. The Licensing Unit controls the reception of the payment at the Treasury of the "Preparation Fees" and of the first annual "Rental Fee". The receipt is numbered according to the national accounting book and this number is copied on the second page of the "yellow" original License.
15. Follow-up Form, stage 6, The file is going to the Commissioner for his signature of the appropriate page of the original License to confirm the reception of the payment. A photocopy of this signed "yellow-paper" License is made by the Licensing Unit personnel (in the Commissioner office by absence of equipment in the LU) and this copy is stored in the Archives of the LU.
16. The applicant collects the original License (yellow copy) in the Licensing Unit after notification.

4.1.5 Flowchart : 'Players' in the licensing application process

The issue of multiple transfers between offices in MEM are identified and detailed in Figure I-6.

Figure I-6: Flowchart of the application process in LU



This flowchart confirms that many exchanges of information between the individuals and offices involved take place. The practical working environment and conditions in the MEM are inadequate to ensure safety of confidential documents or originals during such a process. The problem is further compounded by the fact that there is no central register providing information on the stage of all applications.

The Consultant has observed that some applications are even lost in the system, and it was observed that copies of Licenses were missing in the Archive. The reason for this may be:

- The License number is allocated but no copy of the License exists in the LU Archives;
- The copy of the application received by MEM, or ZMMO/RMO is stamped with the date and time of reception and returned to the applicant. This reference is not repeated in the LU Entry Register, so that all entries cannot be traced.

4.1.6 Computer System

The Licensing Unit uses a computer system for verification of the co-ordinates and for registering License data. A MapInfo based packages for this purpose is available. The system provides graphic boundaries of the granted Licenses and the one application in question to be controlled; the MapInfo software is mainly used for controlling overlaps. In addition to this system three non-connected computers are used for storing the Mineral Rights Inventory, but is based on Excel. Data are exchanged by diskette between the Excel systems. For checking overlap the data is re-entered to the PC's providing for MapInfo area check. Back up is only randomly undertaken, and the copies stored inappropriately.

The major problems observed are:

- Data are not structured in a database, but duplicated without control in both Excel and MapInfo;
- License application data are not stored in the register – hence successive checks do not include applied areas.
- Backup facility is inadequate. Data can be lost at any time
- No indication available to check if a license is granted or have been modified
- Information about which co-ordinate system (e.g. datum) has been used for the co-ordinates is not available
- Procedure manuals are not available
- Date validation routines are inadequate

If such weaknesses are not addressed immediately and solution implemented urgently, there is an significant risk that legal data are lost, inconsistent or not fitting the realty on the field. The applicant may become less confidant with the information provided by the Ministry and the situation being uncontrolled and unmanageable. These issues are studied in detail in the Inventory Chapter.

4.1.7 Other processes

Two processes resulting in a registration were not detailed in the preceding Chapters: Transfer of Mineral Right and the amalgamation (merge of two or more Mineral Rights).

Transfer of a Mineral Right is ensured in the Act with a prior authorisation of the Licensing Authority. In practice, the only control of the transfer concerns the eligibility of the new applicant before registering. A transfer result in the provision of an amended License has to be signed by the Commissioner or the Minister according the type of license. It appears that this process is not followed, except when caused by some large-scale mines and in the event of bankruptcy.

A Letter of Accept is signed by the LU to confirm the transfer, and is sent to the applicant. The change of name in the computerised register is not ensured.

The amalgamation represents the merging of two or several contiguous Licenses to result in one single License. Very few amalgamation applications have been processed and it cannot be confirmed that there is an administrative use for this rare process. The rules are defined in the Act and Regulation.

4.1.8 Procedures for handling and filing data

PML and PPL

Applications for PML and PPL are stored on shelves in the Archives of the LU. Zonal and Resident Mines Office classify them in sequential number.

Due to the limited space of the Archives, the PML applications are stored in an area difficult to access, and thus difficult to use. In principle the ZMO/RMO's have copies of all the applications and granted licenses. It has however been observed that in practise this is far from being the case.

The PML and PPL are not issued in a contract format, but the License certificates are forms attached together in booklet of 50 Licenses (approx. A5 format) with a format defined in the regulations (MRF 10 and MRF 11). Each page consists of two parts: one signed by the LU that is separated and given to the applicant when the License is granted. The other part with the same information copied is kept attached in the booklet. The License number is a pre-printed number in sequential order.

The license certificate includes exclusively the name and identification of the applicant, the area and literal description of the location of the license, sometimes a number that defines an index of a map or a grid, a short description of the License. No co-ordinate is copied. These booklets are poorly stored on a shelf of the Archives, easily accessible by anybody who enters the Archives.

There is no part of the PML/PPL extracted from the booklet to be delivered as a copy to the Zonal Mines Office (only the holder's). ZMOs are poorly equipped and many have no photocopier. It is therefore assumed that ZMOs have no copy of the Licenses granted.

Other licenses

Photocopies of all other licenses granted (PL, PL(Recon), PPL, ML, SML, GML), are stored on shelves in the Archives of LU in sequential number by type of license for the period dating from 1988.

It was observed that some copies of licenses are not enclosed in the files. It is impossible to determine the exact reason for this absence, but several explanations are possible: (i) the application was never granted; in principle, this cannot be possible if the described process is carefully followed, as no numbering is possible before the signature of the Minister; however, in absence of strict control, this option should not be ruled out; (ii) the License was not collected or fees not paid by the applicant. That means that the applicant collects the License in the Commissioner office or directly in the Minister office instead of following the normal process to go the Licensing Unit; or (iii) is simply missing by non-classification of the copy. There is no record of the missing copies of Licenses.

This absence of a copy means that the land is regarded as occupied and not vacant for another application, but the License granted is not legally in operation or not collected or simply not granted. Further detailed investigation is necessary case by case to identify the reasons and update the Computer File accordingly.

The files include only the photocopy of the original license: heading page with name of holder, date, type of license and duration, second page with co-ordinates, additional pages with some standard legal information. The applications are stored in the "Confidential files" in the Minister's office. There is no indication of the Confidential File references in the Archives of LU.

Application registers

There are five different Application Registers, all are hardcopy books, in which the registration is made manually by the officer:

- Application Register for PL and PLR, encompassing the following information: Serial no., date/time; name of the applicant; amount of the fee, receipt no. and date of the payment; district and sub-district; type of mineral; witness.
- Application Register for ML, SML, GML and Renewals (all), encompassing the following information: Serial No.; Name and address of the applicant; mineral category; locality and district; Area size; date of approval; type of license; date recognised; amount of the fee, receipt number and date.
- Application Registry for PML, encompassing the following information: Serial no.; Name and address of the applicant; Date; type of license; type of mineral; approval or refusal date; Zonal Mines Office; PML no. (the time is not registered here but attached on the registration form).
- Application Registry for PPL, encompassing the following information: Serial no.; name and address of the applicant; date received in Dar es Salaam; type of license; type of mineral; zone; Registration no.; Zonal Mines Office.
- Revenue Collections – mineral rights, encompassing the following information: Serial No.; Date received; name and address; Receipt a date of payment of fees; Amount; types of right; license no.

The Application Registers are kept in MEM, in the Registry on 9th floor during working hours; and in the Archive at 5th floor outside working hours.

Access to the archive and register
The archives of the Licensing Unit are located at the 9th floor of the Ministry of Energy and Minerals in the Registry Office.

Archives are meant to be restricted area, allowing access for authorised staff only. However it was observed that Archives and Registers are used in the same room. Access to the room was beyond any control and no records on visitors/MEM staff are organised. The door is – outside working hours - locked by one simple lock only. Both archive and registers are vulnerable to fire (a fire occurred on 7th floor not long time ago and traces of it are visible on the 9th floor!). As opposed to the Archive, the License Registers are in principle open to the public on a fee basis. The existing poor working conditions do not ensure a strict control of the access to the information against fees, and it was observed by the Consultant that non-registered persons were entering directly to the Archives where the Applications are processed.

According to the Mining Act 1998, Sect. 105, MEM shall ensure that a similar register exists in each Zonal Mines Office. However, LU cannot comply with this Section of the Act, because the unit lacks the means in terms of telephones, fax machines, photocopier; instructions on how to undertake this obligation are not available. Thus the ZMO/RMOs receive only sporadic and random information from the Licensing Unit Registers. Consequently the information available in the ZMO/RMOs is incomplete and not useful for the applicants.

4.1.9 Duration of the application process

The Act and Regulation do not provide a maximum duration for the processing of an application, except some incompletely defined situations.

The duration for granting a PPL or PML from the deposit of the application in the ZMNO/RMO is depending on several factors:

(i) The applicant is not always comfortable with administrative procedures and ZMOs face difficulties to contact him when documents are missing;
(ii) The transfer of the information from ZMO to the LU is difficult and long;
(iii) The processing of the application in LU depends sometimes on additional information to be provided by the applicant to the ZMOs, creating additional delay. This indicates that a very large number of applications are pending in the ZMO/RMOs compared with the limited number of Licenses granted and that processing a PPL/PML usually takes more than 3 months.

It is assumed that this long process time may be caused by the following facts:

- The difficult communication between ZMOs and LU, which cannot ensure that all applications are sent and received;
- The absence of administrative skill of artisanal or small-scale miners;
- The distance and sometimes non-functioning direct communication between the ZMO/RMO and the applicant.

When information is missing, ZMO/RMOs are waiting for the applicant to show up, because contact is not possible. But they cannot cancel the application, even though this is not yet entered into the process, and has an impact on the "first come, first served" rule.

Concerning Division A, B Licenses, the non-institutional stakeholder claim that the duration for processing is not less than three months and even one year plus are frequently observed. Further the industry representatives claim that frequent follow-up visits to LU is necessary to ensure that the application time is in the lower end of the time spectrum.

The reasons for such long duration depend on several factors, and the application process is complex and necessitates many controls from different offices, and in some cases agreements with the Minister (SML).

However, no regulation can improve this alarming situation if MEM does not change the approach to the applicants and license holders, implementing a service-minded organisation where transparency, efficiency, confidentiality, and data safety are in focus.

4.2 Issues observed

4.2.1 General procedure of granting licences

The following problems and difficulties are identified in the procedure (the numbering refers to paragraph 4.1.4):

Ad 1:

- The application form cannot be retrieved in public shops, only in the MEM. In general ZMO/RMOs do not have copies of this form in stock..
- The date of registration used to define "first come, first served" is the one of the Application Registers in the LU. If applications are sent to a ZMO, the date of reception in the region is not taken into consideration and this may induce disputes. To overcome this problem, the applicant has to submit the application directly to the LU.

Ad 4:

- The Follow-up Form is a useful tool developed by the LU in order to control that all steps have been successively completed. However, it is inconvenient that this form is going with the application to all involved offices (see data-flow, figure I-6) and consequently it is impossible to check the stage of the application.

Ad 6:

- The computer control of the overlapping rights and applications assumes that, (1) maps and co-ordinates are in a unique co-ordinate system; (2) the computer system is fully operational, and (3) that the Mineral Rights Inventory is up-to-date and complete. These conditions are not fulfilled (see Chapter 3.4 for detailed description). Implementation of the MCIMS will solve this issue and the implementation of a Verification Plan will result in a clean, complete and up-to-date information on Licenses granted and on-going applications.

Ad 8:

- It is assumed that a dialogue exists between the LU and the applicant if the applicant refuses or if he proposes adjustments to the offered modification. It is understood that the applicant generally accepts the changes.
- It is observed that almost all granted license areas are larger than the area applied for. The reasons for such changes were not clearly identified and this indicates a problem that must be further examined by LU.

Ad 13:

- It induces that the Minister's office has no reference of the License number in the confidential files, while LU has no reference of the Application in the confidential file. The serious consequence is that it is impossible to link the Archives of the LU containing exclusively the copy of the License with the Application file, which is stored in the Minister's office.

Ad 15:

- In this step, the Commissioner signs a page of the License after the License is approved and signed by the Minister. It is recommended to find a possibility to invert the sequence so that the Minister signs the final document.

Ad 15 and 16:

- The original confidential document moves from one office to another, and is kept in unsafe conditions waiting for the Applicant. Such uncontrolled circulation of confidential original documents should be avoided. Improving the storage facilities, archives, and providing photocopiers to the LU are a few improvements, which must be addressed to solve this issue.

Ad 16:

- No registration is undertaken of the following actions: (i) reference of the letter to the applicant, (ii) the reception of the acceptance (except in some Entry Registers uneasy to consult) or to the collection of the License by the applicant in the follow-up form.

4.2.2 Company reports – reception, procedures and control

Confidential - and compulsory - company status reports are stored randomly on shelves in the Archives. By instruction the reports are kept separately from the Confidential License File – even though they are supposes to provide information that is meaningful for keeping track of the activity progress on each application. Moreover the reports may contain important geological information, which in one way or another should be conveyed to the Geological Survey for their general update, and which should be part of the State's monitoring of the intended use of the country's natural resources.

The legal Reporting requirements (Report P2.1) is not justified by an adequate number of skilled staff to assess the reports; it is an impossible task for LU to ensure that all reports are delivered in time and assessed by professionals. It is not anticipated that the required number of geologists or engineers will be recruited to undertake this task.

No appropriate action can be undertaken if the control of the reception of the reports is not clearly monitored and if they are not dispatched to the appropriate offices. The lack of clear instructions makes it impossible to determine if a report received in the Licensing Unit has been send to the Commissioner for example or to the appropriate office, and inversely.

Principally the reports should be dispatched to the ZMO/RMO. This occurs only randomly. In the event the reports are re-dispatched to the ZMO/RMO, these offices do not have the required staff and time to seriously control and check the content of the reports. It is also doubtful if hey have the capability to keep confidential reports confidential.

The main reasons for the low number of reports received in LU, concerning mainly PL, PML appears to be:

- The 'non-use' of these reports discourages the license holders to prepare serious reports,
- The Licensees may find that it is a problem to submit confidential information in an unsafe environment;
- The high percentage of non-active licenses, essentially PML; such licenses have nothing to report.
- The unclear dispatching rules of these reports causes confusions about which reports have been submitted; some license holders may have submitted to ZMOs and some to LU, and the lack of permanent communication between LU and ZMOs further compounds this problem.
- Licensees may simply have realised that it has no consequence **not** to go by the rules.

With respect to the Environmental Assessment Impact Report issue, the consequences of the legal and regulatory weaknesses are:

- No control of whether or not reports are provided;
- Exchange between administrative offices is made via the NEMC, which is not informed on all Licenses granted.
- The "polluter pays" statement of the Mineral Policy cannot be systematically applied.

4.2.3 Inspections and termination procedures

The field inspections are made by the ZMO/RMOs in compliance with the Regulation.

It is understood from the interviews, that the large-scale mines usually provide easy access to all the required information, and that security and environmental standards applied by the international companies appears to be high. A good organisation, clear and transparent information, good reporting and skilled counterparts facilitate the inspection by the ZMOs.

It is observed and understood from the interviews that the inspection of small-scale mines in many cases are impeded by several problems:

- The security norms are only followed with a minimum of standards, mainly because the holders of such Licenses – mainly PML - try to minimise the costs of exploitation and maximise benefits.
- The ZMO/RMOs cannot cancel a license in the event that security and environmental norms are not followed; this is the responsibility of the Minister. The ZMO/RMOs are limited to send a notice to the holder accountable, without ensuring that it will be followed by any legal action.
- Concrete inspections, like entering a mine, are in many cases considered a safety risk by the Inspector and thus no inspection is conducted. The consequence is that inspections can be avoided simply by not obeying the safety-regulations.
- The Regulation is detailed, but complex and Inspectors complain that a checklist does not exist. However, international experience shows that inspectors use their experience and capacity to

identify irregular or dangerous plants, based on a complete knowledge of the regulation, not on detailed checklists.

Recent accidents demonstrate the necessity of a better control of safety and environmental norms. Several actions are possible:

- Amend the Act to decentralise some penalty applications at the ZMO, or under control of the LU;
- Transfer the authorisation with respect to mining safety from MEM to a semi-autonomous government body, empowered with the authority to close down an operation if safety is not up to the required standard.
- Transfer the authorisation with respect to environment assessments from MEM to a semi-autonomous government body, empowered with the authority to close down an operation if environment standards are not followed.

It is international practice that safety and environmental issues are not dealt with by the Licensing Unit, but by other government bodies independent of LU, specialised to monitor such issues and empowered to close operations if standards are not met.

The Rush Areas are characterised by illegal operations operating without any license and therefore are beyond the responsibility of the ZMO/RMOs. Illegal mining should not be tolerated, not only because it is illegal and the existence is against the Mineral Policy, but simply because it is a human issue to ensure safety and environmental-safe activities with an well-organised and efficient support of the administration. The only possible improvement is to reinforce the capability of Zonal / Resident Mines Office offices to enforce the Law.

4.2.4 Solving of conflicts

The types, frequencies and numbers of conflicts are evaluated based on information from different sources, like ZMO/RMOs, LU, private miners and associations, licensees and other holders of land rights.

Based on the questionnaires sent to the ZMO/RMOs, the most common disputes experienced by ZMO/RMO in the regions have been gathered, and it appears that the most important disputes are:

- Mineral rights holders against other surface right holders (inclusive farming)
- Two mineral right holders claiming the right to the same area (including underground disputes and disputes with regards to demarcation)
- Mineral right holders against other authorities, and
- Illegal mining activities

This list may not include other disputes solved without the intervention of the administration, between:

- Two holders of SML claiming rights on the same underground area; some are solved internally, with the assistance of Miners Associations
- Large-scale mining companies and villagers or individuals claiming additional compensations. Disputes are directly solved between the company and the claimant or are going to Court
- Large-scale mining companies and neighbouring small-scale licensees. Cases may go to Court
- Holders of rights and illegal miners. Disputes are solved case by case by direct negotiation

- Licensees and villagers. Individual agreements and amount of the compensation are usually negotiated between parties

Individual agreements are generally achieved and disputes may go to the administration for arbitration of local conflicts and disputes. It appears that many difficulties relate to the acceptance and amount of the compensation to pretending holders of other land rights. The Act is clear on the aspects to compensate (see "Assessment of the Legal and Regulatory framework") but does not provide the methodology to calculate the amount, difficult to define in absence of active land market. Clear instructions should be provided to the Zonal and Resident Mines Office to clarify the processes, based on the Act.

The importance of the disputes should not be underestimated, because such may discourage investors and slow down the development of the mining industry.

The other issue relates to the definition of the "lawful occupier" or simply to whom to compensate. The Act is not fully in accordance with the newly promulgated Land Law. This issue should be solved legally as a priority. In the meantime clear instructions should be provided to the Zonal Mines Offices.

Another issue is the demand for taxation of licensees by the Local Governments, governing the area where the mines are located. From the Mining Act and Regulation it is clear that any fee related to a mineral right shall be paid to the Ministry of Energy and Minerals – no other bodies can claim fees for a mineral right. The observed practice is an issue to be addressed at the political level.

4.2.5 Information to the applicant and applicant constraints

A major weakness is the difficulty for the applicant to be informed of the progress of the application. The absence of a general index, the numerous steps of transfers of the application from one office to another, and the absence of complete and up-to-date accessible legal information concerning existing rights cause the lack of transparency. The major difficulties faced by an applicant are summarised in the following list:

1. Application forms are exclusively stored in the Ministry, or in the ZMO where the existence of sufficient samples cannot be ensured. The form is not available in public or governmental bookshops. There is no information desk to assist the applicants.
2. The accessible information concerning the existing Licenses in a certain area is not complete and up-to-date. Unexpected overlapping Licenses may exist and this may be discovered after the License is granted.
3. The existence of another application in the same area that could overrule the current application according to the "first come, first served" principle is not impossible. The computerised control of the boundaries (step 6) is the only step where the co-ordinates are controlled and corrections proposed but without full security (Chapter 3.4)
4. Different on-going applications may exist for the same location and registered at different times. The Application Register records the date and time, but not the co-ordinates and the complete information is not registered and available. It is consequently impossible at the stage of the

registration of the application to ensure correct knowledge of the status of this area, perhaps already applied for.

5. The complete information is not available in MEM because of lack of co-ordination between the Ministry of Lands and the Ministry of Energy and Minerals. The practice is to negotiate directly with villagers or farmers identified in the field. Villages and farms are not always clearly demarcated, except recently some village boundaries.
6. The Act defines the rule for appreciating compensations – what should be or not be compensated - but no complete and detailed methodology exists for calculating the amount of the compensation.
7. It is difficult to recognise and to identify non-active license in the field. They should be identified via the Mineral Rights Inventory enabling the applicant to negotiate the amount of the compensation. It is noted that this use is not in accordance with the Act, which orders compensation against investments only.
8. In case of disputes, large-scale companies use lawyers in order to ensure the legal security of the transactions and compensations. Small-scale miners cannot finance such experts and ZMO/RMOs are not always called in advance for legal advice to the licensees.
9. It is necessary to follow the status of the application in MEM closely to ensure that it is not lost, treated in an acceptable time and not pending for months. In case of administrative silence, the applicant is forced to investigate on his own initiative in MEM, by approaching the officers involved directly.
10. The difficult working conditions in LU (office space, personnel, and equipment) hampers that confidential information is kept secret and not distributed or accessed by non-authorised personnel or persons.
11. In case of modification of co-ordinates proposed by the LU, it is practically impossible for the applicants to control in the field the validity of the proposed correction. All is based on the reliability of the existing computer system – and as described in Report 3, this system cannot ensure that overlaps are not occurring.
12. There is no time limit to grant a license. Investment plans and profitability are directly depending on starting dates and delays in the application process may cause technical and financial difficulties to the applicant.

The majority of all these issues could be addressed if an effective, transparent, accessible, up-to-date Mining Cadastre Information exists, and hence is another justification of the importance of the MCIMS as a tool to promote the mining sector. However, it presupposes a change in the approach of the staff of the administration, changing from bureaucratic management to a mode characterised by service to the customer.

4.2.6 Non-active licenses

Many licenses are observed inactive, but the explanations for this may vary:

- The application is granted based on the financial capability of the applicant. However, some Licensees are waiting for enough cash to start investments in prospecting or mining activity. It is obvious that the financial capacity of the Licensee is only seriously checked for large-scale companies, not for Section D applicants. Some of the PML holders do not have the financial

strength to undertake the planned operations – from which it follows that if the search for external financial support fails, they stay inactive.

- Another categories of license holders are working only on a speculative basis, waiting for discovery in adjacent areas to give reason to a joint venture or a transfer. Such behaviour is pure speculation, and the Act is not supporting compensation for such inactive License.

The rule defined in the Act is to pay for the investment made without paying the plus-value resulting from other Mining activity development. However, international exploration activity is based on the principle of expectation of plus-value. It is moreover in contradiction with the current use, when it is based on a deal between the two parties that can include compensation for dormant Licenses. The issue should not be financial – compensation or not – but operational – ensuring prospecting or mining activity.

The control of non-active licenses is a major issue that can be solved in the MCIMS, in the longer term; when communication with ZMOs is improved, the use of the land in the License area can be better controlled.

The Act does not provide efficient legal procedures to ensure that operation starts as soon as the Prospecting or Mining License is granted. Inversely, the obligation to ZMO/RMO to report on dormant licenses encountered during inspections is not followed by any legal action – notice to start activity, penalty, cancelling License.

4.2.7 Illegal mining and rush areas

Three different types of illegal mining activities occur and different processes apply:

- In a vacant area not included into natural reserves: ZMO/RMOs have stated that they inform the miners that they have to apply for a Mining License (Annex D). The results of such discussions are not known, but artisanal miners are poor, not adequately equipped and it is assumed that they are reluctant to pay fees for a poorly profitable and often temporary exploitation.
- In Forest or Wildlife Reserves: Mining is in not authorised. ZMO/RMOs declare that they inform the illegal miners that they have to leave the area. The results of such discussions are not known, but it is doubtful that miners cease activity if there is no strong legal action.
- In an area allocated to another License: Usually, the lawful holder of the right negotiates with the Miners. In few cases, it is reported that a legal action, using the Police force, has been undertaken with the support of the Zonal Mines Office, to cease the activity. Private agreements are sometimes made easy when the holder of the License considers that illegal miners can prospect and work for him. But this private agreement does not take into consideration safety risks issues.

In any case, the safety of such illegal mining cannot be ensured. Some attempts to tolerate illegal mining if they comply with safety standards are not justifiable because it opens the door to an "informal" mining and prospecting activity contradicting the objective of the Mineral Policy of "rationalising the licensing system" and "upgrading artisanal mining into organised and modernised mining".

Rush areas targeting gold and gemstone/diamonds appear to be common and widespread. More than 36 rush areas are reported from nine of the ZMO/RMOs. No system can solve this issue; it depends on the will of the administration and on the capacity to act.

4.2.8 Overlapping licenses and demarcation

The possible overlapping of the application with another application or with a valid License is checked using the co-ordinates provided by the applicant and the computerised system installed in the Licensing Unit.

The assessment of the current data system has demonstrated that the data stored in the computer are not reliable and the following weaknesses are observed:

- No data safety; random backup, and the computers are in poor working conditions. The risk of loosing information – partly or totally – is high.
- The data are proved not complete. It appears that data are missing.
- The internal process of license application does not formally include the updating of the computerised data at each stage. It is impossible to know if the existing digital information represents the co-ordinates at the stage of the application, or after proposed modification, or the final co-ordinates at the stage of granting the License.
- There is no organised control of the dates of and of validity of the Licenses. Some Licenses may be still stored in the computer although they are terminated and the area covered by the License actually is vacant;
- The background topographic maps are of different quality, scale, and units (meters, yards). It is not proven that the digital topographic background used in the computer fits the sketch map provided by the applicant. Errors of several hundreds meters can be expected in some cases. The relative position of the licenses to the topography (and the physical objects) cannot be ensured;
- There is no field control of the validity of the co-ordinates provided by the applicant. It is not impossible that a mine is not located at the location shown on the map.

The problem of overlapping licenses may create serious problems, which cannot be solved at short-term, and will continue to have a very negative impact on potential investors if the rapid implementation of a modern Mining Cadastre System is not ensured.

Another important practical issue is the field demarcation of the beacons of the licenses. The regulation stipulates the need of beacons and defines the design and material. It was observed that many holders are not following the regulations carefully and that many beacons are missing. That was also observed for an area, declared Reserved Area by the Minister, for which the MEM is responsible.

4.2.9 Communication between LU and ZMO/RMO

The communication difficulties between LU and ZMO/RMOs have been described previously, and it is observed that none of the offices involved in administration of the Mineral Rights are equipped adequately with regard to telephone and Internet connection.

The communication difficulties cause major problems and should be addressed to enable an efficient monitoring of the Licensing Unit processes. The following constraints are observed:

- Basic equipment, telephone line, computer, fax machines in the ZMO/RMOs is inadequate;
- Regular flow of information to ZMO/RMOs concerning Applications received and Licenses granted is missing, so that ZMO/RMOs are poorly informed of the vacant areas;
- Legal and Regulatory constraints of distribution of responsibility between LU and ZMO/RMOs, Commissioner and Minister. (See "Assessment of the Legal and Regulatory framework" Report).

Improving communication with ZMO/RMOs requires not only modern equipment, but also introduction of manuals describing the procedures to be followed, directions and general administrative training courses. Moreover the staff should be trained to appreciate the need for a comprehensive information flow system.

4.3 Constraints

4.3.1 Legal and regulatory constraints

Chapter 2 inventories all legal issues and proposes an approach for preparing amendments, which are detailed in Annex G. These amendments of the Act aim at simplify the Licensing processes, and complete missing information.

The findings can be summarised as follows:

- Simplify the Licensing system by reducing the types and specifications of licenses in order to make the processes easier to administer;
- All licenses – with the exception of PPL – shall have the same strength of exclusivity
- Improve transparency and introduce objective criteria in granting prospecting and mining rights;
- Standardise the procedures with a minimum of individual arrangements, which presently make the monitoring complex;
- Redefine the role and responsibilities between the Minister, the Commissioner, the Licensing Unit and Zonal / Resident Mines Office officers in order to improve the efficiency of the system.

