A system-based approach to land registration analysis and improvements

A case study of the KwaZulu-Natal Deeds Registration system

By

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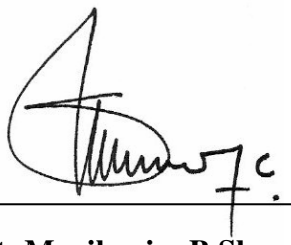
Declaration

I hereby certify that the research presented in this Masters Dissertation is the original work carried out by the author. No part of this work has previously been submitted in any form for any degree or diploma to any other university. Where use has been made of the work of others, it is duly acknowledged in the text.



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Abstract

This study proposes a system-based approach to land registration analysis using the case of the KwaZulu-Natal Deeds Registry in Pietermaritzburg. The study seeks to; (i) investigate and analyze the land registration system (as a whole) in terms of its key processes, data stores and data flows (ii) assess, based on the nature of the data stores, data flows and processes, the turn around time of the *as is* (manual) and the *to be* (computerised) systems, and (iii) recommend improvements based on identified gaps and bottlenecks. The study identified two key role players in land registration; the Conveyancers (responsible for deed drafting) and Deed Registry (deed examination and approval). The interaction between the two, which has its own challenges, ensures the proper application of complex legislation related to the registration of land.

To gain deeper insight into the activities of the land registration system, key informant interviews were held and several documents were reviewed to understand the data sources and their formats, processes performed, storage and accessibility of such data as well as the internal and external data flows across Conveyancers, Deeds Registry and other stakeholders. In this regard, the land registration system was decomposed into a number of data flow diagrams (DFDs); namely context (system as a whole), top level (system as composed of main subsystems) and lower level (detailed sub systems) to identify the core data stores, data flows and processes.

Based on these diagrams, manual and electronic data stores, processes and data flows were identified and turnaround time of the *as is* (manual) and the *to be* (computerized) systems was derived and compared. A conventional case of a deed of transfer - from deed of sale to registration of the deed of transfer was used. The results showed that significant gains in turn around time, from 70 to 9 days can be realized through computerisation of certain key data stores, processes and data flows. Recommendations for improvement were then generated based on the system diagrams and turn around times.
The study thus demonstrates the potential of a holistic approach to land registration analysis and improvement.

Dedication

This thesis is dedicated to my late mother Thandani Venencia Shange who passed away on the 11th August 1999 – may her soul rest in peace.

Acknowledgements

Thanks & praise be to God Almighty who gave me time and chance – "*The race is not to the swift or battle to the strong, nor does food come to the wise or wealth to the brilliant or favour to the learned, but time and chance happen to us all"* – Ecc 9:11

Special thanks to my wife Smangele Shange – without your love and support, completing this Masters would not have been possible - you are one of a kind!

A BIG thanks to my supervisor Dorman Chimhamhiwa, ex-programme director Denis Rugege and ex-programme administrative assistant Faith Nzimande – you believed in me and pushed me to levels that I never thought I was capable of reaching.

The Surveyor-General Office staff, Deeds Office staff, Msunduzi municipality staff, Conveyancers who allowed their work *to be* used and assisted with information, you are acknowledged with gratitude - Nikwenze nakwabanye! (Do the same to others)

A warm thanks to my family, my friends, colleagues who were there for me along the way – your presence and support was noted and very much appreciated.

Last but not least, my father, PS Shange, my eldest sister, Nompumelelo Thabethe and my brother-in-law, Moses Thabethe, who are always a tower of strength. Thank you all for understanding the obvious – the role and place of family!

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List of abbreviations and acronyms

CLaRA	Communal Land Rights Act, 2004 (Act No.11 of 2004)
CASE	Computer Aided Software Engineering
DFD	Data Flow Diagram
DFDs	Data Flow Diagrams
DLA	Department of Land Affairs
DOTS	Deeds Office Tracking System
DRDLR	Department of Rural Development and Land Reform
IDEF	Integration Definition
KZN	KwaZulu-Natal
LR	Land Registration
Min	Minimum
Max	Maximum
SARS	South African Revenue Services
SDW	System Development Workbench
UML	Unified Modelling Language
VAT	Value Added Tax

CHAPTER 1: INTRODUCTION

In South Africa, title to land and other real rights is not guaranteed by law. The system of registration, regarded not only by South Africans, but also foreign jurists - as an accurate and reliable system (Fourie, 1994; Lester & Teversham, 1995; Radloff, 1996), is based on long-standing practices and procedures. Not the law, but the system, has the effect of guaranteeing title. The system's processes of examination and registration; its control and monitoring of standards; its public registers and information processes; and its methods of preserving records, serve to provide security of title in the eyes of the law, financial institutions, and the public. This provides a basis for investment which stimulates growth in other sectors and secures other types of development.

Land registration in South Africa is based on complex legislations such as the Deeds Registries Act, 1937 (Act No. 47 of 1937) and the Sectional Titles Act, 1986 (Act No. 95 of 1986). These Acts designate various mandates to different institutions and are often not understood by ordinary people. With the introduction of the Communal Land Rights Act, 2004 (Act No. 11 of 2004) (CLaRA), arguably, an even more complex and equally politically explosive task lies ahead, converting 16 million hectares of communal land throughout South Africa to freehold tenure through the current deed registration system, will require a lot of efficiency in the current system. Again, the conventional processes of land registration will be followed as prescribed by law. There is therefore no doubt that an efficient and cost-effective land registration system will be central in ensuring the security of tenure, accelerating the pace of land redistribution, restitution and tenure reform, and contributing towards the country's socio-economic growth and prosperity.

1.1 RESEARCH PROBLEM

The interaction between the private sector (the Conveyancers) and public sector (the Deeds Office) ensures the proper application of complex legislation relating to land registration. Such interaction has its own challenges. Firstly, the subsystems of deeds drafting and deeds examination and approval are disjointed (e.g. they work totally

independent of each other using totally different processing technology and systems). This fragmentation can create numerous delays in the delivery of the whole system. To effect an expedient and more cost-effective delivery, without compromising the accuracy and security of the system, technological synergies can be employed. Secondly, with paper-based land registration systems, manual data stores, data flows and processes tend to compromise the system's delivery. For example, only one user can access a manual data store at a time, while multiple users are able to access electronic data store simultaneously. The same applies to the connecting data flows and processes. For example, a letter sent from one organisation to another through post or via the messenger system takes longer compared to using electronic mail. It is against this backdrop that this study suggests a system-based approach which seeks to understand the system as a whole, with its parts viewed as a collective. Without understanding what a Conveyancer does during deed preparation and lodgement or what the Deeds Office does during deed examination and approval, one could fail to capture and holistically analyse a land registration system. A system-based approach is therefore adopted so as to identify, from a holistic perspective, the gaps and bottlenecks in data flows, data stores and processes that hamper on the turn around times. While numerous transactions are executed between Conveyancers and deed registry office, the study focuses mainly on deed of transfer ("transfer cancellation bond") as this type of transaction is common amongst property buyers and owners

1.2 RESEARCH OBJECTIVES

The study has three objectives, namely:

1. To investigate and analyze the current land registration system in terms of processes, data stores and data flows – using a case of a conventional deed of transfer ("transfer cancellation bond")
2. To assess, based on objective 1, the turn around time of the *as is (manual)* and *to be (computer based)* systems.
3. To recommend improvements based on identified bottlenecks.

1.3 SCOPE OF WORK

The scope of this study is limited to land registration systems, where land registration is restricted to deed drafting at conveyancing and deed examination and approval at the deed registry. A typical deed of transfer ("transfer cancellation bond") where a seller of a fixed property with a house on it has a bond with a financial institution and the buyer requires a bond from a financial institution is considered. The case also assumes that the estate agent is not involved in the transaction. In terms of the system, the study is concerned with data stores, data flows and processes that support the delivery of a conventional deed of transfer.

1.4 RESEARCH STRUCTURE

In chapter 1, a brief introduction, problem statement, objectives and a hypothesis of the study are discussed. This is followed by a review of relevant literature on systems approaches, land registration systems and techniques for analyzing land registration in Chapter 2. Chapter 3 outlines the methodology used to execute the study. A brief case study of the KZN Deed registry is presented in Chapter 4. A discussion of results is presented in Chapter 5, while chapter 6 concludes the study and recommends issues for further research.

CHAPTER 2: LITERATURE REVIEW

This chapter reviews relevant literature pertaining to the systems theory and land registration (LR). A review of systems and system-based approaches is given first. Works on LR systems as well as techniques to analyze such systems are then presented. A concept to deduce time, based on the chosen goal for the study is then presented.

2.1 SYSTEMS APPROACH

2.1.1 System defined

The term "system" is derived from the Greek word "synistanai," which means "to bring together or combine (von Bertalanffy, 1968). A system is made up of different components that come together to achieve a specific goal or purpose. Pidwirny (2006) defines a system as an assemblage of interrelated parts that work together by way of some driving process, while Banathy (1997) defines a system as a group of independent but regularly interacting or interrelating elements comprising a unified whole. The common element from the above definitions is that a system comprises of a whole with different interacting and interrelated elements that work together to achieve a specific purpose. Elements of a system are characterised by certain features, which may be physical, geometrical, aesthetic, socio-physical or economic (Ten Haaf, *et al.,* 2002). If characteristics of one element change, then the characteristics of the other element are similarly affected and changed.

2.1.2 Features of systems based approaches

The systems approach emerged as scientists and philosophers identified common themes in the approach to managing and organizing complex systems. Four major concepts have emerged that underlie the systems approach (von Bertalanffy, 1968):-

a) Specialization: A system is divided into smaller components allowing more specialized concentration on each component.

b) Grouping: To avoid generating greater complexity with increasing specialization, it becomes necessary to group related disciplines or sub-disciplines.

c) Coordination: As the components and subcomponents of a system are grouped, it is necessary to coordinate the interactions among groups.

d) Emergent properties: Dividing a system into subsystems (groups of component parts within the system), requires recognizing and understanding the "emergent properties" of a system; that is, recognizing why the system as a whole is greater than the sum of its parts.

Figure 2.1 below illustrates some of the core concepts of a system. Represented in the figure are the system's boundary and its components. The components are independent of each other but are systematically interrelated to one another. The figure in addition shows how input, from outside the system boundary, interacts with the internal components to generate output(s) that flow back to the external environment.

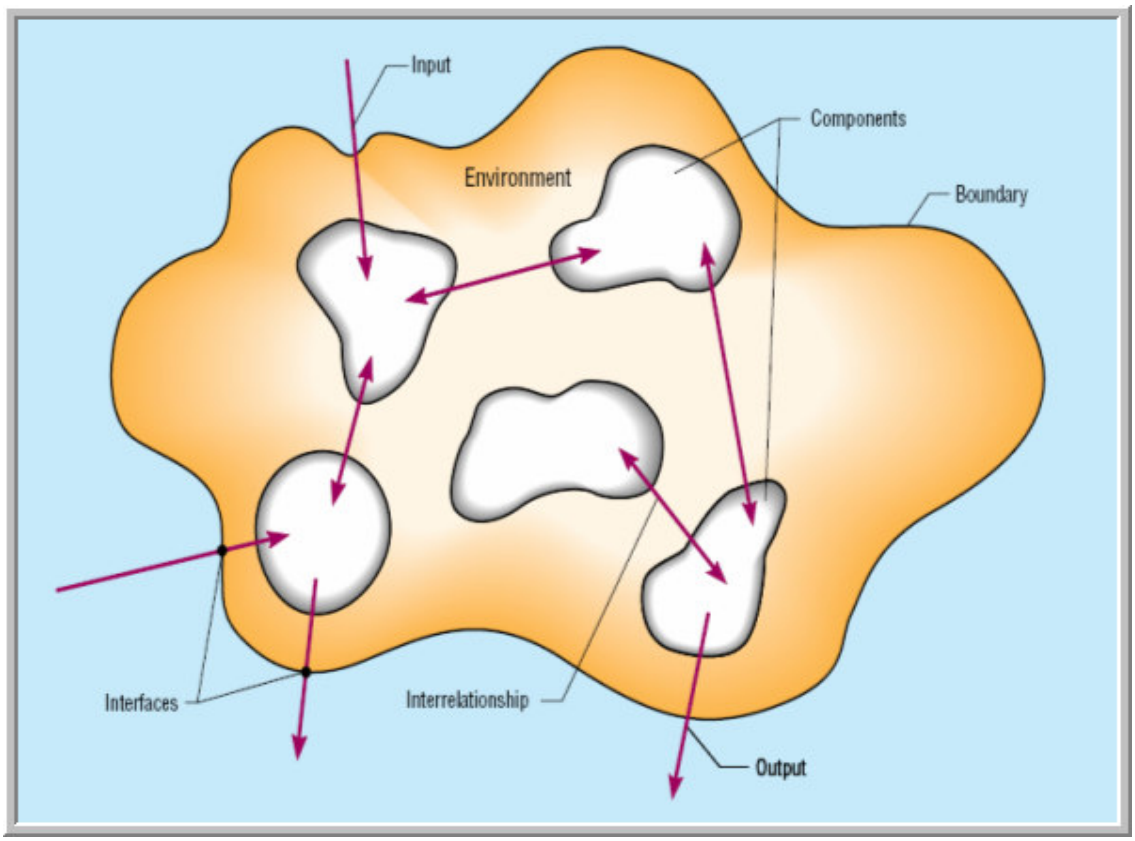


Figure 2.1: Components of a system (Hoffer *et al.*, 1996)

2.1.3 Type of systems

2.1.3.1 Aspect versus Subsystem

With a system-based approach, there are two concepts that are frequently used; the subsystem and aspect system (Ten Haaf *et al.,* 2002; Zevenbergen, 2004). Subsystems are seen as a partial collection of the elements of the system in which all the original relations between the elements remain unaltered. Aspect systems, on the other hand, are understood *to be* a partial collection of the system relations in which all elements remain unchanged and preserved. The main distinctions between the two approaches is that aspect system deals with the phenomenon of analysing specific characteristics of the system, be it technical, social or political - other aspects are not considered. The relations considered are not independent from each other. Subsystems deal with interrelated elements which together make a whole.

2.1.3.2 Open versus Closed

In another perspective, systems can be classified as open or closed (Bingo, 2006). Open systems refer to those systems that interact with other systems or the outside environment, whereas closed systems refer to systems having relatively little interaction with other systems. Boundaries of open systems are more flexible than those of closed systems, which are rigid and largely impenetrable. A closed system perspective views organizations as relatively independent of environmental influences. This approach allows managers and organizational theorists to analyze problems by examining the internal structure of a business with little consideration of the external environment. In contrast to closed-systems, the open-system perspective views an organization as an entity that takes inputs from the environment, transforms them, and releases them as outputs in tandem with reciprocal effects on the organization itself along with the environment in which the organization operates (Chesbrough, 2003). Open-systems theory originated in the natural sciences and subsequently spread to fields as diverse as computer science, ecology, engineering, management, and psychotherapy (Chesbrough, 2003). A South African LR system, for example, could be viewed as an open system that interacts with other systems, like municipalities, South African Revenue Services (SARS) tax systems, the banking systems etc; to ensure the correct registration of deeds.

2.2 LAND REGISTRATION

2.2.1 Land registration defined

Land registration is a systematic and methodical documentation of all real estates situated in an area, which is regarded as a single administrative area. Such registration is open to examination and usually concerns legal facts and/or legal consequences and data relating to the nature of the real estate, including size, location, land use, etc (Henssen, 1981). Nichols (1993) defines land registration, as an official, systematic process of managing information about land tenure. Such a system encompasses a wider range of interests and information which can be classified as;
(1) information about people – individuals and groups with recognized interests
(2) information on the nature of these interests – rights, responsibilities etc.
(3) information about land –description, extent, value etc of a parcel (Nichols, 1993).

From the above definitions, the common issues for this study are that LR must firstly, be official – meaning that the information must be kept and managed by the state or government institution, and used as evidence of interests in land. Secondly, LR must be systematic, therefore the need for policies, standards, and procedures in place to collect, validate, maintain, and provide access to the information. The advantages of registering land depend very much on the prevailing conditions in the country in question. Henssen (1981) provides some generic advantages as follows:

a) Land registration provides certainty and security to the owner as well as to others having rights in the land.
b) Disputes and litigation concerning land will be greatly reduced resulting in better social and human relationships, less work for the courts of law and less cost to the individual.
c) The credit aspect is one of the main reasons for land registration. Most banking institutions insist on plans and title before giving loans on mortgages, or request special insurance *to be* taken.
d) If land reform measures are going *to be* implemented, maps and records of land and rights on land are almost imperative. Even when land reform laws are enacted, it is very difficult to enforce them unless precise information about land

tenure is available. Without registration, it is also not possible to control fragmentation, and no programme of consolidation of fragmented holdings can be carried out.

Although in many jurisdictions, LR is often viewed as incorporating the cadastre, the focus of this study is limited to registration activities within the Conveyancer and the Deeds Office.

2.2.2 Land registration as a system

Land reform and bulk infrastructure development around the world have inspired a renewed interest in LR and provided a rationale for many projects aimed at improving existing systems. But concerned professionals and institutions have sometimes ignored or misunderstood fundamental problems and technology has not always been used to full advantage, while opportunities to make more effective improvements have frequently been lost (Nichols, 1993).

According to Zevenbergen (2004), there exists a tendency within the field of LR and cadastres to approach the object of study with a lot of emphasis on relative details, which in turn has led to one dimensional classification (like deeds versus title registration or fixed versus general boundaries). To avoid this, he suggests the adoption of a holistic framework. Such a framework can be found in the systems approach.

2.2.3 Classification of Land Registration Systems: Static versus Dynamic

Several classifications of LR systems can be made. One such classification makes a distinction between static and dynamic systems. The static form of an LR system describes the system with regard to objects and their identifiers as shown in figure 2.2. The connections between owner, right and parcel as illustrated in the figure are also further discussed in (Henssen, 1995; Kaufmann and Steudler 1998; Zevenbergen, 1998)

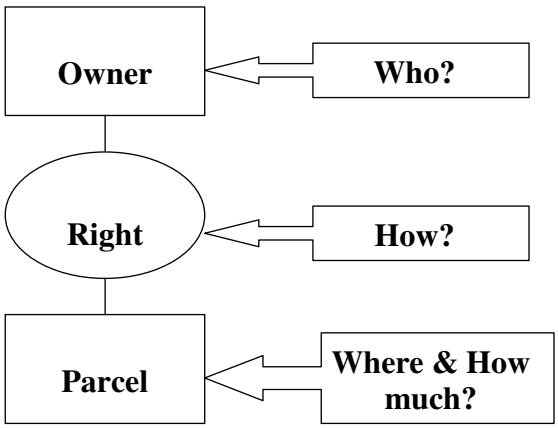


Figure 2.2: Core land registration entities (Zevenbergen, 2004)

The figure represents the linkages between; which person holds which parcel with which right. Each of these 3 questions is related to one of the main objects; owner, right and parcel. Each object has *to be* correctly and unambiguously identified. Only when they are correctly interconnected can one talk about an LR system (Zevenbergen, 2004).

The dynamic aspect of the LR system is built around the functions of adjudication, transfer and subdivision (Zevenbergen, 2004; van der Molen, 2002). A broader discussion of adjudication of land rights, land transfer and mutation (subdivision or consolidation) is given in (Harsono, 1996; Larsson, 1991). The LR system has *to be* treated as one integrated system, since each of the 3 functions is only useful when the other 2 are fulfilled.

2.2.4 Land registration system: Data flows, Data stores and Processes

In this study a LR system is viewed as made up of a group of independent but interconnected data stores, data flows and processes that form a unified whole. Based on these components, the study seeks to breakdown the whole into its parts that take cognisance of existing sub systems. From these perspectives, 2 main sub systems can be distinguished; deed preparation and deeds examination and approval. Deeds are prepared by a Conveyancer and then subsequently lodged with the Deeds office for examination and approval. Each sub system can be viewed further as consisting of processes, data stores and data flows that interact with the other subsystem. The data stores, data flows and processes are systematically combined to achieve a common

goal, of (in this study) registering a title deed. Based on the interaction and relationship between the various data stores (manual or electronic) that connect by means of data flows through established processes to deliver output, the study goes further to evaluate the delivery time of the system. The next sections give an elaborate discussion of these components.

2.2.4.1 Data Store

A data store is a central data container where data can be temporarily stored for future use. It is a container of data at rest, which may take the form of many different physical representations (Chervenak, *et al.,* 2000). A data store can be used on its own or together with other data in the same or different data store (s), for a particular purpose. Data stores can be manual or digital. With manual data stores, only one person can access data at a given time. They also generally occupy large spaces and can easily be destroyed deliberately or otherwise. Creating and safekeeping copies of such data can also be cumbersome and time consuming. An electronic data store, on the other hand, can provide distributed access to data users and applications by supplying standard interfaces for data access, supporting quick searches, ensuring scalability by automatically managing database growth and increasing the database file size when necessary and ensuring data consistency.

2.2.4.2 Data Flow

A data flow is a group of data that flows through a system. It is an input of data to a process or the output of data (or information) from a process (Marlowe & Ryder, 1990). Data flows include a description of the sources and destinations for each data. They are un-aggregated types of communication which flow between subsystems. For the purposes of this study, data flow is defined as the movement of data around an information system. Such movement can be depicted diagrammatically to show the various entry and exit points within the system.

