

White Collar Malpractices in Cadastral Surveying and Their Effects on Secure Land Tenure and Sustainable Development

Alick. R. MWANZA, Zambia

Key words: malpractices, cadastral surveying, land tenure, sustainable development, land delivery

SUMMARY

Land Delivery involves the charting of land for purposes of obtaining security to that land so as to ensure that the development thereon is protected within particular limits as guided by law. This ensures control over the developments on land to secure a sustainable environment in which the future generations are assured of an unspoilt Earth.

This then calls for a land delivery system that uses properly charted land records that are free of conflict. In short survey records that are realised after a well executed procedure by government using existing statutes.

This has not been the case in some cases and therefore this paper looks at the flaws in the system and their effects on secure tenure and sustainable development. It also recommends particular remedies to the identified flaws. It does not mention names of culprits or properties involved in the white-collar malpractices that have crept into the system. This is to protect their integrity as well as to avoid legal implications, as most of them are currently subjects of legal suits in courts of law.

This paper therefore endeavours to bring to the fore white collar malpractices that have recently crept into the land delivery process which if left unchecked would have untold effects on our much cherished environment as has been seen in the mushrooming unplanned settlements where the developers have no security of tenure at all and their activities on land are not controlled in any way.

In conclusion this paper recommends overhauling of the Land Survey Act as well as reorganising the whole cadastral survey approval system as a way of improving the cadastral survey part of the land delivery system.

White Collar Malpractices in Cadastral Surveying and Their Effects on Secure Land Tenure and Sustainable Development

Alick. R. MWANZA, Zambia

1. INTRODUCTION

Since 1992 when the world's governments realised the need to protect the environment, sustainable development was adopted as a general principle for policies and actions that had a bearing in the environment, and one cannot talk about environment without talking about land on which activities that affect the environment mostly take place.

Issues of sustainable development strongly depend on surveying, planning and management of land processes that deal with accessing and securing tenure of land. Surveying is thus a fundamental activity on one of the major components of developmental capital; land, with which Zambia as a country is well endowed. However, in recent years some malpractices have been encroaching into the professional practice of land surveying.

If the system that facilitates acquisition of secure tenure on land is flawed, the resulting security and development is unsustainable. In turn the development undertaken thereon is not secure. Hence, the developers tend to put up development that is not long term and which does not conform to environmental needs for a sustainable earth.

Land surveying is therefore deeply involved in issues of profound importance to sustainable development to improve the social situation of the poor by combating poverty through a flawless land delivery system that in turn ensures security of tenure on land for development that is sustainable.

This paper therefore looks at the current process of cadastral surveying and its approval system. Inherent flaws and their effects on secure land tenure and sustainable development are identified and feasible remedies to mitigate such effects recommended.

2. LAND HOLDING IN ZAMBIA

All land in Zambia was held under customary laws before the arrival of the white settlers. This changed with the arrival of the colonialists who wanted to hold land using the system they left at home, the British legal system (Mulolwa 2002). This brought in what was then called crown land, held either on Freehold or leasehold, and native land held under customary laws.

Today land is still administered with this dual system with crown land having changed its name to state land. In 1975, all freehold estates were converted to 99-year leases through enactment of the Land (conversion of titles) Act. Land could thus not be sold except for the improvements on it. As such land in Zambia is held on leasehold in state land and under customary laws in customary areas. However there is a provision for converting customary land into state land with the consent of the customary leaders (chiefs).

Land may also be held on a fourteen-year lease using just a sketch to generally describe the land parcel in question. This lease is normally looked at as just a facilitating tool for development as arrangements for a longer lease are being made. There is also a 30 year lease given out based on a sketch plan in resettlement schemes. A 30-year occupancy license is also given within housing improvement areas under the Housing (Statutory and Improvement Areas) Act, 1975. Occupancy licenses are given out by councils who hold a block title to such land.

The longer lease is for a period of 99 years and is only granted after an accurate survey of the land parcel has been carried out by a licensed land surveyor, hence the need for a survey diagram which is a document that accurately describes the land parcel in question which has been accepted as such in the Lands and Deeds Registry or in the office of the Surveyor General or his predecessors (Land Survey Act, 1960).