4.3.2 Resources

Table I - 15. *Equipment of Zonal / Resident Mines Office offices*

Zone	ZMO/RMO	Vehicle	Computer	Printer	Photo copies	Tele phone	Fax
CENTRALWESTERN	Shinyanga	1	NO	NO	NO	NO	NO
	Kahama	1	NO	NO	NO	1	NO
	Tabora	No info	NO	NO	NO	NO	NO
LAKE VICTORIA	Mwanza	1	1	NO	NO	1	NO
	Kayanga	1	NO	NO	NO	NO	NO
	Musoma	1	NO	NO	NO	1	NO

WESTERN	Mpanda	1	1	1	NO	NO	NO
SOUTH WESTERN	Mbeya	1	1	NO	NO	NO	NO
	Chunya	1	1	1	NO	NO	NO
NORTHERN	Arusha	2	1	NO	NO	NO	1
CENTRAL	Dodoma	No info	1	NO	NO	1	NO
EASTERN	Dar es Salaam	1	1	1	NO	1	NO
	Morogoro	1	1	NO	NO	1	NO
SOUTHERN	Tunduro	1	NO	NO	NO	1	NO
	Songea	1	NO	NO	NO	1	NO

This table is extracted form the Annex D "Questionnaire responses from Zonal Mines Offices and Resident Mines Offices". The details of this report are not repeated. The list of ZMO/RMOs is incomplete because not all offices have responded to the questionnaire.

The lack of adequate resources is clearly demonstrated in the Table I-15. For example, none of the offices possess a photocopier and only one office possesses a fax machine. Computers are used for basic administrative functions, but printers are not available in all offices. Telephone is available in only 50% of the offices. The vehicles are not all in working conditions.

4.3.3 Infrastructure, safe storage rooms, archives

The Ministry of Energy and Minerals is located in the central part of Dar es Salaam. The area is easy accessible. However, the Licensing Unit is located in the 9th floor – and 7th floor was recently totally destroyed by a fire, illustrating the vulnerability of the premises to fire.

The office place is scarce and the registers, the archives and the computers are located in a two-room office of about 20m^2. Shelves are full with copies of Licenses and PML applications.

There is evidently no control of the personnel entering the archive office, which at the same time is the working area for the computer operators and the licensing application processing personnel. Archives should be separated from the working area to ensure controls and security.

No photocopier is installed in the Registry office, so that "Yellow" licenses (the original and unique license document) is moving between Registry and Commissioner offices, as well as other confidential files for photocopies. The Registry office should be equipped adequately to ensure data confidentiality and safety with regard to fire, theft, and authorised access.

4.3.4 Skills and human resources

All the personnel of the LU are committed to their tasks and responsibilities and are clearly aware of the importance of their work for the MEM as well as for the development of the country. However they may well be frustrated by the state of affairs.

The difficulties as regards to the human resources are:

- The number of employee does not increase in accordance with the fast growing development of the mining activities, and it is assumed that this situation will continue in the coming years.
- It is difficult to recruit new personnel for supporting the fast increasing activity of the LU. This causes work overload and delays in the processing of applications;
- Assuming that to replace a leaving employee, time to find the right person is needed, it is impossible to ensure organised transfer of knowledge to the newly appointed staff.
- In particular, adequate training cannot be planned, and no specific permanent training is organised, which is one of the major constraints for an efficient licensing system.
- There is no training activity, and new recruited employees are trained on-the-job. This creates a depreciation of the quality of the work by absence of transfer of instruction and overlap between resigning and newly recruited or appointed employees;
- Providing an efficient service to the customer needs specific training and availability, which is not in place.

The Part III-2.6 details training courses needed, proposals for their organisation, target employees, schedule and cost. Details are not repeated in this Report. The conclusions can be summarised as follows:

- Organise training based on an approved Training Plan;
- Provide clear written instructions / operation manuals to the new employees;
- Simplify the procedure, in amending the Act if necessary, to ensure that the minimum requirements are fulfilled in avoiding overload.
- Implement tools using modern equipment, computers, Internet, Archives, in order to provide an easy-to-use support to officers of the Licensing Unit.

4.3.5 Annual budget estimates for LU, ZMO, and RMO

Zonal Mines Offices and Resident Mines Offices

Table I-16: *Budget for Zonal Mines Offices and Resident Mines Offices for the year 2001/2002 and 2002/2003 years. Figures in Tanzania Shilling provided by LU; recalculation to USD by conversion factor 1 USD to 960 TSh.*

Offices	Running cost		Investment for equipment			
			PC's Printers, Photocopiers communication (fax, telephones Internet)		Vehicles	
	2001/02	2002/03	2001/02	2002/03	2001/02	2002/03
	USD x 1000	USDx1000	USD x 1000	USD x 1000	USD x 1000	USD x 1000
Arusha	17,878	27.083	-	23.542	-	25.313
Dar Es Salaam	12,875	23,958		23.542		25.313
Mwanza	17.606	23,958		23.542		25.313
Shinyanga	14,583	18,750		23.542		25.313
Singida	7,780	11,458		23.542		25.313
Mpanda	9,531	16,667		23.542		25.313
Mbeya	11.333	20,833		23.542		25.313
Mtwara	11.411	16,557		23.542		25.313
Chunya	8,369	12,500		23.542		25.313
Dodoma	8,333	10,417		23.542		25.313
Karagwe	10,693	11,458		23.542		25.313
Tunduru	10,417	11,458		23.542		25.313
Handeni	8,333	10,417		23.542		25.313
Geita	10,693	13,542		23.542		25.313
Tarime	5,208	7,292		23.542		25.313
Musoma	8,333	11,458		23.542		25.313
Tanga	10,417	14,583		23.542		25.313
Tabora	6,405	10,417		23.542		25.313
Songea	10,417	12,500		23.542		25.313
Morogoro	8,695	16,667		23.542		25.313
Kahama	10,427	11,458		23.542		25.313
Total	**219.737**	**303,331**		**541,466**		**582,176**

The Licensing Unit

There is no separate budget for Licensing Unit (LU) but it is treated within the Mineral Division Headquarters, but a close estimate for the running costs is done by the LU Head of Section as follows from the below:

Table I-17: *Budget – running costs and capital costs for the LU (2003) provided by the LU (2002)*

Offices	Running cost		Investment for equipment			
			PC's Printers, Photocopiers communication (fax, telephones Internet)		Vehicles	
	2001/02	2002/03	2001/02	2002/03	2001/02	2002/03
	USD	USD	USD	USD	USD	USD
Licensing Unit	9,375	12,500	-	-	-	-

Salaries

Salaries are fixed according to Government rates: Average minimum salary for LU, ZMO's and RMO's are as follows:

Table I-18*: Budgeted salaries for the LU groups of staff. Figures provided by LU.*

Staff	Average gross salary (USD)
Head, LU	245 USD per month
Zonal and Resident Mines Officers	156 USD per month
Geologists and Mining Engineers (LU, ZMO, RMO)	94 USD per month
Technicians and other supporting staffs	63 USD per month

4.4 Conclusions and recommendations concerning the MEM's mandate

The MEM and the Licensing Unit are facing numerous constraints to undertake an efficient and smoothly operating organisation. The necessity to amend the Act and adjust Regulations is pinpointed in several occasions in this report. But it appears that internal processes in many cases can be improved by practical actions like purchasing equipment, training the staff, providing clear instructions, adjusting the procedures, and changing the overall approach to a more service-minded organisation.

Some issues are of major importance to ensure the implementation of an effective MCIMS. Other issues have an indirect impact on the efficiency of the License application procedures and are

inventoried. Essential topics are detailed in the preceding chapters: (i) reporting from Licensees; (ii) Inspections; (iii) Conflicts; (iv) Information to the applicant; (v) Non active licenses; (vi) Illegal mining; (vii) Overlapping licenses; (viii) Communication with ZMO/RMO. Problems related to finance, security, environment is outside the scope of this survey, and is therefore not dealt with.

The assessment of the MEM's mandate shows that it is necessary to improve the efficiency of the service provided by MEM and that it can be done by several actions combined with changes in the regulation or amendments of the Act:

- Separate Archives and Registry, with a reserved access to the Archives to guarantee confidentiality and security. Move Archives to a safe place.
- Equip LU with appropriate computer systems and photocopier.
- Provide necessary equipment to each ZMO and RMO, including a 4x4 vehicle in good condition, a photocopier, telephone line with fax and access to Internet, modern computer, software and printer.
- Enhance the entry / exit registers and numbering system in order to be able to retrieve what is the current status of an application, where the application is, and the complete application even after the license is granted;
- Adjust the existing procedure to ensure that the "first come, first served" principle applies.
- Proceed to the verification work as in order to guarantee the control of co-ordinates and the exclusivity of the rights;
- Start the training of the employees as defined in the Part III-2.6, Institutional strengthening and training programs.
- Bid for equipment and software of the MCIMS as defined in the Tender Document attached in Annex O.
- Public libraries and shops should have samples of these forms, particularly for PML and PPL/ PL.

Concerning inventory and archives:

- Adequate measures should be taken immediately to ensure consistency between Applications / Licenses stored in Archives, registered in Entry and Application Registers, stored in the Register or Computer files. A consistent filing and numbering system can do this.
- The possibility of a central follow-up register, accessible to the public as well as the LU, could be envisaged in order to be able to track down any application. Moreover it must be considered to improve numbering and reference system of the Application and Entry Registers.

Many improvements of the procedure of granting a licence can be made:

The process should also include information to those licensees holding a license, which has been overruled by the issue of the new license.

The "overlap checking" should obey the rules defined in the Act. The major requirement to control exclusivity rights is the control that the boundaries of the applications are controlled in order of registration. It must be combined with an up-to-date registration of the status of the application at different stage: applied, proposed, accepted, granted and with an up-to-date follow-up of all the Licenses granted, terminated or cancelled.

The existing computerised procedures detailed in Chapter 3.4, which are used for the checking of overlap, are not fully ensuring these requirements (missing licenses, incomplete information, no

control of the dates, no checking application against application). It follows from that that the overlap checking may be inaccurate.

- Define an entry / reference / register number which is unique all along the process and that can be used to retrieve the application and for follow-up on the progress
- Furnish the Registry Office with photocopier to avoid permanent moving of confidential files or originals between the LU and the Commissioner's and Assistant Commissioner's offices
- Limit the number of transfers of files and documents between offices to a minimum by adjusting the sequence of some tasks
- Improve the service to the applicant by improving the flow of information on the status of the application
- Ensure the safety of original documents (yellow document, confidential file) by centralising the preparation of licenses to one restricted location.
- Inform systematically any applicant or licensee if a license has been modified due to exclusivity priorities, as well as copy all correspondence to the ZMO/RMOs.

Other improvements can be overcome by a simplification of the Act, a better distribution of the roles of players limiting transfers of files between Minister, MAC, Commissioner and LU. MEM and the Licensing and Registry Sub-Section cannot operate efficiently within the existing legal and administrative framework. Simplification and standardisation is necessary to ensure that the existing personal can undertake the work without overload or with a minimum of additional recruitment.

It should be stressed that the major problems in the mining cadastre system cannot be solved without adjusting the organisation of the work, with respect to three issues:

- The management to ensure the exclusivity based on the "first come, first served". The computer system is used for storing application as soon as they are returned from the completion of the Checklist Form approved by the Commissioner. Hence, there is no guarantee that the first application checked in the computer is the first registered in the Application Register. Inversion in the chronological order is not controlled and it is likely that the computer check is not undertaken in the order of date/time, with the consequence that the first arrived application may be rejected because the area has been allocated to a later arrived application.
- The status of the application / licenses. The computerised Mineral Rights Inventory should contain both applications and Licenses at different stages of their life: Applications should be entered as soon as they are registered to ensure the "first come, first served" rule, and then subsequently co-ordinate control should be undertaken;
- The checking procedure must be undertaken on the basis of a clean mineral right database only, thus avoiding that expired/license in default is taken in to account.

This report demonstrates that the implementation of an efficient Mining Cadastre System is one major tool of improvement, providing a legal database of the prospecting and mining areas and status accessible to all the central and national offices in order to offer adequate service to the customers. Establishing access to the public ensuring transparency, safety, confidentiality of files and reports; unique and well-defined co-ordinate system; easy and regulated management of reporting and controls; simple and efficient process of licensing applications, provision of additional equipment and training are the main necessary improvements.

The new service-provider approach of the administration, as also defined in the Mineral Policy, is a key issue for the success of the mining sector. The MEM/LU and ZMO/RMOs should provide the expected service and complete, up-to-date information to the applicants and licensees, limiting bureaucratic constraints to the strict minimum required ensuring confidentiality and security. Training MEM staff in this modern approach should be a priority.

5 Assessment of the existing mineral rights inventory

The existing mineral rights 'database' has been scrutinised with great care and tenacity with the objective to undertake an update of the database and - based on the types of errors encountered - to provide the plan of verification. At the same time, the assessment was expected to provide ideas to be included in the to be suggested structure of the new MCIMS.

5.1 The Current situation

5.1.1 The Archives

The State of the confidential files concerning mineral rights
It is the view of the Consultant that the state of the confidential files is not up to the standard of international best practise, which the mining industry has a right to expect. The files contain far too many errors and substantial parts of key data are not available.

Consequently, the establishment of a clean Mineral Rights Inventory unfortunately cannot be based on the confidential files and an alternative procedure has to be developed. This alternative is outlined below.

5.2 Assessments of the facilities and equipment (PC, communication etc)

5.2.1 The System for handling electronic data

Situation in MEM, LU
The existing hardware and standard software is summarised in Table I-19.

Table I - 19. *Existing hardware and software in MEM / LU*

Type	Working condition	Hard disk	Speed	Memory	Network card	Operating System	Applications
IBM	Good	8 GB	Pentium (r)	32 MB	Yes	MS Windows 98, Norton SystemWorks 2001	MapInfo Professional 6.0, MS Office 97
IBM	Good	8 GB	Pentium (r)	32 MB	No	MS Windows 95, Norton	MapInfo

						SystemWorks 2001	Professional 6.0, MS Office 97
IBM	Good	2 GB	Pentium (r)	16 MB	No	MS Windows 95, Norton SystemWorks 2001	MS Office 97
IBM	Good	20 GB	Pentium (r)	16 MB	Yes	MS Windows XP, Norton SystemWorks 2001	MapInfo Professional 6.0, MS Office 97
HP Vectra	Faulty	9 GB	Pentium III 733 MHz	128 MB	Yes	MS Windows 98, Norton SystemWorks 2001	MS Office 97
Compaq Laptop	Good		Pentium	127 MB	Yes	MS Windows 98, Norton SystemWorks 2001, Office XP	MS Office 97
Compaq D300 P1	Good	40 GB	Pentium 1.7 GHz		Yes	MS Windows 98, Norton SystemWorks 2001, Office XP	MS Office 97

All computers have CD-ROM and Floppy Drive. One tape Drive for back up exists, but is not used for that purpose.

Printers:

- HP LaserJet 405HP and LaserJet 6 L
- HP DeskJet 1125 C (colour)
- HP LaserJet 1200 Series PCL 6

Situation in ZMO/RMO

The existing situation concerning equipment and communication in ZMO/RMO is summarized in the following table. This table is based on replies from ZMO/RMO from a questionnaire sent to them by the MEM.

Only about fifty percent of the offices are equipped with computers and telephone; fax-machine is available in one office only. None of the offices are equipped with a photocopier! Apparently all offices have a vehicle – though the standard of the vehicles are not disclosed.

ZMO/RMO	Vehicl e	Com- puter	Printer	Type- writer	Photo- cop.	Tele- phone	Fax	Internet	GPS	Compass
CENTRAL WESTERN ZONE										
Shinyanga	1			1					1	1
Kahama	1			1		1			1	1
Tabora	No info									
LAKE VICTORIA ZONE										
Mwanza	1	1		2		1			1	2
Kayanga	1			1					1	2
Musoma	1					1			1	1
WESTERN ZONE										
Mpanda	1	1	1	1					1	1
SOUTH WESTERN ZONE										
Mbeya	1	1		2					1	1
Chunya	1	1	1	1					1	1
NORTHERN ZONE										
Arusha	2	1					1		1	
CENTRAL ZONE										
Dodoma		1				1				
EASTERN ZONE										
Dar es Salaam	1	1	1			1			1	
Morogoro	1	1				1			1	1
SOUTHERN ZONE										
Tunduro	1					1			1	1
Songea	1			1		1			1	1

5.2.2 The digitised data inventory – an overview

The System

The current mineral rights data are not kept in a proper database. The data are kept in various files of different formats, such as Microsoft Excel, Word and MapInfo and the files are not properly linked. The data files are kept on three PC's, none of which are linked together by any form of net installations; the

Excel files are mainly stored on one PC, and the MapInfo files mainly stored on two other PC's in a different room. Transfers of data files between the PCs are by diskette or by keyboard typing.

The present MapInfo set-up for checking overlap between licenses is documented, but the facilities have not always been used correctly and to their full extent. Therefore it must be concluded that the current Mineral Rights database system is not documented.

An overview of the hardware and software of the existing system is given in Chapter 5, Table I-19.

The data entry procedures

- The stage in the application process at which the data shall be entered in the system is not well described; thus, data on applications and granted licenses are not systematically entered and are not always linked to the appropriate maps
- All data are entered manually to Excel; for checking possible overlaps in the MapInfo system, the same data are re-entered manually on the next PC, thus making the system very vulnerable to data errors
- The processes and procedures for entering data into the programs used are not adequately described in manuals
- Procedures for data verification and validation are not adequately described, and apparently no procedures are defined for correcting identified errors, nor for keeping track of modifications
- Back-up are undertaken randomly and no safe storage is available for the back-up
- The system is developed/modified by the officers in charge according to individual needs and skills, without any written approval in advance of changes, and without any consideration of possible unwanted effects on the system or the contents of the files

The files

- The 'database' consists of about 160 Excel spreadsheet files.
- Duplicate filenames are observed both in the same or different computers, with no indication of the file version, updated or not
- The data structure varies from file to file, and the files have different fields (columns) for the same category of data-set
- The files do not allow a comprehensive search of specific data.

The data

- Several licences kept in the database are no longer valid, i.e. they have expired but this fact is not recorded in the database about each of them
- The data are not consistent, e.g. some data which supposedly should be entered both in Excel and MapInfo, are only found in files related to one of the programs
- There are no consistent licenses numbering system. In some cases, numbers used in Excel are not the same as used in MapInfo or on the hard copy, for the same license.
- Some key entries on records are missing
- Geographical data are not handled consistently

- There are ambiguities with respect to numbering, e.g. no unique numbers for registration and license numbers, respectively.
- Data in the MapInfo environment are marred by a series of errors, e.g. (a) the Master sheet file consists of both points, polygons, polylines, lines, text objects and records with no attached objects; (b) widespread overlap of licenses can be observed; (c) there are duplicate objects and records

Missing records and data

According to the information provided by LU (see Project Seminar Report) the total number of applications and granted licenses (excluding dealers and brokers licenses) covering the period from January 2000 to May 2002 is respectively 8,689 and 6,761.

Due to the lack of consistency and structure of the existing files (more than 160 files), it is not possible to calculate the numbers of records actually present in the current 'database'. However, based on the assessment carried out, the Consultant finds it justified to conclude that the database contains only a minor fraction of all the granted licenses in the above period, and similarly only a minor fractions of mineral rights applications.

In order to verify records and to update the Mineral Rights Inventory, a Verification Plan is given in Chapter 4.

5.3 Findings (overlaps, missing data, records etc.)

Verification of all Mineral Rights Inventory Data

A thorough verification of all issued license data is inevitable, and specifically the possible co-ordinate errors must be addressed. The errors that will be revealed during the verification process must be corrected and the consequences of corrections have to be handled in order to achieve a clean and up-to-date Mineral Rights Inventory. The accuracy of co-ordinate data for each license is of crucial importance if overlap issues are to be avoided and must therefore be given special attention in the verification process. If carried out carefully, the verification plan outlined below, will not only provide the correct co-ordinates, it will also allow an update of any other information required for the Mineral Rights Inventory.

Correct/incorrect co-ordinates – definitions

The correct set of co-ordinates is defined as the co-ordinates issued on the License Certificate submitted to the Licensee. Consequently, co-ordinates are considered incorrect where a discrepancy occurs between what is recorded in the Mineral Right Inventory/confidential file and what is issued on the License Certificate.

From this it follows that if incorrect co-ordinates define a license then the license area is also located incorrectly in the GIS system. *All* licenses having incorrect co-ordinates have to be identified and corrected to establish a clean Mineral Rights Inventory.

Correcting the co-ordinates will however lead to one of the following situations:

- The land defined by the corrected co-ordinates is vacant and thus a correction of the Inventory record does not cause any conflict with a third party's mining right – *the misplaced area issue.*
- The land defined by the corrected co-ordinates is in whole or part granted to a third party, and hence correction of co-ordinates will create a conflict with a third party's mining right – *the overlapping area issue.*

As explained below, the overlapping area issue has to be dealt with according to which types of mineral rights are mutually overlapping – *and* further obeying the 'first come, first served' principle.

Responsibilities for incorrect co-ordinates – a discussion

The objective of this paragraph is to show how the responsibility for incorrect co-ordinates can be considered to fall upon the LU, based on a theoretical run-down of the application process.

The co-ordinate data issued on a license Certificate may have originated via either Case I or Case II:

Case I: The applicant (now licensee) achieved the co-ordinates used for his application based on a search for vacant areas undertaken by the Licensing Unit /Zonal Mines Office, on the request of the applicant. *In this case the co-ordinates may be considered as being 'provided' by LU.*

Case II: The applicant (now licensee) achieved the co-ordinates used for his application by staking an area and taking readings of the beacons in the field. *In this case the co-ordinates may be considered as being 'provided' by the licensee.*

Irrespectively of whether Case I or Case II describes the initiation of an application, the outcome of the processing of the application may have been either (a) or (b) below:

a. The license was granted strictly according to the co-ordinates submitted by the applicant without any amendments made by LU, or
b. The license was granted according to amended co-ordinates provided by LU.

However, in both cases - by granting a Mineral Rights License - the Licensing Unit guaranties that no overlap exists. Thus the Licensing Unit becomes the responsible legal body for all co-ordinates issued, and can be held responsible for any discrepancies occurring between the co-ordinates issued on the License Certificate and the hard copy files. This emphasises how important it is to get the verification process started and successfully concluded as soon as possible.

5.4 Conclusions and recommendations concerning the Mineral Right inventory

Based on the assessment it is the view of the Consultant that (a) the current system is inadequate for being the operational system for a Mineral Rights Inventory, (b) ditto for the organisation of data, and (c) ditto for the applied procedures. The urgent need for the implementation of a new database and Inventory is clearly demonstrated. A summary of just the most important observations made by the Consultant indicating the weaknesses in the system are listed below,

- The system is not documented
- The current 'database' structure is inadequate, and is not suited for large numbers of records
- The system set-up, based on several PC's is vulnerable to many types of errors
- Information and accurate data for a vast majority of the recorded licenses are incomplete
- Overview of the content of the 'database' – and thus of what is not entered – is not available
- The 'database' contains a small percentage of granted and valid licenses
- The 'database' and set-up cannot guarantee that granted licenses are not overlapping.

The Consultant finds that it is not possible to overhaul the current database, and thus recommends a new database to be developed, to replace the existing system and for use in the immediate future for the verification process. A functional database structure for this purpose is described in Chapter 3. A clean database is the hub of any administration, and is inevitably required; Chapter 4 provides the

CONSULTANCY FOR THE DESIGN OF A MINING CADASTRE DEVELOPMENT STRATEGY
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Part II

THREE MINING CADASTRE DEVELOPMENT STRATEGIES

List of Content – Part II

1 Strategy approach

1.1 Introduction

The strategy goals

The long-term goals for the minerals and mining industry in Tanzania are given by the Mineral Policy (1997), stating that,

- The mining industry shall contribute in excess of ten percent of the GDP, and hence,
- An internationally competitive investment environment is needed, and that
- The focus should be on the development of the legal, regulatory, fiscal, and institutional environment for the investment in mining.

Hence, the Mineral Policy (1997) sets clear goals for a Mining Cadastre Development Strategy.

A World Bank group has recently proved that substantial economic benefits can be gained from legal, fiscal and institutional reforms of mining sectors in general (Naito and Remy: Mining Sector Reform and Investment. Results of a Global Survey. 2001). The survey disclosed that especially non-landlocked countries with favourable geology can achieve a dramatic increase in their share of world-wide exploration investment by implementing a package of mining reforms. The findings by the WB group appear very relevant in the case of Tanzania and in good accordance with the road set out in the Mineral Policy.

The strategy principles

The trends dominating the international mining act reforms taking place these years generally all consider the following key principles,

- Open mining cadastre and title registry
- Granting of rights based on objective criteria (as opposed to discriminatory criteria)
- First come first served basis
- Exclusive title rights
- Security of the tenure
- Free transferability of mineral rights
- Simple financial maintenance requirements of mineral rights
- Environmental protection adapted to the various phases of a project.

The Mining Act, 1998, does provide for some of the vital principles in modern mining acts, but not all of them. Moreover, it appears that although some of the above principles are provided for in the legal framework, they are somewhat suppressed in the daily administration of the Act and Regulations, due to various types of work constraints as described in the Part 1. Some of the obvious discrepancies are for example such as the existence of an open mining cadastre and title registry, the first-come-first-served principle, and the security of tenure.

It is very important to consider the implementation of the key-principles of modern mining act in the new mining cadastre system, in order to develop a viable mining industry in accordance with the Mineral Policy (1997). Hence, these principles are part in two of the three strategies proposed.

Moreover the availability of resources in terms of well qualified human resources, equipment and facilities, and availability of funds are crucial for running an efficient and up-to-date mining cadastre office.

Further, it is the view of the Consultant that Tanzania in terms of mining legislation, regulations and administration leaves room for substantial improvement. In order to implement a modern mining cadastre system such issues needs to be addressed urgently.

2 The findings of the project – background for the strategies

The findings resulting from the assessments of task 1 through 6 of the TOR form the essential input for the development of the three mining cadastre strategies, and a brief presentation of the findings given in previous sections of this report.

2.1 Findings based on the assessment of the legal and regulatory framework

The Mining Act (1998) and the Regulations (1999) have been assessed and the findings are given in Part I, 2. Some of these findings are not justified by – or even ambiguous with - the intentions of the Mineral Policy (1997). It is important to identify and to address such issues when formulating the mining cadastre strategy, and some of the important issues related to the Mining Act (1998) are therefore listed below.

Ambiguities between the Mining Act and the Mineral Policy:

- Neither the application nor the administrative procedures are simple and transparent.
- The Act does not provide complete transparency – due to the application of the discriminatory principle.
- Grouping of minerals is originally meant to facilitate incentives and not as an administrative tool.
- Harmonisation with other land statutes is not addressed.
- No co-ordination with other governmental stakeholders is considered in the Act (i.e. Local Government, Forestry and Wildlife Departments, Ministry of Natural Resources, and the Vice Presidents Office, the Environmental Departments)
- Different process for different applications;
- First come, first serve principle not fully applied;

Principles not complying with international mining acts

- The prescribed discriminatory procedures;
- The special conditions for some types of licenses;
- The complex matrix structure for licenses (types of minerals in combination with types of rights);
- The tenure is not a secured right;
- The controls are made complex by the diversity of the requirements.
- The complexity of one type of mining right against another type of mining right.

Issues requiring simplification and clarification

- Minimise the number of combinations of various types of License and standardise the application procedures

The clarifications relate to:

- Clarify "first come, first served"
- Clarify rights of exclusivity
- Clarify compensation rules
- Better ensure co-ordination with other stakeholders
- Refer to the Lands Act without re-defining occupation
- Suppress the discriminatory processes
- Distribute role and responsibility of Minister, Commissioner, Zonal and Resident Mines Offices;
- Revise advice requirements by MAC;
- Ensure prospecting and mining activity by incentives or penalties;
- Specify non-eligibility of applicants in case of conflict of interest

Adjustments and completion

In addition to the simplifications and clarifications, some adjustments or completions are necessary:

- Definitions provided at the beginning of the Act
- Ensure that all cases are taken into account for limitations and conditions of Licenses (duration, area)
- Role of Resident Mines Office
- Clarify obligations of holders (Environment, safety, reporting)
- Dispatching information with other stakeholders;
- Defining co-ordinate system
- Adjust the process of cancellation of licenses
- Complete Environment reporting requirements;
- Complete reporting requirements
- Clarify Bid processes

This calls for – as minimum – comprehensive amendments of the Mining Act, 1998, and should all be considered in the development of new mining cadastre strategies.

2.2 Findings based on the assessment of the institutional capacity

The institutional capacity and required training plans are detailed in Part I, 2.2. The mineral division of MEM is organised in two Sections and a number of Sub-Sections. The Licensing and Registry Sub-Section is the responsible unit with regard to mining cadastre systems. It is concluded that the current organisational set-up does not adequately support an efficient mineral rights administration. It is therefore recommended to establish a semi-autonomous body - the Mining Cadastre Office (MCO) under the auspices of the Commissioner for Minerals - ensuring an efficient organisation. It is further recommended to structure the MCO with the following functions/offices:

- Registry
- (2) License application processing
- Mineral Rights administration
- Archive

- Information
- MRI and MCIMS; and
- ZMO/RMO Mining Cadastre administration.