2.2.4.3 Process

A process is an activity or group of activities that takes an input, adds value to it, and provides an output to an internal or external customer (Dowson *et al.,* 1991). According to Davenport (1993) a process is a structured and measured set of activities designed to produce a specified output for a particular customer or market. Its emphasis is on how work is done within an organisation. Processes give the specific ordering of work activities across time and place, with a beginning, an end, and clearly identified inputs and outputs i.e. the structure for action. Systems can be broken down into components which include processes, data stores and data flows. Processes can further be decomposed into their elementary components of sub processes and activities (including tasks).

2.3 ANALYSING SYSTEMS

A system such as LR is complex and can consist of various role-players, components and sub-components. Decomposing such a system can be useful for further analysis. Through decomposition, the LR system can be broken into smaller, more manageable and understandable subsystems, facilitating the focus of attention on one part (subsystem) at a time without interference from other parts. This would allow attention *to be* concentrated on the part of the system pertinent to the objectives of a given study e.g. identifying the gaps and bottlenecks in manual data store; flows and processes.

2.3.1 Techniques for modelling data store, flows and processes

To decompose a system in a structured manner, a technique for modelling must be selected. A model is a representation of a set of components of a system or subject area. The model is developed for understanding, analysis, improvement or replacement of a system. System parts can be any combination of things, including people, information, software, processes, equipment, products, or raw materials. The model describes what a system does, what controls it, what things it works on, what means it uses to perform its functions, and what it produces (Mayer *et al.,* 1992).

There are many modelling techniques that can be used to analyse a system. Some of the most common approaches are briefly discussed below.

2.3.1.1 Flow Chart Technique

A flow chart is defined as a formalised graphic representation of a program logic sequence, work or manufacturing process, organisation chart, or similar formalised structure. It is a graphical representation in which symbols are used to represent such things as operations, data, flow direction, and equipment, for the definition, analysis and solution of a problem. The Flow Chart Modelling technique uses flowcharts to represent processes and sequential flow of actions - It does not support a breakdown of the activities (Aguilar-Saven, 2004)

2.3.1.2 Gantt Chart

Gantt charts emerged as a general production planning tool in the early 1900s. They were developed and applied in production environments, where multiple products competed for capacity on several machines spread over a sequence of processing operations across several manufacturing departments (Wilson, 2003). In this kind of setup, the commitment of the workers to production schedules was of concern. Gant charts were thus introduced to coordinate activities so that orders would flow smoothly through the factory while keeping machines and staff busy. A Gantt chart is a matrix that lists on the vertical axis the tasks or activities *to be* performed in a process. Each row contains a single activity identification which usually consists of a number and a name. The horizontal axis is headed by columns indicating estimated activity duration, skill level needed to perform activity and the name of the person assigned to the activity, followed by one column for each period in the project's duration. Each period may be expressed in hours, days, weeks, months, and other time units. Gantt charts relate a list of activities to a time scale (Aguilar-Saven, 2004). There are thus commonly used to represent a process graphically, although their use in analysing the process is limited.

2.3.1.3 Data Flow Diagram

A Data Flow Diagram (DFD) is a diagrammatical representation of the 'flow' or data movement around or through an information system. This is a data modelling technique that uses the functional model to specify the meaning of operations and constraints and show functional dependencies. It shows how information enters and leaves the process; what activities change the information; where information is stored within the process, and the organisational function to which the activity belongs (Aguilar-Saven, 2004). There are four main components to a DFD; processes, data flows, data stores, and external entities (Turetken & Schuff, 2007).

2.3.1.4 Integration Definition (IDEF)

The Integration Definition (IDEF) is a descriptive modelling technique which is based on graphical and text description of functions, information and data (Hernandez - Matias *et al.,* 2008). IDEF models comprise of a hierarchical series of diagrams that describe functions and their interfaces within the context of a system. There are three types of diagrams: graphic, text, and glossary. The graphic diagrams define functions and functional relationships via box and arrow syntax and semantics while the text and glossary diagrams provide additional information in support of graphic diagrams. The IDEF suite of enterprise modelling approaches, comprises a number of modelling notations such as IDEF0, IDEF1, IDEF3 (Kima *et al.,* 2003). These notations are designed to model an enterprise from a defined viewpoint, such as a ''function viewpoint'' or an ''information viewpoint.'' For example, IDEF0 modelling starts by defining a context diagram, which represents the overall purpose of the system and its interfaces with an external environment. Normally, IDEF0 models comprise a hierarchy of related diagrams that are hierarchically decomposed thereby encoding semantic information at so-called lower levels of modelling (Kima *et al.,* 2003). IDEF provides a modelling language that is:

(1) **Generic** (for analysis of systems and subject areas of varying purpose, scope and complexity),

(2) **Rigorous** and precise (for production of correct, usable models),

(3) **Concise** (to facilitate understanding, communication, consensus and validation), (4) **Conceptual** (for representation of functional requirements independent of physical or organizational implementations) and
(5) **Flexible** to support several phases of the life cycle of a project (Mayer *et al.,* 1992).

2.3.2 Time-based analysis

Time is a critical dimension for measuring business processes and for comparisons. Depending on the chosen goal, multiple time variables can be used to analyze business processes in Land Administration and LR in particular. From a cross organizational context, the variables of response time, processing time, completion time, throughput and utilization, the waiting time, speed, resubmission time and request cross over time as key variables for end to end process performance in land administration (Chimhamhiwa, *et al*., 2009). A Unified Modelling Language (UML) timing diagram is used as a base for the estimation of time spent on a rural land transaction across different actors in Slovenia (Lisec *et al*., 2008). The ongoing doing business initiative by the World Bank (www.doingbusiness.org), which analyzes the environment for doing business globally incorporates; (1) number of steps to register a property and (2) time taken to do so as key indicators for reform across countries (World Bank, 2005)

The above few cases present some contexts where different time components have been used in land management contexts. In this study the aim was to measure the turnaround time as well as response and processing time in the 'as-is' (manual) and compare such time with the 'to-be'(computerised) scenario. A generic case of a deed of transfer was used.
The turnaround time is defined as the response time and process time, where the *response time* is the time between issuing a request and receiving the result, and the *process time* being the time that actual work is performed on a request.
These time elements could be derived from the resultant processes, data flows and data stores through the concept illustrated on figure 2.3 below.

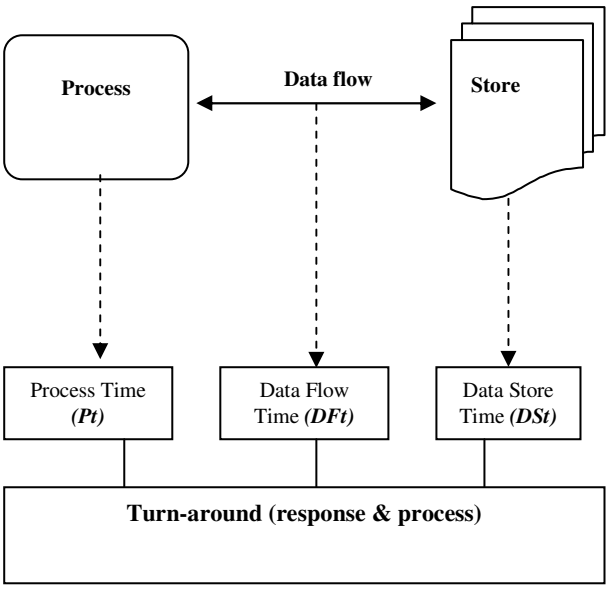


Figure 2.3: Concept diagram for deducing time within a system

The turn around time is derived from the following equation.

Turn around time = $Pt_{1\ldots n} + DFt_{1\ldots n} + DSt_{1\ldots..n}$

Where, $\mathbf{Pt}_{1\ldots n}$ indicates process time. One or more process steps may be involved.

$\mathbf{DFt}_{1\ldots n}$ indicates data flow time and one or more data flows may be involved.

$\mathbf{DSt}_{1\ldots..n}$ indicates time taken to retrieve data from data stores (i.e. data store time). One or more data stores may be involved.

2.4 CONCLUSION

Having reviewed literature related to the system approach and land registration discipline, this chapter placed land registration within the systems concept. It further developed a concept for deducing various time metrics.

The next chapter focuses on the methodology used to achieve the objectives of the study. It focuses on how the study proposes to decompose the system into its elementary part, and on how the time would be determined for comparison purposes.

CHAPTER 3: METHODOLOGY

In order to address the three research objectives it was necessary to investigate the processes, data stores and data flows at conveyancing during a deed drafting and at the deed registry during examination and approval. In order to achieve this it was necessary to interview the two key role-players i.e. Conveyancer (Attorneys) and Deed Registry Office (Deed examiners and approvers). The methodology developed and used was based on the research objectives as the figure below shows.

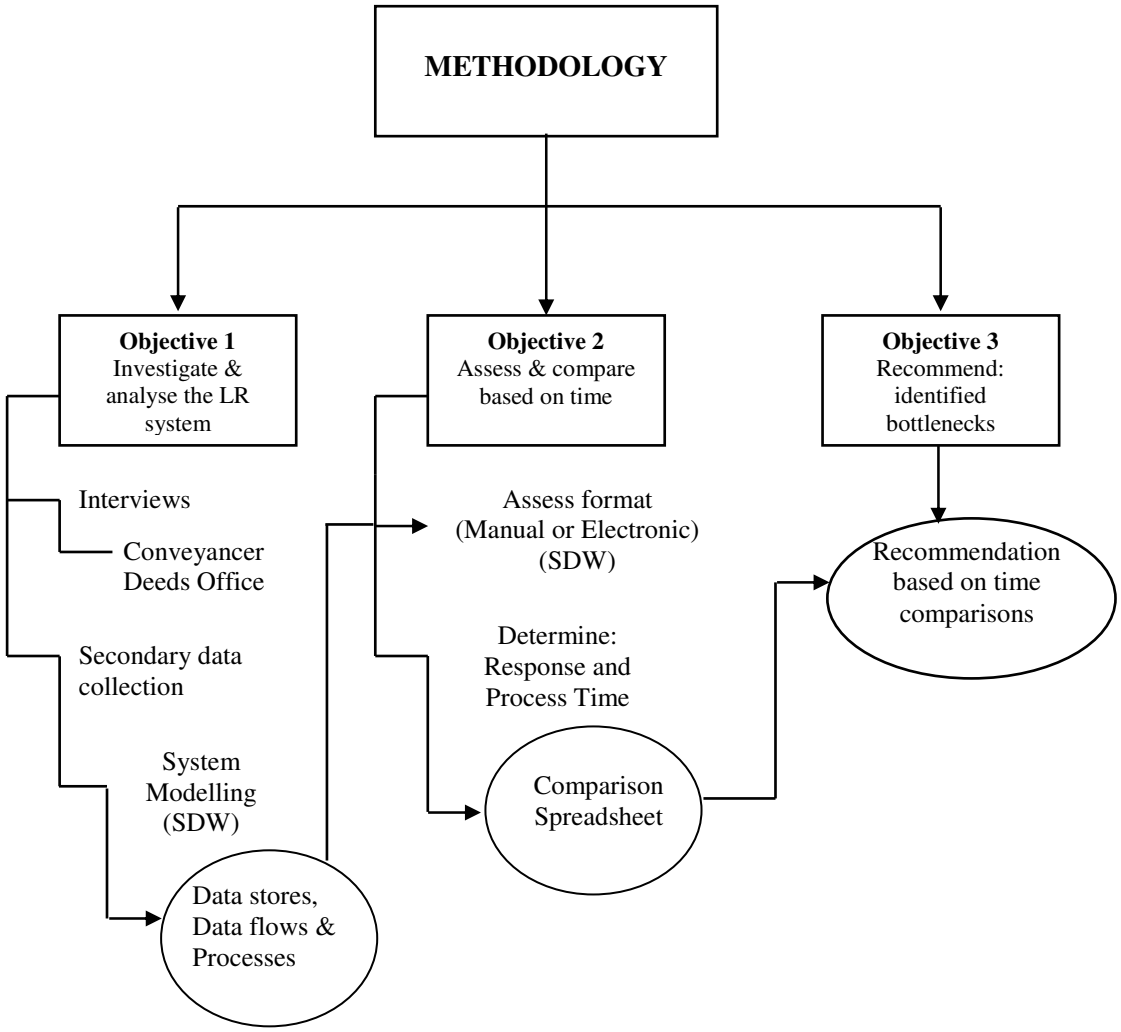


Figure 3.1: Research methodology

3.1 INVESTIGATE AND ANALYZE THE LR SYSTEM

In investigating and analyzing the land registration system in terms of processes, data stores and data flows, two key role players; the provincial Deeds Registry office of KwaZulu-Natal in Pietermaritzburg and attorneys (Conveyancers) were identified. In choosing the attorneys *to be* interviewed, a balance between big and well established firms, and smaller, less resourced firm was desired and ideal. This was to ensure that the information that comes from the investigation is not biased i.e. a well established company might have the computer based filing system while a smaller firm uses a filing cabinet. Once these decisions had been made as part of the preliminary investigations which included, making appointments, obtaining permission to conduct a study and identifying key individuals within the organization, key informant interviews were carried out.

3.1.1 Key informant interviews

To gain deeper insight into the land registration system, six (6) KwaZulu-Natal Deed Registry staff (front desk personnel, examiners, capturers, registrar etc), four (4) conveyancing staff (Conveyancers, Conveyancing clerks and administrators), two (2) Msunduzi municipal staff from the property rate section, two (2) SARS personnel and four (4) bond professionals from four major banks were all interviewed using the key informant interview method. The interviews focused on the types of data, its sources and formats, processes performed on it, storage and accessibility of such data. Information relating to how data is captured and stored, how it is processed and moved around internally and externally, was obtained from attorneys and the Deeds Registry Office.

3.1.2 Review of existing information and business processes

Established practices and business processes prevailing in the organisations were reviewed. Within these organisations, for example, it was established how they would open a new file, issue a receipt for payment, store and process such file. Samples of a typical Deed of Transfer, forms, copy of entry books, cabinet indexes were obtained where available. Some of the data, data store, data processes and data flows were

electronic while others were done manually. Programme LAUNCHER at the Deeds Registry, a document management system was also reviewed and copies of various screens obtained. Other information on conveyancing and deed registration was obtained from the Department of Rural Development and Land Reform (formerly known as Department of Land Affairs) website and legislation such as the Deed Registries Act, 1937 (Act No. 47 of 1937) and Land Survey, 1997 (Act No. 8 of 1997).

3.1.3 Decomposition of the LR system

Using information from the interviews and review of existing information, the system was broken down into its elementary parts using the Data flow diagramming technique and the System Development Workbench (SDW) Computer Aided Software Engineering (CASE) tool. Three DFDs; the context, top level and lower level diagrams were created in SDW.

3.2 ASSESS TURN AROUND TIME FOR *AS IS* AND *TO BE*

To assess the turn around time of the *as is* and the *to be* systems, a number of steps were followed. First, based on the DFD diagrams generated in objective 1, all data stores, flows and processes were analyzed and categorised as either manual or electronic. Second, processing and response times were derived using professional norms. Third a time comparison between the *as is* and *to be* scenarios was carried out. These steps are explained in more details in the next section.

3.2.1 Assess format of data store, flows and processes (manual or electronic)

Having investigated the land registration system and identified critical data store, flows and processes, the study further assessed the format (whether manual or electronic) of all critical data stores, flows and processes identified in objective 1. This assessment was based on an informed premise that manual data stores, flows and processes are generally slower than such stores, flows and processes that are electronic. The one reason for this is because only one user at a time is able to interact with a manual store whereas multiple users are able to interact with an electronic store at the same time. The study therefore determined the format of all identified stores,

flows and processes so that turnaround time (response and process time) of manual and electronic stores, flows and processes could be compared using a comparison spreadsheet.

3.2.2 Determining time

Once the '*to be*' system had been modelled using SDW, time variable data (response time and processing time) was deduced from sub-processes, data stores and data flows based on professional norms. The data on estimations was collected from the professional and experienced Conveyancers, Conveyancing Clerks, Deeds Registry data processors and examiners, SARS officials, Msunduzi Municipality Rates department officials and confirmed. The data from municipality and SARS was only collected as a mean of confirming the information that would have been secured from the Conveyancer. The time was obtained based on how long it takes to process and send a request to the point of receiving a response for further processing. Figure 2.3 in chapter 2 depicts the methodology that was used to determine or derive the turnaround time for processes, flows and stores. The turnaround time for a given process was deduced using the following typical questions:-

- How long does the process take?
- How long does the flow of data from one process step to another take?
- How long does it take to retrieve data from a store as required by a process step?

3.2.3 Time comparisons: 'as is' versus 'to be'

Once these times were determined, a spreadsheet was used to compare all the '*as is*' turnaround times with the '*to be*' turnaround times of the same processes, flows and stores. The comparison spreadsheet was used to present the result information.

3.3 RECOMMEND IMPROVEMENTS

Based on objective 1 and 2, Objective 3 seeks to recommend improvements based on identified bottlenecks. The recommendations emanate from the results analysis i.e. (time comparisons). Various options of improving the system are were suggested.

3.4 CONCLUSION

The chapter explored the methodology used to navigate through the system of land registration to meet the three objectives of the study. It answered the “how” question, from how the study proposes to decompose the system into its elementary part, to how the time would be determined for comparison purposes and in turn recommendations made on the basis of results.

CHAPTER 4: THE CASE STUDY

This chapter briefly discusses the case study of KwaZulu-Natal deed registration system within the context of the South African land registration system.

4.1 SOUTH AFRICAN DEED REGISTRY SYSTEM

Currently, there are nine Deeds Registries in South Africa located in Pretoria, Cape Town, Johannesburg, Pietermaritzburg, Bloemfontein, Kimberley, King William's Town, Vryburg and Umtata. The KwaZulu Natal Deeds Registry in Pietermaritzburg was utilised as the case study. Figure 4.1 outlines the Deeds Registry offices in the country.

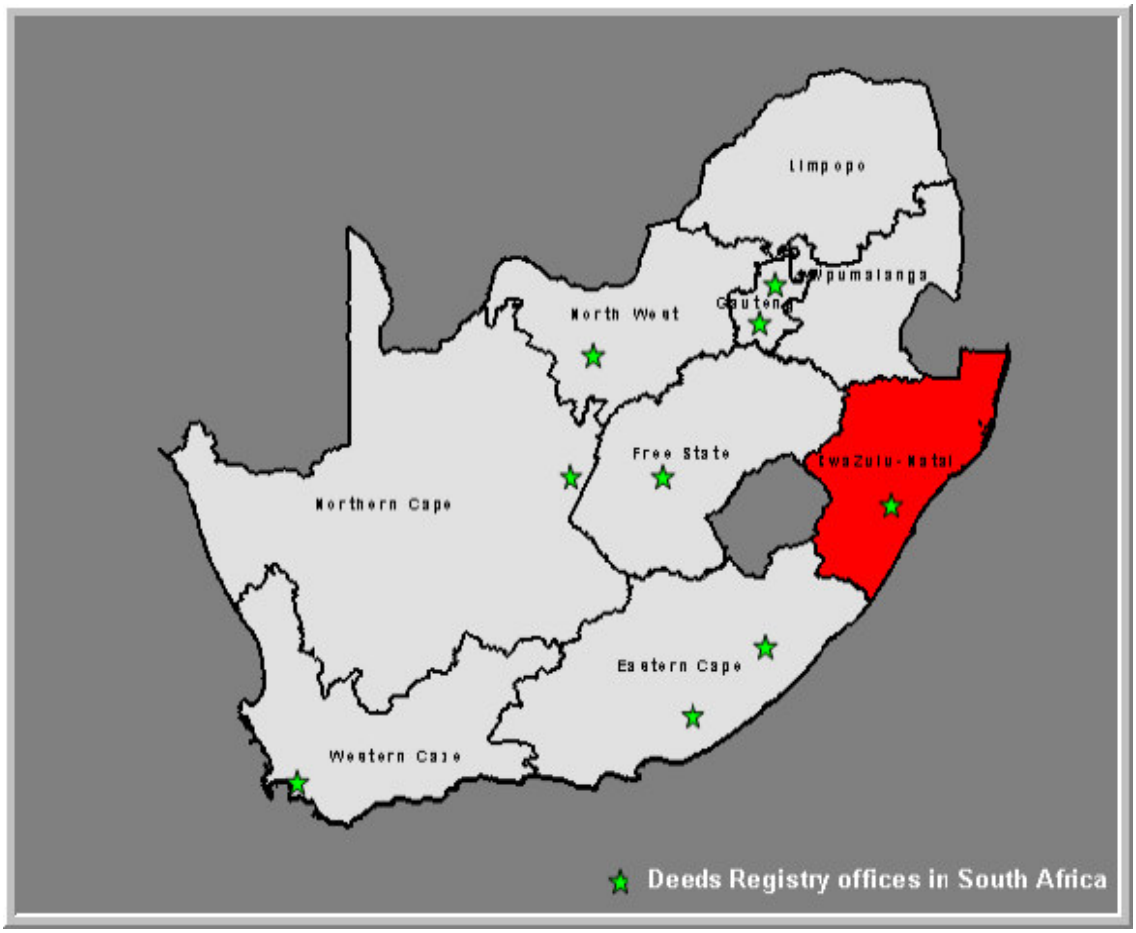


Figure 4.1: South African Deed Registry Offices

Deeds Registries are responsible for the registration of deeds and documents relating to real rights in land in respect of more than 7 million registered land parcels in South Africa. These parcels represent what is known as "immovable property" and include township erven, farms, agricultural holdings, sectional title units and sectional title exclusive use areas. In order to take deeds registry services to the people, the former Department of Land Affairs launched an initiative aimed at establishing at least one Deeds Registry per province.