A survey diagram is one of the three cadastral plans that are part of the survey records for a particular survey of a land parcel for purposes of obtaining a certificate of title to land. It may thus be needed for the following reasons:

- a) to obtain a 99-year lease for a newly offered parcel of land.
- b) to upgrade from a 14-year lease to a 99-year lease.
- c) to obtain a separate title for a subdivision from a parent parcel of land.
- d) to replace a lost 99-year lease.

For *a*, *b*, and *c* a new survey is undertaken whereas for *d* the diagrams are compiled from the original survey and are called Certified True Copies (CTCs) as granted under section 33 of the Land Survey Act.

3. CADASTRAL SURVEYING AND ITS APPROVAL SYSTEM

Cadastral Surveying is concerned with the charting of land to accurately define its boundaries for purposes of obtaining a certificate of title to that land. In Zambia, cadastral surveying is governed by the Land Survey Act under which a Survey Control Board, which regulates the practice of Cadastral Surveying, is constituted.

The Land Survey Act restricts the practice of cadastral surveying to only licensed surveyors who are called Land Surveyors. The Surveyor General may appoint Land Surveyors in government employment as Government Surveyors. Government Surveyors are the ones who approve cadastral surveys on behalf of the Surveyor General, who is the 'Chief' Government Surveyor.

3.1 The Cadastral Survey Approval System

The survey diagram is a legal document; as such the process of approval of the survey from which it is compiled starts with the examination of the survey after the job has been lodged for approval.

3.1.1 Flow of a survey job for examination

Once the planning authority has approved particular parcels of land earmarked for development, that plan is forwarded to the Ministry of Lands for numbering after which advice on commissioning land surveyors to carry out the survey is given to the client. The commissioned land surveyor then carries out the survey, prepares the necessary records and lodges them for examination at the Zambia Survey Department (ZSD).

After examinations, the job is either returned to the land surveyor for corrections or it's passed on to the Government Surveyor for approval. The Land surveyor then collects the approved survey diagrams and hands them over to the client who uses them to apply for a Certificate of Title from the Lands Department.

All other materials (the written survey report, field book, computations book, working plan and general plan) become public property and remain with ZSD. These are used to update plans and for general consultation by other land surveyors and others who may need the same information. These records are kept in the Plan Room.

3.1.2 The Plan Room

The Plan Room is so called since this is where all the cadastral plans and records are kept. At present all the data is in hard copy form. Any data search for cadastral survey records takes place in the plan room. The plan room also acts as a reception area for the ZSD. It is usually the first point of call for all sorts of clients to the ZSD and Ministry of lands at large. The Plan Room, thus, handles all sorts of requests pertaining to cadastral surveys and filters them to particular sections, which deal with them. The Plan room is the focal point in the survey job examination process up to the time approved diagrams are collected (see fig.2) The plan room falls under the examinations section and is supervised by an examiner.

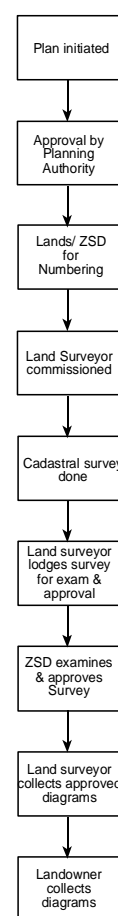


Fig. 1: A survey job's flow from planning to collection of approved diagrams

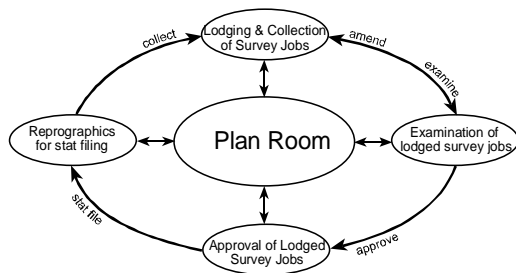


Fig. 2: Plan Room as the focal point in the survey job examination process

3.1.3 The Examinations Section

The examinations section is headed by a Chief Examiner who reports to the Assistant Surveyor General in charge of Cadastral Services. This section is responsible for scrutinising cadastral survey jobs before they are approved. The examination focuses on the correctness of the methods used, preparation of reports and plans and whether carried out in accordance with the Land

Survey Act and its regulations. The job is either passed on for approval or returned to the land surveyor for amendments as per findings of the examiner. Every officer who handles a particular part of the job endorses his or her signature and comment on the Jacket (folder) upon which the contents are also tabulated.