To support and flag the "independent" status of the MCO, it is recommended to organise this organisation out-side the MEM head-office, as a semi-autonomous organisation under the Commissioner for Minerals.

The present number of staffs allocated to the LU is not sufficient to undertake the tasks given by the Mining Act and the Regulations. A reorganisation of the office and the staff is provided in the succeeding paragraphs.

Moreover it is observed that the current staff involved in mining license applications and administrations in general are inadequately trained with regard to basic computer skills, databases and data validation, GIS applications, and basic administrative procedures for running a MCO. Training courses are therefore recommended, encompassing i.e. basic computer training; MS Access and mineral rights inventory database (MRI); MapInfo; Mining Cadastre Office procedures and routines; working principles of the MCIMS; and basic management training. A plan for the implementation of the courses is given in Part III-2.6, considering also the needs for prior training of the task force responsible for the implementation of the Verification Plan. Further the courses should be levelled according to the skills and background knowledge of the trainees.

2.3 Findings based on the assessment of MEM's mandate and the current licensing system

The findings based on the assessment of the MEM's mandate and the current licensing system are detailed in Part I, 3. In summary the following observations are made:

- Applications and maintenance of mineral rights involve not only the Licensing and Registry Sub-section (LU) of the MEM, but also the Zonal Mines Offices (ZMO) and Resident Mines Offices (RMO), the Assistant Commissioner, the Commissioner, the Mining Advisory Committee (MAC), and the Minister. On the sideline, the Environmental Management Sub-Section, and the Legal and Fiscal Affairs Sub-Section, both of MEM, are involved in applications and administration of the Mining Act and Regulations. The applied administrative set-up requires the presence of very well organised organisation fully equipped with modern communication facilities; and this is not the case. Consequently the administration of the Act is very time consuming and sensitive to the introduction of errors and mismanagement.
- Several of the topics pointed to by the Mineral Policy as being of great importance are not or only partly implemented, f.x.:
  - The response time is in general not below the time limit given by the Act – probably due to a complicated process procedure.
  - Complete and trustworthy information on existing applications and licenses granted are not available.
  - Resources for inspections are in general inadequate or even absent.
  - Safe storage rooms are not available; appropriate archives are not available;

- Appropriate computer systems and communication facilities are not available.
- The human resources are not trained adequately, and
- The financial sources are not adequate for running a modern mining cadastre office.

- It is difficult for MEM to fulfil their mandate with respect to,
  - Transparency and information to the public;
  - Information to applicants;
  - Communication with Zonal/Resident offices
  - Maintaining working relations with other stakeholders and routines of exchanging information;
  - Maintain data security and confidentiality;
  - Keep track of exploration and mining operations of each license;
  - Control illegal mining and rush areas;
  - The overlapping rights and existing demarcation;
  - Compensation; and
  - Control, Inspections and enforcement of the law in general.

It is concluded that the fields listed below must be addressed in the formulation of a new mining cadastre strategy,

- Reorganisation of the administrative procedures, with the aim to simplify the process and reduce the processing time for applications and administration of licenses
- Reorganise the procedures for receiving, controlling, and filing mandatory reports from licensees
- Improving the archive system, and securing data safety
- Improve the public access to open-file material
- Enhance the human resource qualifications.

2.4 Findings based on the current mineral rights inventory

The current Mineral Rights Inventory is located at MEM, 9th floor with the Licensing Unit. The observations made by the Consultants are detailed in Part I, 4. The observations - in brief - are listed below:

- The inventory is based on a number of Excel spreadsheet files (about 160 files) and an unknown number of MapInfo files; the two systems are operated independently on different computers and have no linking identifier. The inventory is stored in fragments on three personal PC computers with no internal linking system. The equipment is inadequate for undertaking the licensing work.
- The Mineral Rights Inventory is incomplete with respect to
  - Records of in-going applications
  - Records of granted licenses
  - Errors in records
- Comprehensive and systematic validation of data is not possible
- Data security and safety is inadequate
  - Hard copy confidential files are not kept safe and are incomplete
  - Back up is only randomly performed.
  - The Registry premises and computers are vulnerable to unwanted intruders

- No hardcopy manual master maps of licenses are available

- The manpower is inadequate for undertaking the licensing work in terms of numbers and qualifications; additional training focusing basic database systems are urgently required.
- The status of the mineral rights inventory is in a very bad condition:
  - The database is incomplete,
  - Data errors are massive,
  - Several overlapping licenses are observed.

It is concluded that the inventory may best be described as inadequate in any sense and it is further recommended that the records are not forming the basis for a new inventory. Rather a new Mineral Rights Inventory should be based on hard copy files, in accordance with the proposed Verification Plan.

2.5 Assessment of the technical requirements for a modern MCIMS

Specifications for three different configurations for a Mining Cadastre Information Management System are provided in Part III-2.5 and Annex L, M and N. The MCIMS is defined as hardware, standard software, application system, and network installation.

The main components for the recommended configuration are as follows,

- The co-ordinates should be measured using the WGS-84 datum. The UTM, 36th Zone South should be used as projection, using meters as units. Central Meridian 33.
- All information about mining licenses is kept in one location, the Central Database. The registration system will be divided into two systems – Central Server and ZMO/RMO server.
- The Configuration B includes a Web Server to handle registration formulas and access by the public. A server and modem ensure communication with ZMO/RMO.

The information system and the information technology architecture are detailed in Annex L, M, and N. It is recommended that the MC and the ZMO/RMO should share the same up-to-date information on applications and licenses. The Information System and Information Technology Architecture is based on a network installation for communication between MCO and ZMO/RMO.

3 The three alternative strategies for a mining cadastre system

3.1 The strategy implementation components

An overhaul of the current mining cadastre system aimed for the goals set out in the Mineral Policy (1997) calls for development of some key components as fundamental 'building stones' in the strategy plan. Each of them must be tailored to meet the requirements for each mineral rights strategy plan. In this study seven 'Strategy Implementation Components' are defined:

Component 1: Amendment, simplification or reforming of the legal framework
Component 2: Changes in the institutional framework and the administrative practice
Component 3: Establishment of a mineral rights database
Component 4: Verification plan for the mineral rights database
Component 5: Establishment of a transparent MCIMS system (Open Title Registry)
Component 6: Institutional strengthening and training programmes
Component 7: Resource requirements

The legislation is the hub of any mining cadastre strategy, and consequently Component 1 is *the* determining component with respect to the *design* of each strategy. The majority of the additional Strategy Implementation Components will have to be tuned in accordance with what is set out in Component 1.

Component 1: *Amendment, simplification or reforming of the legal framework*, could take one of the three routes set out below,

(i) **Model A: Mining Act Amendments**. The structure/framework of the Mining Act (1998) and Regulations (1999) remains, but amendments are undertaken considering,
- Adding incomplete and missing information to the Act
- Amendments of inconsistent and ambiguous sections
- Adjustments of the Regulations (1999) accordingly

(ii) **Model B: Mining Act Simplification.** The basic structure of the Mining Act (1998) and the Regulations (199) remains, but certain sections are to be reformulated and certain sections will be suppressed, considering, i.e.
- Amendments in accordance with Model A, where appropriate
- Reducing the number of types of rights (reducing types of licenses and reducing types of minerals)
- Rights to be granted according to objective criteria (as opposed to discriminatory criteria)
- Exclusivity of all mineral rights

- Open mining cadastre and title registry
- Environmental requirements adapted to phases various phases of a project
- Adjustments of the Regulations (1999) accordingly

(iii) **Model C: Mining Act Reform.** Formulation of a new Mining Act, considering the implementation of liberal free market principles applied in some mining acts (e.g. Peru, Madagascar), such as

- Rights to be granted strictly on objective criteria
- Open mining cadastre and title registry
- One licensing scheme, providing the security of a tenure from exploration to mining
- All licenses has status a registered right
- Free transferability of mineral rights
- License areas based on a uniform national block system (relinquishment not possible)
- Simple financial maintenance requirements for mineral rights
- Environmental requirements adapted to various phases of a project
- Formulation of new Regulations

All the additional Strategy Implementation Components will differ depending on which of the above models to be chosen. In other words any changes being introduced in the legal framework will be the prerequisite for the design of the additional strategy implementation components.

Component 2: *Changes in the institutional framework and the administrative practice.*
The choice of the type of act outlined in Component 1 will determine the necessary organizational set-up and the administrative practice with regard to processing application, granting rights and monitoring the status of the licenses.

Model A based on discriminatory principles will require a sizeable organization, well defined sets of routines for the flow of information forwards and backwards, ensuring that all requirements for each application and license are addressed appropriately – both by the applicant/licensee and the LU. The current set-up in the Licensing Unit is inappropriate with respect to any of the models of acts, and reorganization is strongly required.

Model B based on non-discriminatory principles though with control of progress on exploration projects and assessments of licensee-reports will require approximately same size. However the organisational structure will differ from Model A, having a more straightforward process flow.

Model C based purely on objective criteria, uniform block size, and with no follow-up check on exploration projects requires a minimal organisation. The main tasks of such an organisation are to monitor available areas/blocks, to issue the licenses and to administer the respective fees.

Component 3: *Establishment of a Mineral Rights Database*
A mineral rights database, forming the basis of the Mineral Rights Inventory, is one of the corner stones of any mineral rights cadastre system. It is the key tool for any administrative organisation responsible for the granting of mineral rights. However, it is at the same time important to ensure that the database

is designed to fit any specific legislation and existing national mining cadastre practise. (As has been the case for the development of the new mineral right database for Tanzania, which has been developed as part of this project). Thus only the design of the database will differ with respect to Model A, B or C in Component 1.

It is critical for the successful use of a new Mineral Rights Database (MRD) that a number of considerations are observed, including but not limited to the following,

- There must be a defined date for the transfer of control from the existing system to the new Mineral Rights Database; after this agreed date only the new database must be used for the recording of information.
- From this date and onward all security routines must be in place and operational, such as back-up procedures, control of access, separation of digital and analogue records etc.
- Before this date the personnel must be adequately educated and trained in daily use of Access and MapInfo, and specifically in the facilities for entering of new data
- Before this date, the work routines related to various work situations must be familiar to all involved and from that date and onwards they must be followed explicitly and without exceptions or errors.
- The full paper trail of all operations, such as application for a license, reduction of area, etc, must be kept in safe archives; there must be perfect agreement between the information, data and dates given in the papers and the similar digital information in the database.
- All printed output produced from the database must be clearly marked with date, time, license numbers and anything else needed to ensure the unique definition of the printed output and its relation to the information in the system.

If these guidelines are not followed to the letter, the most likely outcome will be a new database suffering from similar catastrophic deficiencies.

Component 4: *Plan of verification*

The urgent need for establishing a new Mineral Rights Inventory (MRI) due to the inadequate and unreliable data and the inappropriate data structure based on Excel has been explained in Part I, 4. The new inventory shall be based on clean and ordered data records.

With the objective to establish a "clean" Mineral Rights Inventory, a Plan of Verification is required. The Plan of Verification has been designed to disclose any possible discrepancies occurring between data kept in the confidential files and the data/information issued on the Licenses.

A clean Mineral Rights Inventory is here understood as an Inventory in which all data have been verified and all data are relevant, from which it follows that the data are reliable; also, all possible measures have been taken to ensure that the database does not contain any errors.

In the event that the survey discloses any discrepancy, the License Certificate issued by the Licensing Unit and given to the Licensee should be regarded as the correct basis for any correction. Such verified and corrected data shall form the basis data for both the Mineral Rights Inventory and for the development of updated confidential (paper) files. The data in the Mineral Rights

Inventory represents only *some* of the data kept in the confidential files; but the data represented in both systems must be identical.

Moreover the Verification Plan shall provide a routine for checking that field data (co-ordinates) are in accordance with the data in the clean Mineral Rights Inventory.

The Component 4 is not depending on the choice made under Component 1.

Component 5: *Establishment of a transparent MCIMS system (Open Title Registry)*
The appropriate design of the MCIMS system will depend on the mining act model chosen under Component 1. If for instance Model C is chosen, the system will have to cater for on-line user access on a regional level, allowing searching for available areas and preferable also for geological data, as well as allow application processes to be undertaken as an on-line process.

The development of the Mineral Rights Inventory will play an important role, and will have to be re-designed according to the model of strategy/act chosen.

However, in order to enhance the communication lines between LU and the Zonal/Resident Mines Offices and the key governmental stakeholders, new routines and systems have to be implemented in all models.

Component 6: *Institutional strengthening and training plan programmes.*
The training and capacity building programmes will have to be designed specifically to the model chosen. This should be considered for each of the following sub-components, regarding Licensing Unit staff, ZMO staff and RMO staff.

- Management study tour
- Management training courses (internal and/or external)
- Training courses for professionals
- Training courses for technicians, clerks and secretaries
- Training courses for Zonal/Resident Mines Office staff
- Information courses for key government stakeholders – ensuring appropriate co-ordination procedures.

Component 7: *Resource requirements*
Resource requirements in terms of

- Human resources: Model A based on discriminatory principles and a complex set of mineral rights posses a strong human resource requirement (management, professionals, technicians, secretaries and clerks) for processing the application, for providing recommendations to the Commissioner/Minister, for monitoring the status for the licenses, and for maintaining the Mining Cadastre Inventory. The staff requirements for Model B is less extensive, because a license is granted on objective criteria (simplified process), and C requires even less staff, since the system is very much a straightforward process, based on the free-market principles and the design of an in-built fee system being the hub of incentives and regulations.
- Facilities (offices, storage rooms, and safety rooms for confidential files): The facilities shall reflect the aim of the Licensing Unit, which in turn is determined by the type of the mining act.

The current situation does not meet the necessary standards ensuring that all files are kept confidential.

- Equipment (i.e. computers, software, system set-up, photocopiers, printers, plotters, fax machines, telephone lines): Same comments as for the above.
- Financial resources: The financial resources requirements with respect to running costs will vary according to the strategy model chosen; it is clear that running costs needed, will reflect the staff requirements, thus administering Model A is substantially more expensive compared to a system based on Model B or Model C.

The seven Strategy Implementation Components defined above make up each strategy, though the content of each of the component 2, 3, 5, 5 and 7 varies, depending on the choice of Component 1. In other words, Component 1 defines the type of strategy and the additional Components sets the speed for implementation of a MICM, but each of the strategies are leading to the same desired goals for the mineral sector set out in the Mineral Policy.

3.2 The three alternative mining cadastre development strategies

The three alternative mining cadastre development strategies were presented for and discussed with the Client in the "Strategy Meeting", held in Dar es Salaam, July 16th, 2002. The meeting concluded that Strategy B is the most appropriate approach, and thus in accordance with the TOR of the project, Strategy B is described in detail in a separate chapter (Part III). Consequently only Strategy A and C are detailed below.

3.2.1 Strategy A

Strategy A is based on the choice of Model A in Component 1.

Component 1 - Amendment, simplification or reforming of the legal framework

Model A: Mining act amendments. The structure/framework of the Mining Act (1998) and Regulations (1999) remains, but amendments are undertaken considering,

- Adding incomplete and missing information to the Act
- Amendments of inconsistent and ambiguous sections
- Adjustments of the Regulations (1999) accordingly

Component 2 - Changes in the institutional framework and the administrative practice

Model A resembles the present institutional framework and administrative practice. No major changes will be introduced. However, it is recommended to assess the possibility for implementing a simplified administration of the license application process. Especially all routines with respect to data handling, filing, entries of data in the mineral rights inventory, data safety, and treatment of confidential data should be thoroughly analyses. Routines for data-flow to governmental stakeholders must be established.

Component 3 - Establishment of a mineral rights database

A mineral rights database must be developed, enabling the LU staff to establish a clean mineral rights inventory. A system based on an MS Access software working in combination with a GIS software system will do. The mineral rights database must be installed on an up-to date computer, and appropriate safety systems must be established, ensuring data-safety. The database developed in this project will cope with the requirements for a Strategy-A-database. But in addition adequate back-up routines, adequate rooms and adequate training is mandatory.

Component 4 - Verification plan for the mineral rights database

In order to establish a clean mineral rights inventory, a comprehensive verification plan is required. The recommended plan for the implementation of the verification plan is outlined in Part III-2.4. The verification plan for all strategies is identical.

Component 5 - Establishment of a transparent MCIMS system (Open Title Registry)

The Strategy A is based on discretionary principles and therefore decentralised processing of applications is not possible. Consequently the system requirement is mainly to enable a smooth flow of data between the ZMO/RMO to LU with respect to applications and administration of licenses. Public access to information about available areas, license holder information could be considered as an adds-on solution to the system. Similarly the number of offices providing such facilities could be anything from one station at the LU to one station in each ZMO/RMO.

Component 6 - Institutional strengthening and training programmes

Management study tour:

The objective of a management study tour is to study a mining cadastre system resembling the Strategy A model, and to identify potential advantages to be implemented in the new mining cadastre system. To support this study Ghana may be considered, due to the fact that this country has been a successful African mining nation, and the mining legislation represents the discriminative type of legislation.

Management training courses (internal and/or external):

The objective of the management-training course is to enhance the administrative skills, encompassing HR management; Mining Cadastre Office (MCO) administrative practice and routines; and introduction and principles of the basic MCO software- and hardware systems.

Training courses for professionals:

The objective of the training courses for professionals – geologists and mining engineers – is to enhance the skills focusing understanding of the principles of the overall MCIMS system encompassing the basic software applied (MS-Excel; MS Access, MapInfo), the hardware of the system. The training should further include training in the principles and routines of the MCO. The attendants should reach the level enabling them to train personnel subsequently recruited by the MCO.

Training courses for technicians, clerks and secretaries:
The objective of training for this group is more diverse, and must focus the individual specialities. In addition to the technical training on specific software, the training should include overall introduction to the MCO working routines.

Training courses for Zonal/Resident Mines Office staff:
Professionals and technicians compose this group, and the training should copy the to previous groups.

Information courses for key government stakeholders:
To ensure correct co-ordination between key government stakeholders and MCO it is recommended to provide such stakeholders the general understanding of the aim and the principles of the Mining Act A. The course should provide details on the arrangement and interface made between the stakeholder and the MCO.

Component 7 - Resource requirements
On the basis of the resource findings outline in Part I, 4, the following assumptions and recommendations are made for Strategy A:

Human resources:
Model A based on discriminatory principles and a complex set of mineral rights posses a strong human resource requirement (management, professionals, technicians, secretaries and clerks) for processing the applications, for providing recommendations to the Commissioner/Minister, for monitoring the status for the licenses, and for maintaining the Mining Cadastre Inventory. The structure of the organisation may resemble the present organisation; however it appears necessary to establish two to three more offices staffed by geologists to undertake control and assessment of applications and to enhance the follow-up administration of the licenses.

Provided a successful implementation of the preceding strategy components it appears realistic to run the organisation – in terms of numbers of employees – by the present organisation plus additional 10-15% professionals, to support mainly the obligations of the LU.

Table II-1: *Estimated human resources requirements for the MCO – excluding ZMO/RMO - Strategy Model A*

Title	***Qualifications***	***Quantity***	***Duties***
Head of MCO	Geol./Mining Eng.	1	Overall responsible
Assistant Head, MCO	Mining Engineer	1	Liaison and application
Senior MCO Officer	Geol./Mining Eng.	6	Follow-up administration
Senior MCO Officer	Geol./ Mining Eng.	6	Application Processing
Contact Officer	Geol./Mining Eng.	3	Clients Contact Point
MCO Registrar	Technician	4	Registration
Archive Officer	Technician	3	Archive/filing
Min. Right. Reg. Officer	Technician	3	Mineral Rights Inventory
Secretary/Clerk	Secretary	3	Administration/photocopying
System Operator	Engineer/techn.	2	Maintenance of the MRD and

			digitised infrastructure.

Table II-2: *Staff requirement for the ZMO/RMO for Strategy A*

Region	Staff group	Present staffing	Recommended staff for Strategy A
Central Western Zone	Head of Offices		3
	Mining eng.	3	3
	Geol.	0	3
	Technician	9	8
	Secretary	3	3
	Driver	2	3
Lake Victoria	Head of Offices		4
	Mining eng.	1	4
	Geol.	1	4
	Technician	9	8
	Secretary	4	4
	Driver	3	4
Western Zone	Head of Offices		1
	Mining eng.	1	1
	Geol.	0	1
	Technician	2	2
	Secretary	1	1
	Driver	1	1
South Western Zone	Head of Offices		2
	Mining eng.	1	2
	Geol.	1	2
	Technician	9	4
	Secretary	6	2
	Driver	2	2
Northern Zone	Head of Offices		1
	Mining eng.	1	3
	Geol.	1	3
	Technician	7	12
	Secretary	0	1
	Driver	1	2
Central Zone	Head of Office		2
	Mining eng.	0	2
	Geol.	1	2
	Technician	8	4
	Secretary	1	2
	Driver	0	2
Eastern Zone	Head of Office		5
	Mining eng.	0	5
	Geol.	3	5
	Technician	7	12
	Secretary	5	5

	Driver	2	5
Southern Zone	Head of Office		4
	Mining eng.	1	4
	Geol. ·	2	4
	Technician	2	8
	Secretary	1	4
	Driver	2	4

Facilities (offices, storage rooms, and safety rooms for confidential files):
The present facilities in terms of offices, storage rooms, and safety rooms for confidential files are inadequate for running an effective organisation, and do not meet the necessary standards ensuring data safety and security. The following functions must be established including the following facilities: It is strongly recommended to re-organise the MCO facilities addressing this issue. Additionally, it is recommended to provide the MCO organisation with office facilities making up a cluster of offices facilitating the administrative process. On the basis of the organisation structure at total of not less than fifteen rooms/offices are required; three of these shall accommodate the registration function, the archive and the mineral rights inventory, and thus require special size, and facilities. It is important to ensure adequate working conditions for all employees. The registration office and the files must be separate, and organised preventing any non-authorised personnel to enter the rooms for confidential files.

Table II-3: *Estimates on facilities for the MCO (excluding the ZMO/RMO) – Strategy Model A*

Item	**Quantity**
Rooms	
Offices - normal	15
Archive	1-2
Registration - office	1
Database – Inventory registrations	1
IT-room	1
Equipment	
Photocopier	3
Telephone- handset	19
PC	30
Printer	8
Plotter	2
Fax machine	2

Equipment (i.e. computers, software, system set-up, photocopiers, printers, plotters, fax machines, telephone lines):
The adequate numbers of photocopiers, telephones (land line or cell), and fax machines must be available. The number of photocopier should be not less than two. Each office must be equipped with not less than one telephone.

Each office must be furnished with one office desk per employee and one net-work connected computer per employee. Printers should be connected to the net-work and the number of printers about one per 4 employees. Printers should not be placed at placed with public access.

Special software and hardware in accordance with the recommendations made for Model A.

The facilities for ZMO/RMO must follow the above recommendations. In addition the adequate number of vehicles must be provided, ensuring that inspections can be undertaken without any delay.

Financial resources:
It is the view of the Consultant that special salary incentives should be considered ensuring well-qualified and well-motivated staff, and thus it appears necessary to offer a salary and beneficiaries comparable with the level of what is offered by the private sector in Tanzania.

Table II-4: *Proposed levels of salaries.*

Staff	***Average gross salary (USD)***
Head, MCO	1,250 USD per month
Zonal and Resident Mines Officers	900 USD per month
Geologists and Mining Engineers (MCO, ZMO, RMO)	700 USD per month
Technicians and other supporting staffs	500 USD per month

Table II-5: *Estimated annual salary budget – MCO, for Strategy A.*

Staff	***Number***	***Annual Salary USD/year***
Head of MCO	*1*	*15,000*
Assist. Head of MCO	*1*	*10,800*
Senior MCO Officer	*12*	*100,800*
Contact Officer	*3*	*25,200*
MCO Registrar	*4*	*24,000*
Archive Officer	*3*	*18,000*
Min. rights registration Officer	*3*	*18,000*
Secretary/clerks	*3*	*14,400*
System Operators	*2*	*16,800*
Total		***243,000***

Table II-6: *Estimated annual salary budget – ZMO/RMO, for Strategy A.*

Staff	***Number***	***Annual Salary USD/year***
Head of office	*22*	*237,600*
Mining engineer	*24*	*201,600*
Geologist	*24*	*201,600*
Technician	*58*	*348,000*
Secretary	*22*	*105,600*
Driver	*23*	*82,800*
Total		***1,177,200***

Table II-7: *Estimated running costs (excl. salaries) and capital costs for Strategy A.*

Offices	**Running cost**		**Capital costs - equipment**			
			PC's Printers, Photocopiers communication (fax, telephones Internet)		Vehicles	
	Proposal by LU, 2003	*Assumption by the Consultant (Strategy A)*	Proposal by LU, 2003	*Assumption by the Consultant (Strategy A)*	Proposal by LU, 2003	*Assumption by the Consultant (Strategy A)*
	USDx1000	*USDx1000*	USD x 1000	*USDx1000*	USD x 1000	*USDx1000*
ZMO/RMO	303,331	*300,000*	541,466	*100,000*	582,176	*60,000*
LU/MCO	12,500	*100,000*	-	*450,000*	-	*750,000*
Total	**315,831**	***400,000***	**541,466**	***550,000***	**582,176**	***810,000***

3.2.2 Strategy B

Strategy B: Component 1 – Model B; additional component designed accordingly.

Component 1 - Amendment, simplification or reforming of the legal framework

Model B: Mining act simplification. The basic structure of the Mining Act (1998) and the Regulations (1999) remains, but certain sections are to be reformulated and certain sections being suppressed, considering e.g.

- Amendments in accordance with Model A, where appropriate
- Reducing the number of types of rights (reducing types of licenses and reducing types of minerals)
- Rights to be granted according to objective criteria (as opposed to discriminatory criteria)
- Exclusivity of all mineral rights
- Open mining cadastre and title registry

- Environmental requirements adapted to various phases of a project
- Adjustments of the Regulations (1999) accordingly

Component 2 - Changes in the institutional framework and the administrative practice
Detailed in Part III- 3, 4, 5 and 6.

Component 3 - Establishment of a mineral rights database
Detailed in Part III- 3, 4, 5 and 6.

Component 4 - Verification plan for the mineral rights database
Detailed in Part III- 3, 4, 5 and 6.

Component 5 - Establishment of a transparent MCIMS system (Open Title Registry)
Detailed in Part III- 3, 4, 5 and 6.

Component 6 - Institutional strengthening and training programmes
Detailed in Part III- 3, 4, 5 and 6.

Component 7 - Resource requirements
Detailed in Part III- 3, 4, 5 and 6.

3.2.3 Strategy C

Component 1 – Model C; additional component designed accordingly

Model C: Mining Act Reform. Formulation of a new Mining Act, considering the implementation of liberal free market principles applied in some mining acts (i.e. Peru, Madagascar), such as

- Rights to be granted strictly on objective criteria
- Open mining cadastre and title registry
- One licensing scheme, providing the security of a tenure from exploration to mining
- All licenses has status a registered right
- Free transferability of mineral rights
- License areas based on a uniform national block system (relinquishment not possible)
- Simple financial maintenance requirements for mineral rights
- Environmental requirements adapted to various phases of a project
- Formulation of new Regulations

Component 2 - Changes in the institutional framework and the administrative practice

The principle of Strategy C is a very high degree of user online services and a new Act based on objective criteria. This allows a small MCO-organisation, possessing strong technical know-how on computers, databases, network, and only few experts in geology and mining are required. All inspections of licenses with regard to environment, mining safety and exploration progress are left to other organisations.

Routines with respect to data handling, filing, entries of data in the mineral rights inventory, data safety, and treatment of confidential data should be designed according to the chosen MCIMS. The system must include the set-up for exchange of data between MCO and the stakeholder organisations.

Component 3 - Establishment of a mineral rights database

A mineral rights database must be developed, enabling the LU staff to establish a clean mineral rights inventory. A system based on a MS Access software working in combination with a GIS software system will do. The mineral rights database must be installed on an up-to-date computer, and appropriate safety systems must be established, ensuring data-safety. The database developed in this project will cope with the requirements for a Strategy-A-database. But in addition adequate back-up routines, adequate rooms and adequate training is mandatory.

Component 4 - Verification plan for the mineral rights inventory

In order to establish a clean mineral rights inventory, a comprehensive verification plan must be developed and implemented. The verification plan for all strategies is identical. The recommended plan for the implementation of the verification plan is outlined in Part III-2.4.