During the year ending March 2005, the nine deeds registries experienced a 10,3% increase in the volume of transactions registered. Despite this significant increase, the registries maintained an average turnaround time of 10 working days from lodgement to registration (Department of Land Affairs: 2005/6 Annual Report). According to the Department's Annual Report for 2008_2009 financial year, there has been an increase in registered land parcels from 7 961 636 in 2008 to 8 149 699 in 2009. The demand for registration information increased to a total of 17 384 105 electronic requests (6,71% increase). Figure 4.2 shows the load distribution and number of registration and recordings in the deed registries (Republic of South Africa, 2009).

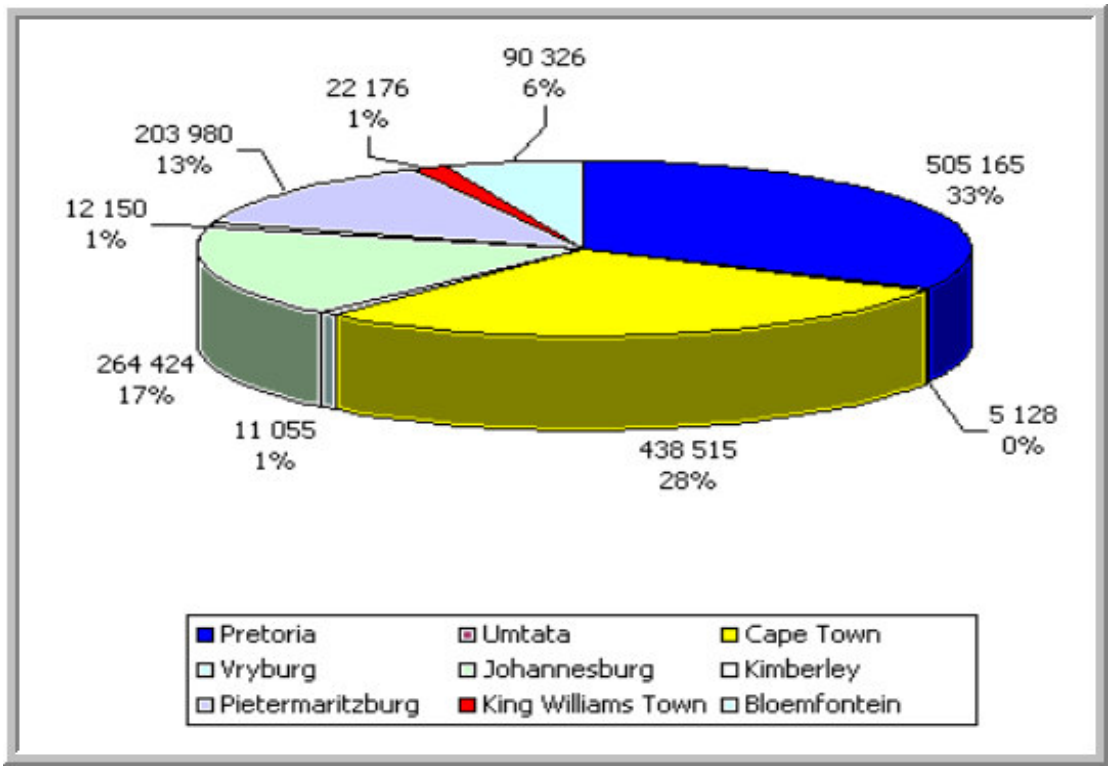


Figure 4.2: Land Registrations recorded per deed office (2009)

As is evident above, the Pietermaritzburg Deed Registry is the fourth busiest deeds office in terms of the number of registrations recorded per year. With regard to the breakdown in terms of the different types of properties, Figure 4.3 from the 2007-2008 report provides an indication of the registration load distribution (Republic of South Africa, 2008).

Deeds Registry	Township erven	Sectional title units	Agricultural holdings	Farms	Total
Pretoria	1 961 912	232 299	46 884	208 261	2 449 356
Cape Town	1 707 126	182 448	0	138 462	2 028 036
Johannesburg	960 271	128 030	0	0	1 088 301
Pietermaritzburg	901 019	140 284	0	92 013	1 133 316
Bloemfontein	516 523	25 506	7 003	60 094	609 126
Kimberley	84 066	713	869	5 088	90 736
King William's Town	177 210	6 298	0	11 645	195 153
Vryburg	78 369	206	4 097	10 544	93 216
Umtata #	65 185	22	0	982	66 189
As at 31st March 2007	6 451 681	715 806	58 853	527 089	7 753 429
As at 31st March 2006	6 297 904	667 201	59 125	522 936	7 547 166

Figure 4.3: Registrations workload per deed office (2008)

According to the above data, the Pietermaritzburg Deed Registry registered a total of 1 133 316 properties made of township erven, sectional title units and farms. Interestingly, no agricultural holding were recorded for 2006/2007 year. The above records show that in the two years from 2006 and 2007, there was an increase of 206 263 in total registrations for the country, which means a 2,7% increase.

4.1.1 Cadastral system

The land registration system in South Africa entails the identification of parcels of land, as well as the registration of ownership and other limited real rights, which guarantees title. An entity of land, as a separate identifiable unit with its unique name and number, comes into existence on registration of the title deed together with the approved diagram or general plan. Before any piece of land is capable of being registered in the deeds registry, it must be surveyed and reflected on a diagram. All diagrams and general plans must be prepared by a qualified land surveyor. In terms of the Land Survey Act, 1997 (Act No. 8 of 1997), all diagrams and general plans must be examined and approved by the surveyor general. Such approved diagrams are provided with a unique number. Each piece of land's location and identity must be indicated on the diagram in order that there can be no doubt as to the exact location and extent. The functions of the Surveyor general were however not investigated as they fall outside the scope of this study.

4.1.2 Negative system

The South African system of land registration is regarded as a negative system of land registration. In terms of this system the transfer of ownership takes place on registration of transactions in deeds registries. Although the system guarantees title, it does not, however, guarantee that the registers reflect a true picture of the state of affairs. Incompleteness is therefore possible and inaccurate information is also possible, for example, the transfers of ownership by operation of law, in the case of expropriation or transfers of ownership in respect of an undivided half share of a spouse at the conclusion of a marriage in community of property where such marriage is not reflected in the title deed of the property.

4.1.3 Legislative framework for Deed Registries in South Africa

Numerous legislations govern the activities of land registration in South Africa. These include; the Deed Registries Act, 1937 (Act No. 47 of 1937), Sectional Titles Act, 1986 (Act 95 of 1986); Land Survey Act, 1997 (Act No. 8 of 1997). Other sources relate to the regulations promulgated under the Deeds Registries Act and the Sectional

Titles Act; Various Ordinances and Rules; Circulars (Circulars of the Chief Registrar and Registrars of Deeds); Common Law; Judicature; Indigenous and Customary Law and the Registrars' Conference Resolutions.

4.1.4 Key role-players in a Deed registration system

There are various role-players in the South African deed registration system. Role players vary according to the nature of the transaction. A property could be an agricultural holding, sectional title unit or freehold title. In the case of this study, a freehold land parcel with a house where the seller has a mortgage bond cancellation and the purchaser requires mortgage finance from a financial institution is used. This type of transaction is normally referred to as the transfer cancellation bond. In most deed registration transactions, role players will include, but not limited to Land Surveyors, Surveyor-General, Municipalities, South African Revenue Services, Electricians and Pest Control officers (in case of a building), Banking institutions (in case of bond registrations and cancellations), buyer and seller and estate agent and body corporate, Deed Registry and Conveyancers. The study focuses on the Conveyancers and deeds registry responsible for deed drafting and lodgement and deed examination and approval respectively.

4.2 KWAZULU NATAL DEED REGISTRY SYSTEM

Between the different Deeds Registries certain operational processes may differ from one office to the other as a result of technological and human capacity. For example, the KZN deed registry uses the Deeds Office Tracking System (DOTS) which allows the tracking of deeds progressing through a Deeds Office from lodgement to registration, while Mthata deed registry is generally manual. The operational environment may also differ as a result of management and technical capacity, staff turnover and geographical location in relation to other role players such as the Surveyor-General. In KZN, the deed registry operates in the same building as the Surveyor-General and in close proximity to the municipality, court of law, SARS and many conveyancing firms.

4.3 CONCLUSION

In this chapter, the case study of KwaZulu-Natal Deed Registry was discussed within the broader context of the South African land registration system. The chapter also outlined various land registration legislation used in South Africa. The next chapter discusses the findings of this study.

CHAPTER 5: RESULTS

This chapter presents the results of the study based on the research objectives as outlined in Chapter 1. The results are presented in three main sections (i) analyses of the land registration system in terms of processes, data flows and data stores (ii) assessment of turnaround time of the *as is (manual)* and the *to be (computer based)* systems and (iii) improvement recommendations based on identified gaps and bottlenecks.

Firstly, to analyse the LR system in terms of its data stores, data flows and processes in a structured manner, three DFDs were generated; the Context, Top Level and Lower Level diagrams.

5.1 CONTEXT DIAGRAM

On the context diagram (Figure 5.1), eight (8) terminators that support the deed registration process by providing the required data into the system or receiving information from the system, were identified. The role of each terminator is discussed below.

a) **Electrician**: investigates and ensures that the subject property complies with electricity regulations i.e. electricity cables safely wired. Once satisfied, the electrician issues an Electricity Compliance Certificate.

b) **Pest Control**: Investigates and ensures that the subject property complies with the South African Pest Control Association standards and municipal bylaws, that the property is free of damaging insects and so forth.

c) **Existing bond banking institution:** Will supply the outstanding amount needed for the cancellation of the bond and instruct the attorneys to proceed with the cancellation. The existing bondholder will also forward the Title Deed in their possession to the transferring attorneys.

d) **New bond banking institution:** Requires cancellation figures from the existing bond banking institution and in turn advises the transferring attorney of the amount available for guarantees.

e) **South African Revenue Services (SARS):** Upon request from the Conveyancer, SARS issues the Tax Clearance Certificate or Transfer Duty Exemption declaring that the seller does not owe any tax to SARS.

f) **Municipality:** Upon request from the Conveyancer, the local municipality issue the rate clearance certificate declaring that the seller is not owing the municipality for any utility services i.e. water and lights.

g) **Seller:** Accepts the Offer to Purchase. Usually hires the transferring attorney. Must provide essential documents to enable the transferring attorney to manage the registration process.

h) **Buyer:** Makes the Offer to Purchase. Must apply for a bond from a financial institution (if not paid in cash). Must provide necessary documentation and sign documents as needed.

In addition to the terminators discussed above, the study focuses on two key role players in the deed registration process i.e. Conveyancers and Deed Registry. The two main process steps that these role players are responsible for are Deeds drafting and deed examination and approval, respectively. Depending on the nature of the transaction the list of terminators could include estate agents, Surveyor-General etc. or may exclude banking institutions for cases where the seller has no existing bond and the buyer has alternative finance arrangements.

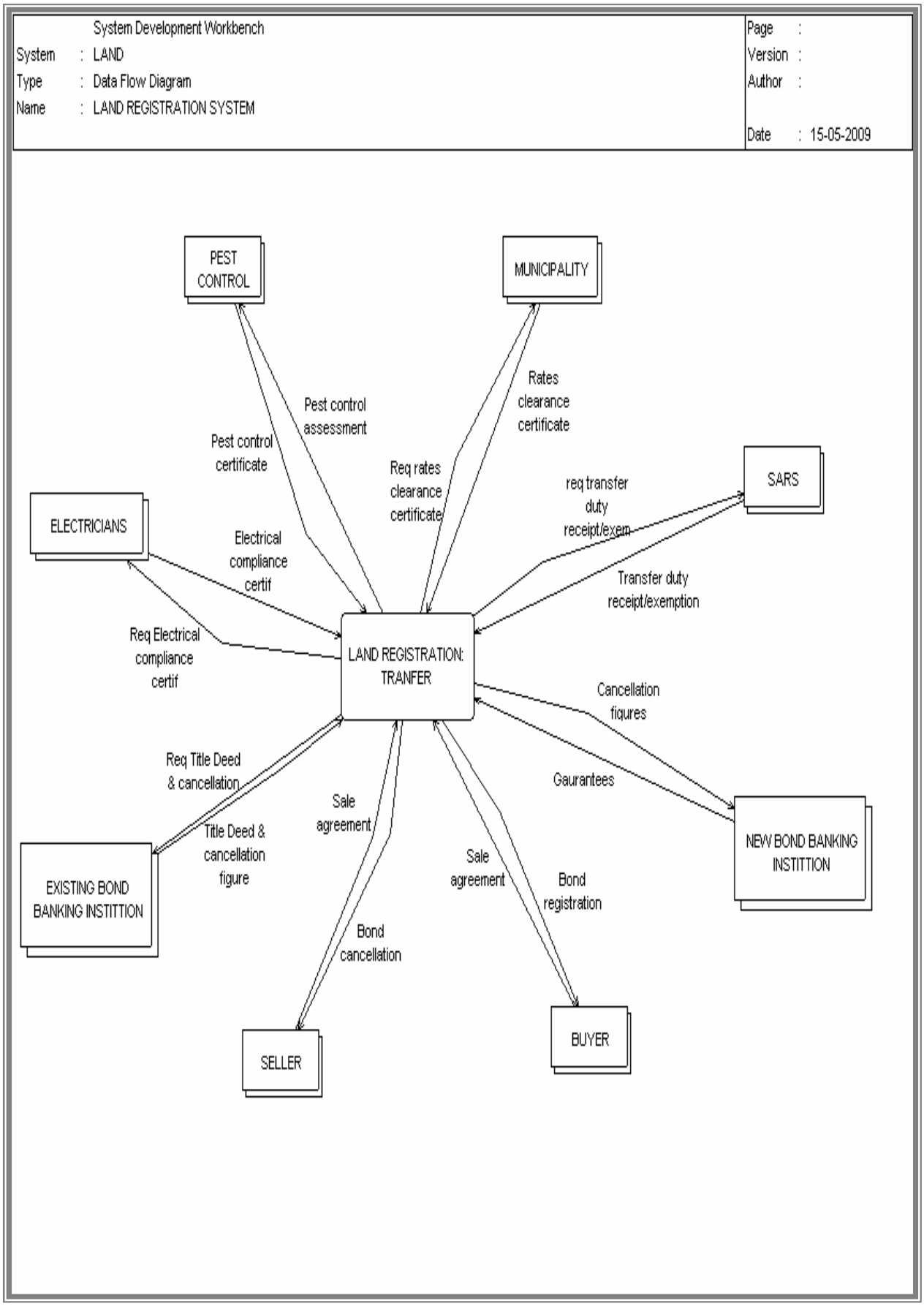


Figure 5.1: The Context Diagram

5.2 TOP LEVEL DIAGRAM

From the context diagram, the system was decomposed into two top level sub processes; deeds drafting and deed examination and approval (Figure 5.2)

5.2.1 Sub Process: Deed Drafting

The deed drafting sub-process involves the preparation and compilation of a deed with all relevant supporting documents. The Conveyancer interacts with all the role-players in securing the required information and supporting documentation. The data flows appearing on the context diagram and relevant for deed drafting were accordingly directed to this sub process. This is where a Conveyancer interacts with the various role-players that were identified on the context diagram and further with the next process step which takes place at the deed registry office. A first critical data store, Conveyancer's Pigeon Hole, evidently comes to the fore. This is a manual data store used by Conveyancers as a document depository box i.e. a link between the Conveyancers and the deed registry office.

5.2.2 Sub Process 2: Deed examination and approval

This phase involves examination of a draft deed to ensure compliance with legislation. The details, the lower level, of activities that takes place during examination and approval are discussed below. As each deed's origin is different, so their daily work flow also differs. However, every deeds registry must comply with the provisions of the Deeds Registries Act, 1937 (Act No. 47 of 1937), and therefore the end result must always be the same.

5.2.3 Lower Level Diagrams

The 2 sub processes represented on the top level diagram were subsequently decomposed into lower level diagrams. Deeds drafting was decomposed into drafting and checking. However, only the drafting sub-process was broken down further into elementary parts (figure 5.3). On the other hand, deeds examination and approval was decomposed into several lower level activities (figure 5.4). This is done in order to gain better understanding of the interacting sub-processes, data flows and data store within a particular process step. At this level, manual and electronic processes, data stores and data flows were also identified.