The Chief Examiner also maintains a register of jobs lodged for examinations to keep track of the examinations process and its findings. Jobs for examination are therefore supposed to enter and exit the section through the Chief Examiner.

3.2 The Problems in the System

After 1996 malpractices in the production of survey diagrams became noticeable. This is at the time when land itself, other than developments thereon, assumed monetary value. Government, parastatal and council houses were sold individuals thereby introducing an immeasurable demand for land to allocate to those that did not benefit from the sale of these houses. Prospective landowners became desperate. They were ready to get land at any cost. On the other hand, there was a cadre of prospective malpractitioners ready to pounce both on the potholed system and the desperate prospective landowners.

The major problem in the system now is therefore that procedures are not followed at almost every level, leaving a lot of room for malpractices and infiltration of the system by malpractitioners who survive by destabilising the system further. This problem is not just a ZSD problem but also spreads to other Departments of the Ministry since there is no system for counter checking what is purported to come from the other Departments.

Consequently fictitious surveys, surveys carried out in offices, existence of diagrams for non-existent land parcels and indiscriminate issuance of CTCs through total abuse of section 33 of the Land Survey Act became immensely noticeable. These malpractices thus gave rise to yet another problem of rampant disappearance of survey records, mostly involving such dubious surveys.

4. JUSTIFICATION FOR THE RESEARCH

Minango (1998) in his thesis report outlined that, Dale (1976) included a review of the cadastral system in Zambia in chapter 10 of his book; Lilje and Nilsson (1976) looked at the backlog (reasons and consequences) of cadastral surveys and their future demand in Zambia in a Swedesurvey consultancy report; Mvunga (1980) traced the origins and development of

land tenure systems in Zambia; Bruce and Dorner (1982) looked at land tenure issues in perspective, equity and productivity; Kagedal and Fagersten (1986) delved into appropriate mapping techniques for land held under customary tenure system; Fox (1989) covered issues of land delivery and Chileshe (1994) looked at a low cost approach to cadastre and land registration for land under customary tenure with emphasis on data acquisition.

Chilufya (1997) in looking at a possibility of an integrated cadastral and land registration information system, alluded to the existence of white-collar malpractices in the system BY noting *that delays in survey records examinations were due to lack of trust the system had in Land Surveyors*. He recommended punishment for the erring land surveyors but no mention was made about other perpetrators. Chilufya (1997) also recommended the reduction of duplicate copies of plans maintained by the system. This meant that the system could not adequately monitor the use of the duplicate copies of plans due to their numbers and might therefore create a fertile ground for white-collar malpractices in the system.

In addressing the issue of delayed examination (backlog) of cadastral surveys, Mulolwa (2002) recommended the use of an elaborate standard survey job submission form with adequate information to aid quick determination of the quality of the survey and hence approval.

The Lands Tribunal, set up under the Lands Act of 1995 to expeditiously handle all matters relating to land, has so far not handled any dispute which could directly be attributed to the problem of white collar malpractices in cadastral surveying.

Table 1: Records collected from each year

	Year	No. of Survey Records
1	1996	14
2	1997	13
3	1998	13
4	1999	13
5	2000	14
6	2001	14
7	2002	17
8	2003	14
	Total	112

It can therefore be seen that no research had previously been dedicated to identifying land survey malpractices inherent in the approval system or indeed the registration system, let alone the effects of these malpractices to secure land tenure and sustainable development. There was therefore need for this research to focus on identifying the flaws in the system and their possible remedies.