Component 5 - Establishment of a transparent MCIMS system (Open Title Registry)

In consequence of the principles forming the basis of Strategy C, easy access for the public to the system and extensive on-line service are essential and must be implemented. In excess to information on possible vacant areas, the MCIMS must allow access to any information on any license, encompassing financial and fiscal matters on the licenses. Due to the straightforward application process for a new license and simple maintenance procedures, the MCIMS system must be designed to permit the local offices – ZMO or RMO – to undertake both applications and administration of licenses. Further the system must be tailored to interface with governmental stakeholder.

Component 6 - Institutional strengthening and training programmes

Management study tour:

The objective of a management study tour is to study a mining cadastre system resembling the Strategy C model, and to identify potential advantages to be implemented in the new mining cadastre system. To support this study it is recommended to include the system developed in Western Australia, which is a modern mining cadastre system, and possibly to supplement the study by a visit to Madagascar, having recently implemented a new mining cadastre system based on Strategy C principles. Australia has a long-standing record of successful explorations projects and experiences in administering this type of act. Madagascar on the other side has recently implemented the act, and may

contribute with valuable, hands-on experience about the implementation process, and the development of the MCIMS software and hardware.

Management training courses (internal and/or external):
The objective of the management-training course is to enhance the administrative skills, encompassing HR management; Mining Cadastre Office (MCO) administrative practice and routines; and introduction and principles of the basic MCO software- and hardware systems. The courses have to be tailored to the Strategy C.

Training courses for professionals:
The objective of the training courses for professionals – geologists and mining engineers – is to enhance the skills focusing understanding of the principles of the overall MCIMS system encompassing the basic software applied (MS-Excel; MS Access, MapInfo), the hardware of the system. The training should further include training in the principles and routines of the MCO. The attendants should reach the level enabling them to train personnel subsequently recruited by the MCO.

Training courses for technicians, clerks and secretaries:
The objective of training for this group is more diverse, and must focus the individual specialities. In addition to the technical training on specific software, the training should include overall introduction to the MCO working routines.

Training courses for Zonal/Resident Mines Office staff:
Professionals and technicians compose this group, and the training should copy the previous groups.

Information courses for key government stakeholders:
To ensure correct co-ordination between key government stakeholders and MCO it is recommended to provide such stakeholders the general understanding of the aim and the principles of the Mining Act C. The course should also provide details on the arrangement made and about the interfaces between the stakeholder and the MCO.

Component 7 - Resource requirements
On the basis of the resource findings outline in Part I-4, the following assumptions and recommendations are made for Strategy C:

Human resources:
The number of ZMO and RMO for Strategy C is assumed to resemble the present situation.

Table II-8 : *Estimated human resources requirements for the MCO – excluding ZMO/RMO - Strategy Model C*

Title	*Qualifications*	*Quantity*	*Duties*
Head of MCO	Geol./Mining Eng.	1	Overall responsible
Assistant Head, MCO	Mining Engineer	1	Liaison and application
Senior MCO Officer	Geol./Mining Eng.	2	process
Contact Officer	Geol./Mining Eng.	2	Application Processing
MCO Registrar	Technician	2	Clients Contact Point
Archive Officer	Technician	2	Registration
Min. Right. Reg. Officer	Technician	3	Archive/filing
Secretary/Clerk	Secretary	2	Mineral Rights Inventory Administration/photocopying
System Operator	Engineer/techn.	4	Maintenance of the MRD and digitised infrastructure.

Table II-9: *Staff requirement for the ZMO/RMO for Strategy C*

Region	**Staff group**	**Present Staff**	**Recommended staff for Strategy C**
Central Western Zone	Head of Office		3
	Mining eng.	3	1
	Geol.	0	2
	Technician	9	3
	Secretary	3	3
	Driver	2	3
Lake Victoria	Head of Office		4
	Mining eng.	1	2
	Geol.	1	2
	Technician	9	4
	Secretary	4	4
	Driver	3	4
Western Zone	Head of Office		1
	Mining eng.	1	0
	Geol.	0	1
	Technician	2	1
	Secretary	1	1
	Driver	1	1
South Western Zone	Head of Office		2
	Mining eng.	1	1
	Geol.	1	1
	Technician	9	2

	Secretary	6	2
	Driver	2	2
Northern Zone	Head of Office		1
	Mining eng.	1	2
	Geol.	1	2
	Technician	7	2
	Secretary	0	1
	Driver	1	2
Central Zone	Head of Office		2
	Mining eng.	0	1
	Geol.	1	1
	Technician	8	2
	Secretary	1	2
	Driver	0	2
Eastern Zone	Head of Office		5
	Mining eng.	0	2
	Geol.	3	3
	Technician	7	5
	Secretary	5	5
	Driver	2	5
Southern Zone	Head of Office		4
	Mining eng.	1	2
	Geol.	2	2
	Technician	2	4
	Secretary	1	4
	Driver	2	4

Additionally, it is recommended to provide the MCO organisation with office facilities making up a cluster of offices facilitating the administrative process. It is important to ensure adequate working conditions for all employees. The registration office and the files must be separate, and organised preventing any non-authorised personnel to enter the rooms for confidential files.

Table II-10: *Estimates on facilities for the MCO – Strategy Model C*

Item	**Numbers**
Rooms	
Offices - normal	5
Archive	1
Registration - office	1
Database – Inventory registrations	1

IT-room	1
Equipment	
Photocopier	2
Telephone- handset	15
Computer	15
Printer	5
Plotter	2
Fax machine	2

Equipment (i.e. computers, software, system set-up, photocopiers, printers, plotters, fax machines, telephone lines):
The adequate numbers of photocopiers, telephones (land line or cell), and fax machines must be available. The number of photocopier should be not less than two. Each office must be equipped with one telephone.

Each office must be furnished with one office desk per employee and one net-work connected computer per employee. Printers should be connected to the net-work and the number of printers about one per 15 employees. Printers should not be placed at places with public access.

Special software and hardware in accordance with the recommendations made for Model C.

The facilities for ZMO/RMO must follow the above recommendations. In addition the adequate number of vehicles must be provided, ensuring that inspections can be undertaken without any delay.

Financial resources:
It is the view of the Consultant that special salary incentives should be considered ensuring well-qualified and well-motivated staff, and thus it appears necessary to offer a salary and beneficiaries comparable with the level of what is offered by the private sector.

Table II-11: *Estimated annual salary budget – MCO, for Strategy C.*

Staff	***Number***	***Annual Salary USD/year***
Head of MCO	*1*	*15,000*
Assist. Head of MCO	*1*	*10,800*
Senior MCO Officer	*2*	*16,800*
Contact Officer	*2*	*16,800*
MCO Registrar	*2*	*12,000*
Archive Officer	*2*	*12,000*
Min. rights registration Officer	*3*	*18,000*
Secretary/clerks	*2*	*9,600*
System Operators	*4*	*33,600*
Total	***19***	***144,600***

Table II-12: *Estimated annual salary budget – ZMO/RMO, for Strategy C.*

Staff	***Number***	***Annual Salary USD/year***
Head of office	*22*	*237,600*
Mining engineer	*11*	*92,400*
Geologist	*13*	*109,200*
Technician	*23*	*138,000*
Secretary	*22*	*105,600*
Driver	*23*	*82,800*
Total	***114***	***765,600***

Table II-13: *Estimated running costs (excl. salaries) and capital costs for Strategy C.*

Offices	**Running cost**		**Capital costs – equipment**			
			PC's Printers, Photocopiers communication (fax, telephones Internet)		Vehicles	
	Proposal by LU, 2003	*Assumption by the Consultant (Strategy C)*	Proposal by LU, 2003	*Assumption by the Consultant (Strategy C)*	Proposal by LU, 2003	*Assumption by the Consultant (Strategy C)*
	USDx1000	*USDx1000*	USD x 1000	*USDx1000*	USD x 1000	*USDx1000*
ZMO/RMO	303,331	*300,000*	541,466	*100,000*	582,176	*60,000*
LU/MCO	12,500	*100,000*	-	*450,000*	-	*750,000*
Total	**315,831**	***400,000***	**541,466**	***550,000***	**582,176**	***810,000***

3.3 Pros and cons of the strategies

3.3.1 Comparison of the three strategies

This chapter provides some of the pros and cons related to the three strategies, as also given in table II-14; additional explanations are given in the text below. The comparisons between the three strategies are given as relative indications, since no exact figures are possible. The Implementation Plan, Report 7.2 provides further details with respect to Strategy Model B.

Table II - 14. *Overview of the pros and cons of the three strategies.*

	Strategy A	Strategy B	Strategy C
Total strategy implementation time	Short	Medium	Long
Financial resource requirements for Licensing Unit	Extensive	Medium	Low
Staff requirements for MCO	High	Medium	Low
Application process principle	Discretion	Objective	Objective
Application processing time	Long	Short	Short
Transparency of MCIMS and mining act	Not complete	Yes	Yes
Overlapping licenses issues	Possible	Possible (See note)	Not possible
Licensees security of tenure	No	Possible	Yes
License maintenance requirements	On discretion	Simple	Simple
License registered as a right	No	Yes	Yes

Note: The risk of overlap is almost absent provided the amendments define the Registrar as responsible of the registration record, and provided compensation rules are defined in case of mistake in the registration. It is "possible" because of the similarity of the conditions with an integrated registration system.

Timing of the strategy implementation. Assessment of the time needed for the implementation is given as two parts: one for changing the Act according to the model chosen, and the second for the subsequent implementation of the Mining Cadastre Plan. It should be made clear that the first part, any changes of the Act, involves a long row of different phases. These will encompass i.e. draft proposals by the professionals involved, writing up in legal terms by lawyers, and the political process. Thus the times given should be regarded only as the best guess under the assumption that all phases will go smoothly. The time for each of the two phases should be added to get the total anticipated timeframe for each strategy.

- *Strategy A* Mining Act A - Amendments: Half a year
  Strategy Implementation: One year
- *Strategy B* Mining Act B - Simplification: One year

	Strategy Implementation:	One year
▪ *Strategy C*	Mining Act C - Reform:	One year
	Strategy Implementation:	Up to five years

However, it is clear that the implementation of Strategy A is fairly much a straightforward process. It is also obvious that the complete implementation of Strategy C, based on the uniform national block system will take years. Full implementation of this must probably await that all current licenses within a certain block expire, and it must ensure that after the implementation only one license is granted for each block (license area and block area are identical). However, a temporary cat-door-solution might be considered for mines operating under Division B, avoiding waiting for twenty-five years.

Financial resource requirements for the Licensing Unit – Salaries are assumed to be by far the biggest part of the annual budget of a Licensing Unit. Thus Model A, requiring the largest number of professionals and technicians will also require the largest financial budget of the tree models, and Model C the smallest annual budget. Staff requirements for the Licensing Unit – Due to the discretionary principles applied in Model A, this model will require the highest number of professionals for assessing applications, control of overlapping areas, budgets, reports etc. The Model C thus will require the smallest number of professionals and technicians.

Application processing time - will be longer for Strategy Model A, for which the Act is based on discretionary principles and thus requires a thorough scrutinising process, compared to Model B and C, based on simple objective criteria.

Transparency of the cadastre system will not be achieved in Model A, due to the fact that it is based on the discretionary principles, and special agreements made with a licensee has to be kept confidential.

Overlapping licenses - Issues may still occur in Model A and Model B, both based on co-ordinates provided by the applicant and subsequently checked and entered to the system by the Licensing Unit staff, thus being vulnerable to human errors. However, checking routines will ensure that such errors occur only very rarely. Overlap is not possible in Model C.

Security of the tenure - will be guarantied in Model C but not in Model A and B, though Model B might be modified to do so.

License maintenance requirements – The requirements a Licensee has to comply with in order to renew a license. Model A is based on the discretionary principles, thus maintenance requirements are based partly on assessment of the work performance and partly on payments; Model B and C are both based on objective criteria, hence maintenance requirements are entirely fee-based – normally defined as simple maintenance requirements.

License has status as registered right – in contradiction to the mining acts forming the basis for Model B and C, the Model A Mining Act shall not ensure all types of licenses the status as a registered right which is in accordance with the current system.

3.3.2 Pros and cons for three different MCIMS configurations

Based on the descriptions of the different configurations and software detailed in the preceding, the pros and cons are listed in Table II-15. Please note that the three configurations to some extend are independent of the Strategy Model chosen, i.e. it cannot be assumed that Configuration A goes with Strategy B etc.

Table II - 15. *Pros and Cons for three different MCIMS configurations.*

Configuration	Pros	Cons
A: Minimise the changes	▪ Less expensive solution ▪ Feasible without major risks in a short time ▪ Less changes in the organisation, easier integration in the current system ▪ Training easier to undertake locally.	▪ System to be changed in the near future (c. 5 years). ▪ Changes in the organisation necessary in any case, not taken into consideration. ▪ No direct access to the database in ZMO
B: Network development	▪ Access to the information by ZMOs ▪ Easy to use standard software ▪ Possible extension in the future	▪ Need a long-term investment plan ▪ Training plan to implement ▪ Is going with a comprehensive approach (amendments, organisation, budget)
C: Advanced solution	▪ Ensure that a modern system will operate for a long time ▪ Can motivate the staff using modern and efficient technology ▪ Provide the better technical solution with many functionalities and possible developments	▪ Need a long-term strategy, implementation plan and funding. ▪ Specialised personnel not in place to recruit. ▪ High cost ▪ Training and long-term educational background necessary

The major risk for Configuration A is that the proposed system probably must be changed at medium-term because it cannot absorb the planned changes. The risk of Configuration C is that the advanced

technology because of its sensitivity necessitates a costly monitoring and so much machinery that the personnel must be supplemented by recruitment of very specialised staff.

Taking everything into account, it is recommended to select the B Configuration, which (i) will ensure that future improvements can be and are implemented; (ii) can be implemented in an acceptable time, minimising the risk of long-term work with two systems in parallel. The risks are: (i) necessity of implementing a long-term plan, including not only MCIMS technology but also institutional strengthening and amendments of the Law; and (ii) shortage of available budget.

The implementation plan should go with the development of the training plan, tender for MCIMS, amendments of the Law and Regulations, equipment and office supply.

The total duration for such an implementation is evaluated as follows:

- One year for tender process (verification plan in parallel)'
- Six month for signing contract
- One year until final implementation

3.4 Strategy recommendations

The Consultant finds that Strategy Model A, based on an amended version of the Mineral Act (1998) carries the risk that a second round of amendments must be called for in a few years time.

Strategy Model B is based on principles which are widely considered to be the best international practices and supported by a modern, open mining cadastre and tile registry and transparent administration. The Consultant finds that the Strategy Model B supports the goals set out in the Mineral Policy.

Strategy Model C involves a very liberal mining act, which in addition to the principles outlined for Strategy Model B, involves principles such as a single license system ensuring the licensee the right covering all steps from exploration through exploitation; simple annual obligations to maintain the mineral rights; and all licenses are equi-dimensional and defined by a national grid system. It is the view of the Consultant that Strategy Model C will not allow adequately support to artisanal and small-scale mining activities, and hence does not thoroughly support the Mineral Policy of Tanzania.

CONSULTANCY FOR THE DESIGN OF A MINING CADASTRE DEVELOPMENT STRATEGY
RFP#MSD-TA/NDF-277-2

DRAFT FINAL REPORT
December, 2002

PART III

IMPLEMENTATION PLAN FOR THE MINING CADASTRE DEVELOPMENT STRATEGY - MODEL B

List of Content – Part III

1 The Strategy B

The goals set out in the Mineral Policy (1997), calls for the implementation of a Mining Cadastre Strategy. Part II introduces the three alternative Mining Cadastre Strategies, composed by the development of following seven key strategy implementation components,

Component 1: Amendment, simplification or reforming of the legal framework
Component 2: Changes in the institutional framework and the administrative practice
Component 3: Establishment of a mineral rights database
Component 4: Verification plan for the mineral rights database
Component 5: Establishment of a transparent MCIMS system (Open Title Registry)
Component 6: Institutional strengthening and training programmes
Component 7: Resource requirements

The legislation is the hub of any mining cadastre strategy, and consequently the Component 1 is *the* determining component with respect to the *design* of each strategy. The additional Strategy Implementation Components will have to be tuned according to Component 1 and to the desired speed of implementation.

Component 1. Either *Amendment or simplification or reforming of the legal framework.*
As explained in Part II- 3.1, the Strategy B is based on the Component 1B – which is a simplification of the Mining Act and Regulations, as follows:

Model B: Mining act simplification. The basic structure of the Mining Act (1998) and the Regulations (1999) remains, but certain sections are to be reformulated and certain sections being suppressed, considering e.g.

- Amendments in accordance with Model A, where appropriate
- Reducing the number of types of rights (reducing types of licenses and reducing types of minerals)
- Rights to be granted according to objective criteria (as opposed to discriminatory criteria)
- Exclusivity of all mineral rights
- Open mining cadastre and title registry
- Environmental requirements adapted to various phases of a project
- Adjustments of the Regulations (1999) accordingly

All the additional Strategy Implementation Components must be tailored to fit the new Mining Act B and Regulations B. Hence any changes being introduced in the legal framework will be the prerequisite for the design of the additional Strategy Implementation Components, though the content of each of the Component 2 to 5 varies, depending on the type of Component 1.

1.1 Strategy recommendations

The Consultant finds that Strategy Model A, based on an amended version of the Mineral Act (1998) carries the risk that a second round of amendments must be called for in a few years time.

Strategy Model B is based on principles which are widely considered to be the best international practices and supported by a modern, open mining cadastre and tile registry and transparent administration. The Consultant finds that the Strategy Model B supports the goals set out in the Mineral Policy.

Strategy Model C involves a very liberal mining act, which in addition to the principles outlined for Strategy Model B, involves principles such as a single license system ensuring the licensee the right covering all steps from exploration through exploitation; simple annual obligations to maintain the mineral rights; and all licenses are equi-dimensional and defined by a national grid system. It is the view of the Consultant that Strategy Model C will not allow adequately support to artisanal and small-scale mining activities, and hence does not thoroughly support the Mineral Policy of Tanzania.

2 Strategy Model B – the components

2.1 Component 1 – Mining Act B and Regulations B

2.1.1 Introduction

Part III-2.1 provides the details for amendments and simplifications to the Mining Act, 1998, along the lines set out in the recommended strategy detailed in Part II.

Preparing the amendments and simplification of the Mining Act, 1998 and the subsequent adjustment of the Regulations, 1999, consists of the following phase: preparation of the draft version of the amendments; promulgation of the amended Act and Regulations; implementation. The two initial steps relate to usual legal processes in Tanzania, like setting up a Committee with legal advisers, presenting to involved Ministries to get their comments, mainly Lands, Environment, presenting to the National Assembly... It is assumed that this process is not under fully under control and its duration depends on political factors. It is essential to improve transparency and communication to all stakeholders and the private sector in order to attract investors.

The implementation of the new Act and Regulations includes a temporary stage to be described in the Law in order to ensure the compatibility with old Licenses and their transfer in the new system, as well as the procedure to grant licenses of on-going applications.

The report "Strategy Meeting - Résumé" (Annex F) is defining the options for amending the Act as it was presented at the Strategy Meeting, held July 16, 2002. It was decided in the Strategy Meeting to select Strategy B: simplification, without changing the structure of the Act. For further details hereto the reader is referred to the report.

The objective of this chapter is - section by section - to inventory the proposed changes in three columns:

- Current section;
- Proposed changes, and
- Justification for the proposal.

The justification includes notes when necessary. The amendments cannot be studied separately as several may relate to the same issue. To clarify the understanding, the proposed amendments are classified in several packages:

- Simplification: reducing the number of licenses, or avoiding unmanageable complexity
- Processes: simplification and clarification of the application processes
- Missing information: to complete
- Consistency: to ensure the equivalence between all License applications
- Co-ordination: with other stakeholders, Laws or Regulations

- Clarification: to complete the description for ensuring a more efficient process.
- Role: adjusting role and responsibility of offices and officers involved in the Licensing process, avoid discriminatory decisions.

Concerning the regulations, the Mining (Mineral Rights) Regulation, 1999 is the basis for the suggestions. The Regulations on Security and Environment are out of the scope of the TOR and are not studied. The proposed changes relate, as stated in the TOR, to "prepare regulations in agreement with suggested amendments".

Tanzanian lawyers should refine the wording, as for the Act, in accordance with the use in the country.

2.1.2 Transforming Mining Act, 1998 to Mining Act B

The table III-1 summarises the proposed changes by section. The title in the left column shows the title given in the Act. A new title is proposed when appropriate in the right column.

The type of change is is defined as: no change, deleted, replaced, modified, added, simplified, not included in this study.

The section numbers are repeated. If new sections are created, a new 'Nxx' number is created. The details are attached in Annex G.

Table III-1: *Proposed amendments to the Mining Act 1998*

Section	Title	Changes	New Title
1	Short title and commencement	No change	Short title and commencement
2	Application	No change	Application
3	Act does not apply to Petroleum	No change	Act does not apply to Petroleum
4	Interpretation	Modified some definitions Other new definitions	Interpretation
5	Control of Minerals	No change	Control of Minerals
6	Authority required for prospecting or mining	No change	Authority required for prospecting or mining
7	Mineral Rights	Simplification	Mineral Rights
8	Restriction of grant of Mineral Rights	Addition in (1) Deletion (3)	Restriction of grant of Mineral Rights
9	Mineral Rights transferable	Replaced	Mineral Rights transferable
10	Development agreement	Modified	Development agreement
11	Joint and several obligations	No change	Joint and several obligations
12	Priority between competing	Deleted (2)	Priority between competing

	applications	Add new sub-section	applications
13	Application for Mineral Rights by tender	Replaced (1) by 2 sub-section Deleted (2) Add 13(3)	Application for Mineral Rights by tender
14	Exclusive areas for Primary Licensees	Replaced	Exclusive areas for Primary Licensees
15	Offences relating to unauthorized trading of Minerals	Modified (1) (3) Deleted (5)	Offences relating to unauthorised trading of Minerals
16	Appointment of Commissioner for Minerals	No change	Appointment of Commissioner for Minerals
17	Execution and Delegation of functions of Commissioner	No change	Execution and Delegation of functions of Commissioner
18	Geological service	No change	Geological service
19	Geological survey, mapping and prospecting on behalf of the Republic	No change	Geological survey, mapping and prospecting on behalf of the Republic
20	Mining Advisory Committee	Deleted	*cancelled*
21	Prohibition against the disclosure of information	No change	Prohibition against the disclosure of information
22	Indemnity	Replaced	Responsibility of MEM's officers
23	Zonal Mines Office	Add (2)	Zonal and Resident Mines Office
24	Application for Prospecting License	Modified (1) (3) Deleted (4) (5)	Application for Prospecting License
25	Preliminary Reconnaissance Period	Deleted (or Replaced)	Reconnaissance rights
26	Prospecting License by tender	Replaced	Prospecting License by tender
27	Maximum areas, minimum expenditures	Deleted	*Cancelled*
28	Conditions for grant of prospecting license	Deleted (Replaced by other sections)	*Cancelled*
29	Grant, duration and renewal of Prospecting License	Modified (1) Deleted (2) Modified (3)	Grant, duration and renewal of Prospecting License
30	Notification of grants	Add (3)	Notification of grants
31	Content of Prospecting License	Modified (1) Deleted (2)	Content of Prospecting License
32	Rights of holder of Prospecting License	Modified (1) Complete (2) Deleted (or Replaced)	Rights of holder of Prospecting License

		(3) Deleted (4)	
33	Obligation of holder of Prospecting License	Simplify	Obligation of holder of Prospecting License
34	Application for Retention License	Modified	Application for Retention License
35	Grant of Retention License	Modified (4) (5)	Grant of Retention License
36	Applicants	Modified	Applicants
37	Effect of application under this head of PL for building materials	Modified	Effect of application under this head of PL for building materials
38	Application for Special Mining License	Replaced by news 38-46	*Cancelled*
39	Grant of Special Mining License	Replaced by news 38-46	*Cancelled*
40	Duration of Special mining License	Replaced by news 38-46	*Cancelled*
41	Content of Special Mining License	Replaced by news 38-46	*Cancelled*
42	Renewal of Special Mining License	Replaced by news 38-46	*Cancelled*
43	Rights of holder of SML	Replaced by news 38-46	*Cancelled*
44	Obligations of holders of SML	Replaced by news 38-46	*Cancelled*
45	Amendments of SML by holder	Replaced by news 38-46	*Cancelled*
46	Mining Licenses	Replaced by news 38-46	*Cancelled*
47	Application for ML for minerals other than gemstones	Replaced by news 38-46	*Cancelled*
48	Grant of ML for minerals other than gemstone	Replaced by news 38-46	*Cancelled*
49	Rights and obligations of holders of ML for minerals other than gemstones	Replaced by news 38-46	*Cancelled*
50	Renewal of ML for minerals other than gemstones	Replaced by news 38-46	*Cancelled*
51	Application for GML	Replaced by news 38-46	*Cancelled*
52	Grant of GML	Replaced by news 38-46	*Cancelled*
53	Rights and obligations of holders of GML	Replaced by news 38-46	*Cancelled*

54	Report of prospecting and mining under GML	Replaced by news 38-46	*Cancelled*
55	Renewal of GML	Replaced by news 38-46	*Cancelled*
N38		Based on 51	Mining Licenses
N39			Types of Mining License
N40		Based on 38, 47, 51, 64	Application for granting Mining License
N41		Based on 39, 48, 52	Special Development agreements
N42		Based on 41, extended	Content of Mining License
N43		Based on 43, 44, 49, 53	Rights of holder of Mining Licenses
N44		Based on 44, 49, 53	Obligations of holders of ML
N45		Based on 45	Amendments of Mining Licenses by holder
N46		Based on 42, 50, 55	Renewal of Mining License
N47		Based on 42, 50, 55	Grant of Mining License
56	Surrender of land subject to Mineral Right	No change	Surrender of land subject to Mineral Right
57	Suspension and cancellation of Mineral right	Slight changes	Suspension and cancellation of Mineral right
58	Extension of Mineral Right during applications	No change	Extension of Mineral Right during applications
59	Enlargement of certain Mineral Rights	Modified	Enlargement of Mineral Rights
60	Holders of certain Mineral Rights ceasing or suspending mining operations	Modified	Holders of Mineral Rights ceasing or suspending mining operations
61	Maximum area for which licence may be granted	Deleted	*Cancelled*
62	Allocation of mining License or GML by Tender	Deleted	*Cancelled*
63	Termination of Mining License or GML where production is insufficient	Deleted	*Cancelled*
64	Additional requirements for certain ML and GML	Deleted	*Cancelled*
65	Application for and grant of PPL	Modified (1) to (7) Deleted (8)	Application for and grant of Primary License
66	Application for PML	Deleted	*Cancelled*
67	Minimum and maximum area	Modified	Maximum area

68	Grant of PML	Replaced by 65	*Cancelled*
69	Renewal of PML	Deleted	*Cancelled*
70	Allocation of PML to mine exclusive primary area	Deleted	*Cancelled*
71	Conversion of PML to certain mineral rights under Division B	Deleted	*Cancelled*
72	Cancellation of PML	Modify (1) (2) (3)	Cancellation of PML
73-85	Licenses for dealing in raw gold, gemstones and other minerals	Not in the study	
86-93	Financial provisions	Not in the study	
94	Security of gold and gemstones mining operations	No change	Security of gold and gemstones mining operations
95	Restriction of rights of entry of holders of a Mineral Right	Modified (1)b replaced (1)i deleted	Restriction of rights of entry of holders of a Mineral Right
96	Right under a Mineral Right to be exercised reasonably	(2) Modified	Right under a Mineral Right to be exercised reasonably
97	Renewal of minerals	No change	Renewal of minerals
98	Wasteful practices	No change	Wasteful practices
99	Reports, records and information.	No change	Reports, records and information.
100	Authorized officers, power of entry	No change	Authorized officers, power of entry
101	Commissioner may decide disputes	(2) Deleted or modified	Commissioner decides disputes
102	Enforcement of the Commissioner's orders	No change	Enforcement of the Commissioner's orders
103	Appeal to High Court	No change	Appeal to High Court
104	Rules	No change	Rules
105	Register of Mineral Rights	No change	Register of Mineral Rights
106	Evidentiary provision	No change	Evidentiary provision
107	Radioactive minerals	Proposed modification of (4)	Radioactive minerals
108	Transfer of control over company	(4) Modified	Transfer of control over company
109	Insurance and indemnity	No change	Insurance and indemnity
110	Regulations	No change	Regulations
111	Obstruction of holder of Mineral Rights	No change	Obstruction of holder of Mineral Rights
112	Miscellaneous offences	No change	Miscellaneous offences
113	Offence committed by body	No change	Offence committed by body

	corporate		corporate
114-117	Repeals, savings transitional and temporary provisions	Not in the study	

2.1.3 Transforming the Regulations, 1999 to Regulations B

This chapter gives details of the modification proposed in the Regulations.