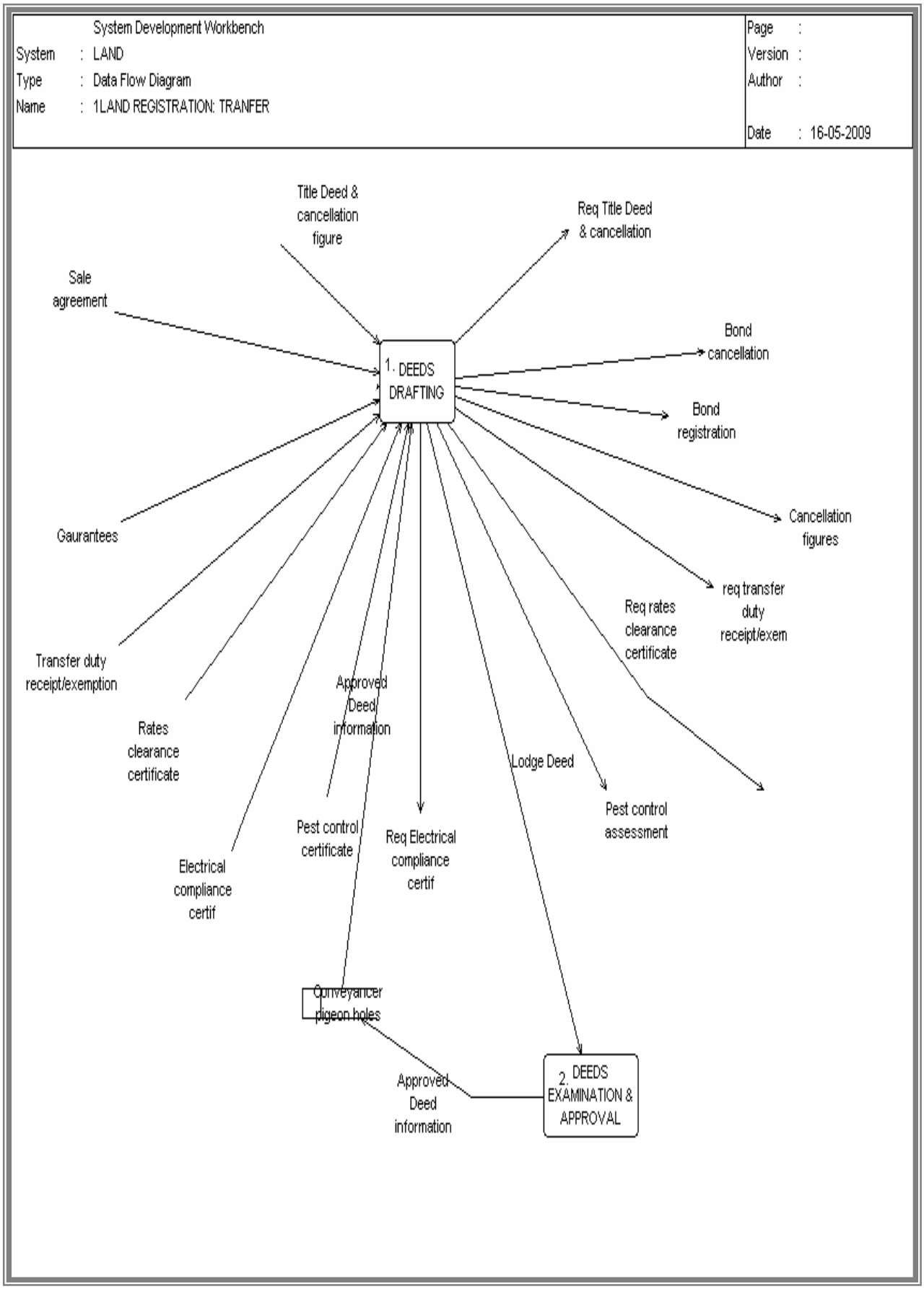


Figure 5.2: Top level DFD – The two key process steps

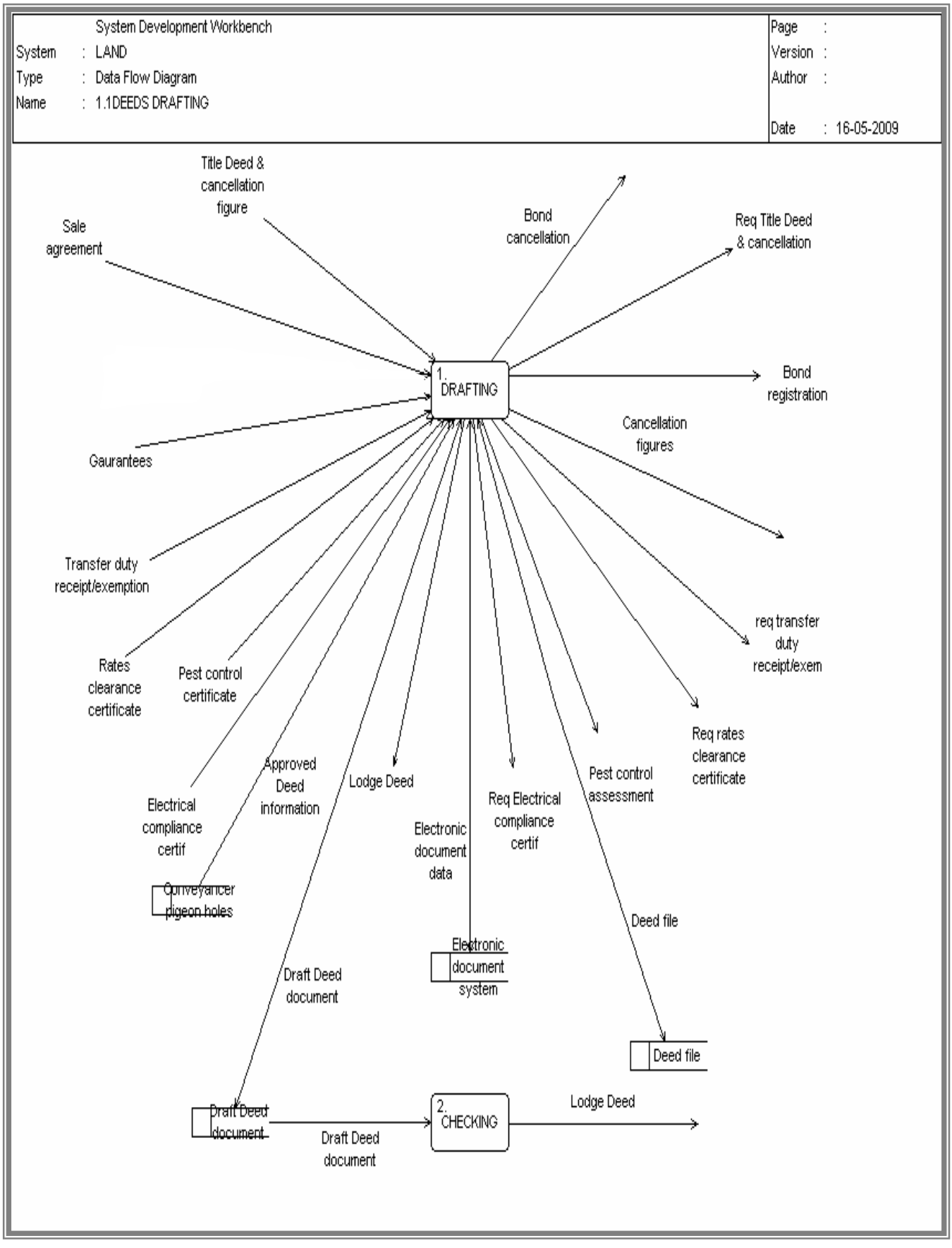


Figure 5.3: Lower level DFD - Conveyancing

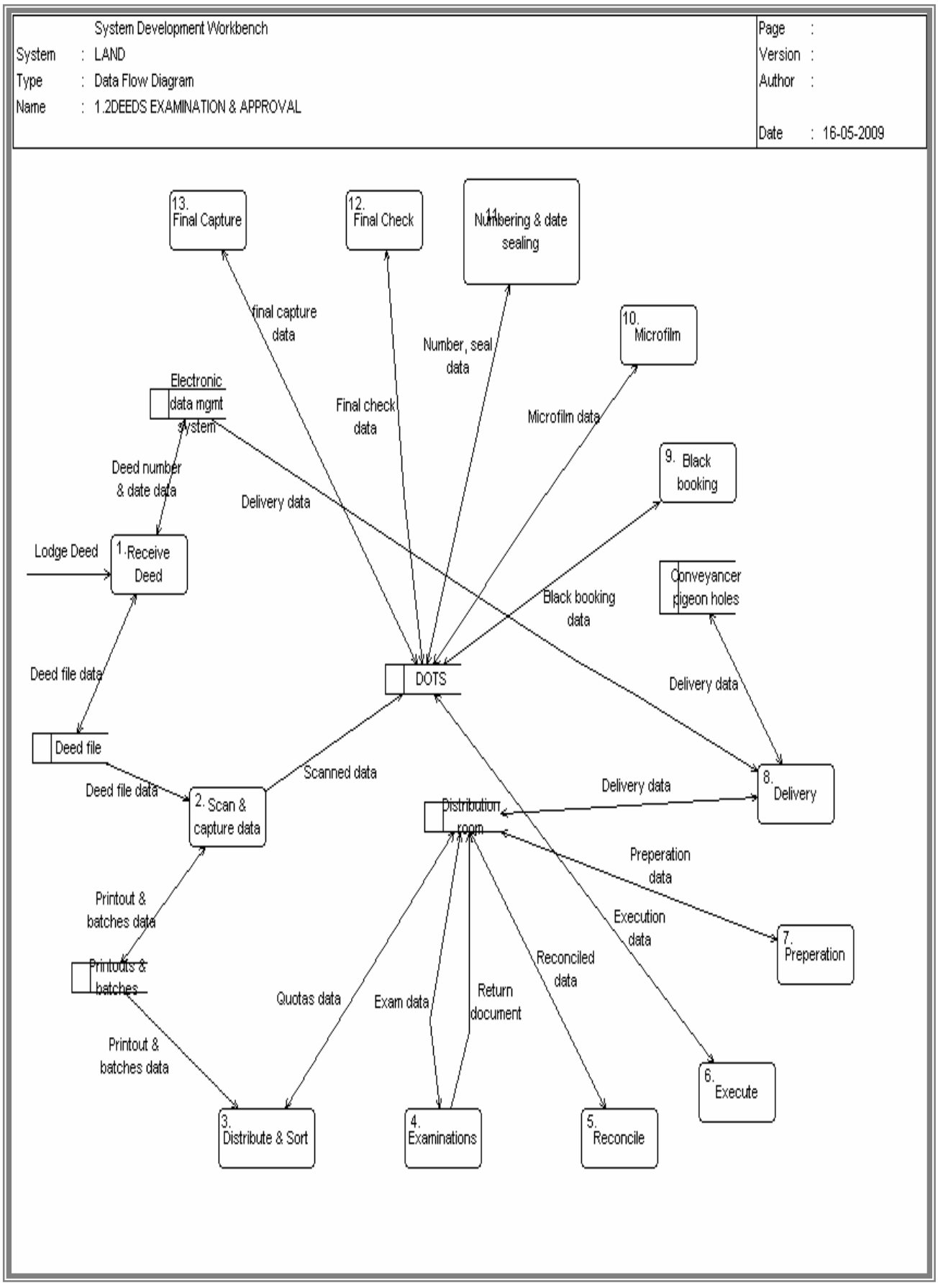


Figure 5.4: Lower level DFD – Deed Registry

5.2.4 Deed registry process Activities

Process activity 1: Receive Deed

The deed, documents and/or batch of deeds, together with a lodgement slip, will be lodged by the Conveyancer/notary (or clerk) at the lodgement counter at the deeds registry. Every registrar of deeds may determine the lodgement hours of his/her own office. As more than one Conveyancer is involved in the lodgement of batches of deeds, the deeds/documents relating to one transaction will be linked, after being reconciled with the lodgement slip, and dated by the officers at the lodgement counter.

Process activity 2: Scan and Capture

In the Pietermaritzburg deed office the Deed Office Tracking Systems (DOTS) is used, which enables the tracking of documents from lodgement to registration. Deeds are scanned at every section so that one can determine exactly where the deeds are. Once all the batches are linked and dated, the deeds/documents are sent to the data section, where printouts of the transferor and property are prepared from the records on data and filed in each lodgement cover. These printouts are needed by the examiners to enable them to compare the deeds office records, with the deeds as well as to check for any interdicts prohibiting dealings with the properties.

Process activity 3: Distribute and Sort

The deeds are then sent to the distribution/sorting room where the sorters allocate a value to the batches corresponding with the degree of difficulty of the batch. Different kinds of transactions are also sorted together to ensure that each deeds controller will have more or less the same kinds of deeds to examine the next day. The sorters will, after having ascertained how many examiners are available to examine deeds that day, calculate the norm, being the minimum amount of work required from the examiner. The norm indicates the difficulty of the work which must, if at all possible, be the same for each examiner. The sorters calculate how many deeds must be done as quota and how many deeds must be done on an overtime

basis. This is necessary as each day's lodgement must be examined in the order in which they were lodged, in other words – first come first served.

Process activity 4: Examinations

The first examiners collect their quota of deeds at the distribution room, thereafter prepare the deeds for passing or rejection by the second examiners, and ultimately for execution. They do this by endorsing the deeds, checking interdicts against the persons and properties concerned and doing first examination on the deeds. They make notes to the Conveyancers to enable the Conveyancer to rectify any errors in the deeds that they may have found. The first examiners return the deeds they examined the previous day to the distribution room, to enable the sorters to distribute the deeds to the second examiners. Once more, the sorters calculate the norm and how many deeds will be sorted to the second examiners as quota, and how many will be sorted as overtime. The second examiners collect their deeds from the distribution room and examine them for the second time. The second examiner must ensure that the provisions of the Deeds Registries Act are complied with, as well as any other legislation or common law which applies in each case. The second examiner must decide whether each deed or batch is registerable, and must either pass or reject the deeds according to this assessment. The examiner will indicate on the lodgement cover of each deed/document whether the batch has been passed or rejected. This is done by either endorsing it with a capital R, or initialling the cover of the deed in the space provided for this.

Process activity 5: Reconcile

The second examiner hands the deeds over to a monitor, usually an assistant registrar of deeds, who will reconcile the deeds with a sorting slip, and check the second examiners deeds, to ensure the correctness of the notes, and oversee the fairness of rejections. Since the Pietermaritzburg deeds registry uses the dots system, second examiners would return their deeds to the sorting room *to be* scanned off their names and *to be* scanned to the different assistant registrars. The deeds that were rejected will be sent to the delivery counter from where they are returned to the Conveyancer.

Process activity 6: Execute

The term 'execute' is used simply to mean sealing/signature. It is the practice to allow deeds which come up for execution *to be* executed on the day they come up, or within the next two days. This time period allows the Conveyancer to ensure that the necessary finances are in place. The Registrar has the power to advance a deed for execution to a date earlier than normal. This is known as 'putting forward' (expediting) a deed. In the morning of the day of execution the deeds which are ready for execution are sorted for each Conveyancer and put in their relative pigeon holes. It is at execution phase that the Conveyancers fetch the awaiting deeds and in conjunction with other firms of attorneys execute the deeds in the presence of the registrar of deeds. Final financial arrangements are made between the conveyancing firms involved, and once the deed has been signed by the Conveyancer, the deeds are tendered for attestation, usually by the assistant registrars.

Process activity 7: Preparation

The deeds that were passed for execution are sent to the preparation counter. The counter clerk will sort the deeds, and place them in the relevant Conveyancers/firm's pigeonhole. It often happens that the deeds that were up for preparation cannot be executed because of financial or other arrangements. These deeds will then stand over at the preparation counter until they are rejected after 3 days or executed before 3 days have passed.

Process activity 8: Delivery

Deeds that were rejected are sent for delivery to the relevant Conveyancer Pigeon holes, who in turn must collect and comply with the notes before re-lodgement. The Conveyancer can also approach the second examiner if the deed was incorrectly rejected, in which case the examiner must indicate on the back cover that it was rejected incorrectly. The deed together with an application to expedite must be referred to the Registrar of Deeds. These Deeds must then be lodged by the Conveyancer and will be sorted to the relevant second examiner (not as part of quota or piecework). Conveyancers have three to five days in which they must comply with any notes raised by the examiners. Should they fail to comply with the notes; the deeds will be rejected by the counter clerk.

Process activity 9: Black Booking

Should deeds be ready for execution, they will be black booked by the data section, i.e. the data section will provide printouts for every deed, in respect of which interdicts might have been lodged in the time after lodgement of the deeds. After the interdict clerks have checked every interdict that might apply, and determine that they do not apply, the deeds are once more sorted into the pigeonholes of each firm. Once the deeds have been black booked and distributed into the Conveyancer's pigeonholes, the Conveyancers will arrange the execution of the deeds in the relevant batches amongst themselves. The deeds are then brought to the Registrar, Deputy Registrars and/or Assistant Registrars *to be* executed or registered

Process activity 10: Microfilm

In offices where the deeds are not on microfilm, the execution will be sent *to be* cross-written. This is the process by which the office copy of every deed is updated to reflect the new transaction. However, in KwaZulu Natal Deed office, where the deeds are captured on microfilm, the deeds are prepared for microfilming by the camera operators in the microfilming department. Each deed will then be captured on microfilm page by page. After every deed has been captured, the film is processed. It is then subjected to quality control, and then the filming is checked to ensure that there is an acceptable replica of every deed document on record. Once microfilming is completed, the deeds are sent to the delivery clerk who manually marks every deed out, and delivers the deeds to the relevant Conveyancers by distributing the deeds into the relevant delivery pigeonholes. The Conveyancer collects every deed, and in certain offices signs for them on the original lodgement sheet.

Process activity 11: Numbering, Date and Sealing

As soon as there are sufficient deeds to process, the numbering, dating sealing and checking of the deeds must commence. This section merely ensures that every deed document has a unique numbering and the date of registration is properly sealed before it goes for final checking and capturing.

Process activity 12: Final Check

Once all the notes have been complied with and the deed numbering and date sealed, the deeds are sent to the data section for final checking. They determine whether any new interdicts were received in the time between lodgement and execution. If new interdicts were received, they are checked to determine whether they are relevant, and should they prohibit the transaction, the deeds will be rejected and returned to the Conveyancer.

Process activity 13: Final Capture

Where no new interdicts were received, the deeds documents are captured on the computer. As soon as the initial capturing has been completed, every data typist's work is checked for accuracy. Depending on the size of the lodgment and availability of staff, this sub-process usually takes one day. Before deeds are dispatched to the microfilm section for final capture, deeds are finally checked to ascertain whether the deed is correctly stamped, notes removed, endorsements signed, etc.

5.2.5 Turnaround time assessment: *as is* (manual) vs. *to be* (computer based)

Since all the data stores, data flows and process were identified under Objective 1, the focus at this stage would be on the assessment of identified stores, flows and processes establishing whether they are manual or electronic. Based on professional norms, turnaround times (process and response time) for every identified data store, flow and process is determined for the '*as is*' scenario and compared with the '*to be*' scenario. The '*to be*' electronic system is based on technological innovation and recommendations on how a manual store, flow and process can improve its process and response time as a result innovation.

5.2.5.1 Assessing format: Manual vs. Electronic

Using Data DFD diagrams generated for objective 1, the format of each identified data store, flow and process was assessed to ascertain whether they are manual or electronic. Electronic data stores/flows and processes were indicated on the DFDs in green while manual ones were shown in red. Figure 5.5 shows the results of this

categorisation. 23 manual data store, data flows and processes were identified on the deed drafting DFD compared to only 3 electronic. On the deed examination and approval DFD, 25 manual data stores/ flows and process steps were identified compared to 13 electronic. This means that overall, there are more manual (58) than electronic (16) data stores, data flows and processes in the two key sub processes.

It is evident that even though the Deed Registry Office has done a lot to introduce an electronic system into the examination and approval process, there is still room for improvement. The fact that the distribution room remains a manual store is an indication that the distribution still has a lot of incoming data flows from examination, reconciliation, execution, preparation, distribution etc. and that such incoming data is received and handled manually. The biggest problem area however is the manual processes, stores and flows during deed drafting process. Going forward, the focus of the study focuses on the deed drafting process step, deducing process and response time from the data store, data flows and processes.