5. METHODOLOGY

112 survey records were randomly picked from the Plan Room covering the period 1996 – 2003 (see table 1). From these records the following information was collected; parcel number, examiner, survey record number and who carried out the survey (government or private).

Table 2: People interviewed

	Title	Department
1	Assistant Surveyor General – Cadastral & Government Surveyor	ZSD
2	Assistant Surveyor General – Mapping & Government Surveyor	ZSD
3	Ag. Senior Registrar	Deeds and Lands
4	Registrar	Lands Tribunal
5	Senior Lands Officer	Lands
6	Ag. Chief Examiner	ZSD
7	Plan Room Supervisor	ZSD

Since each surveyed and approved plan has a Survey Record (SR) number, each parcel has an associated SR number. Accordingly, using parcel numbers from the randomly selected survey records, a search was conducted in the computer database to

come up with the survey record numbers for those parcels. Another check was also performed using the survey record numbers to see if the survey records under scrutiny were for the same parcels of land. This was done to determine the extent of the problem.

Interviews with some system operators were also conducted through which some cases of these malpractices were identified. These interviews and mere observations also helped understand the system of cadastral survey approval and the public reception and complaints procedure now in place (see table 2).

6. FINDINGS

6.1 Record Searches

The searches done on computer using parcel numbers generated same survey record numbers for most of the parcels, i.e. 76 of 112 representing 68%. Therefore 68% exist both on ground and in the alphanumeric database. The other 32% (36 of 112) generated comments ‘**exist**’ (23) and ‘**not exist**’ (13). This is despite these survey records existing and being as old as 5 years after approval. A possible explanation was given that:

- ‘**exist**’ means the parcel was proposed (numbered) to be surveyed but may not have been surveyed yet, or if surveyed is not yet updated in the database.
- ‘**not exist**’ means that the parcel was not proposed (numbered) to be surveyed in the first place. As such it does not even exist in the database.

The search by SR numbers did not yield much as the computer database available has no capability to search using SR numbers. This was thus done using the examinations register, but it was very outdated.

6.2 Interviews and Observations

Through interviews, it was also discovered that:

- a) there is abuse of section 33 of the Land Survey Act. Section 33 reads, in part, that “*provided that a general plan or diagram may be approved if it has been framed from*

an approved general plan or from an approved diagram or diagrams or from approved Survey Records filed in the Surveyor General's office or registered in the Registry, without the signature thereon of the land surveyor who signed the original general plan or diagram if he is not available or unreasonably refuses to sign the general plan or diagram so framed". It makes no mention of a new survey being approved using the same section.

This section has facilitated conceiving of fictitious surveys involving either a real parcel or indeed a non-existent parcel.

- Existing parcels are usually those that upgrade from 14-year lease to a 99-year lease. The malpractitioners just scales off coordinates from a topographic map and insert them on a diagram and use other record numbers on it. It thus looks authentic and is presented for approval.
 - Non-existent parcels are used where a desperate prospective buyer who is promised a one-stop shop to acquiring the certificate of title for the promised parcel of land.
- b) There is indiscriminate production of CTCs using the same section 33.
- This is done to circumvent paying of survey fees due to a land surveyor. The malpractitioner charges a small fee for production of a dubious CTC.
 - to facilitate a dubious sale of one parcel of land to more than one buyer by issuing both with diagrams (CTCs).
- c) Survey records pertaining to questionable diagrams disappear from the plan room to obliterate incriminating evidence.

It was also discovered that persons who masquerade as land surveyors perpetrate most of these malpractices aided by land surveyors who endorse their work as authentic when not, at a small fee, the so-called signing fee.

The plan room though acting as a reception area to ZSD is actually not. As such a lot of confusion reigns presenting a fertile ground for the growth of these malpractices. It is thus difficult to monitor the movement of survey records, which sometimes fall in wrong hands (Chilufya 1997). Some officers even personalise some survey records denying land surveyors and other interested parties access to the same. Collection of approved diagrams is done by any body instead of land surveyors who lodged them.

Movement of lodged survey jobs is not properly monitored with some going directly to examiners with interest, a situation which compromises quality of work produced. In most cases it is such records that disappear soon after the job has been approved.