The changes are the consequences of the changes proposed in the Act. The first schedule relates to the financial aspects, which are not studied here. The second schedule relates to the forms and is studied in the next chapter.

Table III-2: *Proposed amendments to the Regulations, 1999.*

General	Suppress specific references to GML Replace Commissioner by LA	Simplification
Part II ***Section 3(1)*** An application for a mineral right under Division A or B... (uses) form MRF 1 or 3 or 5....	Change, MRF 1 (prospecting), 3 (Mining). Cancel 5 (GML) The forms are modified accordingly	Simplification
Section 3(2) An application... shall be accompanied by a plan... drawn on a topographic map to a scale of 1:50,000 giving dimensions.	Shall state the size of the area of land be accompanied by a topographic plan recognised by the LA to a minimum scale of 1:50,000 co-ordinates and the definition of the limits in accordance with the Technical Specifications provided in relevant regulations	Missing information The map should be the "official " map described in other sections, means the topographic map provided by the Survey division of the ministry of Lands.
Section 3(3) (c) forward to the Commissioner	... forward to the LA	Role
Section 4 (b) In the case of PML be	Be accompanied by a sketch	Missing information and clarification

accompanied by a sketch map of the mining area applied for giving dimensions in ha and precise particulars of direction and measurements as much as possible to enable PML applied for to be correctly plotted on the Official Mines sheet or official map	map with co-ordinates and area, to be applied on the topographic maps in the relevant ZMO/RMO	
Section 5 (1) Maximum area: PL with preliminary reconnaissance period, 5,000 sq.km. PL for AOBG 200 sq.km. PL Gem 1000 ha PL BM 100 ha ML AOBG 1000 ha GML 100 ha ML BM 100 ha PPL AOGG 10 ha PPL BM 2 ha PML AOBG 10 ha PML BM 2 ha	Delete There is no limit, the financial aspects should compensate the absence of maximum (the fees increase with the area). This is justified by the absence of maximum for SML, and the possibility of merging PML (see section 5(2)	Simplification
Section 5 (2) Sub-regulation (1) (j) and (k) shall not apply to PML amalgamated...	Delete	Simplification
Section 7 (1) An application for renewal of Mineral Right under A or B ... (uses) Form MRF 2, 4 or 6...	Cancel	Simplification
Section 8-10: Fees	Not studied but essential to ensure that licenses are granted for an appropriate area.	Out of the scope of the TOR.
Section 18(1) Where two ... applications over the same area .. are received the same day,... those applications shall be deemed to have been received simultaneously...	Cancel. Subsection (4) applies in all the case	Consistency Apply first come, first serve using date and time.

Section 18(2)(3) At the time of opening the bids... priority where there are more than one highest bid...	Delete. Process clearly specified in the Act	Processes
First schedule	Not studied	Out of the scope of the TOR
Second schedule		See next chapter

2.1.4 Transforming the Forms (Second Schedule), 1999 to Forms B

It is recommended not to change many details of the forms The objective at a first stage is to minimise the modifications in order to avoid negative impacts to applicants that could necessitate detailed justifications. In summary, forms are only changed when necessary. Some forms are useless with the new Law (applications for GML for example). Other forms can be used for all type of License instead being restricted to PML.

Table III-3: *The list of forms is proposed modified as follows.*

Form	Use	New form	Change
MRF1	Application for Mining Rights under Division A	MRF1	Minor changes
MRF2	Application for renewal of Mining Rights under Division A	Delete	
MRF3	Application for Mining Rights under Division A	MRF3	New title Changes
MRF4	Application for renewal of SML or ML under Division B	Delete	
MRF5	Application for GML under Division B	Delete	
MRF6	Application for renewal of GML under Division B	Delete	
MRF7	Application for PPL	MRF7	Minor changes
MRF8	Application for PML	MRF8	Minor changes
MRF9	Registration of a demarcated area	MRF9	No change
MRF10	PPL	MRF10	No change
MRF11	PML	MRF11	No change
MRF12	Application for renewal of a PPL	Delete	
MRF13	Application for renewal of a PML	Delete	
MRF14	Application for suspension of work	MRF14	No change
MRF15	Certification of suspension of work	MRF15	
MRF16	Application for amalgamation of PML	MRF16	Extended to all types of License

MRF17	Certification of amalgamation of PML	MRF17	Extended to all types of License
MRF18	Surrender of a PML	MRF18	Extended to all types of License

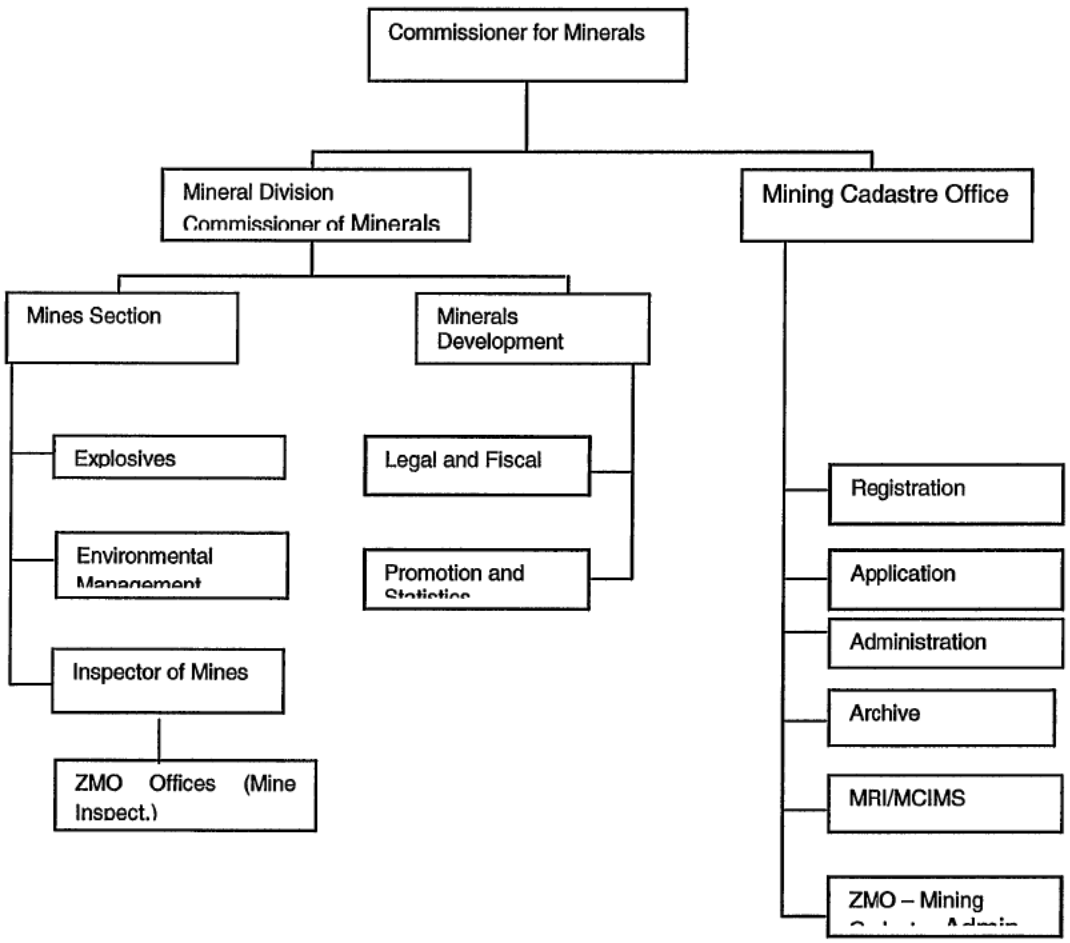
There are no major changes in the forms, so they are not detailed in this paragraph.
The minor changes include reference to deleted sections of the Act references to categories simplified in the amended Act or to suppressed limitations (maximum area, period) or extension of the use of the form to all types of licenses

The associated information to fill can be deleted from the form or simply kept for information only, even though not formally used in the application process.

2.2 Component 2 – MCO and administrative practice

2.2.1 The organisation

Figure III - 1. *Organisation diagram for the Mining Cadastre Office (MCO). The MCO boxes are in the text referred to as "Sections".*



It is recommended to establish a Mining Cadastre Office (MCO) as an semi-autonomous organisation under the Commissioner for Minerals, Ministry of Energy and Minerals, and to "out-source" all monitoring tasks to specialised bodies, i.e. assessment of activity reports, environmental issues, safety issues, and fiscal issues. The proposed structure is shown in Fig. III-1; the boxes shown for MCO are the individual task offices, not Sub-Sections as for the Mines Section and the Mineral Development Section.

2.2.2 Administrative routines

It is proposed that new procedures of granting Licenses are applied in accordance with the new legal framework and institutional structure. These changes are based on the following principles:

- minimising transfers of the application from an office to another; and
- permanent and transparent follow up of the status of the application.

The procedure could be as follows:

1. All applicants for a Mineral right have to fill in a standard "Application Form" issued by the MCO available in the Central as well as in Zonal offices. Subsequently the application is submitted to the MCO with attached receipt of Application fees.
2. The MCO registers the application in one Entry Register with chronological numbers, date and time. The "first come, first served" concept is ensured by the date and time of these entries. The Applicant receives a stamped receipt of the application with the date and time of reception by the MCO.
3. Examination of the application follows a new "Check-List Form". If necessary, MCO asks the applicant to provide additional information.
4. Control of overlap using MCIMS In case of identified overlap modifications of co-ordinates are calculated and sent to the applicant for approval.
5. Follow-up form, Stage 4, "Notification of Grant" includes 2 possibilities
    a. "Letter of Grant" supposed to be a confirmation that the License is granted fully in accordance with the application requests, or
    b. "Letter of Modification" after acceptance from the applicant of the modified co-ordinates and the recalculated size, signed by the applicant and MCO
6. The applicant pays the preparation and license fees so that MCO prepares the License on a special pre-stamped yellow paper made to prevent fraudulent copies of this original. At this stage, the complete application file is sent to the Head of MCO with the yellow-paper License for signature of the original.
7. The License is numbered and the application is stored in the MCO Archive.
8. The applicant collects the original License (yellow copy) in the Licensing Unit after notification.

2.2.3 Relations and links to stakeholders

The legal and organisational relations with external stakeholders is described in detail in the Part I-3.4: "Assessment of MEM's mandate" and related amendments of the Law and Regulations proposed in Part I-2 "Assessment of the Legal and Regulatory Framework", and the Annex G "Proposed amendments of the Law and Regulations".

It was deducted from this study that the relation between stakeholders is a major institutional issue: consistency of the Laws and Regulations, operational co-ordination bodies, regulated exchange of information.

No other ministry has developed a basic land-related computerised system. The Tanzania Government is taking into account new policies leading for example to a very new Land Law, 1999 that needs several years to be fully operational. No land-related or IT-system consistent project was identified and it is not expected that such a system will emerge in the next couples of years. Under these conditions, it is impossible and risky to foresee future developments, in a fast changing technical environment.

It is recommended to develop the MCIMS separately within the Ministry in using standard software that can be easily connected to any new system in the future. The use of a co-ordinated system similar to the Survey division of the Ministry of Lands, the access to ZMO by customers, including to Local Government, is more related to public relations than it is a technical issue.

The permanent contact with stakeholders, promotion of the system, and perhaps in a near future the creation of a Land Committee debating on land-related and cadastre issues, is the maximum requirements at this stage of development.

2.3 Component 3 – Mineral Rights Database (MRD)

2.3.1 Introduction

When the state of affairs of the existing system was finally confirmed by the joint efforts of all participants in the project, the Consultants suggestion of building a new simple but very functional database was really the only possible way forward. This must be used for the subsequent verification process, and properly applied it will provide the data basis for the next step, construction of a Mining Cadastre Information Management System.

The database constructed for this purpose by the Consultants is described in some detail in this chapter. To ensure the maximum exploitation of pre-existing knowledge of MapInfo in LU and wishing to stick to fairly standard techniques for databases, it was decided to use Microsoft Access and MapInfo. Access is a robust and simple to use relational database system well suited for single users on fairly simple systems, though it can be extended to a multi-user system if and when net installations become

available. Access is part of the MS Office Professional suite of programs and will integrate easily with e.g. Excel, and it will run well on any modern PC.

Most modern databases are relational database systems, having a number of advantages. The data modelling necessary for the building of this database, will be directly applicable in the future MCIMS, and the order brought to the data and information while inputting to the database, is a pre-requisite for a successful implementation of such a much more complex future system.

The Consultants fell that a word of advice is warranted here. The Mineral Rights Database described in the following and being suggested for use in LU, is a necessary component for an improvement of the license situation, but it is not sufficient. The database will only be as good as the data entered, and all involved staff will need to be very careful and conscientious in their work. A perfect agreement between the digital data in the database and the paper trail (i.e. paper copies in archives and files) must exist at all times to ensure that the total system is legally and administratively sound. To assist with this, sections on work procedures etc. have been included in this report.

2.3.2 MRD – design

The general aim of the new Mineral Rights Inventory is to be the vessel that will hold all the verified data and information about licenses in Tanzania until the future MCIMS can be implemented and the information can be transferred to this. The new Mineral Rights Inventory should also be the tool to use to carry out the verification of existing licenses. This has been a determining factor for the design of the database.

Thus, the focus is on licenses, from application to cancellation and the routines and operations related to the monitoring of licenses in their different variations. The database is fitted to the presently valid laws and regulations, not to a possible future law. The database alone is not sufficient to guarantee a successful updating of the information related to licenses. The proper and skilled use of the database and associated facilities must be supplemented with the proper administrative procedures. The database does not replace the papers (applications, documents, and letters) in the physical files in the archives, but it provides a digital image of the information that is suited to digital handling of a number of operations.

The fact that a relational database system is used for the construction of the new Mineral Rights Database ensures that modification of and additions to the database structure are not an insurmountable problem. Any reasonably skilled person will be able to add new fields, new reports and new forms to the system, though care must be taken to also handle the consequences for the data already in the database, i.e. it should only be done by someone with an intimate knowledge of the database. As a matter of fact the Consultants must strongly advice the future users of the system to refrain from making changes in the structure of the database; it will be far better to spend the resources working on the content of the database and make sure that is as perfect as possible.

The new Mineral Rights Database (MRD) and - Inventory is not a MCIMS, but a more limited tool to be used in the interim period between now and when the final MCIMS is implemented. It is a database with helpful administrative tools attached not an administrative master system. The users must fully

understand this and know with certainty what is expected from them in terms of accuracy, care and good governance.

In the following sections of this report, a brief description of the new Mineral Rights Database is provided for a good understanding of its use. Some of the terms are technical and sometimes a few words of explanations are included, but a general explanation of their meaning is beyond the scope of this report. Readers are referred to most textbooks on Object Oriented Relational Databases and Data Modelling Theory.

Entity Relationships

Figure III-2 shows the major entities and relationships in the database and shows the general data entities provided for in the Mineral Rights Database.

An entity can be defined as a name, place, thing, event, or concept about which information is kept. An instance is a single occurrence of a given entity. Each instance must have an identity distinct from all other instances. In an entity relationship diagram, a box or rectangle represents an entity.

Relationships between entities are a vital component of a relational database. The use of shared keys will capture these relationships: facts in one entity refer to, or are associated with, facts in another entity. The line drawn between the entities in the model represents a relationship. A relationship between two entities also implies that facts in one entity refer to, or are associated with, facts in another entity.

The basis for the structure is the existence of a one to one relationship between most parts of a license/Application for licenses; the large "Application" – table that stores all these elements.

In order to understand the reasoning behind the structure, please observe the following examples of relations between entities.

- Between licensee and license it is quite likely that there will be a one to many relations i.e. a licensee may hold several licenses.
- The relation between license and fee is a one to many relations, because a license can have several attached fees during its lifespan.
- Between licenses and basic geography (Zone, District-, Topo-sheet number) there should be a one to one relation (in the event of a license area overlapping zone or district borders, a simple rule of major coverage can be applied).
- Between license and beacon co-ordinates a one to many relations should exist.
- Between the licensee and LU-officers and their function in relation to the licence there exist a one to many relation, i.e. many staff members can have several roles in connection with one license. In order to handle this, a transition table with a many to many relationship with license, roles and LU officers involved has been established.

For any database it is very important to maintain the integrity and consistency of the content of the database. To ensure the integrity between related data in separate tables the relations between "Application", "Co-ordinates", "Fee", and "Staff-Control" is set to *cascade update* and *cascade deletion* of related records. In practical terms this means that whenever a new record is entered in "Application"

its ID (Application ID) is automatically added to these tables. In the same way once a record is deleted from table "Application" this deletion will cascade through the other tables ensuring that there is no stranded (superfluous) records in the tables. Between "Company" and "Application" a cascade update of "Application Company" takes place. However, no rule of *cascade deletion* is applied here, as it is quite likely that a company should continue to exist in the database for further use.

The actual name of a table or a data field is of no consequence to the data stored in the table or field. The tables could be named any other way, if so desired. What is of importance is the naming on the screen-forms, se the chapter on "User Interface", which guide the user in registration. All Entries marked in bold on the Data Entry Forms are compulsory data fields (Table 1). That is data absolutely needed for registration of licenses. The MRD allows the user to partly enter information on a license. This is not recommended but implemented so as to allow the users to return to the registration when data becomes accessible. The situation with partly accessible data is expected to exist for a period. When MRD needs data entered in order to correctly link data together actions, is not possible until the data is applied or corrected. That way the integrity of the MRD is assured.

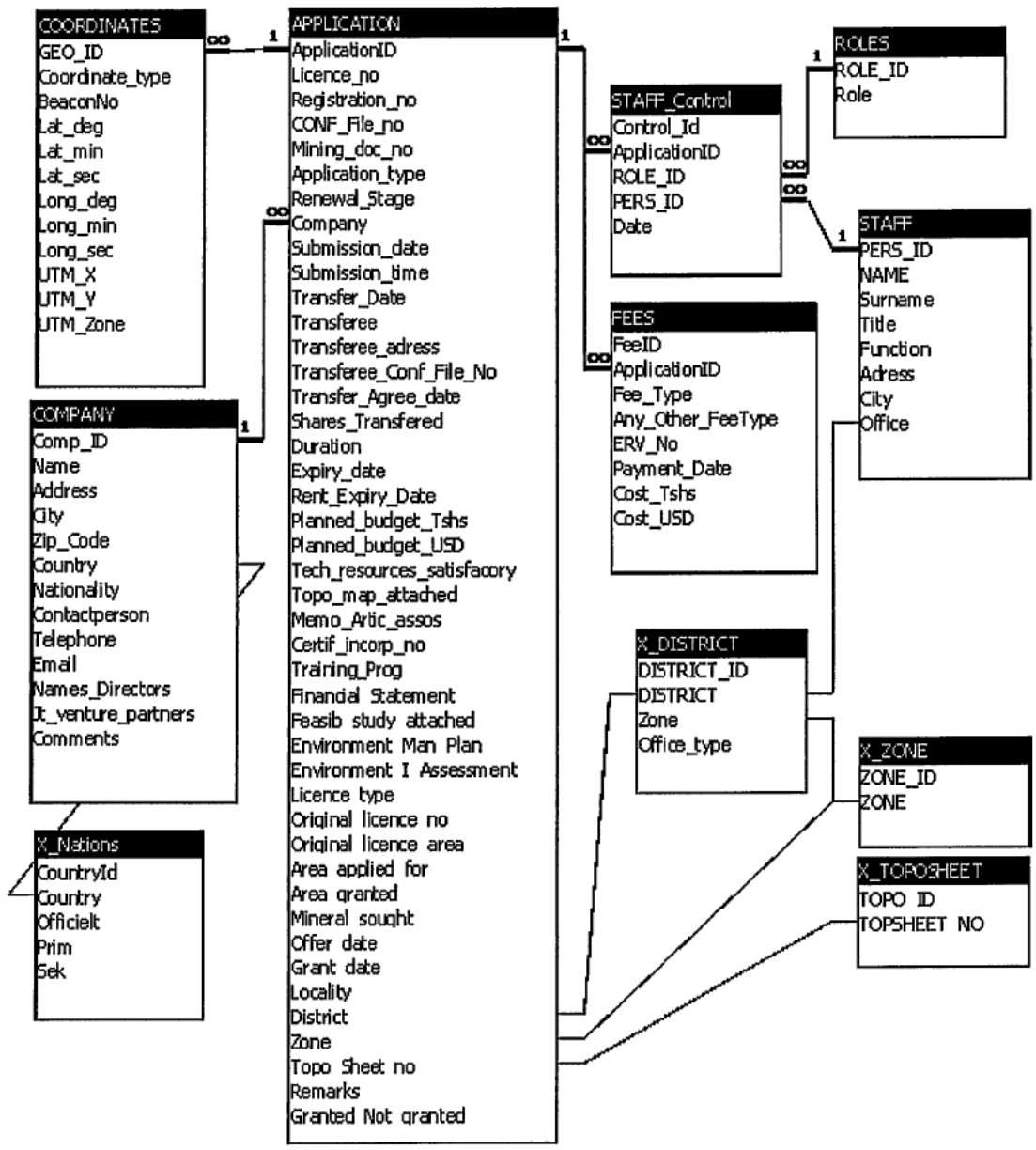


Figure III –2. *The schematic representation of data relationships – the data model. Each of the rectangles is an entity or table. Each of the names in the list is the name of a field or attribute used to hold the information.*

2.3.3 Data entry forms

Three different types of Data Entry Forms have been developed in close dialogue with the Client. The aim of the Data Entry Forms is, (a) to ensure that all relevant information for each license is recorded;

(b) to ensure that all data are systematically validated before being entered to the Mineral Rights Inventory, and (c) to keep track of any amendments made on each license.

The Data Entry Forms are designed to support the following three situations:
Form I: Mineral Right Application/ License Granted
Form II: Renewal of a Mineral Right
Form III: Transfer of a Mineral Right

After a LU officer has completed a Data Entry Form, an authorised person validates the data and approves the form by signing it. At this stage the data is ready for being entered to the Mineral Rights Inventory, and the Data Entry Form is subsequently filed with the respective confidential file, and the record no. is attached the Data Entry Form. In the event a licensee at a later stage submits an application for renewal of the license a new Data Entry Form is filled in, and the same procedure is applied again. This ensures that each record in the Mineral Rights Inventory has a hard copy twin in the Confidential Files, and hence no amendments can be undertaken in the one part without being amended according in the other.

Samples of the three Data Entry Forms are given in Annex H, I, and J.

2.3.4 Output

A critical part of any database is the ability to query information from the database. Standard Access querying through the use of SQL is possible. The queried information can be printed through standard Access Report Generating. Additional pre-created search and reports menus have been developed focusing on the most used search and report criteria's when working with the Mining Cadastre.

The implemented Reports are:

- Report of specific License
- Report of all licenses held by specific License holder

MapInfo generates a message in a Message Box identifying overlapping License areas, as well as highlighting the areas in question.

2.4 Component 4 – verification plan – for a clean MRI

2.4.1 Design and use of the geodetic reference system in Tanzania

The recommendations given in the "Improvement of the Tanzanian Mining Cadastre" (Swedish Geological AB, 1997) is still valid but in most cases still has not been implemented. Obtaining better measurements of co-ordinates for the license beacons require accuracy below 1 meter. The Ministry of Land Use and Settlement claims to use accuracy of 0.3 m for Real Property Rights. To obtain such accuracy Differential GPS (real time DGPS when possible) instead of Standard Positioning Service

should be used. This technique requires a national network of geodetic points, which does to our knowledge not exist. Before such a network is established accuracy below 10 meters are doubtful. Therefore, workable accuracy for mining licenses depends on external parameters, which are under the control of The Land Survey and Mapping Department.

Until an accurate geodetic network has been established, measurements should be conducted using real time DGPS, but this is expensive and requires training of the officers at the RMO/ZMO. Also, it cannot be expected that all applicants have access to the necessary instrumentation. The technique is at present simply not implemented at a national level. Never the less this must be the ideal to aim for.

The co-ordinates should be measured using the WGS-84 datum or Arc 1960. The Universal Transverse Mercator Projection (UTM), 36th zone South, should be used as projection, Central Meridian 33; preferable using meters as units.

Plotting licenses of 50x50 meters at maps in scale 1:50.000 in a country of 942.700 sq. km. do call for national useable projections and not precise local projections, which most people would not know of or know how to use. It is recommended to introduce a national grid system, and this does call for a nationally useable projection. Using a UTM projection would be preferable for foreign companies, which would be able to prospect and use available GIS data without having to transform instrument specifications and GIS data. It will make the system more transparent and useable.

The most important consequence of a national projection is related to the registration procedure, where every entry to the MCIMS should be based on one and only one projection and datum, thereby limiting errors and making data easily available for plotting etc.

2.4.2 Basis for verification

Based on the information, impressions and points of view now known to the Consultants a possible procedure for how to achieve a clean Mineral Rights Inventory can be outlined for the consideration of the Ministry. The procedure basically involves two main phases, (a) the removal of all irrelevant licenses; and (b) the identification and correction of the valid license records.

In order to organise and maintain control of this 'cleaning-up' process, it is strongly recommended to undertake the process on a zone-by-zone basis. Also, though it may be undesirable from some points of views, the Consultant strongly recommends that for a pre-defined period during the establishment of a clean inventory by the implementation of the Verification Plan, no new applications should be accepted and no applications should be granted -*in reality a suspension of all processing of license applications*. The appropriate legal measures for such a period of graze, should be ensured in advance by MEM through announcements, maybe zone-by-zone, and careful orchestration of the events.

Identification and removal of all irrelevant licenses – and general data verification
Based on the information made available to the Consultant it appears that a large – but unknown - percentage of the mineral rights recorded in the current Mineral Rights Inventory are expired or in

default (i.e. dormant, due for payments, due for reporting etc.). In order to ensure that the efforts used for the correction of co-ordinates are spent on relevant licenses only, it is recommended first to remove all licenses expired and in default from the Inventory. However, because the hard copy files are not complete and not up-to date the identification of such licenses cannot be undertaken on the basis of the archived hard copy files. A supplementary process involving notifications of the licensees via the press and the Gazette unfortunately seems inevitably.

It may be considered to exclude PPL holders from this process, since this type of licenses have no impact on the result, and thus PPL could be included in the new Mineral Rights Inventory, based on new applications only.

2.4.3 The procedures to establish a clean mineral rights inventory

Putting all of these considerations together, procedures for identification of all valid licenses could be recommended as follows:

Step One – Identification of all licensees
Public Notification of all license holders via the Gazette and the press should inform the holders that all mineral licenses must be re-issued (with a new numbering system). The notification shall provide comprehensive information with regard to

(a) Suspension period for applications and granting of mineral rights,
(b) Instructions to the licensees regarding all actions he shall take and directions he must obey,
(c) Provide information about the consequences of not complying with the notification,
(d) Time schedules.

In the event a Licensee fails to comply with the notified requirements he should be considered in default, and his license should automatically be cancelled without further notice (or using the Act, with a 30-day notice).

Step two – Gathering the license data
All license holders shall submit (personal appearance) to the LU in Dar es Salaam (only one single office should be in charge of the operation), the following documents,

i) The original License Certificate,
ii) The original receipts of fees paid over a defined period years, e.g. the past year

In co-operation with the Licensee, the LU-officers should then undertake to,

iii) Fill in hard copy Data Entry Forms.

In return the Licensee will the same day receive a receipt (numbered) and a photocopy of both i) ii) and iii). Similar copies should be kept in the LU in accordance with the Verification Plan.

Step three – follow-up procedures

The above procedure will make it possible for LU to check the validity of all licenses submitted. Any license holder in default shall - at the meeting - receive a written note specifying the type of default observed and giving the instructions to be followed to avoid cancellation of his license. This assessment of course requires clear definitions of rules for the assessment of the licenses, including how to deal with possible exceptions.

Simple default cases would be such as 'licenses expired' and 'fees overdue'. More complicated types of defaults would be such as license holders not complying with the Mining Act and Regulation i.e. dormant, no reporting, environmental reports. It is recommended to disregard all the latter types during the implementation of the Plan of Verification, and then return to them after they have been accepted in the new Mineral Rights Inventory, as needed in the normal course of events related to the monitoring of licenses.