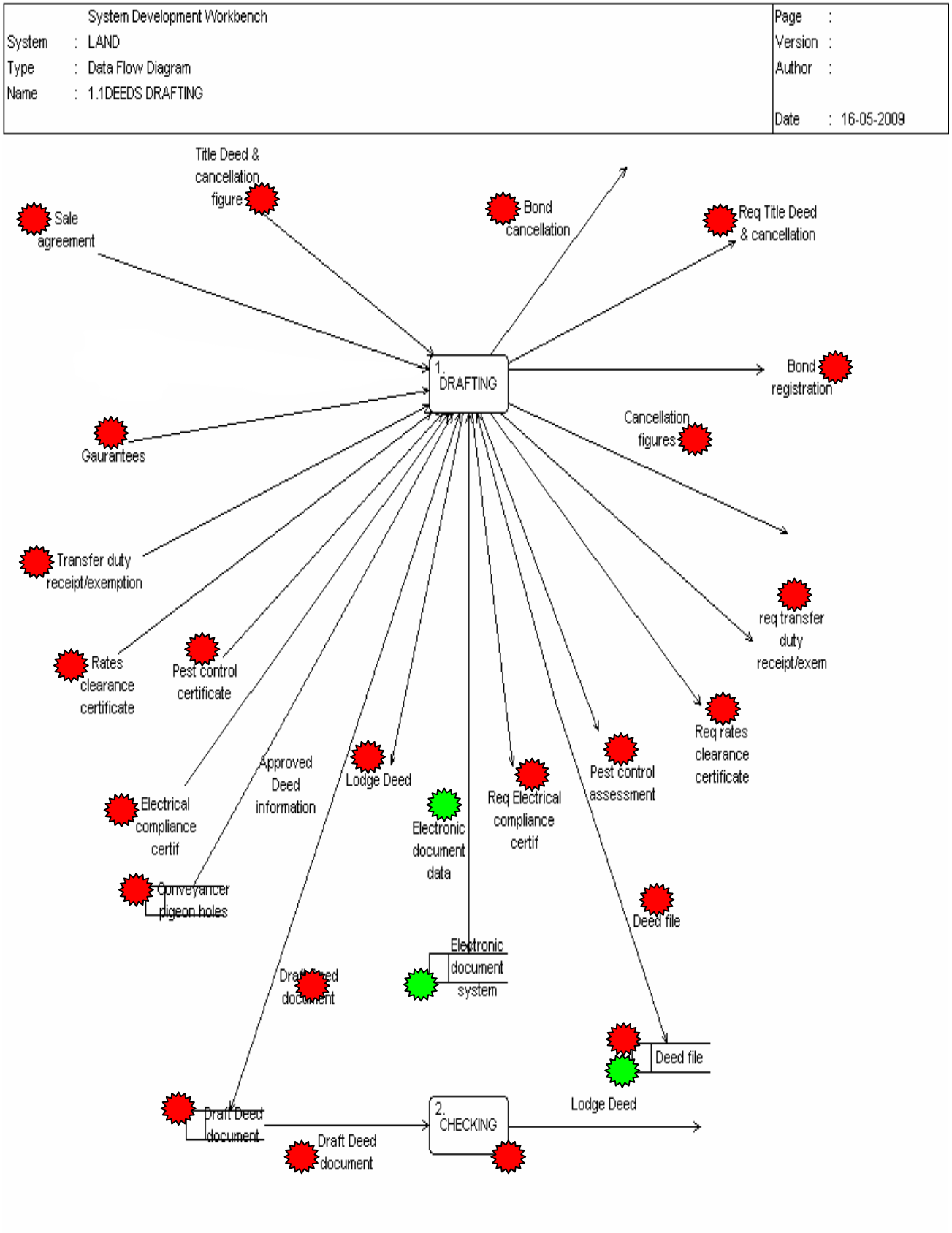


Figure 5.5: Lower level DFD – Conveyancing: Manual vs. Electronic

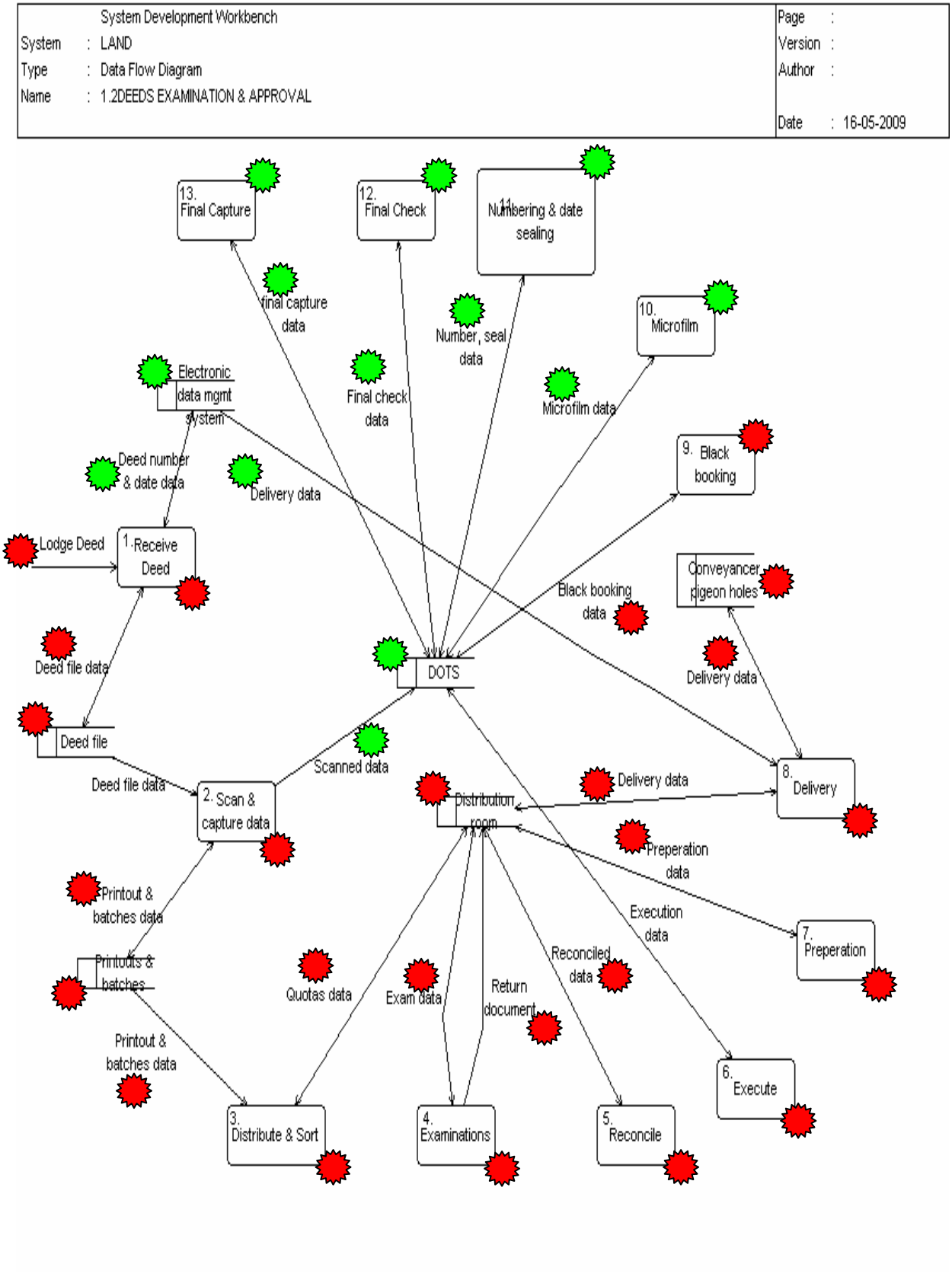
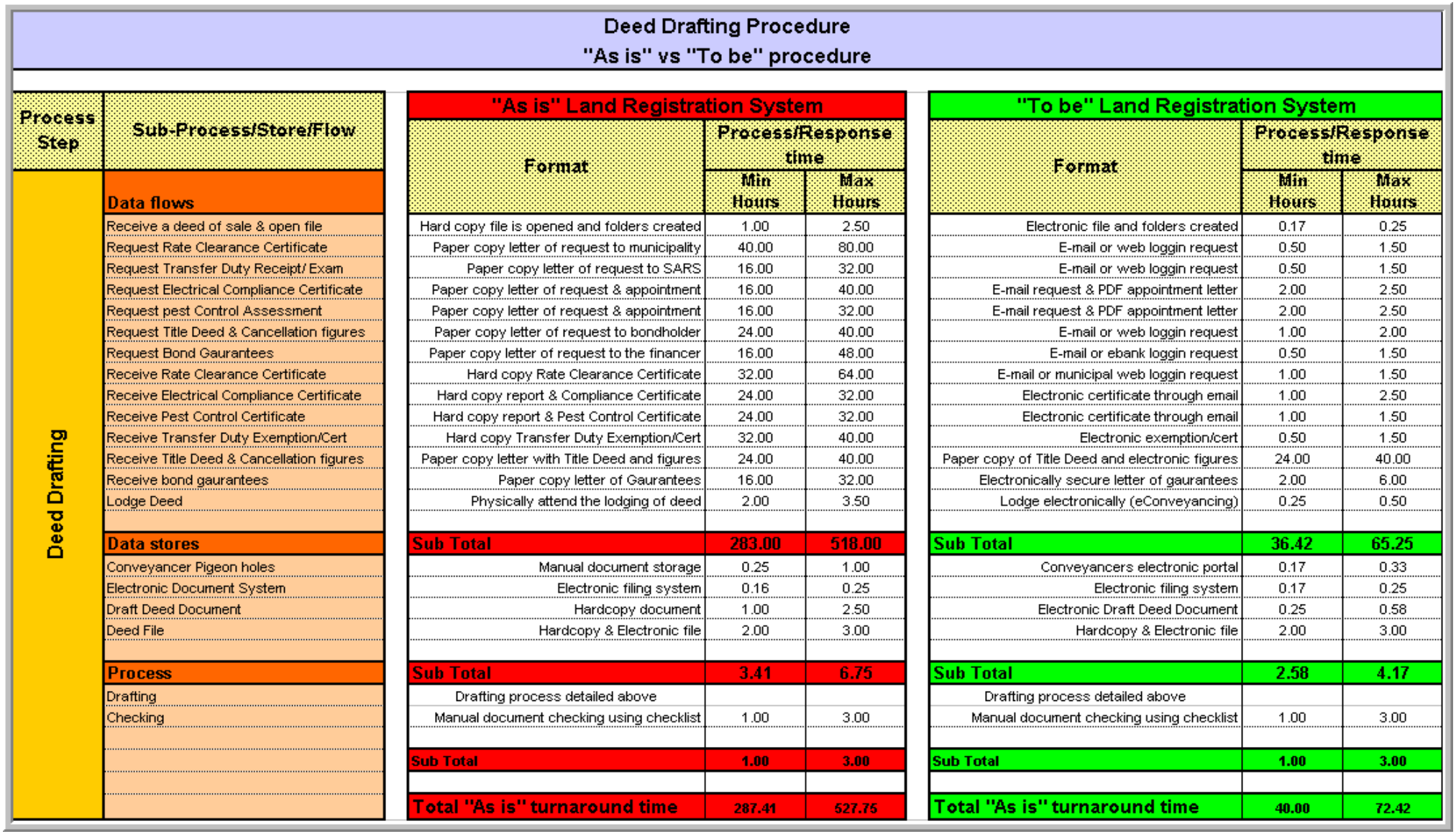


Figure 5.6: Lower level DFD – Deed registry: Manual vs. Electronic

5.2.5.2 Determining process and response time

The response and process time is subsequently built based on these process activities and time variances determined and based on professional information/knowledge and norms. It must be mentioned, however, that even though the study is concerned with the investigation and analysis of the two key process steps (Deed drafting; and Deed examination and approval), the time element was investigated and deduced for the Deed Drafting process step only. This was due to two reasons, one being that the examination and approval process (in KwaZulu-Natal Deed Registry) has already taken strides in implementing innovative measures of transforming manual processes, stores and flows to an electronic system. The introduction of the Deeds Office Tracking System (DOTS) in 2001 to track the progress of a deed document from lodgement to delivery was a step in the right direction. The second reason, apart from time constraints, is that the deed drafting process proved *to be* the process that interacts mostly with players outside of the system i.e. municipalities, SARS, banks etc., thus a lot of time is lost in the process with information and data exchanges.

According to figure 5.7 and 5.8, minimum and maximum time was determined for the *as is* and *to be* systems. The *as is* system's minimum and maximum turnaround time is 287.41 and 527.75 working hours (rounded to 36 – 70 days) respectively. While *to be* system's minimum and maximum turnaround time is 40 and 72.42 working hours (rounded to 5 – 9 days) respectively. There are whole chains of transactions linked up in the land registration process. The length of time it takes to get the transaction into the Deeds Office is dependent on the response and process time taken by each and every one of the identified parties. The usual time taken by the Deeds Office to inspect all the documents lodged by the different Conveyancers is partly dependent on the accuracy of the Conveyancer's submission. Unforeseen difficulties such as the death of one of the parties, attachment of the property by a creditor of the seller and so forth may cause the period *to be* extended. These unforeseen difficulties have not been considered by this study, however, the study notes that such delays would affect the turnaround times even further.



Deed Drafting Procedure
"As is" vs "To be" procedure

Process Step	Sub-Process/Store/Flow	"As is" Land Registration System			"To be" Land Registration System		
		Format	Process/Response time		Format	Process/Response time	
			Min Hours	Max Hours		Min Hours	Max Hours
Deed Drafting	**Data flows**						
	Receive a deed of sale & open file	Hard copy file is opened and folders created	1.00	2.50	Electronic file and folders created	0.17	0.25
	Request Rate Clearance Certificate	Paper copy letter of request to municipality	40.00	80.00	E-mail or web loggin request	0.50	1.50
	Request Transfer Duty Receipt/ Exam	Paper copy letter of request to SARS	16.00	32.00	E-mail or web loggin request	0.50	1.50
	Request Electrical Compliance Certificate	Paper copy letter of request & appointment	16.00	40.00	E-mail request & PDF appointment letter	2.00	2.50
	Request pest Control Assessment	Paper copy letter of request & appointment	16.00	32.00	E-mail request & PDF appointment letter	2.00	2.50
	Request Title Deed & Cancellation figures	Paper copy letter of request to bondholder	24.00	40.00	E-mail or web loggin request	1.00	2.00
	Request Bond Gaurantees	Paper copy letter of request to the financer	16.00	48.00	E-mail or ebank loggin request	0.50	1.50
	Receive Rate Clearance Certificate	Hard copy Rate Clearance Certificate	32.00	64.00	E-mail or municipal web loggin request	1.00	1.50
	Receive Electrical Compliance Certificate	Hard copy report & Compliance Certificate	24.00	32.00	Electronic certificate through email	1.00	2.50
	Receive Pest Control Certificate	Hard copy report & Pest Control Certificate	24.00	32.00	Electronic certificate through email	1.00	1.50
	Receive Transfer Duty Exemption/Cert	Hard copy Transfer Duty Exemption/Cert	32.00	40.00	Electronic exemption/cert	0.50	1.50
	Receive Title Deed & Cancellation figures	Paper copy letter with Title Deed and figures	24.00	40.00	Paper copy of Title Deed and electronic figures	24.00	40.00
	Receive bond gaurantees	Paper copy letter of Gaurantees	16.00	32.00	Electronically secure letter of gaurantees	2.00	6.00
	Lodge Deed	Physically attend the lodging of deed	2.00	3.50	Lodge electronically (eConveyancing)	0.25	0.50
	Data stores	**Sub Total**	**283.00**	**518.00**	**Sub Total**	**36.42**	**65.25**
	Conveyancer Pigeon holes	Manual document storage	0.25	1.00	Conveyancers electronic portal	0.17	0.33
	Electronic Document System	Electronic filing system	0.16	0.25	Electronic filing system	0.17	0.25
	Draft Deed Document	Hardcopy document	1.00	2.50	Electronic Draft Deed Document	0.25	0.58
	Deed File	Hardcopy & Electronic file	2.00	3.00	Hardcopy & Electronic file	2.00	3.00
	Process	**Sub Total**	**3.41**	**6.75**	**Sub Total**	**2.58**	**4.17**
	Drafting	Drafting process detailed above			Drafting process detailed above		
	Checking	Manual document checking using checklist	1.00	3.00	Manual document checking using checklist	1.00	3.00
		Sub Total	**1.00**	**3.00**	**Sub Total**	**1.00**	**3.00**
		Total "As is" turnaround time	**287.41**	**527.75**	**Total "As is" turnaround time**	**40.00**	**72.42**

Figure 5.7: Deed Drafting – '*as is*' vs. '*to be*' turnaround time comparison table

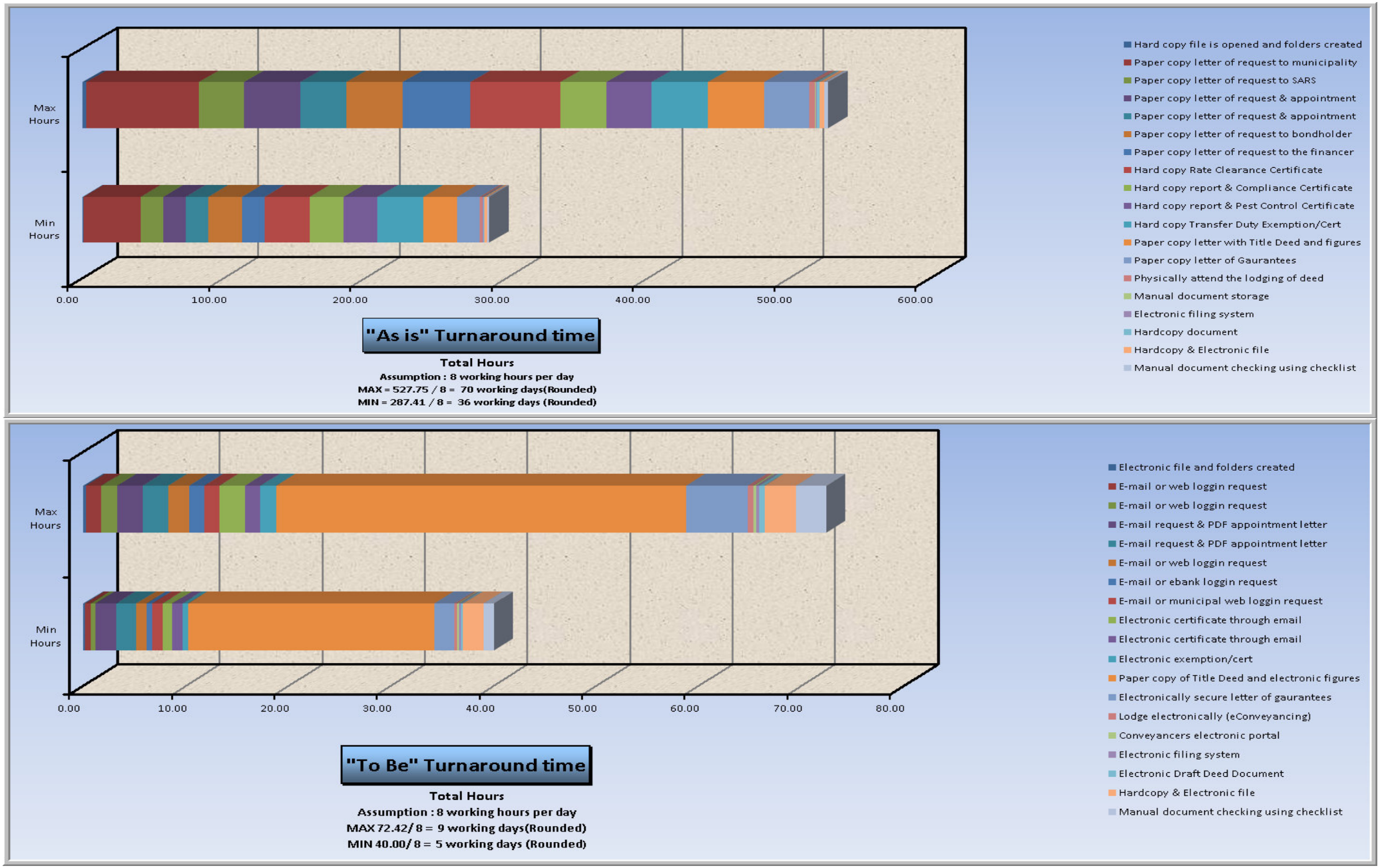


Figure 5.8: Deed Drafting – min hours vs. max hours comparison

5.2.5.3 Activities running simultaneously

It must be noted that there are activities (especially the data flows) that often run concurrently; however, this does not mean less time (man hours) spent on such activities. The above turnaround times relate to man hours and assume an 8 hour shift per day. If it takes 2 to 5 days for an electrical compliance certificate request, it is possible that a pest control assessment is requested at the same time. This means such activities will run parallel to each other. This however does not mean less time spent on such activities as result of activities running concurrently. The turnaround time remains the same regardless of whether an activity is done simultaneously with another. The turnaround time refers to an end-to-end process, meaning a time spent requesting, delivering, processing and responding to a particular request. In essence, all the requests i.e. Request for Electrical Compliance Certificate, pest Control Assessment, Transfer Duty Receipt/ Exemption can all be done simultaneously.

5.2.5.4 General Comments

The turnaround time comparison spreadsheet shows the times as taken from the interviews with the attorneys. Since the time data was collected from both the well established and resourced company and the less resources company, minimum and maximum turnaround time proved *to be* the most accurate and non-biased way of presenting such results. A more resourced company, for example, tends to carry out certain activities much quicker than those of the other. This may be as a result of a well established reputation and respect they command in the industry field – more resource to assist in following up request and so forth. Similarly, well established municipalities or metro councils like Ethekwini Metro, tend to respond quicker to requests than less resourced municipalities. This too could be as a result of established municipalities having proper recording systems and well established request processes systems. Some smaller municipalities don't have such systems in place.

Assumptions

With regards to the above comparison spreadsheet, certain assumptions were made. The obvious one being that all role players operate on an 8 hour working day schedule

and no overtime was catered for. The most critical assumption was that the '*to be*' improved system assumes that all role players operate in a fully computerised environment. The assumption is based on an ideal notion that all role players including the electricians and pest control specialist have access to a computer and associated computer tools such as email and the web.

5.3 RECOMMENDATIONS

5.3.1 Deeds registration system should be computer based

Manual data stores, data flows and processes pose a challenge for the land registration system. The present paper-based system is successful to the extent that it provides security of title and is accurate. The challenge now lies in effecting speedier and more cost-effective land delivery through technology without detracting from the accuracy and security of title enjoyed by the South African public at present. The introduction of e-Conveyancing can radically reshape the process of land registration, not only to work better but to work in a way which can be handled completely electronically giving the customers a more efficient, and a better service (Rajasekhar, 2006). The improvement option thus would be to alter, where possible, manual data store, data flows and processes to a computer based environment. Critical data stores such as the distribution room at the deeds registry remain a challenge in the current situation. Process activities such as the distribution, examination, reconciliation, execution and preparation all interact and depend on the manually operated distribution room.

In the cases where e-Conveyancing models are more comprehensive and all encompassing e.g. the Netherlands and Wales, deeds are lodged electronically. The 19 million registered titles within England and Wales are held electronically and updated by Land Registry staff (HM Land Registry, 2003; Rajasekhar, 2006). It should be possible for a Conveyancer or accredited government official to access the Deeds Office from any place in the Republic with a PC, modem and telephone line. The existing cumbersome procedure where a Conveyancer has to instruct a colleague practising at the seat of registry to lodge the necessary documents on his or her behalf should no longer be necessary.

The data stores, data flows and processes required during a deed drafting stage should be electronic and computer based. SARS tax declarations, for example, should be done on the SARS system in the same fashion as a system used for Tax returns. The e-Conveyancing service must however gain the confidence of users by strict adherence to an appropriate level of security, striking a balance between security, usability and cost. Unfortunately, e-mail exchanges on the internet are almost totally unprotected. This information can be misused if measure related to system integrity, authenticity, non-repudiation, audit trails and privacy are not prioritised (Rajasekhar, 2006)

5.3.2 Legislation *to be* amended to support electronic land registration

Governments have undertaken wide-ranging programmes of legislative changes to ensure that the law meets the needs of today's property markets, especially countries like Netherlands, England and Wales who are at the forefront of e-Conveyancing (Rajasekhar, 2006). For electronic land registration in South Africa *to be* realised therefore, certain amendments to the Deeds Registries Act, 1937 (Act No. 47 of 1937) will be required. It will not be necessary to redraft the entire Act. Such amendments are possible to allow an electronic lodgement of documents. For example, Regulation 20(1) of the Act requires that deeds and other documents lodged for execution, registration or records must be on paper approved by the Registrar. In terms of regulation 20(8), the Registrar can relax this and other provisions of the regulations at his/her discretion.

The Electronic Communications and Transactions Act, 2002 (Act No. 25 of 2002) has gone a long way towards creating a suitable environment for electronic land registration. Government, specifically the Deeds Registries, needs to consider providing the private sector access to electronic systems such as DOTS, whereby the Conveyancers are able to track the documents through the process. It would appear that the implementation of electronic land registration would necessitate, for at least an initial period, a parallel registration system. The present paper-based system will have to run concurrently with an electronic system as it would be impossible to convert to an electronic system in one jump.

5.3.3 Electronic land registration options

The responsibility for the legal validity of titles should be the basis for options analysis. The present system provides for a division of these responsibilities between the Deeds Office and the conveyancing profession. In recent years and especially since the introduction of Section 15A of the Deeds Registries Act, 1937 (Act No. 47 of 1937) and the Sectional Titles Act, (Act No. 95 of 1986), the responsibilities of Conveyancers have steadily increased. The examination function of the Deeds Office although substantial and important, is no longer as comprehensive as in the past. With regard to the electronic land registration, the following options warrant consideration:

5.3.3.1 Legal validity of deeds: The Deeds Registry assumes full responsibility

The Deeds Registry should assume full responsibility for the legal validity of deeds. This would inevitably result in a substantial expansion of the examination function of the Deeds Office to ensure the legal validity of each and every registration. It would lead to a massive increase in supporting documents *to be* checked by the Deeds Registry in order to establish the legal validity of a particular transaction. This could lead to an untenable position as the list of problems resulting from this option would be substantial. To undertake such a comprehensive examination function, the Deeds Registry will have to insist that extracts of company, close corporation and trust documents as well as extracts from the constitutions of voluntary associations such as churches, social and sports clubs be filed, albeit in electronic format, in order to enable the Deeds Registry to check the powers of these juristic persons. Natural persons would also pose problems as the existing records of Deeds Registry cannot be relied upon in so far as it relates to a person's marital status. Affidavits confirming a person's marital status will therefore have *to be* checked and verified by the Deeds Registry.