At the ministry level it was found that there is no way of verifying what Lands Department receives from ZSD as the landowners present the diagrams from wherever. The same is true for the Lands and Deeds Registry. Although there exists an alphanumeric database in the ministry on matters of land, most line officers have no access to it.

These flaws therefore make the perpetrated malpractices not easily detectable at the right time at the right stage to quickly nip them in the bud.

7. ANALYSIS OF FINDINGS AND RECOMMENDATIONS

7.1 Record Searches

Searches that were conducted on randomly picked survey records came up with 20.5% of records that were classified as existing but had not been updated and 11.6% of the records that were classified as not existing. Yet all these were approved surveys, some from as long ago as 5 years.

The only one computer terminal in the plan room from where the alphanumeric database is updated could an excuse that it is inadequate, but why are approved surveys update randomly?

There is therefore no clear-cut monitoring mechanism to check that the flow of plans for numbering and approved survey records is according to procedure. There is also no defined roles for the plan room personnel to follow.

This scenario thus leaves room for anyone to pick the numbered plans or survey records before they are updated with or without permission. The 32.1% of ‘**exist**’ and ‘**not exist**’ records could therefore be as a result of malpractices.

Recommendations:

- a) *Clearly define who should be charged with the task of updating the database with unique rights, which all others might not be assigned.*
- b) *Increase the number of terminals in the plan room so as to ensure uninterrupted access to the database for the person(s) carrying out the updates.*
- c) *Clearly define the kind of information obtainable in the plan room so that it attends to its core business.*
- d) *Put in place a clear watertight mechanism for monitoring the flow of jobs handled in the plan room. Mulolwa’s (2002) integrated land delivery architecture includes a job flow-monitoring module across the entire process. This would strengthen the current mechanisms.*
- e) *A monthly reconciliation of the plan room records and actual jobs handled in the examination section must be undertaken to account for every job lodged..*

7.2 Indiscriminate Use of Section 33 of Land Survey Act

Most if not all of the fictitious diagrams produced involve the use of a name of a land surveyor who was or is in government employment. This is a result of the loose application of the said section 33 of the Land Survey Act because ZSD is short of licensed surveyors. This is a clear contravention of the provisions of the Land Survey Act. Therefore jobs from most of ZSD’s 9 Regional Offices are not signed by the land surveyor but just bear the land surveyor’s name who actually may not have even supervised the work.

This flaw has been exploited to the fullest since one does not need a land surveyor's signature but just typing in the land surveyor's name suffices even for false surveys.

In fact section 33(2)a is categorical on the matter and states, "*subject to the provisions of section thirty-four, no general plan or diagram shall be approved unless it is prepared under the direction of and signed by the land surveyor or land surveyors who carried out the respective survey*". Section 34 only allows approval of unsigned records if they are for consolidation purposes or boundary realignment only.

Recommendations:

- a) *ZSD must put in place a deliberate policy that will ensure that only licensed land surveyors are in charge of all Regional Offices.*
- b) *ZSD must restrict the use of section 33 to authority given by the Assistant Surveyor General – Cadastral Services or the Surveyor General only.*
- c) *Living land surveyors must be made to sign the documents involving their work.*
- d) *The Land Survey Act, which was enacted in 1960, must urgently be overhauled to strengthen it in line with the changing land administration and surveying technologies.*

7.3 Indiscriminate Production of CTCs

Many people in Zambia do not want to pay survey fees (an average of US\$50). The opportunity a dubiously produced CTC offers presents a viable alternative to their needs and at the moment the plan room is a strong facilitator of the production of CTCs without the consent of the land surveyor who could still be holding on to approved diagrams waiting for the no show parcel owners.

A mechanism is in place to ensure that the land surveyor accents to the production of CTCs but it is not watertight.

Recommendations:

- a) *Applications for CTCs must go through the land surveyor who originally carried out the survey to the Surveyor General before resorting to section 33.*
- b) *Reasons for production of CTCs must be supported proper documentation.*

7.4 Missing Survey Records

Missing survey records are usually of dubious surveys, to erase evidence of the same. But some survey records are just personalised by some people especially officers in ZSD. The reason being that they carry out unauthorised surveys in certain areas but also simply for the love of creating mini archives in their offices.