Step four - corrections of co-ordinates in the Inventory

The records that pass through this first filter, then require a systematic check of the co-ordinates, and must subsequently be checked for overlaps. In the event overlaps are found to occur, the co-ordinates must be corrected. However, correcting is not a straightforward process, because a number of combinations of circumstances are possible. The following procedure is recommended,

1) Identifications of all overlapping license occurring in the new inventory, not containing any licenses in default according to the above procedure.
2) Each overlap between two licenses must to be described and corrected with respect to (based on the present Mining Law and Regulations),
   a) The types of licenses involved in the overlap must be identified (i.e. type of mineral right and type of mineral), revealing which license should be given priority over the other (e.g. any Prospecting License overrules a PML-building-material-license),
   b) If the priority cannot be decided from the type of licenses involved, then the date and time of application can be applied.

For any overlapping licenses, which still cannot be evaluated in terms of the above, one of the following principles may be applied,

a) give priority according to SML, ML, GML, RL, PML, PL, PLR, PPL, or alternatively
b) give priority to largest investments made over the past five years.

As explained previously all identified errors at this stage are due to errors in the co-ordinates granted by LU. Consequently LU is obliged to reach agreements with the holders involved with regard to who of them should surrender his part of the overlap, and subsequently LU is obliged to negotiate compensations and maybe recovery of costs related to this process for the license holders.

Step five – Development of the clean mineral rights inventory
At this stage, all relevant and correct information on all valid licenses have been gathered - and all mandatory fields from the Hard Copy Entry Forms have been filled in. After a second validation and quality control of the Hard Copy Entry Forms the data can be entered to the Mineral Rights Inventory. The archived hard copy confidential files should be cleaned accordingly to correspond correctly to the digital records in the database.

Step six – Issue of new license certificate
For all licenses accepted as a valid record in the Inventory at this stage, a new license certificate (including a unique license number) must be issued and delivered to the holder, and the associated information related to this can be entered into the database. Only then can an accurate new Mineral Rights Inventory be said to exist in Tanzania.

Step seven – Instructions to licensees
According to Mining Act 1998 and Regulations 1999, all license holders are obliged to demarcate their license area in accordance with the (corrected) co-ordinates issued on their copy of the new license certificate. It must be regarded as the responsibility of the licensee to ensure that beacons are in place and positioned correctly to avoid land disputes and he should carry all expenses related hereto.

The Licensing Unit shall inform and instruct all license holders – and surveyors - about the geographical and technical specifications to be applied in any land survey. It must be ensured that co-ordinates are based on the same system and thus are comparable (Notification in the Gazette and the press may be considered).

Step eight – Obligations of licensees
The Licensee shall submit to the Licensing Unit a Surveyor's certificate of beacon positions proving that the actual beacon position in the field is in accordance with the new license certificate.

The Zonal Mines Office/Resident Mines Office may undertake randomly control inspections.

In the event that an overlap between two licenses is observed in the field or in the event a license is wrongly located, it occurs as a consequence of incorrectly surveyed data or a beacon is not in place. The holder shall be notified and told to correct the beacon in accordance with the co-ordinates granted, or alternatively his license shall be cancelled.

2.5 Component 5 – MCIMS

2.5.1 General design

Basic software

The Mining Cadastre Information Management System (MCIMS) is defined as hardware, standard software, application system, and network installation, as they are further detailed below.

The MCO and the ZMOs should share the same up-to-date information on applications and licenses. The Information System and Information Technology Architecture is based on a network installation for communicating between MCO and ZMOs, with databases providing a registration access to MCO and information on the appropriate area to ZMOs. Major issues as data-security and -safety, control of external access to the database or queries, possible future extensions are taken into consideration.

The hardware and standard software are listed below. Suggestions are Microsoft products at 15 desktop computers with Windows 2000 and Windows Office XP. The server software is Microsoft Windows Server 2000 and ISA Server 2000 to handle the firewall and external communications (Proxy server).

The database environment is also Microsoft (Access or SQL), where Access is chosen as the best choice at the moment and SQL Server at a later stage. The database handles all entries and only in the database are data kept.

The GIS should be a component to the database and MapInfo software is proposed, being a suitable and high quality GIS system for the given needs and the database environment envisaged.

Technical design

The principle is to store all information about mining licenses in one location, the Central Database, to keep track of changes, provide distribution tools to the public and to organise access to the appropriate area information for the ZMOs.

The Registration System will be divided into two system parts:

- RMO/ZMO –The applicants apply to and from ZMO/RMO where data are "entered" or emailed. The RMO/ZMO will not have direct access to the database but will email applications or use Internet. The system configuration at the RMO/ZMO is kept as simple as possible, communication is using a HUB for access to the data from the Central Server.
- Central server – the central part of MCIMS, which stores all registered information, journals and logs.

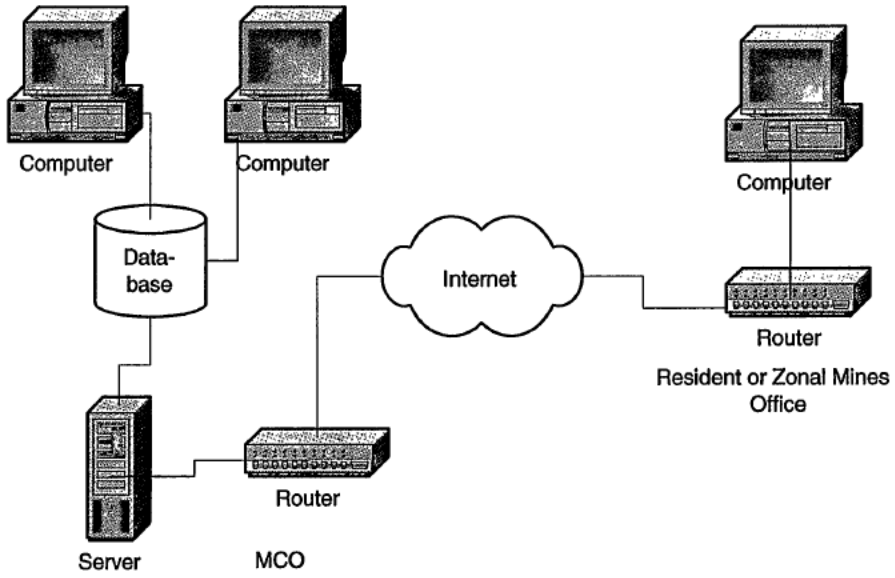


Figure III – 3. *Principle outline of MCIMS*

Five databases are defined:

- Journal Database – information about reception of application forms, their type, status and date/time.
- Database of Mining Cadastre – storage of all licenses. This database stores infor-mation about licenses.
- Replications Database– database used to replicate data accessible for the RMO/ZMO or at the Internet for the public.
- Refusal Archive/database – an archive database for all refused licenses.
- Discharge Archive/database – an archive database for all discharged licenses.

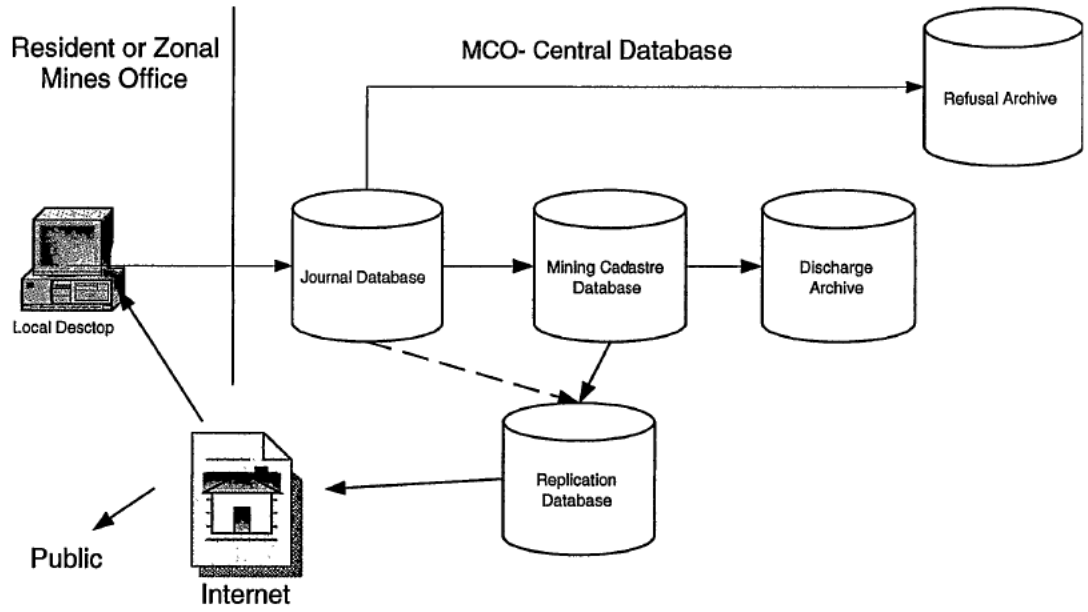


Figure III - 4. *Databases of MCIMS*

Entries to the MCIMS are coming from two sources:

1. RMO/ZMO
   - Clerical Staff responsible for
   - Entering data from the application form
   - Correcting the information previously entered
   - Officers responsible for
   - Control of data entry
   - Cross-checking of the documents
   - Adding to the Journal Database (Application Forms Procedures)
   - Make decisions
2. MCO is responsible for
   - Updating the Journal and Mining Cadastre Database
   - Maintenance of hardware, basic software and MCIMS-specific software in the RMO/ZMO and at MCO
   - Monitoring the process and access to MCIMS
   - Backup
   - Supporting users of the distribution system – the RMO/ZMO and the public

Special attention to the servers is needed, which handles:

- Mails
- Files
- Database
- Security
- Users
- External access
- Internet
- Anti virus

- Backup

2.5.2 System configurations

Three configurations are proposed. All three configurations fulfil the requirements defined in the technical design.

The configuration objectives are the following:

- Configuration A: Minimise the changes in the current use and the cost to ensure that this project can be implemented. It is proposed that the system is developed at the central level, with no specific system in ZMO. Some data are accessible by Internet and communication with ZMO uses email tools.
- Configuration B: Develop the system at the central and ZMO level. Provide the minimum equipment to be able to operate during at least the 5-10 next years after implementation.
- Configuration C: Modern state-of-the–art equipment providing easier access and interconnectivity, efficient process and ensuring future development and extensions,

Pros and cons of the three configurations are developed after the presentation of the three options.

Configuration A: Minimise changes

The configuration in the figure III-5 is the simplest configuration that does not use IT direct access to the database for the ZMO.

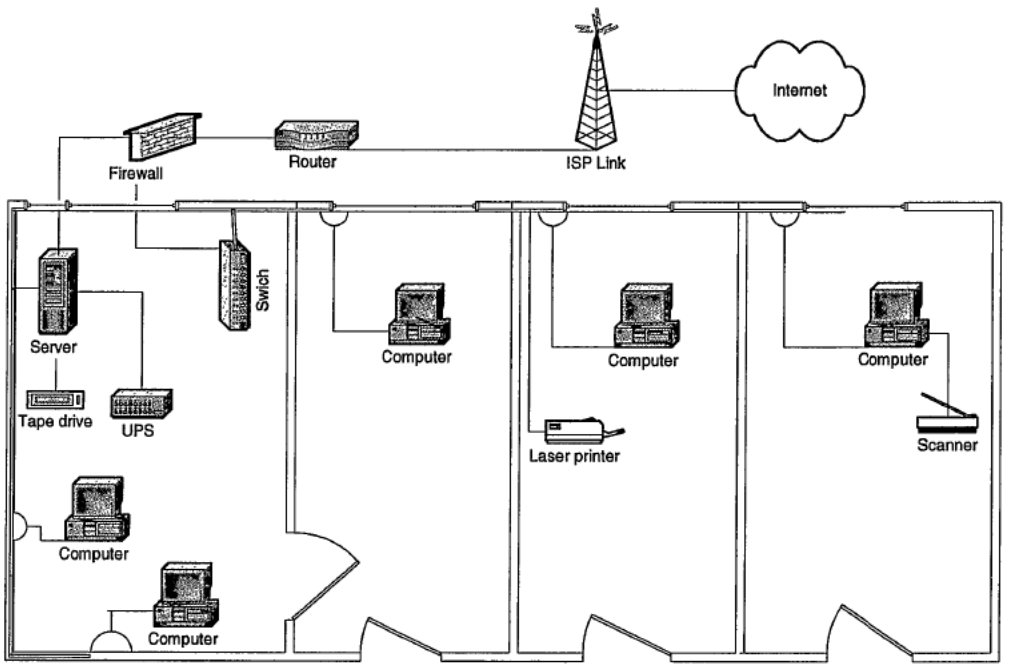


Figure III - 5. Configuration A

It is expected that the number of PC will increase from 5 to 12, and the printer from 1 to 5, including an A1 format printer. A plotter should be added to this configuration to print maps.

In 2-4 years time it would be relevant to install a second server to deal with files and the database and therefore the choice of server software should be SQL Server 2000 Standard or identical software.

Hardware – Configuration A

Table III – 4

Hardware	*Quantity*
LU equipment	
S.1: Domain Controller, File & BDC, Central Database, Domain and Registration Server	1
S.3: Web Server (Optional)	1
Personal Computer	12
Printer	5
Plotter	1
Router	1
Switch	1
UPS	1
Tape drive (Backup)	1
Firewall	1
RMO/ZMO (26) equipment (only individual PC)	26

Software - Configuration A

Table III – 5

Standard Software	*Quantity*
LU	
Windows Server 2000 English with 6 (1 server + 5 clients) pcs. CAL	1
Microsoft Internet Information Server	1
Microsoft Office 2000 Professional (1 server + 5 computers)	13
Antivirus software (1 server + 5 computers)	13
Modem	1
RMO/ZMO (26) (only Microsoft Office 2000 Professional and Antivirus)	26

Configuration B: Network development

This configuration includes a Web Server to handle registration formulas and access by the public. A server and modems ensure communication with ZMO.

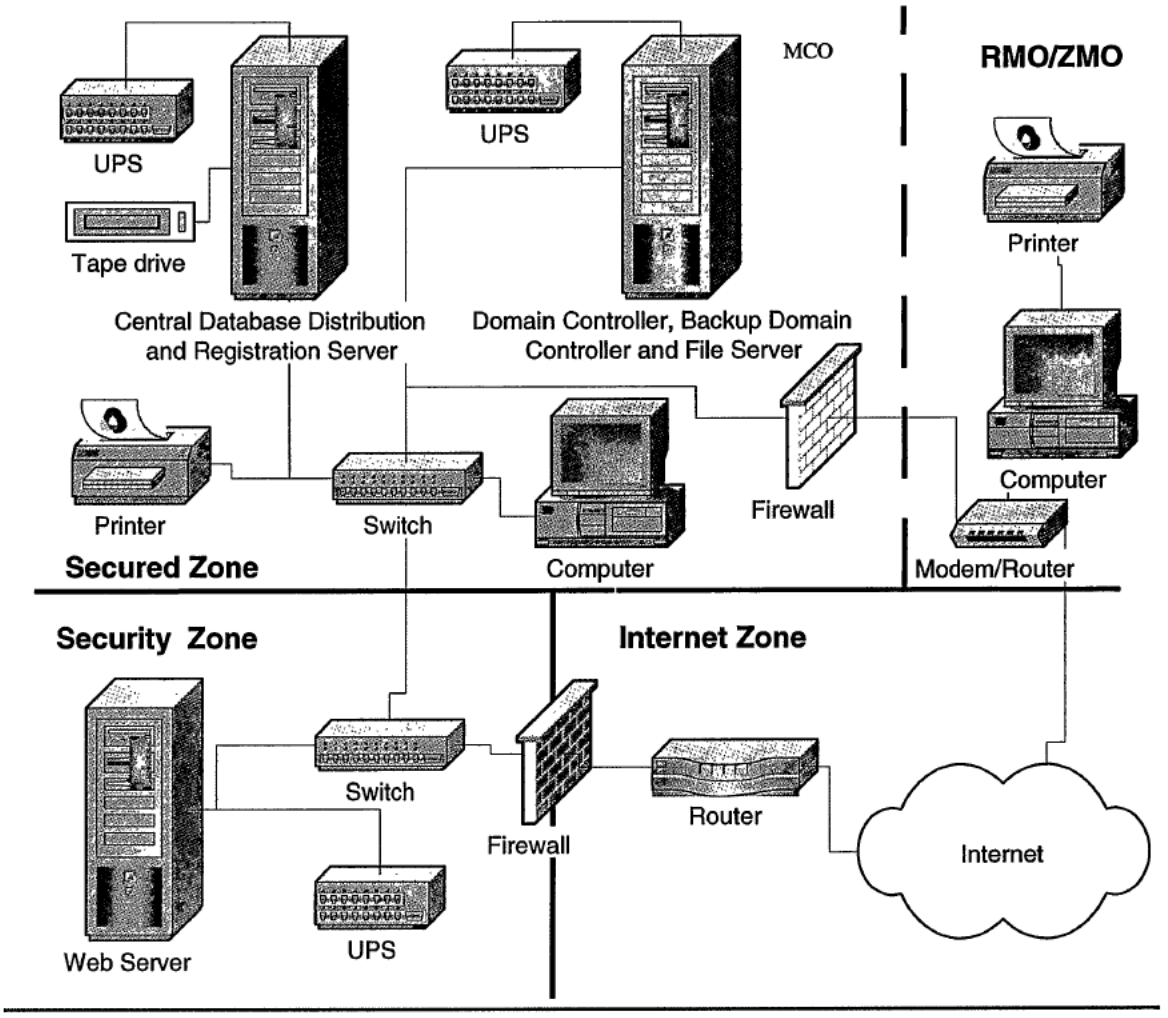


Figure III - 6. Configuration B

The servers in Configuration B has to handle various functions:

- Domain Controller
- File & BDC
- Central Database Distribution and Registration Server
- Central Database

Hardware – Configuration B

Table III - 6

Hardware	***Quantity***
LU equipment	
S.1: Domain Controller, File & BDC, Central Database, Domain and Registration Server	1
S.2: (Central) Database Distribution and Registration Server	1
S.3: Web Server	1
Personal Computer	12
Printer	5
Plotter	1
Switch	2
Firewall	2
UPS	28
Tape drive (Backup)	1
Router	1
Modem	1
RMO/ZMO (26) equipment	
Personal Computer	26
Printer	26
Modem/Router	26

Software - Configuration B

Table III – 7

Standard Software	***Quantity***
LU	
Windows Server 2000 English with 8 (3 servers + 5 clients) pcs. CAL	12
MS SQL Server 2000 Std. Ed. English with 8 (3 servers + 5 clients) pcs. CAL	12
Microsoft Internet Information Server	1
Microsoft Office 2000 Professional (3 servers + 12 clients)	15
Antivirus software (3 servers + 12 clients)	15
RMO/ZMO (26)	
Microsoft Windows2000	26
Microsoft Office 2000 Professional	26
Antivirus software	26

Configuration C: The advanced solution

Figure 5 shows an overview of hardware and network components for the operation of MCIMS with registration at RMO/ZMO connected online with MCO.

This configuration is the most advanced configuration where several dedicated servers improve performance and security.

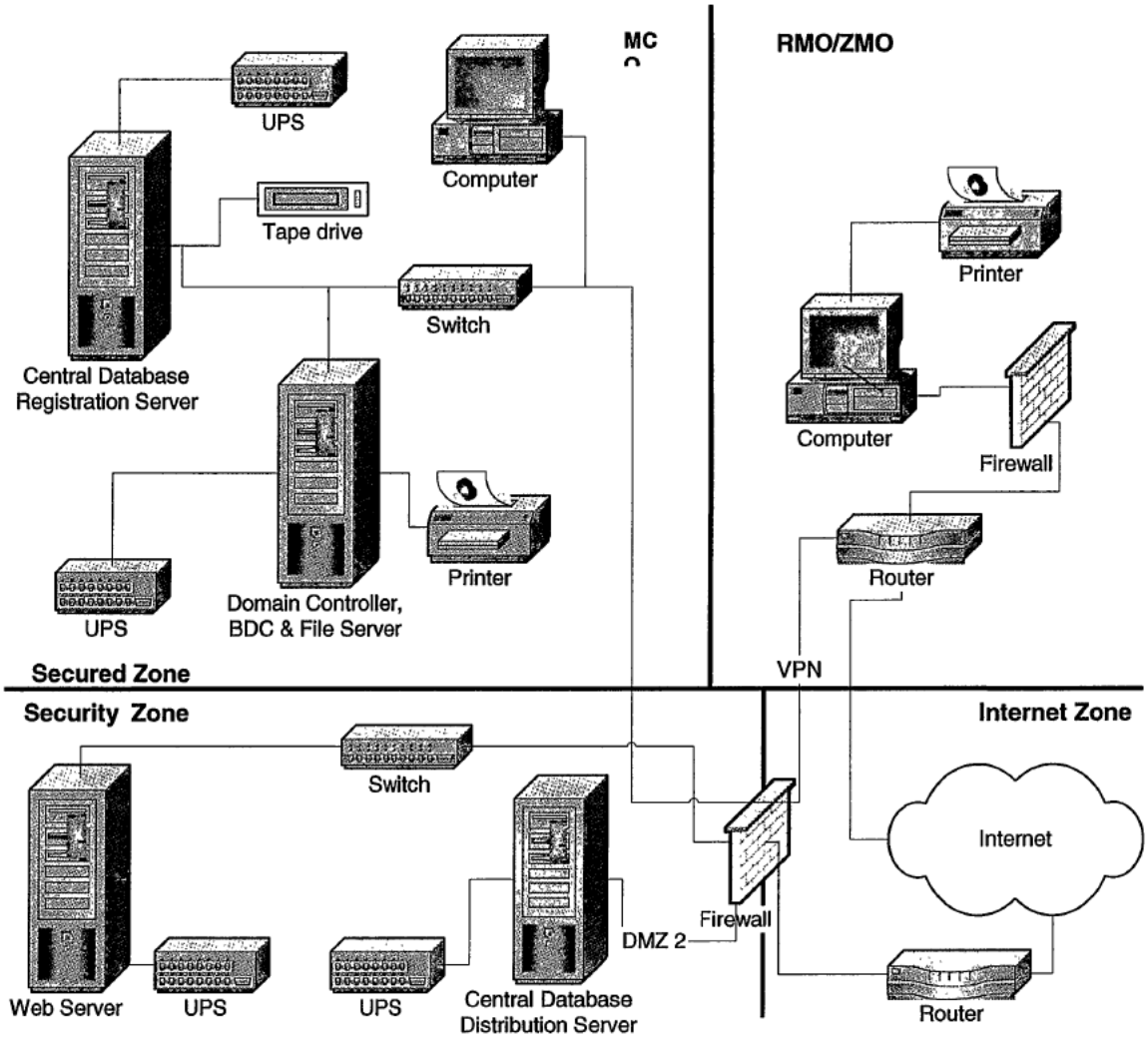


Figure III - 7. Configuration C

Hardware - Configuration C

In Configuration C, 4 servers are defined. There are three server types, with operation split into several servers. The allocated servers of Configuration C optimise connectivity with RMO/ZMO, administration, security and maintenance.

Table III- 8

Hardware	*Quantity*
LU equipment	
S.1: Domain Controller, File & BDC Server	1
S.2: (Central) Database Distribution	1
S.2: (Central) Database Registration Server	1
S.3: Web Server	1
Personal Computers	12
Printer	5
Plotter	1
Router	1
UPS	12
Modem	2
Switch	2
Firewall	1
RMO/ZMO (26) equipment	26
Personal Computer	26
Printer	26
Router	26
Firewall	26

Software - Configuration C

Table III - 9

Standard Software	*Quantity*
LU	
Windows Server 2000 English with 9 (4 servers + 5 clients) pcs. CAL	12
MS SQL Server 2000 Std. Ed. English with 9 (4 servers + 5 clients) pcs. CAL	12
Microsoft Internet Information Server	1
Microsoft Office 2000 Professional	16
Antivirus software	16
Remote control software	1
RMO/ZMO (26)	
Microsoft Office 2000 Professional	26
Antivirus software	26
Remote control software (pc Anywhere) 26 * 2	52

2.5.3 System outline

General design

The purpose of the MCIMS is to store all information about mining licenses in one location, being the Central Database, where the history of changes will also be kept, and could be traced. In other words, the Central Database will contain information concerning Mining License applications and Licenses granted, as well as historical data concerning cancelled licenses. The MCIMS will in the meantime provide the possibility for distributing the data to the public.

The Registration System will be divided into two systems:

1. RMO/ZMO –where applications are submitted to and from ZMO/RMO where data are "entered" or emailed. The RMO/ZMO will not have direct access to the database but will email applications or use Internet for their processing. The system configuration at the RMO/ZMO is kept as simple as possible, communication is using a HUB then the data is accessed from the Central Server.
2. Central Server – is the central part of MCIMS, which stores all registered information, journals and logs.

The network should be based on a Wide Area Network (WAN) migrating to a Local Area Network (LAN) over the next five to ten years, so to take into consideration expected developments in network connectivity in Tanzania.

Data storage

The Databases system is described in Figure III-2. Five Databases are defined, with data storage located in RMO/ZMO to support recording of working documents:

- Journal Database – information about reception of application forms, their type, status and date/time of submission. This database records all entry documents.
- Database of Mining Cadastre – storage of all licenses. This database stores in-formation about licenses.
- Replications Database– database used to replicate data accessible for the RMO/ZMO or on the Internet for the public.
- Refusal Archive/database – an archive database for all rejected licenses.
- Discharge Archive/database – an archive database for all discharged licenses.

System access

Entries to the MCIMS are coming from two sources:

1. RMO/ZMO

- Clerical Staff responsible for:
  Entering data from the application form
  Correcting the information previously entered
- Officers responsible for:
  Control data entry
  Perform crosscheck of the documents
  Adding to the Journal Database (Application Forms Procedures)

Make decisions

2. MCO is responsible for:

- Updating the Journal and Mining Cadastre Database
- Maintenance of hardware, basic software and MCIMS-specific software in the RMO/ZMO and at MCO
- Monitoring the process and access to MCIMS
- Backup
- Supporting users of the distribution system – the RMO/ZMO and the public.

2.5.4 System architecture

The servers have to handle the following functions:

- Domain Controller
- File & Data Base Control (DBC)
- Central Database Distribution and Registration Server
- Central Database

It is recommended that MCO have more than one server. The data-flow would be limited, but the operations manifold.

Choice of configuration

The three configurations described above give an indication of the technical ranges of products and complexities that can be involved in systems for purposes like a MCIMS. The configurations suggested could be used for many different types of databases and similar systems, and is not in any way special because of the intended use in this context. In many ways the configuration of hardware and software does not have a direct relationship with the strategy: several different strategies could be served by the same configuration.

Ideally, the hardware and software involved must function as an almost neutral background and basis for the functions of the MCIMS, so that the resources can be spend on the MCIMS and the goals desired to be reached by this system. However, in reality this is almost never possible. Most organisations find that they have to spend not insignificant resources on simply keeping the basic system running. Therefore it is important to take into account the actual situation of the organisation and the state of computer knowledge. Often it will be necessary to strike a bargain between how complex a system one should try to keep running and the actual benefit created for the key problems, which the system is supposed to solve. In other words, trying to keep a too complicated system running may result in using all available resources to make the platforms operational without getting the results that will convince everybody that the development is moving in the right direction.

Irrespectively of choice of platform, this means for the delivery of goods and products that it is very important to get a turnkey system delivered, ready to run with the desired functions and capabilities by MEM personnel that have been trained well. All of these aspects must be involved in the delivery. This is the reasoning behind the tender material described later in the report.

Configuration A would probably be quite suitable from a training and continuity point of view. It is almost only a modification and strengthening of the present situation in LU and would therefore be easy to absorb for the personnel, but probably it is not sufficient to give possibility for the necessary development. The Consultants feel it is not ambitious enough in that the zonal offices will not be helped much by this configuration. If one envisages a good, constructive development of IT and MCIMS skills in the group, it would very soon be necessary to make another leap in technology to include the zonal offices in the development.

Configuration C is up to high international standard of many similar systems in the world. It holds the possibility for a very professional system, with superior security and functionality, provided the personnel handling the system is very skilled, dedicated and knowledgeable. If the situation is less stable – and that includes power – or if the personnel do not possess the in-depth understanding required, there would be a risk of frequent system failures, break-down of equipment and databases. Probably this configuration will make it necessary to employ very skilled IT system experts, or alternatively let an external company carry the responsibility of system maintenance.

The Consultants recommend starting the development by using a system as in Configuration B. This system is fully op to par with many similar database systems, and can be run professionally from the beginning. Much training is needed, or new personnel will have to be assigned, but this configuration can gradually become an even more professional system (equal to configuration C) at the rate that the development in training and routine realistically allow. The Consultants would like to emphasise that this probably would be the safest course to steer for most organisations embarking upon a development where a very significant part of the organisation's responsibilities will be totally dependant on a functioning, fail-safe system of computers. System capabilities and functions must be developed in harmony with people skills.