The objective of effecting registrations electronically will be frustrated as supporting documents will have *to be* submitted in paper format. This option may also result in too many persons gaining access to the electronic land registration system for registration purposes. The records are not accessed for information purposes but in

fact to record new registrations. Hackers could create havoc and jeopardize the integrity of the system. If access is limited only to qualified Conveyancers and government officials with accreditation to access the system, the question again arises as to why the Deeds Office should carry the sole responsibility for the legal validity of deeds in the first place. In the South African land registration context, this option is clearly not a viable one.

5.3.3.2 Legal validity of deeds: The legal profession assumes full responsibility

The legal profession assumes full responsibility for the legal validity of deeds. This would result in the Deeds Office abandoning its examination function. All the other important functions of the Deeds Office will remain intact, i.e. the duty to register and record, to maintain registers, to provide information and to preserve records. This would also mean that it would become the sole responsibility of the Conveyancer to ensure that transactions intended for registration are in proper form and that their nature is such that they are capable of registration. It would appear that the Deeds Office will still have to perform a "checking" role as opposed to an "examination" function. As Court Orders and Notices affecting persons (insolvency and divorce orders) and land (attachments and expropriations) are filed with the various Deeds Offices, it follows that the Deeds Office will have to check as to whether or not any of these orders or notices affect a person or property involved with a transaction which the Registrar may be called upon to register. Should the Deeds Office dispense with the examination function, virtually the full responsibility for the validity of Deeds will rest with Conveyancers. This could lead to problems that may well be insurmountable.

This option would clearly not be in the public interest if the Deeds Office were to neglect its responsibilities to ensure that land registration is effected in accordance with the laws. It is in the public interest that the Deeds Office performs this vital function in conjunction with the conveyancing profession. The system of checks and balances afforded by the interaction between the Deeds Registry Office examiners and Conveyancers is the cornerstone of our land registration system, whether applied in paper or electronic format.

5.3.4.3 The Deeds Office outsources the examination function

The Deeds Office merely records and registers as the examination function is delegated and outsourced to the private sector. The Deeds Office as the representative of the State remains the authority to perform the registration function, to keep records and maintain registers. The private sector performs the examination function on behalf of the Deeds Office. It is doubtful whether the inter-action between the public and private sector can be improved upon if such inter action (with its system of checks and balances) is replaced by a system where the private sector interacts with itself, i.e. the Conveyancers on the one hand and the examination entity on the other hand. The question arises whether this option would serve any purpose. It is doubtful whether a shift of this nature would afford real benefits to either the public or the employees of the various Deeds Offices. The disruption that will be caused by such a move would probably not add value to the public or any of the role players in the property industry especially insofar as it relates to land registration. The conversion of a paper-based system to an electronic system should not result in changes that are unlikely to improve the status quo.

5.3.4.4 Electronic system as opposed to paper-based processes

It can be said of our land registration system where the obligations and duties of the various role-players are clearly defined, that it virtually guarantees security of title - to the extent that title insurance (the norm in the United States) is unknown in South Africa. Electronic registration must not detract from the status quo in this regard. It must streamline the system without compromising its integrity. To achieve this, it would be necessary for Conveyancers to assume greater obligations and responsibilities when performing their legal, management and financial functions and duties. The electronic registration environment will however require certain adaptations affecting all role players especially the Deeds Office and Conveyancers. In regard to the Deeds Office, a computerised land registration system should provide for the examination of deeds by electronic means. This would relate to basic issues such as checking the names and identity numbers as well as the marital status of transferors against the existing records of the Deeds Office.

In regard to Conveyancers, it would appear that Conveyancers would have to assume additional responsibilities. The Deeds Office should no longer check and retain supporting documents such as powers of attorney to pass transfer or register bonds, transfer duty receipts, rates clearance certificates, consents to alienate, sub-divide and the like. These supporting documents will for the foreseeable future remain in paper format. This would certainly apply to the authority of a property owner to transfer or mortgage his or her property (the relevant power of attorney). Such an authority should in our view be given in writing *to be* used as best evidence for the resolution of disputes. The Conveyancer or statutory rights officer should be obliged to keep a proper protocol for these documents. Should the validity of a transaction be questioned or attacked, the parties to the dispute must be enabled to access the documents authorising the digital registration of the property transaction. In the public interest the conveyancing profession should assume this additional responsibility.

5.3.4.5 Electronic system should render a better service

If the present system were converted to an electronic one, certain "paper requirements" would still hamper and even frustrate the entire initiative. It is therefore recommended that the duty to check transfer duty receipts should not be imposed on the Registrars of Deeds. The duty imposed on Registrars of Deeds to check rates clearance certificates issued by local authorities should likewise be dispensed. These duties should become the responsibility of Conveyancers and the legislation should be amended accordingly. In this regard it should be noted that the entire initiative to introduce electronic land registration could be severely hampered by the insistence that the Registrars still check transfer duty receipts and clearance certificates. Experience has shown that excessive delays are caused in property transfers by the requirement that transfer duty receipts and municipal clearance certificates have *to be* lodged. These documents are in any event not furnished electronically and it would be an untenable position to have both an electronic component as well as a paper component (i.e. the aforesaid receipts) in respect of every property transaction. The obvious solution is to shift this burden to the Conveyancers and accredited government officials. This proposal will undoubtedly speed up the registration process without affecting the position of the Conveyancers, financial institutions, the Receiver of Revenue or the various local authorities.

Conveyancers obtain transfer duty receipts and rates clearance certificates in any event. The Receiver can easily check in respect of which transactions Conveyancers omitted to pay transfer duty. The Deeds Office will have no difficulty in furnishing each Receiver from time to time with all the information regarding registrations in its area of jurisdiction for a specific period so as to enable the various receivers to collate (presumably electronically) this information against its records relating to the payment of transfer duty. It should therefore be a simple exercise to identify those transactions in respect of which Conveyancers failed to pay duty. Local Authorities should not be placed in a better position than Bodies Corporate in Sectional Title Schemes. Reluctance on the part of the SARS and municipalities to co-operate in this regard should not impede the implementation of electronic land registration.

CHAPTER 6: CONCLUSION

This Chapter concludes the study and proposes recommendations for further study.
The DFD technique was used to decompose the LR system into data flows, data stores and processes. 58 manual data store, data flows and processes were identified compared to only 16 electronic for the two key processes of deed drafting (at Conveyancers) and Deed examination and approval (at the Deeds Registry). The manual based interaction of data stores, data flows and processes appear to result in longer turnaround times as shown on the turn around time results. In the *as is* system's the minimum and maximum turnaround time was found *to be* 36:70 days respectively compared 5: 9 days for the ideal *to be* (computerized) system. This suggests that the proposed electronic (computer-based) system would take much less than the present manual, paper-based system.

A system-based approach proved *to be* one of the best approaches of identifying system gaps and bottlenecks. Based on the system analysis done, evidently, there is plenty of room for improvements. The current system of land registration is excellent in that it guarantees security of title and ensures accuracy of information submitted. The challenge now lies in effecting an expedient and more cost-effective land delivery through technology without detracting from the accuracy and security of title enjoyed by the South African public at present.

With funding and commitment from all concerned role players, it should be possible to have an electronic land registration system where supporting documents are sourced electronically, and that lodgement, examination and registration done electronically. The current paper-based system is slow compared to the ideal electronic system. The introduction of electronic registration should enable the Deeds Office to dispense with the labour intensive and time-consuming checking and collating of matters such as identity numbers, the numbers of companies, trusts and close corporations, the names of persons whether natural or judicial as well as the numbers of erven, holdings and farms, the extent of these properties as well as their title numbers. These are all matters that can be attended to in an electronic environment without human intervention. Authorising documents such as powers of

attorney to give transfer or pass bonds and applications for the issue of certificates of registered or consolidated title, should no longer be lodged as these documents should be kept in safe custody in the Conveyancer's Protocol. This practice has been followed in respect of Notarial Deeds in the current paper system for many decades. Electronic registration will provide an ideal opportunity to extend this principle to all Deeds lodged for registration or execution thereby relieving the Deeds Office of the burden of having to examine these documents.

This principle could be further extended to other supporting documents such as transfer duty receipts and rates clearance certificates. These can likewise be kept in the Conveyancer's Protocol. Before this procedure could be implemented in respect of transfer duty receipts and rates clearance certificates, the co-operation of both SARS and the various municipalities will have *to be* obtained. This will also necessitate the amendment of legislation governing the production of these documents. This is a long-term initiative which is not a pre-requisite for electronic registration and which should be pursued as a separate issue. It should nevertheless be emphasised that it will simplify matters for the Deeds Office if the checking of these documents by the Deeds Office, which has nothing to do with the integrity of the land registration system, could be dispensed with. The updating of the records of the Deeds Office will occur instantaneously with the registration of each and every transaction.

The present expensive procedure whereby the information received by the Deeds Office in paper format, can only be converted into electronic format by data operators (leaving room for errors) after registration, would no longer apply. This will inevitably result in the records of the Deeds Office being more accurate and up to date as the present system does not necessarily reflect the actual position by reason of the time-lapse occasioned by the conversion of paper-based data into electronic format. Data typists will be able to update the remainder of paper-based information, e.g. court orders, more expeditiously and would be free to perform other tasks and duties. Electronic registration may also enable the Deeds Office to create additional revenue streams such as establishing and maintaining security registers for commercial banks and other financial institutions; and establishing and maintaining comprehensive property and ownership registers for local municipalities. A cost-benefit researched might be required to check, test and balance this option.

The need for the expedition and restoration of deeds will diminish and may even disappear. Although it is the prerogative of the Deeds Office to accede to or refuse requests for either the expedition or the restoration of deeds, much time and energy is spent in considering these requests. The system is often abused and does interfere with the normal workflow of a number of examiners. Conveyancers will undoubtedly welcome "the levelling of the playing fields" as many Conveyancers feel that the system is being abused by some. Labour implications of this possibility can be researched in conjunction with the Deeds Office. It is important to note that time will not only be saved because of the fact that the examination and registration period in the Deeds Office could be substantially reduced. Electronic registration will also expedite the deed drafting process that precedes lodgement in the Deeds Office. To give but one example: Dispensing with the paper process would result in the Deeds Office no longer requiring a client's copy of a title deed or bond(s) for lodgement. The laborious procedure where titles or bonds must first be obtained from sellers or mortgagees would automatically fall away. A substantial period of time would be saved in this manner. The study concludes that electronic registration will fast-track the land registration process, saving a lot of time, which in turn would considerably contribute to economic growth of South Africa, in general, and specifically to the majority of poor people who depend on the security of tenure for their livelihood.

References

Aguilar-Saven, R. S. R. S. (2004). "Business process modelling: Review and framework." Int. J Prod Econ, 90(2): 129-149.

Banathy, B. H. (1997). Designing Social Systems in a Changing World. Contemporary Systems Thinking Graduate School and Research Center, San Francisco, CA, and International Systems Institute, Carmel, CA, USA, 387 pp.

Bingo, V. (2006). Open and closed systems and the Cambridge School, Review of Social Economy, 64 (4): 493 – 514.

Chimhamhiwa, D., Van der Molen, P., Mutanga, O., Rugege, D., (2009). Towards a framework for measuring end to end performance of land administration business processes – A case study. Computers, Environment and Urban Systems, 33(4): 293-301.

Chervenak (2000). Data block prefetching and caching in a hierarchical storage model. Information Sciences, 128: 19-41.

Chesbrough, H. (2003). Open Innovation: the new imperative for creating and profiting from technology, Harvard Business School Press.

Davenport, T. H. (1993). Process Innovation-Reengineering Work through Information Technology, Cambridge, Harvard Business School Press, 335 pp.

Dowson, M., Nejmeh, B., arid Riddle, W., (1991). Concepts for process definition and support. In Proceedings of the Sixth International Software, Procesa Washington DC, 87-90 pp.

Fourie, C. (1994). Options for the Cadastre in the New South Africa. Report to the South African Council for Professional and Technical Surveyors' Conference.

Harsono, B. (1996). The land dispute resolution according to rules in Basic Agrarian Law. Paper presented at the Basic Agrarian Law XXXVI Anniversary Conference, The State Minister of Agrarian Affairs/Head of the National Land Agency Office, Jakarta, Indonesia.

Henssen, J. L. G., (1995). Basic Principles of the Main Cadastral Systems in the World. In Proceedings of the One Day Seminar held during the Annual Meeting of Commission 7, Cadastre and Rural Land Management, International Federation of Surveyors (FIG), May 16, Delft, The Netherlands.

Henssen, J. L. G., (1981). The requirements and significance of a land registration system, including the cadastre, for developing countries, Federation Internationale des Geometres, XVI International Congress, Montreux, Switzerland, Invited Paper 702.1, 10 pp.

Hernandez - Matias, J. C., Vizan, A., Perez-Garcia, J. & Rios, J., (2008). An integrated modelling framework to support manufacturing system diagnosis for continuous improvement. Robotics and Computer-Integrated Manufacturing, 24: 187-199.

H M Land Registry (2003). The Strategy for the Implementation of e-Conveyancing in England and Wales, H M Land Registry.

Hoffer, J. A., J. F. George and J. S. Valacich, (1998). Modern System Analysis band Design. Addison-Wesley, New York.

Kaufmann, J. and Steudler, D. (1998). Cadastre 2014: A Vision for a Future Cadastral System, July 1998.

Kima, C., Westonb, R. H., Hodgsonb, A. & Lee, H. K., (2003). The complementary use of IDEF and UML modelling approaches. Computers in Industry, 35 -56.

Larsson, G. (1991). Land Registration and Cadastral Systems: Tools for land information and management. Longman Scientific and Technical, Essex, England, ISBN 0-582- 08952-2.

Lisec, A., Ferlan, M., Lobnik, F. & Sumrada, R., (2008). Modelling the rural land transaction procedure. Land Use Policy, 25: 286 - 297.

Lester, K. J. and Teversham J. (1995). An overview of the Cadastral System of South Africa. The South African Journal of Surveying and Mapping, 23 (2).

Mayer, R. J., Painter M., and deWitte P. (1992). IDEFfamily of methods for concurrent engineering and business reengineering applications, 1992. Knowledge Based Systems, Inc.: College Station, TX.

Marlowe T. J. and Ryder B. G. (1990). Properties of data flow frameworks. Acta Informatica, 28(2): 121–163.

Nichols, S. E. (1993). Land Registration: Managing Information for Land Administration. Ph.D. dissertation, Department of Surveying Engineering Technical Report No. 168, University of New Brunswick, Fredericton, Canada, 340 pp.

Pidwirny, M. (2006). "Definitions of Systems and Models". Fundamentals of Physical Geography, 2nd Edition. March 2008. Also available at: http://www.physicalgeography.net/fundamentals/4b.html (Accessed 08 November 2008).

Radloff, F. G. T. (1996). Land registration and land reform in South Africa, The John Marshall Law Review, 29: 809 pp.

Rajasekhar, P. V. (2006). e-Conveyancing: Challenges and Ambitions. International Conference on Enhancing Land Registration and Cadastre for Economic Growth in India 31 January – 1 February 2006, Hotel Taj Palace, New Delhi.

Republic of South Africa (1937). Deeds Registries Act 1937 (Act No. 47 of 1937). Pretoria: Government Printers of Republic of South Africa.

Republic of South Africa (2002). Electronic Communications and Transactions Act, 2002 (Act No. 25 of 2002). Pretoria: Government Printers of Republic of South Africa.

Republic of South Africa (1986). Sectional Titles Act, 1986 (Act No. 95 of 1986). Pretoria: Government Printers of Republic of South Africa.

Republic of South Africa (1997). Land Survey Act, 1997 (Act No. 8 of 1997). Pretoria: Government Printers of Republic of South Africa.

Republic of South Africa (2004). Communal Land Rights Act, 2004 (Act No. 11 of 2004). Pretoria: Government Printers of Republic of South Africa.

Republic of South Africa (2007). Department of Land Affairs 2006_7 Annual Report, Parliamentary Monitoring Group, also available at: http://www.pmg.org.za/docs/2007/071107dlarep.pdf (Accessed 5 June 2009)

Republic of South Africa (2009). Department of Land Affairs 2008_9 Annual Report, Parliamentary Monitoring Group, also available at: http://www.pmg.org.za/report/20091021-department-land-affairs-annual-report-200809-auditor-generals-and-dep (Accessed 7 June 2009)

Ten Haaf W., Bikker H., Adriaanse D.J. (2002). Fundamentals of Business Engineering and Management, A Systems Approach to People and Organisations, Delft University Press.

Turetken, O. & Schuff, D., (2007). The impact of context-aware fisheye models on understanding business processes: An empirical study of data flow diagrams. Information & Management, 44: 40 - 52.

Wilson, J. M., (2003). Gantt Charts: A centenary appreciation. European Journal of Operational Research, 149: 430 - 437.

World Bank (2005). Doing Business. Washington, USA.

van der Molen, P. (2002). The dynamic aspects of land registration: an often-forgotten component in system design, Computers, Environment and Urban Systems, 26(5): 361-381.

von Bertalanffy (1968). General System theory: Foundations, Development, Applications, New York: George Braziller, revised edition 1976.

Zevenbergen, J., (1998). The interrelated influence of the technical, legal and organisational aspects on the functioning of land registrations (cadastres), Proceedings XXI FIG Congress, Commission 7, Brighton, 130-145.

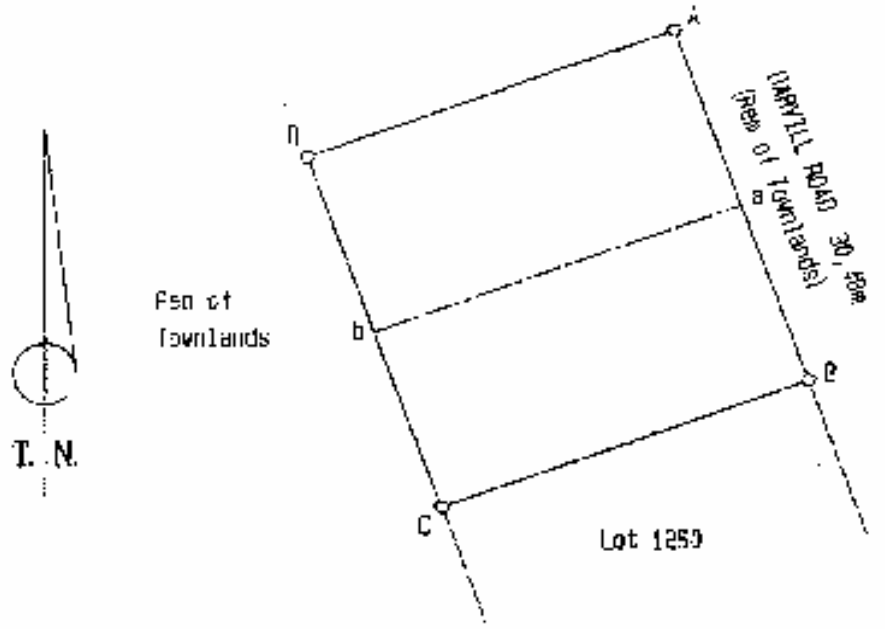
Zevenbergen, J. (2004). A Systems Approach to land registration and cadastre. Nordic Journal of Surveying and Real Estate Research, 1 (1): 11-24.

Annexure 1: Survey diagram

D. A. Symington & Co — CONSOLIDATED DIAGRAM

SIDES Metres	DIRECTIONS	CO-ORDINATES Y System (Local)		X ORIGIN TOWN HALL SPIRE
AB 30,48	160 27 20	A	+ 2 033,10	- 502,40
BC 30,48	250 27 20	B	+ 2 019,30	- 531,15
CD 30,48	340 27 20	C	+ 2 004,58	- 541,35
DA 30,48	70 27 20	D	+ 1 994,39	- 512,62

S. G. No. 3462 / 1991
Approved
for Surveyor-General
23-12-1991



SCALE 1:500

BEACON DESCRIPTIONS:
A, D - 16mm Iron Peg
B, C - 16mm Iron Peg under Stones

The figure A B C D
represents 920 square metres of land, being
LOT 3325 OF PIETERMARITZBURG
and comprises.
1. The figure A B C D representing Lot 1234 Pietermaritzburg. Vide diagram S. G. No. 2224/1958 and Deed of Transfer No. 2209/1961.
2. The figure b B C b representing Lot 1184 Pietermaritzburg. Vide diagram S. G. No. 6676/1955 and Deed of Transfer No. 4133/1957.

situate in the City of Pietermaritzburg, Administrative District and Province of Natal.

compiled in November 1991

by me — Land Surveyor

This diagram relates to No. CCT 3654/1992
Registrar of Deeds

File No. PMB 3219
S. A. No. —
Comb. FT-5B-24A-1

Degree Sheet

REG. DIV. FT

Annexure 2: Power of attorney to pass transfer

48

Shafee Khan & Company
Attorneys, Notaries & Conveyancers
385 Loop Street
PIETERMARITZBURG

Prepared by me

CONVEYANCER
KHAN M S

POWER OF ATTORNEY TO PASS TRANSFER

I, the undersigned

AHMED KADODIA
Identity Number 260906 5161 08 1
Married out of community of property

do hereby nominate and appoint MAHOMED SHAFEE KHAN

with power of substitution to be my true and lawful Attorney and Agent in my name, place and stead to appear at the Office of the Registrar of Deeds in Pietermaritzburg or any other competent official in the Republic of South Africa and then and there as my act and deed to pass transfer to:

NOELENE VERONATHA URSLA MALISSAR
Identity Number 620129 0057 08 0
Married out of community of property

the property described as:

ERF 3326 PIETERMARITZBURG REGISTRATION DIVISION FT, PROVINCE OF KWAZULU-NATAL;

IN EXTENT: 930 (NINE HUNDRED AND THIRTY) SQUARE METRES

HELD BY Certificate of Consolidated Title No. T3654/1992

the said property having been sold by me on 13 March 2006, to the said transferee/s for the sum of R450 000,00 (Four Hundred and Fifty Thousand Rand)

and further cede and transfer the said property in full and free property to the said Transferee; to renounce all right, title and interest which the Transferor heretofore had in and to the said property, and generally, for effecting the purposes aforesaid, to do or cause to be done whatsoever shall be requisite, as fully and effectually, to all intents and purposes, as the Transferor might or could do if personally present and acting therein; hereby ratifying, allowing and confirming all

GhostConvey 8.0.5.1

and whatsoever the said Agent/s shall lawfully do or cause to be done in the premises by virtue of these presents.