Recommendations:

- a) *Devise a survey records monitoring and tracking system for the plan room that will ensure follow-ups in good time to recover the records.*
- b) *Collection of and consulting of certain records must be restricted to a specified group of people only such as land surveyors and line officers in the ZSD.*
- c) *Only land surveyors or their authorised agents must be allowed to collect diagrams from the plan room after approval.*
- d) *Create a separate data review and printing section with qualified staff in data and information management to run the Plan Room.*

7.5 Public Reception and Complaints Procedure

There is literally no public reception and complaints procedure system in place. It is even difficult for someone coming to the Ministry for the first time to find his or her way. As such the plan room also acts as a public reception office for not only the ZSD but also other Departments as it is usually the people's first point of call. This has bred a lot of confusion in that the roles of the plan room are not well known making monitoring of its activities difficult because of a continuous influx of the public looking for this or that.

Recommendations:

- a) *The Plan Room must be a cadastral survey information archive and a specialised reception office for services needed by land surveyors and line officers in ZSD.*
- b) *Create a separate public reception office for the ZSD or Ministry that could act as a filter for all clients. This would reduce incidences of tempting offerings to various officers who at the moment come directly into contact with the public. Mulolwa's (2002) integrated land delivery architecture incorporates such a front desk idea.*

7.6 Checks within the Ministry

Knowing the output of other line Departments in the ministry is very important if a conflict free product (title) is to be realised. At the moment the Lands Department that receives the approved diagram to prepare a certificate of title, cannot ascertain the authenticity of what they receive thereby creating room for preparation of titles based on dubious diagrams.

Recommendations:

- a) *There is need for cross Departmental awareness campaigns to simply enlighten each other on what to expect from the other Departments and in what form. That way they will be able to tell the difference between an authentic document and a dubious one.*
- b) *The present database system must be enhanced into an integrated GIS, which both Chilufya (1997) and Mulowa (2002) advocated. Through such a system, which integrates survey graphic data and land records, each operator in the process of land delivery would have access to view the records they need and take their action based on it with specific rights on what they can alter or just view.*

7.7 Unqualified People Carrying out Cadastral Surveys

Most of the malpractices in cadastral surveying are perpetrated by people who are not qualified to do the job. These are people in the allied professions who come across cadastral related work. But instead of referring it to the experts they take it up and use fellow unqualified people who use short cuts to get to the product required. Such people have flourished because of the laxity in enforcing the law and the sheer ignorance of those that give them such jobs.

Recommendations:

- a) *Mount awareness campaigns for the public using all effective media channels to enlighten the public on the need to use land surveyors for cadastral surveys. Further enlighten the public on what it takes to produce a diagram and consequences of using unqualified people and dubious methods to obtain a survey diagram. It is important to tell the public that cheap is expensive.*
- b) *Encourage land surveyors to educate the public, especially the venerable groups e.g. women, on the process of getting title to land as their contribution to society through which society's attitude could be influenced towards the concept of sustainable development (FIG Agenda 21).*

8. EFFECTS ON SECURE TENURE AND SUSTAINABLE DEVELOPMENT

The effects of these white-collar malpractices in cadastral surveying are immense and costly. Land developers have had to lose out on developmental projects they started on land that was later found to have irregular documentation with building structures being demolished with no compensation at all or well-cleared farmland repossessed. All because short cuts in the process were sought through resorting to malpractices.

In a country that is grappling with high poverty levels, such loss of scarce resources has a very devastating effect in that the majority of the people are denied access to land and security of tenure, which are very important prerequisites for the provision of shelter for all. Consequently this translates into a great denial of the development of sustainable human settlements in a country where there is virtually no residual income. Hence a denial to break the vicious circle of poverty which, is continually killing our society (FIG Agenda 21).

In an effort to role back malaria, mosquito-spraying campaigns in unplanned settlements failed due to lack of proper maps to plan and monitor the process. Disease control therefore becomes a difficult task where illegality reigns. Maps in such areas are usually a product of cadastral surveys.