The recommended choice of Configuration B will also ensure the involvement of zonal offices via Internet. The Consultants recommend starting with the central facility and developing this to a sufficiently professional level and then as quickly as it is realistically possible extend the new technology to first selected zonal offices and later to all zonal offices.

The software recommendations will fit this development, starting reasonably simple and upgrading to progressively more powerful software at the rate that the training and a realistic view of the capabilities allow.

Functionalities

The functionalities must follow the defined processes in 7.2. The computer operations concern:

For PML/PPL applications the following procedure applies:

1. All applicants for a PML/PPL have to fill a standard "Application Form" in ZMO or MCO. The acceptability of the PML / PPL application is verified in the ZMO (nationality, completely filled form, eligibility) before registering the entry in the computer and delivering a receipt to the applicant.

2. The form and the co-ordinates are then entered in the online MCIMS by the ZMO in chronological order of registration of applications. After the technical control of the form data, ZMO uses MCIMS to check online the co-ordinates and verify that the area requested by the applicant is available.
3. If the area is partly of fully the computer (existing Licenses to be extracted) calculates unavailable, corrective co-ordinates. The new total area cannot exceed the total area of the application. A document is printed out with approved co-ordinates (as required if available or adjusted) to be delivered to and signed (approved) by the applicant. If the applicant will change the limits, he must apply again with new date, time and co-ordinates. ZMO can assist the applicant using MCIMS.
4. When the applicant signs the extract with co-ordinates, it is registered in MCIMS as an "approved by the applicant" application.
5. MCO is informed of the validity of the application and the Head of MCO controls (conflict of interest, eligibility), then confirms using MCIMS (final acceptance). ZMO is informed online. The final License is printed out in ZMO comprising the necessary information on the applicant, application, complete co-ordinates of the limits, information on existing Licenses included into the area.
6. The License is signed by ZMO Head of the office and delivered to the Applicant.

For PL /ML applications the following procedure applies:

1. All applicants for a Mineral Right have to fill in a standard "Application Form" in MCO. MCO fills in the Data Entry Form. The acceptability of the PL/ML application is verified in the MCO (all documents provided, completely filled form) before registering the entry in the computer and delivering a receipt to the applicant.
2. The form and the co-ordinates are then entered in the online MCIMS by the MCO.in chronological order. After the technical control of the form data, MCO uses MCIMS to check the co-ordinates and verify that the area requested by the applicant is vacant.
3. In the event the area is partly or entirely unavailable the computer propose corrective co-ordinates (existing licenses to be extracted). The new total area cannot exceed the total area of the application. A document is printed out with approved co-ordinates (as required if available or adjusted).
4. The application is studied in accordance with the Act and Regulations, including payment of fees. If necessary, the Application Section may ask for an independent body to provide advise on environmental, safety or technical matters. The Application Section signs two copies of a checklist and proposes recommendations. The complete application with reports is going to the Head of MCO for decision.
5. The Head of MCO decides on the action (refused, accepted, additional information requested), signs the checklist documents and the application returns to the Application Section for processing.
6. If the application is accepted or refused, it is registered in the MCIMS. The resulting letter is printed out. The draft License is printed out with necessary information on the applicant, application, and complete co-ordinates of the limits, with co-ordinates of existing Licenses included into the area. A chronological License number is created.
7. In case of additional information request, the Application Section complete the information, inquiring the applicant if necessary.
8. The Head of MCO signs the documents produced by MCIMS with one signed checklist. The application is send to the Archive with the reference number of the License written on the heading page.
9. The applicant is informed to pay the fees and to collect his License.

Renewals, management of expiry and cancelling licenses are following a process with the same principles. The MCIMS checks the dates of validity, informs MCO/ZMO in advance, update the graphic information if necessary.

MCO and ZMO are online using full resources of MCIMS for public service. Reception and acceptation of reports are registered in MCIMS.

Computerised functions:

- Entry of the application (ZMO for PPL, PML, MCO for ML, PL). Registration of the date and time. Production of a receipt.
- Entry and control of the application form. Control of the chronological order.
- Graphical control of the co-ordinates (ZMO or MCO). Control of chronological order. Checking whether the area is vacant. Calculation of new co-ordinates, production of a proposal for the applicant.
- Registration of the decision in MCIMS (refused, accepted). Updating the status of the area covered by the application.
- Printing letter to the applicant.
- Printing the License with complete co-ordinates.
- Registration of the License number.
- Permanent control of the dates of validity of license, printing status report.

Other functionalities should be envisaged:

- Journal.
- Registration of transfer of holder of a License right
- Registration of fees.
- Cancelling a License, partly or fully and updating the status of the vacant land.
- Changes incurred in the original registered license.
- Discharge or termination of previous registered licensees' rights

Data query

MCIMS should allow the users to quickly query the database for relevant information on licenses. The querying would be done in both The Journal and Mining Cadastre Database:

- Finding licenses and documents by License Number
- Finding licenses and documents by Address
- Finding licenses and documents by Journal Number
- Finding licenses and documents by Owner
- Finding licenses and documents by Co-ordinates
- Finding discharged licenses and documents in The Discharge Database by Discharge Number

All results of the query are printed using the Report Application.

Printing functions

- Journalising certificates
- Receipt of acceptance or refusal
- Registration certificates
- Certificate of refusal
- Certificate of registered rights
- Certificate of discharge and termination
- Statistics

All documents should be kept in a special archive and all information should be moved from the Journal and Mining Cadastre Database to the Discharge Database.

2.5.5 Other requirements

Communication

Vast problems with communication might hamper or impede any development and the Resident and Zonal Mines Offices might be deprived of the present development trend in Tanzania. One way to solve the communication problems in Tanzania could be to adopt a direct line of communication between head and field offices by way of telephone lines or Radio communication. A HTML/ASP based user interface could then be adopted and field officers could report directly to the head office or even enter data directly in the database. The latter is not recommended at the present stage due to inadequate communication and registration procedures.

Security issues

The security of the system comprises:

- Access control (each user of the system should be registered and can only access the system by using username and password)
- Rights and restrictions for users (definition of rights and restriction for database users)
- System backups (database backups should be done daily and stored in a different place)
- Recovery procedures (description of procedures should be performed for database recovery after failure)
- Virus checking (software for virus checking, rules of use of internet and computers)
- Electric power supply (stable electric power supply, alternative power sources)
- Fire protection (fire alarm and automatic fire extinguisher system)
- Working place and server room physical security (access control and physical security for The RMO/ZMO and servers at MCO)

Security of MCIMS shall apply for servers, database, network, client workstations and registration system. No data entered shall be lost due to any system failure. All changes done by registration shall be tracked.

Database security
If database problems occur, the user should receive error messages sent by the application module. User should be prompted for further actions.

Only authorised users or MCIMS application programs shall be allowed to perform operations on the database. Users shall only be allowed to access database through stored procedures. Structured Query Language (SQL) shall be used for data manipulation. No other SQL applications, except applications designed for MCIMS, shall be used on the client workstations.

Computer security
Computer security shall include start-up password and power reset switch cover. Working places and server room should be physically safe.

Network security
The wide area network (WAN) of MCIMS between The RMO/ZMO and MCO will be part of the telecommunication company network and shall be protected by a firewall. A support agreement between MCO and the telecommunication company should be entered guaranteeing line connections, speed and traffic optimisation, virus protection, and response and repair time in case of WAN failure.

Even if the WAN connection breaks down, only part of the system functionality should be disabled. Some of the functionality of the system should remain so that the user can save work in a temporary log. If a network connection breaks down during saving of operation, all operations should be undone until last successful saving.

Availability and maintenance
The registration system should be available 9 hours a day, 5 days a week while the distribution system should be available 24 hours a day, 7 days a week.

The system should be designed and developed to ease maintenance and to allow for further development and extensions to be incorporated. All MCIMS-specific data (like list of districts, etc.) should be stored as parameters, thus being modifiable without causing recompilation or changes to the system.

The system shall include online help for all users. Users should not require the use of a hardcopy manual to use the system.

System response time is the ability to handle user activities:

- **Client workstation start-up time** depends on the configuration of the workstation, but should not exceed 5 minutes.
- **Log-on time** depends on network and server speed and duty, but it should not exceed 2 minutes.

2.5.6 Software

Database

The central database servers shall store all information that is entered in the next 5 years. After 5 years it's recommended to migrate data to other database server software. In general Access is used in an office environment with few (max 10) persons using the database. Connectivity to ZMO can be difficult if ZMO use permanently the access to the database. In this case a SQL Server solution is recommended.

The GIS software is also depending on the configuration selected. MapInfo Runtime is recommended for configurations A and B, MapInfo Professional or MapX for B and C. The difference between MapInfo Runtime and Professional is the complexity of operations that can be performed and a superior functionality in MapInfo Professional. MapX allows professional, advanced Internet functionalities and should be used if it's decided to have the database available to the public as well as to ZMO.

MapInfo handles GIS operations as a component to Microsoft Database Software and is found to be the easiest software to be implemented. Other relevant standard software is ARC software, ARCView or ARCGIS with somewhat similar functionalities.

Database system

The database systems can be divided into the simple desktop DB and the more sophisticated relational/object relational database systems. DB systems could be MS Access, MS SQL Server and Oracle. Both Oracle and MS SQL Server spatial (GIS) provide many additional functions increasing complexity and extending the use of geographical data management. Oracle is a well-known database, and widespread in huge organisations, but pre-assumes much training and recruiting of Oracle specialists to operate the system. It is recommended not to use Oracle, which proposes complex functions not need for the Mining Cadastre in the near future. Access and MS SQL Server are considered to be the most suitable systems, because of the lower complexity, ease-of-use and cost.

MS Access is a desktop database, and should be used for no more than 15 persons at a time. The database should be used on high-speed network connections (LAN – Local Area Network). It is not suitable for use over low speed network connections (WAN – Wide Area Network). With this in mind, MS Access is suitable for use in an office environment, not for use in a geographically widespread organisation. MS Access has no built in backup, which must be developed specifically. No special technical skills are required to manage an MS Access database system. It is fairly easy to move an application build on MS Access onto an MS SQL Server environment.

MS SQL Server is a server-based database system. It can be used in systems with network connections over WAN's (Wide Area Networks). It can therefore be used in organisations with geographically widespread offices. A certain amount of technical knowledge is required to manage an MS SQL Server database. Backup utility is built-in and several tools to manage the database are available.

Either MS SQL Server or MS Access should be used depending on the functionality required. For central registration functions, MS Access can be selected. If the distribution system expands, it could be moved to an MS SQL Server platform. MS SQL Server allows connections over WAN's and has very good backup facilities. MS Access is recommended in Configurations A and B while MS SQL Server is recommended in Configurations B and C.

A suitable strategy would be to implement MS Access and get the system up and running, which probable would take several years. In the meantime the ZMO would become online as the cables in Tanzania are laid down. Then the database could migrate to MS SQL Server, including public access to the database.

GIS technology

The suited GIS technology depends on the number of GIS operations, data and maps. The present functionalities needed are verification of ownership, overlapping licenses and simple querying for reports.

It is recommended to start with MapInfo Runtime/Professional and Access Database to move later to SQL Server with MapX when new functionalities are developed, and the users in MEM have become proficient in the use of the programmes.

MapInfo Runtime is a complete MapInfo Professional without user interface. With MapInfo Runtime a developer can make use of all the well-known functionality of MapInfo Professional. The user interface gives the user the only access to the functionality needed for the geographical part of MCIMS. A MapInfo Runtime application has to be developed in the MapInfo MapBasic development language, which is an integrated part of MapInfo Professional and Runtime. Easy-to-use entry forms can be developed in MS Access VBA or Visual Basic.

MapInfo Professional is a full-blown desktop GIS-system. With the use of the development language MapBasic a system developer can learn the functionality of MapInfo Professional. The geographical part of The MCIMS can be developed using MapInfo Professional. In case of future necessities of developing other GIS related task, MapInfo Professional is relevant, but induce a comprehensive training and education plan. The Entry forms can be developed in MS Access VBA or Visual Basic.

MapInfo MapX is an ActiveX component that can be implemented directly into any application on the Microsoft platform. The programming language is Visual Basic, Visual C++, Delfi or any other programming language supporting the ActiveX technology. With MapX a developer can make use of the powerful and well-known functionality of MapInfo Professional. MapX is able to connect to both MS Access and MS SQL Server (and other well-known database systems such as Oracle and DB2). MapX makes data available at the Internet and allow graphic extensions.

With MapX a total integrated Mining Cadastre Information system can be developed. Both entry forms and the license verification can be developed within the same environment/ application, giving the user an experience of a more complete system. The user interface is completely within the standards of Microsoft Windows and thereby minimises the need. If the application, over time, is to be used in a

geographically widespread organisation the use of MapX offers the best alternative in regard to the total cost of ownership and stability of the system.

2.6 Component 6 – Institutional strengthening and training programs

A clear need to strengthen the capabilities of the organisation has been identified during the Project. Thus it has been observed that training in general administrative principles and training in computer skills as well as more specifically training in Mining Cadastre administration is urgently needed.

The main objective of the proposed Training Plan is assure an efficient organisation possessing the adequate qualifications for running all aspects with regard to a Mining Cadastre Office. The Training Plan considers both the immediate and short term demands as well as more long term requirements.

2.6.1 Institutional strengthening

The recommended training courses are detailed in Chapter 2.6.2, but a summary of the recommended training courses is given in Table III- 10. Planning of the training courses should consider the timing of the Verification Plan, ensuring that the staffs involved in this phase are all given the necessary skills in advance of the project. Training of the staff involved in this phase should therefore be organised as a pilot training course, enabling also adjustments of the overall training plan components to be made.

Table III - 10. *Training Plan overview.*

Course	***Content***	***Participant***
BCT 1	Basic Computer Training	Only one level for all participants
DB 1	MS Access and MRI	Managers/Head of Sub-Section Professionals
DB 2	MS Access and MRI	Technicians
MI 1	MapInfo	Managers/Head of Sub-Section
MI 2	MapInfo	Professionals Technicians
MCIMS 1	Mining Cadastre Information Management System	Managers/ Head of Sub-Section
MCIMS 2	Mining Cadastre Information Management System	Professionals Technicians
MCO 1	Mining Cadastre Office – working principles and routines	Managers/Head of Sub-Section
MCO 2	Mining Cadastre Office – working principles and routines	Professionals Technicians
MCO3	Mining Cadastre Office – working principles and routines	Secretaries
BM 1	Basic Management	Managers/Heads of Sub-Section

2.6.2 Training programs

The training needs are specific for the individual groups of staff and training programs must be designed considering training background, skills and needs for the specific group.

In order to ensure a robust set-up and managerial flexibility it is recommended to train a broad part of the employees, employed in both the Mine Section and the Mineral Development Section.

For the short-term training the numbers of participants for the courses are based on the current staff capacity in the Minerals Division. However, it appears that only the secretaries allocated to the Commissioner for Minerals currently support secretary functions. It is however recommended that potential secretaries allocated to the proposed Mining Cadastre Office be trained accordingly with Table III-13.

The functions of the Zonal Mines Officers and Resident Mines Officers combine both management and professional skills, and therefore such staff is grouped with the Head of Sub-Sections.

The technicians involved possess highly diversified skills, training background and duties. It is recommended to establish a Training Program for the level of technicians. In the event a technician undertakes tasks similar to the professionals, it should be considered to group such a technician with the professionals. It is important to provide basic training also to the group of secretaries to ensure that the concept of the MCIMS is appreciated throughout in the organisation and also to provide specific skills to undertake their duties.

Table III - 11. *Proposed courses and numbers of participants for training courses for Assistant Commissioners and Heads of Sub-Sections*

		Basic Management	Basic Computer Training	Access and MRI	MapInfo	MCO administration principles	MCIMS
		BM 1	BCT 1	DB 1	MI 1	MCO 1	MCIMS 1
Mineral Development Section	Assist. Comm.	1				1	1
	Head LU	1		1	1	1	1
	Head Legal and Fiscal	1		1		1	1
	Head Prom. & Stat.	1		1		1	1
Mines Section	Assist. Comm.	1				1	
	Inspect. Mines	1		1		1	
	Head Co-ordination	1		1		1	
	Head Explosives	1		1		1	
	Head Environmental	1		1		1	
	ZMO	8		8	8	8	8
	RMO	14		14	14	14	14
	Total	31	Not known	29	23	31	26

Table III - 12. *Proposed courses and numbers of participants for training courses for professionals (exclusive the Head of Sub-Section).*

		Basic Management	Basic Computer Training	Access and MRI	MapInfo	MCO administration principles	MCIMS
		BM 1	BST 1	DB 2	MI 2	MCO 2	MCIMS 2
Mineral Development Section	Licensing Unit	-	?	2	2	2	2
	Legal & Fiscal	-	?	-	-	1	1
	Promotion & Statistics	-	?	2	-	2	2
Mines Section	Inspection of Mines	-	?	1	-	-	-
	Co-ordination	-	?	2	-	-	-
	Explosives	-	?	1	-	-	-
	Environment Management	-	?	1	-	-	-
	ZMO	-	?	5	5	5	5
	RMO	-	?	5	5	5	5
	Total	-	Not known	19	12	15	15

Table III - 13. *Proposed training courses for secretaries*

		Basic Management	Basic Computer Training	Access and MRI	MapInfo	MCO administration principles	MCIMS
		BM 1	BCT 1	DB 3	MI 3	MCO 3	MCIMS 3
Mineral Development Section	Licensing Unit		√			√	
	Legal & Fiscal		√			√	
	Promotion & Statistics		√			√	
Mines Section	Inspection of Mines		√			√	
	Co-ordination		√			√	
	Explosives		√			√	
	Environt Management		√			√	
	ZMO		√			√	
	RMO		√			√	
	Total		Not known			Not known	

2.6.3 Training program

Goals and activities

For designing the appropriate Training Plan it is essential to focus on strengths and weaknesses in relation to the ability to operate a MRI/MCIMS.

The overall goal is to train the staff involved in administration of the Mining Act the appropriate know-how to undertake the duties in compliance with the best international standards.

The Training Programme, aimed for the Verification Plan Special Task force - should be completed prior to the initiation of the Verification Plan.

The Training Programme must be developed according to (i) a needs-based approach as well as (ii) a systematic approach with regard to planning, co-ordination, implementation, and evaluation of the training.

The Training Program should be tailor made to provide specific skills to the four different groups of staff Managers, Professionals, Technicians, and Secretaries/Clerks. In addition to these groups it is recommended to select about ten individuals from the level of Professionals and Technicians, for further specialist – super user – training. The aim of 'super-users' is to ensure the in-house special knowledge for solving immediate problems and to undertake in-house training of new staff. Moreover the 'super-users' shall be trained to undertake maintenance of the MCIMS and the MRI. The super-user candidates may be selected during the training program.

The training courses outlined below are considered to be part of the short-term capacity building program. A long-term – on-the-job-training - should be considered as well.

The training courses

The design of the Training Programme should specifically take into account the following topics, which should be levelled according to each of the four groups of staff:

- The role and responsibilities of the Mining Cadastre Office (MCO)
- General Mining Cadastre procedures and routines
- General working principles of the MRI and MCIMS
- Upgrading computer skills (MS Word; MS Access; MS Excel; MapInfo)
- Procedures and routines for liasing between MCO and government stakeholders
- MCO as a service provider.

As a consequence the following courses are recommended:

1. Basic Computer Training
2. MS Access and MRI
3. MapInfo
4. Mining Cadastre Office Management – procedures and routines
5. General working principles of the MCIMS
6. Basic Management

Basic computer training
The Basic Computer Training Course is aiming at providing knowledge in Windows and Microsoft Office. It is recommended that all MCO staff from managers to secretaries should have qualifications not less than this. Participants attending the MCIMS courses should have qualifications equivalent to this course.

MS Access and MRI
The Access and Mineral Rights Inventory Course is aiming at giving the participants the basic understanding of the principles and functionalities in the MS Access being the fundamentals for the Mineral Rights Inventory, and hence to train the use of MRI such as data-registration, back-up, data validation and out-put.

MapInfo
The MapInfo Training Course provides the basic functionalities MapInfo, the specific functionalities in relation to MCIMS and MRI, checking of overlaps and out-put.

General working principles of the MCIMS
The MCIMS Training Course shall provide the participants the overall understanding of the MCIMS, and shall enable the participant to operate the various parts of the system. The training shall encompass such elements as the operator duties, data safety, querying and report generation.

Mining Cadastre Office management – procedures and routines
The Mining Cadastre Office Management Course shall enable the participants to achieve an overall understanding of the procedures and the routines to be applied in a modern mining cadastre system, by providing the basic principles of the Mining Act and the Regulations, the routines and procedures to be followed from registration of the application, granting of mineral right to the follow-up routines on licenses. Moreover the Course shall enable the participants to undertake all procedures involved in registration of applications, payment of fees, filing of confidential material, correspondence with clients and stakeholders, and general clients service.

Basic Management Course
It is recommended to train all Head of Sub-Sections in basic management, encompassing such elements as budgeting and planning of work, follow-up procedures, coaching and motivation.

2.6.4 Organisation of the courses

Based on the Table III-14 and III-15 it is assessed that the capacity training should be organised as 11 different courses training the six topics. The Programmes are detailed in Annex L.

Table III - 14. *Overview of the training courses and levels*

Course	Content	Participant
BCT 1	Basic Computer Training	Only one level for all participants
DB 1	MS Access and MRI	Managers/Head of Sub-Section Professionals
DB 2	MS Access and MRI	Technicians
MI 1	MapInfo	Managers/Head of Sub-Section
MI 2	MapInfo	Professionals Technicians
MCIMS 1	Mining Cadastre Information Management System	Managers/ Head of Sub-Section
MCIMS 2	Mining Cadastre Information Management System	Professionals Technicians
MCO 1	Mining Cadastre Office – working principles and routines	Managers/Head of Sub-Section
MCO 2	Mining Cadastre Office – working principles and routines	Professionals Technicians
MCO3	Mining Cadastre Office – working principles and routines	Secretaries
BM 1	Basic Management	Managers/Heads of Sub-Section

It is necessary to decide at a later stage, when the accurate number of trainees is defined, how to many times the actual course should be held to cope with the numbers of participants.

2.6.5 Implementation

The total days for the courses are calculated, and detailed in table III-15.

Table III - 15. *Calculations of days for the proposed training program*

Course	Participants	Estim. courses	Unit days	Total days
BST 1	30	3	6	18
DB1	30	3	3	9
DB 2	20	2	6	12
MI 1	23	2	1	2
MI 2	12	2	6	12
MCIMS 1	26	3	3	9
MCIMS 2	15	2	6	12
MCO 1	30	3	2	6

MCO 2	15	2	4	8
MCO 3	10	1	3	3
BM 1	30	3	6	18
Total days				**109**

The courses MCIMS and MCO are not of-the-shelf courses since each course must be related to MCIMS and mining cadastre related experiences in Tanzania, wherefore the cost is expected to be high.

Planning of the training courses should consider the timing of the implementation of the Verification Plan, ensuring that the key staffs to be involved in this phase are provided all the necessary skills in advance of the project. Training the key staff for the Verification Plan should therefore be organised as a pilot training course, enabling adjustments of the training plan components.

A timetable for the implementation of the training courses is provided in Chapter 3.

2.6.6 Qualifications of the training course provider

The Trainer Course Provide must posses the following qualifications,

- Experience with Training in Developing countries
- Management of Training in a large content
- Experience in the development of MCIMS
- Experience in Access and thus knowledgeable in Mineral Rights Inventory
- Experience in GIS and specialised knowledge in MapInfo
- Experience in Computer Skills

2.6.7 Study tour

With the aim to gain a comprehensive understanding of the pros and cons of some of the "modern" mining acts and mining cadastre management, it is strongly recommended to undertake a study tour to a couple of sister organisations. It is recommended to undertake a study tour to either Australia or Madagascar, each of them representing new principles for the mineral legislation.

Western Australia: A modern mining cadastre system based on a decentralised system. The organisational set-up puts customer service and efficiency in focus.

Madagascar: A new Mining Act was enacted in 1999 and the Regulations implemented in 2000. The legal framework represents very liberal principles, such as: (1) No requirement to demonstrate technical or financial capability to qualify for a grant; (2) Licenses are freely transferable, mortgageable and may be inherited; (3) Applicant for a mining license is not required to demonstrate commercially exploitable minerals; (4) No minimum work or investment requirement; (5) Escalating area fees; and (6) Unisized grid system for all license areas.

Ghana: Additionally it is recommended to include a visit to Ghana for the following reasons:
The mining industry in Ghana has been booming over the past about twenty years – notwithstanding that the legal framework represents some of the principles now a days regarded outdated. Ghana has a vast small-scale mining industry.
Ghana is in the process of renewing the current Mining Act implemented in 1986. A visit to Ghana could provide useful information and ideas about the principles of the new legal framework for the minerals industry and about the possible implementation strategy.

Participants for the study tour should comprise, but not be limited to the task force recommended for writing the Mining Act B and the Regulations B and the external consultant.

2.7 Component 7 – Resource requirements MCO and implementation of the strategy B

2.7.1 Component 1 – Mining Act B – resource requirements and planning

The taskforce organisation and estimated duration for the implementation of Component 1 – the formulation of the new Mining Act B and corresponding Regulations B are detailed in Table III-25.

2.7.2 Component 2 – MCO and administrative practise – resource requirements and planning

Strategy B assumes an efficient open title registry based on a modern mining cadastre and computerised mineral right recording system. Moreover the Mining Act B provides for granting of mineral rights on the basis of objective criteria. Both elements are in favour of a small and efficient organisation.

In order to assess the workload of the MCO the following assumptions are made:
- Small-scale mining license applications (Division D): about 1,000 applications annually
- Prospecting License applications (Division A): About 200 applications annually
- Mining License applications (Division B): About 25 applications annually,

The above guesses are roughly equivalent to 6 licenses per working day. To accomplish this workload not less than four senior officers are required for processing the applications, supported by technicians for registrations, filing, area checking, registrations in the Mineral Rights Inventory, totalling a staff of twenty including two managers (Table III-16). In addition two contact officers are allocated to undertake clients inquiries. The staff calculations are based on the assumption that administration of MCO is undertaken elsewhere by MEM, and therefore no accountant is included.

Table III - 16. *Staffing the MCO*

Title	*Qualifications*	*Quantity*	*Duties*
Head of MCO	Geol./Mining Eng.	1	Overall responsible
Assistant Head, MCO	Geol./Mining Eng.	1	Liaison and application
Senior MCO Officer	Geol./Mining Eng.	4	process
Contact Officer	Geol./Mining Eng.	2	Application Processing
MCO Registrar	Technician	3	Clients Contact Point
Archive Officer	Technician	2	Registration
Min. Right. Reg. Officer	Technician	3	Archive/filing Mineral Rights Inventory
Secretary/Clerk	Secretary	2	Administration/photocopying
System Operators	Engineer	2	IT-system maintenance (MCO, ZMO, and RMO)

The requirements for the MCO with regard to offices are given in Table III-17. It should be noticed that the area requirements are regarded as recommendations only. However, it should be stressed that sufficient square meters and rooms are essential to ensure a convenient and efficient working process, and moreover to ensure that the restricted access to certain rooms can be fully implemented.

Table III- 17. *Facility requirements for MCO*

Title	*Quantity*	*Specifications*
Managers Office	1	No specifications
Assist. Man. Office	1	No specifications
Senior Officers Office	2	Not less than 20 sq. m; restricted access
Registering Office	1	Not less than 20 sq. m
Client Inquiries Office	1	Not less than 20 sq. m; restricted access
Secretary Office	1	Not less than 20 sq. m; air conditioned; fire-safe; restricted access
Min. Right Inventory	1	Not less than 60 sq. m; fire-safe; restricted access
Archive	2	Specifications not available.
Safety room	1	Specifications not available
IT – equipment	1	Air-conditioned, and power back-up
IT-system offices	2	No specifications

The office equipment requirements for the MCO are estimated on the basis of the anticipated workload, functions and numbers of staff, considering also the efficiency of task duties. Estimated quantities are given in Table III-18.

Table III - 18. *MCO office equipment requirements*

Item	*Quantity*	*Specifications*
PC's	15	Specification in Chapter 2.5
Min. Rights Invent Computer	2	Specification in Chapter 2.5
MS Office	15	Specifications in Chapter 2.5
Printer	4	A4 Laser Printer
Printer A3	1	Colour A3 Printer
Plotter A0	1	Colour plotter
Photocopier	1	Standard – up to A3 size
Fax machine	1	For A4 paper
Telephone landline	3	3 lines and 10 extensions
Internet connections	1	To all PC (- but not for Min. Rights Inventory)
Network		Connecting all PC in accordance with the re-commendations outlined in Chapter 2.5

In addition to the equipment mentioned in Table III-19 appropriate office furniture should be acquired.