Signed at PIETERMARITZBURG on 31 May 2006

in the presence of the undersigned witnesses.

AS WITNESSES :

1. _____

2. _____

_____

AHMED KADODIA

Annexure 3: Municipal rate clearance certificate

The Msunduzi Municipality

STRATEGIC EXECUTIVE MANAGER [FINANCE]

CITY OF CHOICE

PIETERMARITZBURG
MSUNDUZI

CITY FINANCES [RATES SECTION]

Telephone : 033 3951258
Fax : 033 3951425

333 Church Street
Pietermaritzburg
3201

P O BOX 261
Pietermaritzburg
3200

Email : jayp@msunduzi.gov.za
Email : pamd@msunduzi.gov.za

CERTIFICATE NUMBER: 6009

RATES CERTIFICATE

THE MSUNDUZI MUNICIPALITY

THIS CERTIFICATE IS ISSUED IN COMPLIANCE WITH SECTION 118 OF ACT 32 OF 2000

This is to certify that all Rates and Penalties payable on the undermentioned property have been paid, and all claims and other requirements under Ordinance 14 of 1936 and Section 10, Ordinance 16 of 1968, as amended, have been satisfied, performed or secured.

Amounts owing in terms of Section 175 (1) of the Local Authorities Ordinance No. 25 of 1974 have been paid.

DESCRIPTION OF LAND OR RIGHT IN LAND:

Stand No./Standplaas Nr. 3326 / 3326 / 3 DARVILL ROAD
PMB - PIETERMARITZBURG, THE MSUNDUZI MUNICIPALITY

This certificate is valid until: 31 July, 2006

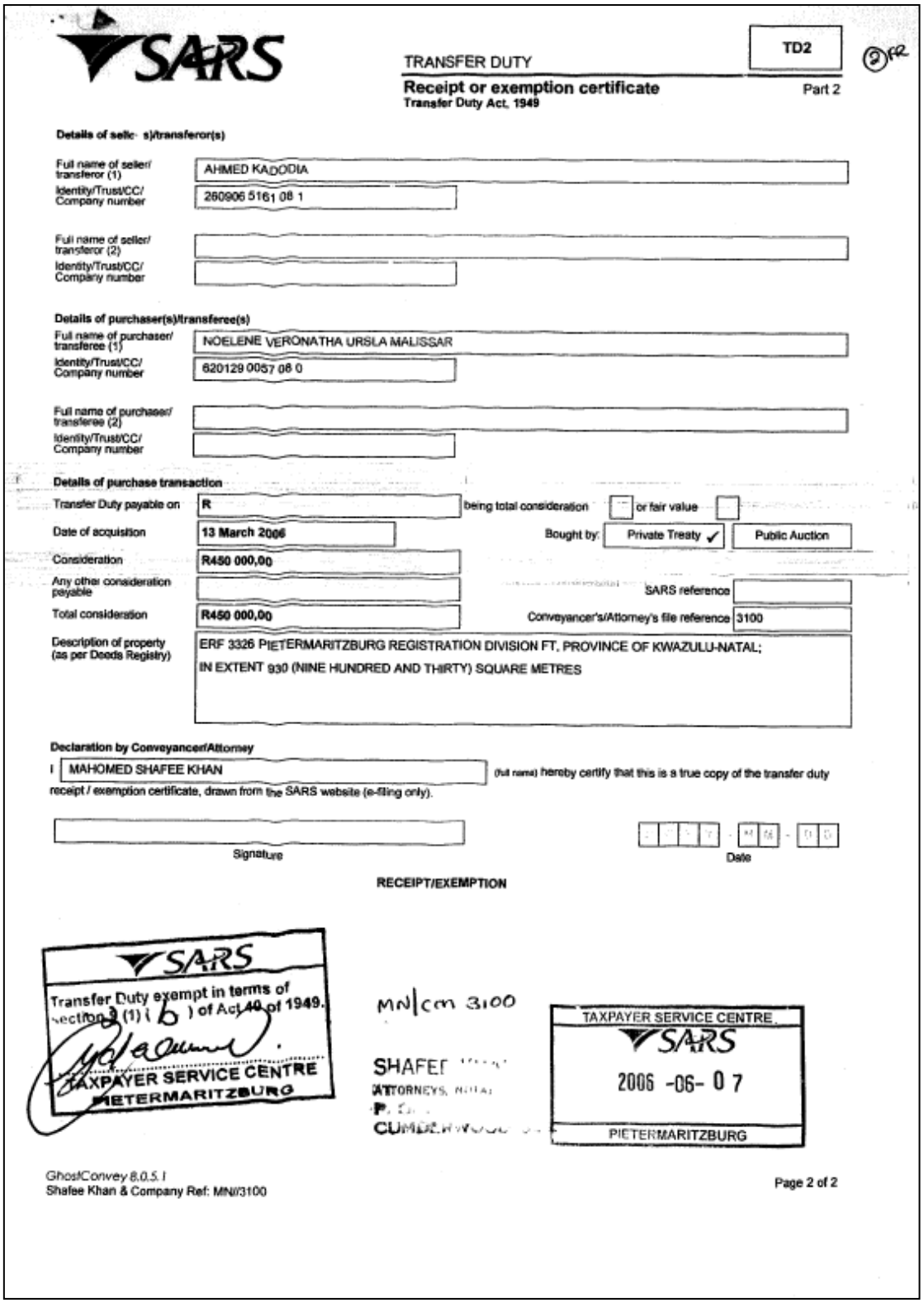
Number: 064415/0001

Given under my hand at PIETERMARITZBURG on 13 June, 2006

Strategic Executive Manager Finance

..... 13 June, 2006

Annexure 4: Transfer duty receipt or exemption



SARS

TRANSFER DUTY

TD2

Receipt or exemption certificate
Transfer Duty Act, 1949

Part 2

Details of seller(s)/transferor(s)

Full name of seller/ transferor (1)	AHMED KADODIA
Identity/Trust/CC/ Company number	260906 5161 08 1
Full name of seller/ transferor (2)	
Identity/Trust/CC/ Company number	

Details of purchaser(s)/transferee(s)

Full name of purchaser/ transferee (1)	NOELENE VERONATHA URSLA MALISSAR
Identity/Trust/CC/ Company number	620129 0057 08 0
Full name of purchaser/ transferee (2)	
Identity/Trust/CC/ Company number	

Details of purchase transaction

Transfer Duty payable on	R	being total consideration	or fair value
Date of acquisition	13 March 2006	Bought by:	Private Treaty ✓ / Public Auction
Consideration	R450 000,00		
Any other consideration payable		SARS reference	
Total consideration	R450 000,00	Conveyancer's/Attorney's file reference	3100
Description of property (as per Deeds Registry)	ERF 3326 PIETERMARITZBURG REGISTRATION DIVISION FT, PROVINCE OF KWAZULU-NATAL; IN EXTENT 930 (NINE HUNDRED AND THIRTY) SQUARE METRES		

Declaration by Conveyancer/Attorney

I MAHOMED SHAFEE KHAN (full name) hereby certify that this is a true copy of the transfer duty receipt / exemption certificate, drawn from the SARS website (e-filing only).

Signature

Date

RECEIPT/EXEMPTION

SARS
Transfer Duty exempt in terms of section 9 (1) (b) of Act 40 of 1949.
TAXPAYER SERVICE CENTRE
PIETERMARITZBURG

MN/cm 3100

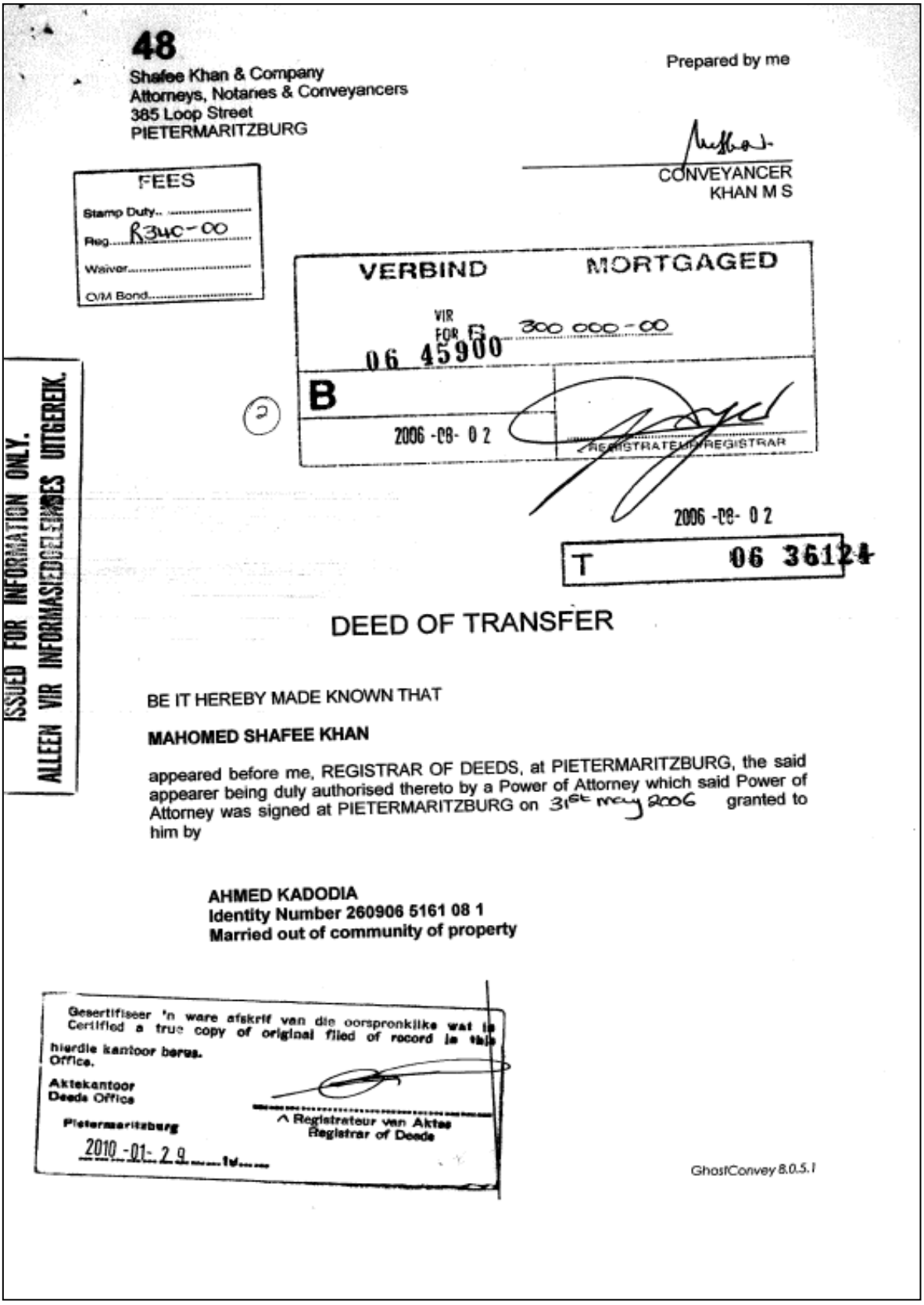
SHAFEE
ATTORNEYS, NOTARIES
CUMBERWOOD

TAXPAYER SERVICE CENTRE
SARS
2006 -06- 07
PIETERMARITZBURG

GhostConvey 8.0.5.1
Shafee Khan & Company Ref: MN/3100

Page 2 of 2

Annexure 5: Deed of transfer



48

Shafee Khan & Company
Attorneys, Notaries & Conveyancers
385 Loop Street
PIETERMARITZBURG

Prepared by me

CONVEYANCER
KHAN M S

FEES
Stamp Duty..
Reg. R340-00
Waiver
CVM Bond

VERBIND MORTGAGED
VIR FOR R 300 000-00
06 45900
B
2006 -08- 02
REGISTRATEUR/REGISTRAR
2006 -08- 02
T 06 36124

ISSUED FOR INFORMATION ONLY.
ALLEEN VIR INFORMASIEDOELEINDES UITGEREIK.

DEED OF TRANSFER

BE IT HEREBY MADE KNOWN THAT

MAHOMED SHAFEE KHAN

appeared before me, REGISTRAR OF DEEDS, at PIETERMARITZBURG, the said appearer being duly authorised thereto by a Power of Attorney which said Power of Attorney was signed at PIETERMARITZBURG on 31st May 2006 granted to him by

AHMED KADODIA
Identity Number 260906 5161 08 1
Married out of community of property

Gesertifiseer 'n ware afskrif van die oorspronklike wat in hierdie kantoor berus.
Certified a true copy of original filed of record in this Office.

Aktekantoor
Deeds Office
Pietermaritzburg
2010 -01- 29

Registrateur van Aktes
Registrar of Deeds

GhostConvey 8.0.5.1

And the appearer declared that his said principal had, on 13 March 2006, truly and legally sold by Private Treaty, and that he, the said Appearer, in his capacity aforesaid, did, by virtue of these presents, cede and transfer to and on behalf of:

NOELENE VERONATHA URSLA MALISSAR
Identity Number 620129 0057 08 0
Married out of community of property

her Heirs, Executors, Administrators or Assigns, in full and free property

ERF 3326 PIETERMARITZBURG REGISTRATION DIVISION FT,
PROVINCE OF KWAZULU-NATAL;

IN EXTENT 930 (NINE HUNDRED AND THIRTY) SQUARE METRES

First Registered and still held by Certificate of Consolidated Title No. T3654/1992 with Diagram S G No. 3462/1991 annexed thereto.

This Property is Transferred

A. SUBJECT to such of the terms and conditions of Deed of Grant No. 1687 as are still in force and applicable thereto.

B. SUBJECT to the following conditions which shall be enforceable by and are in favour of the said City Council of Pietermaritzburg as created in said Deed of Transfer No. T 2208/1961 namely:

1. (a) The land shall not be used for any purpose other than for trading purposes, provided that dwelling accommodation may, subject to the following paragraph (b) be provided on the land, in addition to the trading premises.

   (b) For the purpose of the preceding paragraph (a) not more than two shops shall be erected or established on the land. Dwelling accommodation may only be provided above the shop and shall be limited to one dwelling per shop.

2. No dwelling accommodation shall be erected or provided on the land, unless and until provision is made for a shop/ shops as set out in condition

   1. Nothing mentioned herein shall be constructed so as to prohibit the erection on the land of outbuildings normally required therewith.

3. No building or structure of any nature whatsoever shall be erected on the land within a distance of 3,05 metres of the southern boundary of the land or within a distance of 1,52 metres of the northern boundary of the land.

4. No shop/shops shall be erected on the land, unless it abuts on the street boundary of the land.

5. (a) No building shall be erected on the land, unless it is constructed of brick, stone or concrete, with a roof of concrete or clay tiles, natural slate, or wooden shingles, or any other roofing material, which the Council may, in it sole discretion, upon written application to it, authorise, provided that in no event, shall a roof of corrugated iron, corrugated asbestos, or aluminium be erected, constructed or permitted on the land.

(b) Buildings to the value of not less than R7 000,00 erected and constructed in compliance with the preceding paragraph, shall be erected on the land to the satisfaction of the Council, within three years from date of sale of the land by the said Council, provided that any rates imposed and levied on the land, shall be payable from the date of sale and on the buildings, from the date of erection thereof and if on the expiration of the three years calculated from the date of sale, no buildings have been erected on the land or if the value of the buildings be less than R7 000,00 then in the fourth and subsequent years, the rating provisions of Section III of the Local Government Ordinance (Natal) No. 21 of 1942 or any amendment thereof shall apply to the property.

6. No wood and iron buildings or structure of any kind or for any purpose, shall be erected on the land.

7. The City Council expressly reserves the right to enter upon the land for the purpose of laying, constructing and maintaining sewers, drains pipe lines, cables or other municipal works on or over the said land and to acquire such municipal servitudes as may be required from time to time for municipal purpose without the payment of compensation to the owner of the land, except where improvements effected by the owner, have to be demolished or rendered unserviceable by reason of such servitude. In the exercise of this right, the City Council shall act reasonable and shall, as far as possible, restore, the land to the condition, which existed before the work was commenced. The owner of the land shall not refuse to grant such servitudes.

8. The land shall not any time, be subdivided without the consent of the said Council, which consent will not be given, except in exceptional circumstance and may be subject to the imposition of such conditions and servitudes as the said Council may decide.

9. No poultry shall be kept on the land.

As to that portion of the Consolidated Property letterd a B C d on Diagram S.G.No. 3462/1991:

B. Subject to the following conditions as created in said Deed of Transfer No. 4183/1957, which unless otherwise state therein shall be enforceable by the City Council of the City of Pietermaritzburg, namely:-

1. The land shall not be used for any purpose other than a shop with or without one dwelling which shall be constructed only above the shop; and not more than one shop shall be ercted on the land.

2. Buildings to the value of not less than R6 000,00 (Six Thousand Rand) constructed on brick, stone, concrete or oher land permanent and and firproof material, with roofs of sound kiln-baked terra cotta tiles, concrete, slate or shingles or Canadian Redwood or other material approved by the Ciy Engineers, shall be erected on the land within three years from the date of sale of the land by the said Council, which period the said Council may, however, on application by the owner for the time being extend as in its sole discretion may seem reasonable provided that any rates imposed and levied on the land shall be payable from the date of sale, and on the buildings thereon from the date of erection thereof, and that notwithstanding the granting of an extension as aforesaid, if on the expiration of the three years from the date of sale of the land by the said Council, no buildings have been erected on the land, or if the value of the buildings be less than R6 000,00 then in the fourth and subsequent years the rating provisions of Section III of the Local Government Ordinance (Natal) No. 21 of 1942, or any amendment thereof, shall apply to the land.

3. The Council reserves the right, after notice to the owner, to lay and maintain any necessary water and sewerage pipes and stormmwater drains through and across the said land and at all times have access to the pipes and drians for removal, maintenance, extension or repair without compensation to the owner or occupier, provided that such right shall not be unreasonably exercised.

WHEREFORE the said Appearer, renouncing all right and title which the said

AHMED KADODIA, Married as aforesaid

heretofore had to the premises, did in consequence also acknowledge him to be entirely dispossessed of, and disentitled to the same, and that by virtue of these presents, the said

NOELENE VERONATHA URSLA MALISSAR, Married as aforesaid

her Heirs, Executors, Administrators or Assigns, now is and henceforth shall be entitled thereto, conformably to local custom, the State, however reserving its rights, and finally acknowledging the purchase price to be the sum of R450 000,00 (FOUR HUNDRED AND FIFTY THOUSAND RAND).

IN WITNESS WHEREOF, I the said Registrar, together with the Appearer, have subscribed to these presents, and have caused the Seal of Office to be affixed thereto.