Where landowners are spared of repossession or demolition, they have had to foot the bill for a resurvey to correct the wrong, while losing out on their first or indeed second payment for the same service thereby diverting developmental resources into a process that could have been done right the first time.

Where development goes ahead the economic effects are also immeasurable since it becomes extremely difficult to turn such assets into liquid capital thereby hindering acquisition of the much-needed capital for new investments. Correction is usually at great cost both in terms of direct payments for correction as well as in terms of loss of what might have been a lifetime investment opportunity.

The greatest effect is that of loss of confidence in the land delivery system by the main players such as development financing institutions because the documents that guarantee security of tenure become questionable. Thus when confidence in a system is lost, illegality takes root (Mulolwa 2002). This then breeds anarchy in that development is unplanned and haphazard. In such a scenario it therefore becomes difficult for central or local government to control development in this age where even illegal developers can seek protection of the law leading to lengthy and costly legal battles in courts of law. Moreover, environmental concerns cannot be addressed when development itself cannot be controlled. Even the much needed provision of services and collection of revenue is difficult in such circumstances.

All these effects sum up to an unsustainable development as everybody loses confidence in the system. Environmentally, this has led to development that does not take into account the well being of the surroundings within which it is occurring. Hence degrading it to levels, which require diversion of huge amounts of resources to correct. Yet such diverted resources could otherwise be used to sustain society.

For example, the Kalikiliki Dam, at one time the home of a once vibrant Lusaka Yachting Club is slowly being suffocated by encroachments of illegal settlements. Many dambo (swampy) areas are now illegally built up; disturbing the natural environment of any aquatic life there was in these areas.

9. OVERALL RECOMMENDATIONS

Secure and sustainable development can only come about when there is order in the land delivery system. Security of tenure is a critical factor of sustainable development and so the system that delivers it must be flawless to facilitate economic development.

The operations of the Plan Room and Examinations Section therefore need to be streamlined to make the survey diagram approval process watertight. The plan room needed to be separated from a public gallery that it is into a specialised service delivery unit.

The line officers in the cadastral surveys approval process must have access to enhanced database records (GIS) so that they are better informed as they carry out their tasks. A GIS that is transparent enough to afford line officers only that information they need to do their job with or view. The present system therefore needed to be reengineered on the lines recommended by Mulolwa (2002) and Chilufya (1997).

The Land Survey Act, CAP 188, and related legislation must be overhauled to facilitate a streamlined process of cadastral surveys approval system.

ZSD must stop abusing section 33 of the Land Survey Act by putting in a deliberate policy that will ensure that all its officers in charge in Regional Offices were licensed surveyors.

The Survey Control Board must also ensure that the current scenario of one land surveyor per 350,000 inhabitants is greatly improved by devising deliberate apprenticeship programmes for the profession that would encourage young graduates to get licensed.

10. CONCLUSION

Poverty is a chronic disease eating away the fabric of our society and affects both the haves and the have-nots. In Zambia, the single resource that we have in abundance is land. Everywhere in the world economic activities take place or start taking place on land. For us to economically prosper, there must be security for rights held in land by various players in the economy so as to facilitate economically sustainable development that has the well being of the environment in mind. This is achievable through the involvement of the land surveyor in fulfilling his or her part in a conflict free land delivery process by providing reliable survey data upon which a certificate of title, that ensures secure holding in land, is based.

Sustainable development depends on access to appropriate information at the right time in the right form for critical decisions to be made. Some of this information is delivered through cadastral surveying, which is in turn used for property tax, land rent and rates collection, location of utilities installations and provision of vital services such as ambulance and fire services. The Lusaka Water and Sewerage Company limited, has shown that use of cadastral information is beneficial. Using cadastral maps based GIS, the utility has been able to sustain its operations through a billing system that catches all its clients by location, timely location of faults to properly maintain its infrastructure and to timely plan future developments with an environmental friendly touch. These are some of the benefits of a properly functioning cadastral surveying system.