Table III – 19. *Furniture requirements for MCO*

Item	*Quantity*	*Specifications*
Office desk	18	No specification
Office chairs	25	No specification
Shelf	18	No specification
Filing Cabinet – pending	10	Standard – with lock
files	50	Fire proof – with lock
Filing Cabinet - archive	5	Fire proof – with lock
Filing Cabinet - maps	5	Fire proof – with lock

2.7.3 Component 3 – Mineral rights database – resource requirements

The implementation and development of the mineral rights database (MRD) requires a special task force, and is included in Component 4 – Verification plan, phase F and G. When the implementation of the MRD having been completed, three Mineral Rights Registration officers undertake the daily maintenance and up-date.

2.7.4 Component 4 - Verification plan resource requirements

The status of the Mineral Rights Inventory must be rectified irrespectively of how the modernisation of the Mining Law and Regulations proceed. To achieve the overall goal of all the activities dealt with in this project, it is strongly recommended to immediately start the implementation of the Verification Plan according to the phases outlined in Chapter 2.4. The time schedule of the Verification Plan is given in Table III-26.

Table III - 20. *The phases and the estimated human resource requirements for implementing the Verification Plan.*

Phase	*Task*	*Staff requirement*	*Number*
A	Project Planning and Pilot Test	Head of MCO Assist. Head of MCO Senior MCO Officer MEM lawyer Technician External Consultant	1 1 4 1 2 1
B	Notification of the public		
C	Suspension of relevant parts of the Mining Act (no applications accepted and no applications processed	Head of MCO Assist. Head of MCO MEM lawyer External Consultant	1 1 1 1
D	Organisation of adequate set-up with regard to facilities (hard-ware, soft-ware photocopier, telephone etc), process manuals, offices, training of the officers, work-plans, archive facilities etc	Same phase as organising the MCO	
E	Meetings with all licensees and recording of data – including first step data assessments (organised Zone by Zone)	Senior MCO Officer Assist. Senior Officer Supervisor MCO Registrar Assist. MCO Registrar Archive Officer Assist. Archive Officer Min. Right Reg. Officer Assist. Min. Right. Reg.	4 11 3 3 3 2 2 3

		Officer	3
		Secretary	3
		Assist. Secretary	3
		External Consultant	1
F	Quality control of all data gathered – including overlap check	Senior MCO Officer	4
		Assist. Senior Officer	11
		Supervisor	3
		MCO Registrar	3
		Assist. MCO Registrar	3
		Archive Officer	2
		Assist. Archive Officer	2
		Min. Right Reg. Officer	3
		Assist. Min. Right. Reg. Officer	3
		Secretary	3
		Assist. Secretary	3
		External Consultant	1
G	Entry of all data to the new Mineral Rights Inventory	Min. Right Reg. Officer	3
		Assist. Min. Right. Reg. Officer	3
H	Negotiations with licensees regarding overlap	Head of MCO	1
		Assist. Head MCO	1
		Senior MCO Officer	2
I	Issuing of new License Certificates	Head of MCO	1
		Assist. Head MCO	1
		Senior MCO Officer	2

The status of the Mineral Rights Inventory must be rectified irrespectively of how the modernisation of the Mining Law and Regulations proceed. To achieve the overall goal of all the activities dealt with in this project, it is strongly recommended to immediately start the implementation of the Plan of Verification in the following phases,

A. Planning of project – inclusive pilot tests of the plan
B. Notification of the public
C. Suspension of relevant parts of the Mining Act (no applications accepted and no applications processed)
D. Organisation of adequate set-up with regard to facilities (hard-ware, soft-ware photocopier, telephone etc), process manuals, offices, training of the officers, work-plans, archive facilities etc.
E. Meetings with all licensees and harvesting of data – including first step data assessments (organised Zone by Zone)
F. Quality control of all data gathered – including overlap check

G. Entry of all data to the new Mineral Rights Inventory
H. Negotiations with licensees regarding overlap
I. Issuing of new License Certificates

The planning and execution of all these phases should be fitted to a zone-by-zone schedule, with the phases e) through i) being repeated for each zone being upgraded.

A rough time estimate for the individual phases are given in Chapter 3, indicating that planning and organising probably will amount to approximately three months, the harvesting of data about 8 months with follow-up work being undertaken partly simultaneously. It is anticipated that the implementation of the Verification Plan will take not less than 13 months, of which the Mining Act is suspended for about 12 months. This estimate is regarded to be the minimum – and assumes that all phases are working smoothly.

Since the relevant parts of the Mining Act is suspended, the LU and ZMO/RMO may have the resources to man the project, provided adequate trained has been undertaken in advance.

If it is assumed that a total of about 4,000 license holders will comply with the notice, about five parallel offices should be established for the 8 months period, each of which are expected to handle up to 100 licenses per office per month. Each office should be manned with not less than three professionals and two technicians and secretaries. In addition about 3 supervisors and a number of controllers should also be added for phase E.

Moreover each office should be fully equipped with PC, printer, photocopier, telephone, and file cabinets for day-to-day filing of photocopies, receipts and Hard Copy Data Entry Forms.

2.7.5 Component 7 – MCO financial resource requirements

Table III-21: *Estimated annual salary budget – MCO, for Strategy B.*

Staff	***Number***	***Annual Salary USD/year***
Head of MCO	*1*	*15,000*
Assist. Head of MCO	*1*	*10,800*
Senior MCO Officer	*4*	*33,600*
Contact Officer	*2*	*25,200*
MCO Registrar	*3*	*18,000*
Archive Officer	*2*	*12,000*
Min. rights registration Officer	*3*	*18,000*
Secretary/clerks	*2*	*9,600*
System Operators	*2*	*16,800*
Total	***20***	***159,000***

Table III-22: *Estimated annual salary budget – ZMO/RMO, for Strategy B.*

Staff	***Number***	***Annual Salary USD/year***
Head of office	*22*	*237,600*
Mining engineer	*18*	*151,200*
Geologist	*18*	*151,200*
Technician	*46*	*276,000*
Secretary	*22*	*105,600*
Driver	*23*	*82,800*
Total	***149***	***1,004,400***

Table III-23: *Estimated running costs (excl. salaries) and capital costs for vehicles only.*

Offices	**Running cost**		**Capital costs – Vehicles**	
	Proposal by LU, 2003	*Assumption by the Consultant (Strategy B)*	Proposal by LU, 2003	*Assumption by the Consultant (Strategy B)*
	USDx1000	*USDx1000*	USD x 1000	*USDx1000*
ZMO/RMO	303,331	*300,000*	582,176	*60,000*
MCO	12,500	*100,000*	-	*750,000*
Total	**315,831**	***400,000***	**582,176**	***810,000***

3 Time schedules

3.1 Planning of the components

3.1.1 Total duration

The time schedules for the implementation of the Mining Cadastre Project is calculated in MS Project system. The estimated duration of the implementation of the Strategy Components is c. twenty-two months (Table III-24). The estimate does not take in to account any delays in the implementation phase of the Project. Tables are attached to each component detailing the estimated working days; to estimate the actual length of the project week-ends and days off must be added.

The most critical part of the plan with respect to timing is to recruit the necessary staff and organise the required training prior to the initiation of the Verification Plan.

Table III-24. *Summary table: Estimated duration for the implementation of six of the Strategy Components*

Component	***Task***	***Implementation Period***	***Approximate duration (days)***
1	Writing Mining Act B and Regulation B	01-05-2003 to 07-04-2004	245
2	New Institutional Framework - MCO	01-05-2003 to 03-09-2003	90
3	Establishing the MCIMS	04-09-2003 to 04-02-2004	110
4	New Mineral Rights Inventory encompassing the implementation of the Verification Plan	09-01-2004 to 02-03-2005	299
5	Resource Requirements	04-09-2003 to 19-01-2005	360
6	Capacity Building and Training	01-05-2003 to 15-03-2004	228
7	Human Resource /Recruitment	02-06-2003 to 03-10-2003	90
	Total duration of the project		**22 months**

3.1.2 Work planning and duration – Component 1

A special task force should be organised, with the responsibility to (Task a) undertake the planning the project with regard to timing and resources, and to (Task b) undertake the writing process of the Mining Act B and Regulations B. As given in Table III-25, Task b includes working seminars and presentations to ensure that all aspects and consequences of the Mining Act B and Regulations B are comprehensively considered. The working seminars should be empowered to direct the project.

The task force must be staffed with senior officers of MEM, some being legal experts and some having the hands on experience from the current administration. It should be considered to draw on the expertise represented among the Zonal Mines Officers and the Tanzania Geological Survey. In addition it is recommended to call on one external legal expert (preferably from the Ministry of Justice) and not less than one expatriate consultant with strong know-how of international mining laws. An Assistant Commissioner should chair the task force.

To ensure the best possible results and the effectiveness of this task force, it is recommended to allocate two rooms and appropriate facilities for the project, and to free the MEM staff members of the task force from any other duties.

Table III - 25. *Task force organisation and estimated duration of the Component 1.*

Recommended task force	Number	Period (Months)
Senior geologists/engineers from MEM	2	12
Legal experts from MEM	1	12
External legal expert	1	3
External mining law expert	1	3
Secretary	1	12

Table III - 26. *The time schedules for undertaking the revision of the legislative framework.*

Phase	*Duration (days)*
Writing draft regulations	135
Work Planning for the Act and Regulation	30
Writing Draft 0 - Act B	30
Working Seminar 1	10
Writing Draft 1 - Act B	20
Working Seminar 2	10
Presentation to the Minister	35

Writing Regulations B	40
Writing Draft 0 Regulations B	20
Working Seminar 1	5
Writing Draft 1 Regulations B	10
Working Seminar 2	5
Approval of the Mining Act B and Regulations B	70
Presentation to the Minister	10
Presentations in the Parliament	30
Approval of the Mining Act B and Regulations B	30
Duration - total	***245***

Working Seminars are included in the process to ensure that all aspects and consequences are considered. The participants in such seminars may be senior officers from MEM, including ZMO/RMO and TGS; it should additionally be considered to arrange a seminar for "the users", such as governmental stakeholders and representatives of the mining industry.

It is recommended to undertake the writing up of the Mining Act B as the first step, and await any work on the Regulations B until the Minister for Energy and Minerals has approved the principles of the Mining Act B. The subsequent work of the Regulations B follows the receipt of the act, and when approved by the Minister the Mining Act B and the Regulations B are ready for presentation to the political system. The duration of this part of the project is arbitrarily set to six month, but this estimate is of course very uncertain.

The process of writing a new simplified Mining Act B and Regulations B is estimated (Table III-25) to about 12 month. It is assumed that the Task Force is operational throughout this period, and hence that the MEM members are allocated to the project during the entire thirteen months period; however it is anticipated that the external legal expert and the external mining expert will be required for only three months.

In the timing of the entire implementation process the printing and distribution of the Mining Act B and Regulations B should be considered.

3.1.3 Work planning and duration for Component 2 – MCO and Administrative Practice

It is recommended to establish the new Mining Cadastre Office as early as possible in the process. The implementation of a new reorganised administrative practise must however await the out come of the Component 1. The duration of this process is estimated to last about nineteen days in total.

Table III-27: *Duration for the implementation of the Component 3*

Phase	*Duration (days)*
Planning phase	60
Implementation of the new structure	30
Duration	**90**

3.1.4 Work planning and duration for Component 3 – Establishment of a mineral rights database

A new mineral right database will naturally be based on the database structure developed during this project. However it is important to adjust the database structure to the outcome of Component 1 and 2. Implementation of the mineral rights inventory – applying the mineral rights database – must be organised in strict accordance with the recommendations mentioned under Component 4.

Table III-28: *Duration for the implementation of the Component 3*

Phase	*Duration (days)*
Planning phase	20
Development of the Mineral Right Database	30
Testing the database	30
Implementation of the database	30
Duration	**110**

3.1.5 Work planning and duration for Component 4 – Verification Plan

The final design and implementation of Component 4, is depending of the outcome of component 1, 2, and 3. The total duration is estimated to 280 days.

Table III-29: *Duration for the implementation of the Component 4 – Verification Plan*

Phase	*Duration (days)*
Planning phase	30
Notification of the public	60
Suspension of parts of the Mining Act	0
Organisation of the set-up	30

Data gathering	160
Quality Control	160
Entering data to the Mineral Rights Inventory	160
Negotiation with the licensees	160
Issuing new license certificates	
Duration	**280**

3.1.6 Work planning and duration for Component 5 – MCIMS

The implementation of the Mining Cadastre Information Management System (MCIMS) is depending on the outcome of the Component 1, 2 and 3. However, the design of the MCIMS also has an impact on the before mentioned components, and it is therefore recommended to arrange the planning phase at the same time as the planning phases for the Component 1, 2 and 3, to ensure the best possible solution.

Table III-30: *Implementation of Component 5*

Phase	***Duration (days)***
Planning phase	30
Tendering phase	60
Procurement phase	60
Installation and tests	180
Duration - total	**423**

3.1.7 Work planning and duration for Component 6 – IS, TP and Study Tour

The implementation principles of the training plan are detailed in Part III-2.6. The total duration for the training plan is estimated to c. 70 days. The study tours to West Australia and Madagascar are estimated to take about 10 days each; it is recommended to separate the trips by 2-3 weeks to allow adequate discussions and reporting in between.

3.1.8 Work planning and duration for Component 7 – Resources

It is important to ensure that all permanent staff for the MCO be appointed or recruited as early as possible. Additionally, the temporary staff must be recruited to undertake duties with regard to the implementation of the mineral rights inventory. It is recommended to appoint only the well motivated staff among the present staff ensuring a smooth implementation of the MCO.

Table III-31: *Duration of the recruitment phase*

Phases	***Duration (days)***
Planning	30
Advertising	30
Recruitment	30
Duration - total	**90**

4 Procurement of goods and services

4.1 Basic principles

The complete tender document (Annex O) can be proposed to donors and providers with the following comments and restrictions:

- The Technical Specifications relate to the State of the Art at the date of the submission of this Report (September 30, 2002). It is clear that due to the permanent and fast changing new computer technology, these specifications should be carefully studied when the Tender process is initiated in order to adjust the specifications to the new developments if any;
- The legal documents are those most internationally recognised, made by the World Bank and used by the majority of donors, including African Development Bank and IDA. NDF might be the main donor for the next stage and recognises officially this Tender document as valid. A detailed description of the NDF General Procurement Guideline is indicated in Chapter 2 for control.
- Slight adjustments concerning eligible firms, origin of goods or wording is put into brackets if a NDF Credit finances the future contract. The Tender is valid for all others donors.

The MCIMS (hardware, software, training) should follow the process of the "Procurement of Goods" Tender standard. The complete document is in the sub-Annex A. It should be completed by some information, written in Italics (dates, addresses, and special requirements) at the time of the Tender.

Furniture, photocopiers, small-size equipment: should use the "local shopping" process should be applied.

Training: For an important service, the "Sample contract for Consulting Services, small Assignments, lump sum payments" is proposed in Annex.

4.2 Procurement strategy

There are three types of procurement:

- MCIMS including hardware, software, development and related users' training;
- Equipment, furniture, locally provided.
- Institutional Strengthening, training, study tour;

It is recommended to prepare one Tender document for the whole MCIMS, not to divide into hardware / software or training, that create unmanageable risks of inconsistency, delay due to co-ordination issues and finally costly solution. The procurement process is a "procurement of Goods" standard Tender. The development and service to be provided is considered as a minor component in term of costs. The evaluation process should however take into consideration the quality of the service. It is proposed to

evaluate the less expensive proposal (as required in the guidelines), with an "evaluated cost" adjusted to take into consideration the quality of the service (for example 10% for the training proposal, 20% for the methodology). The Bidder should then provide detailed proposal for the organisation of the training and for the methodology of development of the MCIMS functionalities.

It is recommended to use local shopping for providing necessary equipment in domestic shops. This process induces a selection of the less expensive of minimum three quotations. This should be done with national budget, managed by the Project staff and well documented. It is recommended to order a complete set of equipment by step. The best solution should be to fully equip MCO at the first stage, then one or two ZMO, operating as a pilot installation to identify difficulties, then all others ZMOs in two or three stages. This procurement process can be implemented in two years.

It is recommended that a Service contract is signed with an International Company specialised in Mining, prospecting and training. This contract should use a Quality-Cost Evaluation Method, with 80% weight for the quality, then 20% for the cost. The quality, which is a priority issue, could be evaluated based on criteria provided to the Bidders. It is proposed that evaluation criteria could be: CV of trainers 60% (with 30% to the Team Leader), Training organisation and methodology 40%. The trainers should include specialists of all disciplines required by the training. A contract for "Consulting Services, small Assignments, Lump sum payments" should be selected to simplify the contract monitoring and give flexibility to the assignment of experts.

It is recommended that domestic training in IT software, systems or basic knowledge is organised by the Service Contract team leader using and evaluating domestic companies base on Local Shopping processes.

4.3 Prospective suppliers

It is assumed that the continuation of the Project is financed by NDF. The prospective suppliers are then restricted to Nordic suppliers.

Two short-lists are defined:

Goods for the IT-system (MCIMS): Suppliers are selected within companies with international experience in implementing IT advanced systems with network, Databases and GIS. An experience in cadastre is required.

Service for the Monitoring of the Project and Institutional Strengthening, Contractors are selected between companies with comprehensive experience with respect to mineral exploration, mining, mineral rights administrative systems, and capacity building is required.

MCIMS
The Nordic companies are:

Denmark: COWI
Parallelvej 2, DK-2800 Lyngby, Denmark

Rambøll
Bredevej 2, DK-2830 Virum, Denmark

Finland: FM International OY
P.O. Box 14, FIN-00511 Helsinki, Finland

Iceland: TrackWell Software
Sudurlandsbraut 24, IS-108 Reykavik, Iceland

HNIT Consulting Engineers
Haaleitisbraut 58-60, IS-108 Reykjavik, Iceland

Norway: Blom ASA
Høybråtenveien 13b, NO-1055 Oslo, Norway

Norconsult
Vestfjordgate 4, NO-1338 Sandvika, Norway

Sweden: Carl Bro Sverige AB
Långholmsgatan 34, Box 9611, S-11791 Stockholm

SwedeSurvey AB
SE-80182 Gävle, Sweden

Institutional Strengthening
The Nordic companies are:

Denmark: Geological Survey of Denmark and Greenland (GEUS)
Oster Voldgade 10, DK-1350 Copenhagen K, Denmark

Finland: Geological Survey of Finland (GTK)
P.O.Box 96, FIN-021251 Espoo, Finland

Norway: Geological Survey of Norway (NGU)
Leiv Eirikssons vej 39, N-7491 Trondheim, Norway

Sweden: Geological Survey of Sweden (SGU)
P.O. Box 670, S-75128 Uppsala, Sweden

5 Cost estimates

The cost is estimated based on assumptions of the necessary Technical Assistance and Training needed for the Institutional Strengthening Component, and based on quotations made to private providers having no financial interest in the Tanzania Mining Cadastre Project development.

5.1 Institutional Strengthening

The cost includes the long-term appointment of an international expert for providing service to monitor the Project, mainly at its initial stage (8 months over 2 years), short-term input on different topic (6 months international, 4 months local), a pool of available consultants at the request (4 months international, 6 months local), training related to Basic management (BM), MCO administration and processes (MCO), because specialised expertise that is not available in Tanzania. It does not include local training (IT basic software) that can be locally conducted, or MCIMS operational training that is provided by the MCIMS Contract.

The total man month is:

International 18 man months	USD 240,000 including travel and daily allowances
Local 10 man months	USD 40,000
Training, operation	USD 20,000
Total	**USD 300,000**

5.2 MCIMS

The evaluation is based on quotations made by private suppliers on the equipment FOB Dar el Salaam.
The maintenance cost induces that a local company is in charge of the guarantee and maintenance with a support of the provider when necessary. This cost is estimated at 15% of the total cost of the equipment.
The license for standard software and mainly the development of the application software must be added to the initial cost.
The installation, testing and quality control process that involved local and international companies is one of the major criteria of success and is evaluated at a fixed amount per unit installed.
Finally, the provision of Manuals, training at the central level and in ZMOs is estimated at 10% of the total cost of the equipment.

The total cost is then evaluated at

Hardware, basic software, maintenance	USD 220,000
Development software, training, manuals	USD 80,000
Total	**USD 300,000**

5.3 Total costs of the Project

The detailed costs of the MCIMS relate to a quotation based on Technical Specifications defined in the Tender Document for Goods. The Institutional Strengthening cost is evaluated based on foreign and domestic man-month allocated to these tasks in accordance with Terms of references described in the Tender Document for Service Contract.

Additional cost for furniture and local supplies and facilities, including reparations, network installation, is evaluated based on a fixed amount of 10,000USD per ZMO and 30,000 USD for MCO.

The total cost of the project is evaluated as follows (in USD):

MCIMS:		
Hardware, Basic Software	USD	220,000
Development software	USD	80,000
Institutional Strengthening including local Training	USD	300,000
Furniture, supplies, facilities (MCO and ZMO)	USD	160,000
10% margin for the total cost	USD	80,000
Total cost of the Project	**USD**	**840,000**

This cost includes the counterpart funds to be allocated in the National Budget, mainly local facilities and domestic training. The total evaluated is 180,000 or 20% of the total cost of the Project, based on local training and operation costs.

6 Tender document

Two Tender documents are prepared in Annex O. Procurement of Goods for MCIMS, Procurement of Services for Institutional Strengthening. Local training will follow Local shopping processes (quotation system) to be onitored with the TA.

The Documents are made in accordance with the international standards of the World Bank Group, which are used by NDF. General principles of NDF are described in the next paragraph 6.2.

6.1 Introductory note

Annexes include the complete Tender Document that can be proposed to Donors and Providers with the following comments and restrictions:

- The Technical Specifications relate to the State of the Art at the date of the submission of this Report (September 30, 2002). It is clear that due to the permanently and fast changing new computer technology, these specifications should be carefully studied when the Tender process is initiated in order to adjust the specifications to the new developments if any;
- The legal documents are those most internationally recognised, made by the World Bank and used by the majority of donors, including African Development Bank and IDA. NDF might be the main donor for the next stage and recognises officially this Tender document as valid. A detailed description of the NDF General Procurement Guideline is indicated in Chapter 2 for control.
- Slight adjustments concerning eligible firms, origin of goods or wording is put into brackets if a NDF Credit finances the future contract. The Tender is valid for all others donors.

The MCIMS contracting (hardware, software, training) should follow the process of the "Procurement of Goods" Tender standard. The complete document is in sub-Annex A. It should be completed by some information, written in Italics (dates, addresses, and special requirements) at the time of the Tender.

Furniture, photocopiers, and small-size equipment: the "local shopping" process should be applied.

Training: and Technical Assistance service should use the standard "Sample contract for Consulting Services, small Assignments, Lump sum payments" (sub-Annex B). It is noted that in International standards, use the term "small" mean for contracts less than 200,000 USD.

6.2 NDF general procurement guidelines

6.2.1 General

Nordic Development Fund (NDF) was established in 1989 as a multilateral development institution by the five Nordic countries (Denmark, Finland, Iceland, Norway and Sweden) to promote economic and social development in developing countries by providing concessional credits to projects of interest to the Nordic countries. NDF Credits are provided by way of co-financing, normally parallel financing, with other, primarily multilateral financial, institutions (hereinafter referred to as the Lead Agency).

The Credit Agreement governs the legal relationships between the Borrower and NDF. The present Procurement Guidelines apply to procurement of goods, as provided for in the Credit Agreement. The rights and obligations of the Borrower (or the Implementing Agency) and the providers of goods, works and services for the project are governed by the contracts signed by the Borrower (or the Implementing Agency) with the providers of goods, works and services, and not by these Procurement Guidelines or the Credit Agreement.

The general procurement principles of NDF follow internationally recognised practice, e.g. as used by the World Bank and the Regional Development Banks.

It is the policy of NDF to require that Borrowers (including beneficiaries of NDF's credits), as well as bidders/suppliers/contractors under NDF-financed contracts, observe the highest standard of ethics. To avoid corrupt- and fraudulent practises during the procurement and execution of such contracts a clause to this effect shall be included in the contracts in accordance with the procurement guidelines of the Lead Agency.

Projects should be of interest to the Nordic countries, and goods, works and services under NDF funding should mainly be sourced in competition from the Nordic countries and in accordance with these Procurement Guidelines. As appropriate, suppliers in the Borrower's country can be considered eligible.

6.2.2 Eligible bidders

In general, an eligible bidder for contracts of goods, works and services to projects under NDF funding shall be either a citizen, a permanent resident or a registered company of a Nordic country. Eligible Bidders shall be further specified in the Procurement Schedule being an integral part of the Credit Agreement.

6.2.3 Eligible goods, works and services

A substantial part of goods, works and services to be supplied under NDF funding shall be of Nordic origin. The origin of goods, works and services shall be further specified in the Procurement Schedule being an integral part of the Credit Agreement. Manufactured goods and works supplied by a registered

company in the Borrower's country with a Nordic majority ownership interest shall, in respect of these guidelines, be considered to be of Nordic origin.

By origin is meant the place where the goods are mined, grown or produced, or from which services are rendered. Goods are produced when, through manufacturing processing or substantial and major assembling of components, a commercially recognised product results that is substantially different in basic characteristics or in purpose or utility from its components.

6.2.4 Procurement of goods and works

In principle, procurement of goods and works under NDF funding shall follow internationally recognised practice, e.g. the practice used by the World Bank and the Regional Development Banks. Tenders under NDF funding are normally referred to as Nordic Competitive Bidding. Invitations for Bids under Nordic Competitive Bidding shall be distributed to all eligible bidders who have made their interest in the project known to the Borrower, and to all Nordic Embassies or Consulates in the Borrower's country. NDF will forward the Invitation for Bids to the Nordic Export Councils, branch organisations and other interested parties in the Nordic countries as agreed upon.

The tender documents shall give all relevant information for the procurement and shall clearly state the type of contract(s) to be entered into, specifications, time of delivery, terms of delivery etc. As far as possible NDF encourages Borrowers to use the standard tender documents prepared by the Lead Agency adjusted for the special requirements of eligibility of these Procurement Guidelines.

In the evaluation of bids the Borrower shall ensure that economy and efficiency in the execution of the project is secured by evaluating the qualification of bidders, by securing that the offered goods and works comply with the technical specifications, and by selecting the bid with the lowest evaluated bid price among the qualified bidders.

6.2.5 Procurement of services

The general principles for selection of Consultants follow internationally recognised practice, e.g the practice used by the World Bank and the Regional Development Banks. Normally not less than 3 and not more than 6 eligible bidders shall be invited to bid. NDF will, on request from the Borrower assist in the preparations of a short list or a long list (for further screening and short listing by the Borrower) of eligible bidders.
The Borrower shall prepare the Request for Proposal with all relevant information including terms of reference, the proposed contract, and the list of consultants to be invited to bid. NDF recommends that the standard formats of contract documents of the Lead Agency be used as far as possible. The method of evaluation shall be outlined in the letter of invitation.

In selecting consultants, the Borrower shall ensure economy and efficiency in the execution of the project. The evaluation of proposals shall follow the method of evaluation specified in the Request for

Proposal and ensure that the quality of services is satisfactory, and that the selected bidder and nominated personnel are eligible.

6.2.6 Responsibilities of the borrower

The Borrower is responsible for the procurement and shall ensure that these Procurement Guidelines form an integral part of all procurement documents used under a NDF Credit. In particular the following considerations shall be made:

(i) Tenders are only open to eligible bidders as specified in Paragraph 2 below;
(ii) Requests for Proposal and tender documents shall be reviewed and no objection given by NDF before bids is called for. Likewise, in cases of limited tenders for goods and works and in case of invitations for consultancy services, NDF shall approve the list of bidders to be invited;
(iii) The tender evaluation report shall be sent to NDF for review and no objection before award of contract. In cases where the evaluation report recommends further negotiations with the best evaluated bidder, such negotiations shall not take place before NDF has reviewed the evaluation report and NDF has agreed that such negotiations can take place. The deliberations of negotiations shall be recorded in writing and shall, together with the final conclusion, be sent to NDF for review and no objection prior to award of contract;
(iv) Negotiated contracts shall be sent to NDF for review and no objection before being signed by the Borrower; and
(v) A copy of the contract, when signed by both parties, shall be sent to NDF for information. No disbursements related to financing of a contract will be made under the NDF Credit before the executed contract is received by NDF