THUS DONE and EXECUTED at the Office of the Registrar of Deeds at Pietermaritzburg on

2006 -08- 02

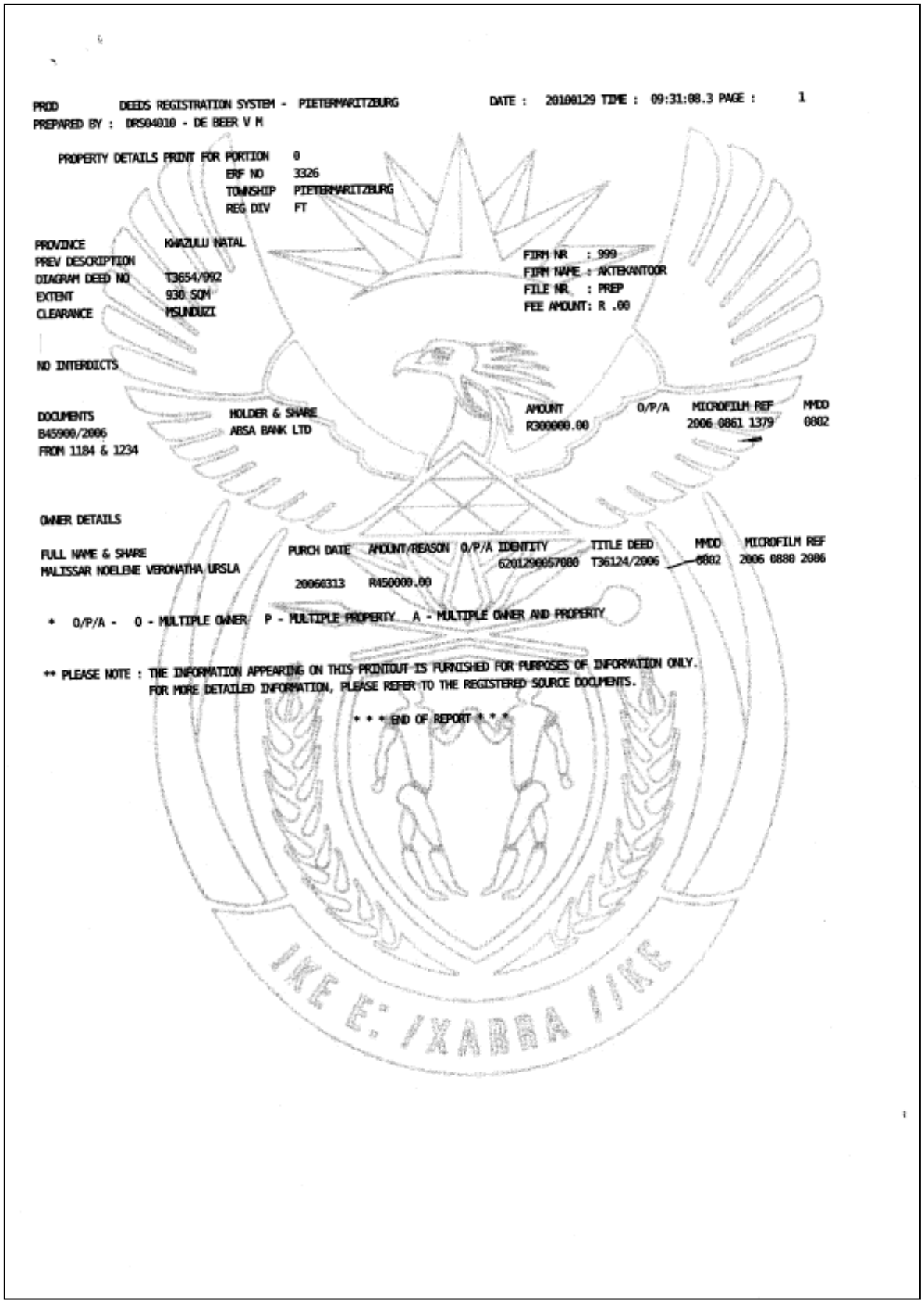
q.q.

In my presence

REGISTRAR OF DEEDS

GhostConvey 8.0.5.1

Annexure 6: Deed registration printout



PROD DEEDS REGISTRATION SYSTEM - PIETERMARITZBURG DATE : 20100129 TIME : 09:31:08.3 PAGE : 1
PREPARED BY : DRS04010 - DE BEER V M

PROPERTY DETAILS PRINT FOR PORTION 0
ERF NO 3326
TOWNSHIP PIETERMARITZBURG
REG DIV FT

PROVINCE KWAZULU NATAL
PREV DESCRIPTION
DIAGRAM DEED NO T3654/992
EXTENT 930 SQM
CLEARANCE MSUNDUZI

FIRM NR : 999
FIRM NAME : AKTEKANTOOR
FILE NR : PREP
FEE AMOUNT: R .00

NO INTERDICTS

DOCUMENTS	HOLDER & SHARE	AMOUNT	O/P/A	MICROFILM REF	MMDD
B45900/2006	ABSA BANK LTD	R300000.00		2006 0861 1379	0802
FROM 1184 & 1234					

OWNER DETAILS

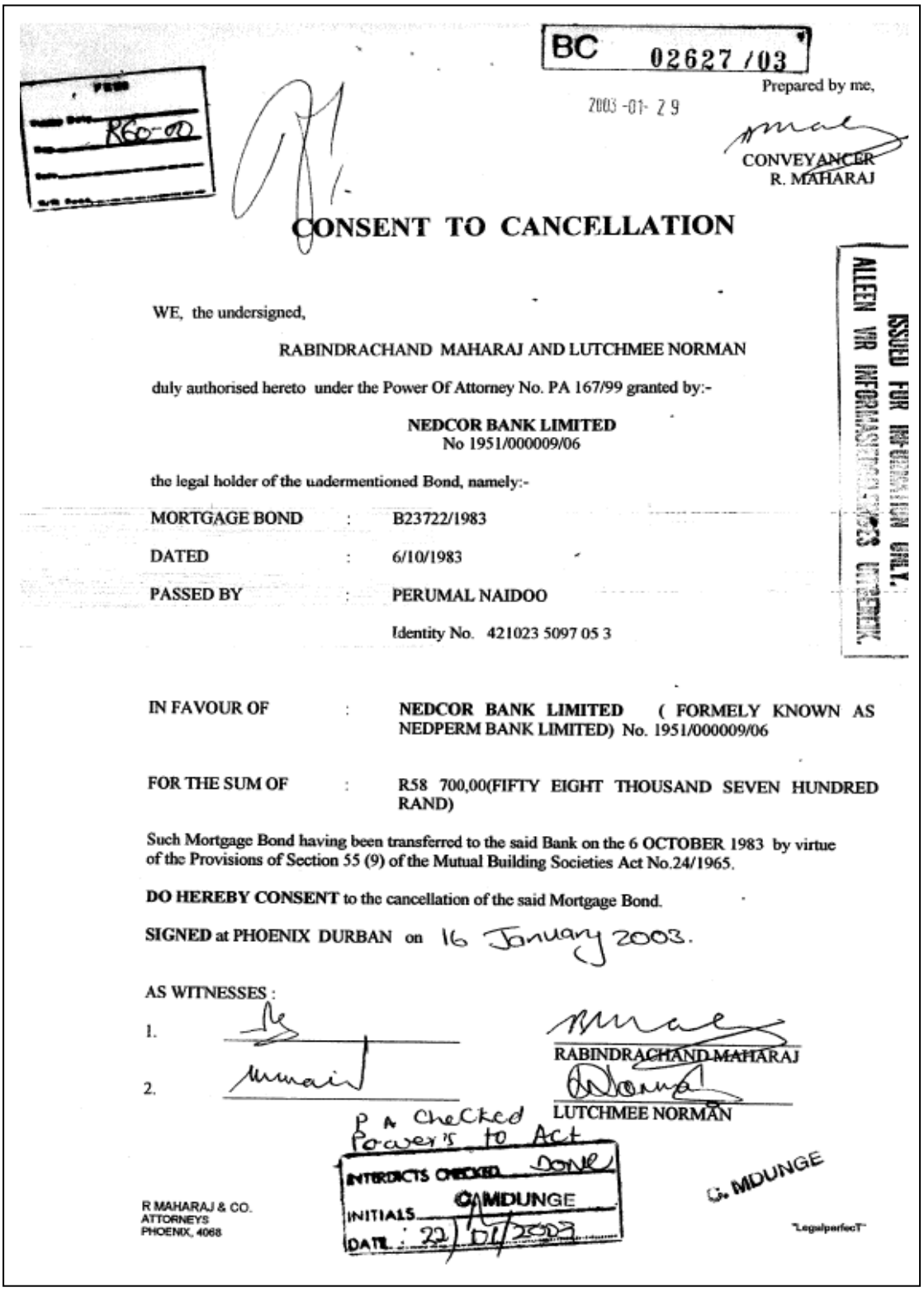
FULL NAME & SHARE	PURCH DATE	AMOUNT/REASON	O/P/A	IDENTITY	TITLE DEED	MMDD	MICROFILM REF
MALISSAR NOELENE VERONATHA URSLA				6201290057080	T36124/2006	0802	2006 0888 2086
	20060313	R450000.00					

* O/P/A - O - MULTIPLE OWNER P - MULTIPLE PROPERTY A - MULTIPLE OWNER AND PROPERTY

** PLEASE NOTE : THE INFORMATION APPEARING ON THIS PRINTOUT IS FURNISHED FOR PURPOSES OF INFORMATION ONLY.
FOR MORE DETAILED INFORMATION, PLEASE REFER TO THE REGISTERED SOURCE DOCUMENTS.

* * * END OF REPORT * * *

Annexure 7: Bond cancellation consent



BC 02627 /03

Prepared by me,

2003 -01- 29

CONVEYANCER
R. MAHARAJ

CONSENT TO CANCELLATION

ISSUED FOR INFORMATION ONLY.
ALLEEN VIR INLIGTING

WE, the undersigned,

RABINDRACHAND MAHARAJ AND LUTCHMEE NORMAN

duly authorised hereto under the Power Of Attorney No. PA 167/99 granted by:-

NEDCOR BANK LIMITED
No 1951/000009/06

the legal holder of the undermentioned Bond, namely:-

MORTGAGE BOND	:	B23722/1983
DATED	:	6/10/1983
PASSED BY	:	PERUMAL NAIDOO
		Identity No. 421023 5097 05 3
IN FAVOUR OF	:	NEDCOR BANK LIMITED (FORMELY KNOWN AS NEDPERM BANK LIMITED) No. 1951/000009/06
FOR THE SUM OF	:	R58 700,00(FIFTY EIGHT THOUSAND SEVEN HUNDRED RAND)

Such Mortgage Bond having been transferred to the said Bank on the 6 OCTOBER 1983 by virtue of the Provisions of Section 55 (9) of the Mutual Building Societies Act No.24/1965.

DO HEREBY CONSENT to the cancellation of the said Mortgage Bond.

SIGNED at PHOENIX DURBAN on 16 January 2003.

AS WITNESSES :

1.

2.

RABINDRACHAND MAHARAJ

LUTCHMEE NORMAN

P A Checked
Powers to Act

INTERDICTS CHECKED DONE
INITIALS GMDUNGE
DATE : 22/01/2003

G. MDUNGE

R MAHARAJ & CO.
ATTORNEYS
PHOENIX, 4068

"LegalperfecT"

CLEMMANS AND JOHNSTON INC.
Conveyancers
2nd Floor Permanent Building
34 Field Street
DURBAN

MS/11

1.

Prepared by me

Conveyancer.

Mortgage Bond No. B

KNOW ALL MEN WHOM IT MAY CONCERN THAT: **FREDERIC ST. GEORGE TATHAM**

a Conveyancer, appeared before me the Registrar of Deeds at Pietermaritzburg he being authorised thereto by a Power of Attorney duly attested and this day exhibited to me and filed in this office and granted to him at DURBAN on the 11th day of AUGUST, 19 83 by

PERUMAL NAIDOO
Identity No. 421023 5097 05 3

(hereinafter referred to as "the Mortgagor")
AND the Appearer declared that whereas a loan of R 50 000,00 (FIFTY THOUSAND RAND)

("the Initial Sum") has been granted to the Mortgagor by the SOUTH AFRICAN PERMANENT BUILDING SOCIETY ("the Society") provided, inter alia, that this Mortgage Bond is registered.

B73/E

/ Now....

Annexure 8: Mortgage bond

Badenhorst & Olivier Inc.
Attorneys
239 Chapel Street
PIETERMARITZBURG
3201

Prepared by me

CONVEYANCER
BOTHA S

FEES
Stamp Duty.....
Reg. R260-00
Waiver.....
OVM Bond.....

Gesertifiseer 'n ware afskrif van die oorspronklike wat in hierdie kantoor berus.
Certified a true copy of original filed of record in this Office.

Aktekantoor
Deeds Office
Pietermaritzburg
2010 -01- 29

Registrateur van Aktes
Registrar of Deeds

ISSUED FOR INFORMATION ONLY.
ALLEEN VIR INLIGTINGSDOELEINDES UITGEREIK.

2006 -08- 02

B
06 45900

ABSA BANK LIMITED
MORTGAGE BOND

BE IT HEREBY MADE KNOWN:

THAT SANET DOTHA

appeared before me, REGISTRAR OF DEEDS, at Pietermaritzburg, he, the said Appearer, being duly thereto authorised by a Special Power of Attorney executed at Pietermaritzburg on 6 JUNE 2006, and granted to him by -

NOELENE VERONATHA URSLA MALISSAR
Identity Number 620129 0057 08 0
Married out of Community of Property

("the Mortgagor") which Power of Attorney was exhibited to me on this day.

96520 (ABSA 431)(1) *GhostConvey 7.8.4.4ab* ABSA 35614(11/97)

1

CAUSE OF INDEBTEDNESS

The Appearer declared that the Mortgagor has become indebted to, and/or will from time to time become indebted to,

ABSA BANK LIMITED

Reg No 1986/004794/06

its successors or assigns ("the Bank"), which indebtedness arose and/or will arise from any cause whatsoever.

2

ACKNOWLEDGEMENT OF DEBT

The Appearer acknowledged and declared his principal, the Mortgagor, to be truly and lawfully held and firmly bound unto and in favour of the Bank and the security conferred by this bond, to be in the sum of **R300 000,00 (THREE HUNDRED THOUSAND RAND)** or any lesser amount that may from time to time be owing ("the capital amount"), arising from any cause whatsoever, together with interest on the capital amount.

3

ADDITIONAL AMOUNT

The Appearer further declared the Mortgagor to be truly and lawfully held and firmly bound unto and in favour of the Bank in the additional amount of **R60 000,00 (SIXTY THOUSAND RAND)** ("the additional amount") in respect of the following costs and similar causes, viz service fees, discount, commission, costs of legal proceedings (plus Value Added Tax thereon) and stamps in connection with the issue of any notices and demands in any legal process for the recovery of any amount secured under this bond, all moneys disbursed by the Bank in respect of stand licences, Government and Municipal rates and taxes and other charges in respect of the property mortgaged under this bond, insurance premiums and costs of repairs and maintenance, and, in general, all costs of maintaining and realising the property mortgaged under this bond.

4

CONTINUING COVERING BOND

This bond shall remain in force as continuing covering security for the capital amount, the interest thereon and the additional amount, notwithstanding any intermediate settlement, and, notwithstanding any intermediate settlement, this bond shall be and remain of full force, virtue and effect as a continuing security and covering bond for each and every sum in which the Mortgagor may now or hereafter become indebted to the Bank from any cause whatsoever to the amount of the capital amount, interest thereon and the additional amount.

5

JOINT AND SEVERAL LIABILITY

Should there be more than one Mortgagor under this bond then –

5.1 the liability of each Mortgagor shall be joint and several, unless otherwise agreed in writing;

5.2 all references in this bond to "the Mortgagor" shall be construed as references to all of the Mortgagors, jointly and severally, unless the context otherwise required.

6

REPAYMENT

The Mortgagor shall repay all amounts owing by him to the Bank and which are secured under this bond in accordance with the provisions of such written agreement or agreements as have been concluded, or which may be concluded from time to time hereafter, between the Mortgagor and the

Bank.

7

INTEREST

Interest on all amounts owing by the Mortgagor to the Bank and secured under this bond shall be calculated in the manner or manners and at the rate or rates determined or to be determined in terms of any written agreement or agreements concluded or to be concluded between the Bank and the Mortgagor from time to time and failing any such agreement shall be calculated in the manner or manners currently necessary and at the rate or rates currently charged by the Bank in respect of the relevant transaction, provided that such interest rate or rates shall not exceed the legal maximum rate.

8

DEFAULT

Unless otherwise agreed in writing, if the Mortgagor fails to observe or perform any of the terms or conditions of any written agreement or agreements between the Mortgagor and the Bank in respect of any amounts which are secured under this bond or if the Mortgagor fails to observe or perform any of the terms and conditions of this bond or of the Standard Mortgage Conditions hereinafter referred to or if the Mortgagor upon demand by the Bank fails to pay to the Bank any amount which is legally claimable by the Bank or if the Mortgagor fails to discharge any obligation or liability to the Bank on the due date thereof, then all the amounts which are secured under this bond shall, at the option of the Bank and without the Bank being required to give notice to the Mortgagor, immediately become payable in full, notwithstanding the exercise by the Bank of any other rights, and the Bank shall be entitled thereupon to institute proceedings for the recovery of all such amounts and for a court order declaring the mortgaged property executable.

9

PROOF OF INDEBTEDNESS

9.1 The amounts at any time owing by the Mortgagor to the Bank which are secured under this bond (including any interest and the rate or rates at which and the period or periods for which interest is calculable) and the fact that such indebtedness is due and payable may be determined and proved by a certificate signed by any manager of the Bank, whose appointment and authority to sign such certificate need not be proved.

9.2 Such certificate shall be accepted as proof of the facts stated therein, unless the Mortgagor is able to prove the facts incorrect.

10

DOMICILIUM CITANDI ET EXECUTANDI

The Mortgagor chooses for the service of all notices, communications or legal processes (*domicilium citandi et executandi*) for all purposes under this bond, as his address, the physical address of the mortgaged property or, should there be more than one mortgaged property, the physical address of any one of the mortgaged properties.

11

JURISDICTION

11.1 The Mortgagor consents in terms of section 45 of the Magistrates' Courts Act, No 32 of 1944, as amended, to the Bank instituting any legal proceedings for enforcing any of its rights under this bond in the Magistrate's Court of any district having jurisdiction in respect of the Mortgagor by virtue of section 28(1) of the aforesaid Act.

11.2 Notwithstanding the Mortgagor's consent to the jurisdiction of the Magistrate's Court aforementioned, the Bank shall have the right to institute legal proceedings against the Mortgagor in any other competent court having jurisdiction in the matter

12

LEGAL COSTS

The Mortgagor shall be liable to the Bank for the payment of all legal costs to which the Bank may become lawfully entitled, including tracing costs and collection commission (plus Value Added Tax thereon), on the scale as between attorney and client.

13

PRESUMPTION OF DUE COMPLIANCE

In any court action by the Bank against the Mortgagor for the recovery of any amount which is secured under this bond -

13.1 it shall be presumed that the Bank has duly complied with all the terms and conditions of the relevant agreements referred to in 6 between it and the Mortgagor and with all the terms and conditions of this bond and with all the terms and conditions of the Standard Mortgage Conditions hereinafter referred to; and

13.2 it shall not be necessary for the Bank to produce proof of such compliance, unless the Mortgagor has placed the presumption of due compliance in dispute.

14

STANDARD MORTGAGE CONDITIONS

14.1 The Standard Mortgage Conditions of the Bank which have been filed in the Deeds Registry in which this bond is registered under reference BC9/2005 are applicable to and form part of this bond except insofar as any written agreement between the Mortgagor and the Bank may provide otherwise.

14.2 In the event of a conflict between the provisions of this bond and the provisions of the Standard Mortgage Conditions, the provisions of this bond shall prevail.

14.3 By his signature to the Power of Attorney authorising the registration of this bond the Mortgagor acknowledges that he has been provided with a copy of the Standard Mortgage Conditions referred to in 14.1.

15

MORTGAGED PROPERTY

As security for the due and prompt payment of the capital amount or any portion thereof, interest due thereon and the additional amount or any portion thereof which may be owing or payable at any time to the Bank, the Appearer on behalf of the Mortgagor hereby declares to bind specially as a **FIRST** MORTGAGE, the following immovable property: -

ERF 3326 PIETERMARITZBURG
REGISTRATION DIVISION FT, PROVINCE OF KWAZULU-NATAL
IN EXTENT 930 (NINE HUNDRED AND THIRTY) SQUARE METRES
HELD BY DEED OF TRANSFER NO. T 06 36124
SUBJECT TO THE CONDITIONS THEREIN CONTAINED.

IN WITNESS WHEREOF I, the said REGISTRAR, together with the Appearer qq have subscribed to these presents and have caused the seal of office to be affixed thereto.

THUS DONE and EXECUTED at the office of the Registrar of Deeds

at Pietermaritzburg
on 2006 -08- 02

qq

In my presence,

REGISTRAR OF DEEDS

Badenhorst & Olivier Inc.
Attorneys
239 Chapel Street
PIETERMARITZBURG
3201

Prepared by me

CONVEYANCER
BOTHA S

1-2-3
Oor

POWER OF ATTORNEY

I/~~We~~, the undersigned

NOELENE VERONATHA URSLA MALISSAR
Identity Number 620129 0057 08 0
Married out of Community of Property

being fully acquainted with the contents of the Bond hereinafter set out and especially with the legal force of the benefits of the legal exceptions mentioned and renounced therein which are fully understood by me/~~us~~, hereby nominate and appoint **SANET BOTHA**

with power of substitution, to be my/~~our~~ Attorney and Agent to appear before the REGISTRAR OF DEEDS at PIETERMARITZBURG or any other competent official in the Republic of South Africa, and then and there as my/~~our~~ act and deed to declare that whereas **ABSA BANK LIMITED (Registration Number 1986/004794/06)** has agreed to lend to me/~~us~~ the sum(s) specified in the said bond and to sign and execute the said Bond and also to cede to **ABSA BANK LIMITED (Registration Number 1986/004794/06)** all assurance policies therein referred to; to make and authenticate all such alterations, additions and/or deletions in and to the said Bond hereinafter set out as may be necessary for the purpose of registration thereof; to receive from **ABSA BANK LIMITED (Registration Number 1986/004794/06)** the sum to be advanced to me/~~us~~ under the said Bond; to issue or arrange the issue of guarantees and/or letters of undertaking up to the full amount of the Bond;
AND GENERALLY to do whatsoever may be necessary to make the said Bond as valid and effectual as I/~~we~~ could do if personally present, hereby ratifying all and whatsoever the said Attorney shall lawfully do or cause to be done by virtue of these presents.

THUS DONE AND PASSED at PIETERMARITZBURG
on 6 June 2006
AS WITNESSES :

1. _____ _____
NOELENE VERONATHA URSLA MALISSAR

2. _____

GhostConvey 7.8.4.4ab

UBS 301 EX (10/91)