It is therefore hoped that the findings and recommendations of this research shall become a vital piece in our quest to improve the administrative, technical and legal aspects involved in the land delivery process, especially those addressed herein.

ACKNOWLEDGEMENTS

The Author would like to acknowledge the financial support from the FIG Foundation in Copenhagen and material support from the Department of Geomatic Engineering at the University of Zambia (UNZA), without which this research would have been very difficult to carry out. The willingness of all those interviewed is also highly acknowledged as they made the research successful. The efforts, encouragement and assistance of Chama Manda and Yamikani Mwanza in carrying out this research are equally highly appreciated too. The encouragement of the Surveyor General and his staff, the School of Engineering Research Coordinator, UNZA and the President of the Surveyors Institute of Zambia (SIZ) is all acknowledged. Dr A Mulolwa thank you for reviewing the report and indeed all those who contributed directly and indirectly.

REFERENCES

- Chilufya S M., 1997, From Manual to Integrated Cadastral and Land Registration Information Systems – A Zambian New Legal Challenge, MSc Thesis, ITC, Enschede, unpublished
- FIG Publication No. 23, FIG Agenda 21 2001 E ISBN 87-90907-07-8
- Land Survey Act CAP 188 of the 1995 Edition of the Laws of Zambia, Government Printers.
- Land (Conversion of Titles) Act, 1975, Laws of Zambia, Government Printers
- Housing (Statutory Improvement Areas) Act, 1975, Laws of Zambia, Government Printers
- Minango J C., 1998, Introducing a “Progressive” cadastre at the Village as a Toll for Improving Land Delivery – A Case Study of the Customary Areas of Zambia, MSc Thesis, ITC, Enschede, unpublished
- Ministry of Lands, 1996, Land Policy Document, Government Printers.
- Mulolwa A., 2002, Intergrated Land Delivery: Towards improving Land Administration in Zambia, Delft, DUP Science, Delft University Press

BIOGRAPHICAL NOTES

Graduated from the University of Zambia (UNZA) with a Bachelor of Engineering (B Eng) degree in Surveying in 1992, then worked for the then giant Zambia Consolidated Copper Mines (ZCCM) Limited at Nkana Division as a Sectional Surveyor. In 1995 joined the University of Zambia as a Staff Development Fellow and obtained an MSc in Integrated Map and Geoinformation Production (IGP II) at the International Institute for Aerospace Survey and Earth Sciences (ITC) in the Netherlands. Upon return in 1997 started lecturing at UNZA. In 1998 attended course in Teaching Methodology by the School of Education of the University of Zambia in Lusaka, Zambia. In 1999 attended the ICA conference in Ottawa Canada as an ICA Award Winner with a paper entitled “Remapping Zambia for Census, Elections and Other Needs”.

In 2001 obtained a certificate in Remote Sensing and Digital Image Processing from the Indian Institute of Remote Sensing (IIRS) in Dehradun, India and a Certificate in Introduction to Intellectual Property from WIPO Worldwide Academy of World Intellectual Property Organisation in Geneva, Switzerland. In 2002 was awarded a Registration Certificate (License) to practice as a Land Surveyor in Zambia. In this same year attended the United Nations Group of Experts on Geographical Names (UNGEGN) Training Course in Toponymy organised by the Dutch and German Speaking Division (DGSD) in Enschede, The Netherlands, and Frankfurt a Main and Berlin, Germany. In 2003 was awarded an FIG Foundation Grant whose result is the work of this paper.

A member of the Surveyors Institute of Zambia (SIZ) and its Vice President at one time. Also the Chairperson of the Zambia Association for Geographic Information Systems (ZAGIS).

Also instrumental in communicating FIG activities to the professionals in Zambia and a member of the FIG Working Group on Education in Africa.

CONTACTS

Mr. Alick. R. Mwanza
The University of Zambia, School of Engineering, Department of Surveying
P. O. Box 32379
10101 Lusaka
ZAMBIA
Tel: +260-1-295530
Fax +260-1-295530/290057/293848
Email: armwanza@eng.unza.zm, armwanza@netscape.net