

# A Geo-spatial Analysis of Sectional Title Schemes Growth in Pretoria North: 2000-2012

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## Abstract

*Sectional title units have grown in popularity since the Sectional Title Act 66 of 1971 and the predecessor the Sectional Title Act 95 of 1986, made it lawful for any legal entity to own parts of land or buildings exclusively or commonly by defining real rights horizontally and vertically (RSA, 1986). This is, arguably, due to the need to manage competing demands for limited urban spaces and the increased simplicity of preparing traditionally complex three dimensional representations of real rights, by Land Surveyors, Building Engineers and Architects, specially authorised to do so. The City of Tshwane is by area the largest municipality encompassing 6 368km<sup>2</sup> (StatisticsSA, undated). An assessment to evaluate the implications on sectional title approval on the office of the Surveyor-General's office and temporal spatial growth process on a developed townships may help curb lateral growth of the city. This research study demonstrates the use of techniques in spatial and temporal growth Geographic Information Systems tools used to analyse a time series growth or popularity of sectional titles units constructed from undeveloped and developed free hold tenure within Pretoria North between 2000 and 2012. The results shows that for the period under review, most sectional title schemes were approved by the Surveyor-General between 2004 and 2008 and the spatial distribution did not follow a defined pattern.*

## 1. Introduction

The City of Tshwane proudly houses most head offices of the South African government. Based on the census in 2011, the City of Tshwane's population is approximately 2.9 million South Africa's most spatially spread city covering 6368km<sup>2</sup> of Gauteng's 19055km<sup>2</sup> (StatisticsSA, undated). With a vision to be and be seen as a leading capital city of excellence (City\_of\_Tshwane, 2010), the City of Tshwane is always looking for innovative ways to solve its urbanisation problems. The popularity and effective perception changes to the role of sectional title units as ownership and rental formal housing units would go a long way in curbing continued spatial spread of the city.

The Sectional Title Act 95 of 1986 (RSA, 1986) and the predecessor Sectional Title Act 66 of 1971 were enacted, presumably, to curb the spatial spread of urban areas into competing demands for other urban uses and the rural areas. It, therefore, presupposes that spatial management of the growth of urban spaces may be contained through intense utilisation of already designated urban areas and not through spreading to nearby urban and rural areas. The Sectional Title Act 66 of 1971 was the first statute that made it possible for legal persons to own spaces in the third dimension in South Africa. Sectional title units are developments on open or single dwelling stands to modern styles of homes that economises the use of scarce land resource while allowing improvements that are beneficial to



Figure 1: Illustrative Representation of case study: Region 1  
Ward 2: Pretoria North Town

accommodate population growth and advancement if the economy in a region. The Sectional Title Act 95 of 1986 introduced the updated laws that governs the conditions for divisions of buildings into portions of common and exclusive parts for use and ownership (RSA, 1986). Sectional title plans are prepared by specially authorised land surveyors and architects who have written and passed a special examination that demonstrates skills and competencies to represent real rights in three dimensional spaces (RSA, 1986). The graphical representations is thereafter augmented by legal description by a notary public to separate rights in space and vertically.

This paper presents results of a study conducted in the Pretoria North to spatially analyse the growth of sectional title units development from single units or stands, registration of sectional titles and construction to habitable dwellings been 2000 and 2012. Pretoria North Town is part of region 1 ward 2 of City of Tshwane's seven regions and 105 wards (City\_of\_Tshwane, 2010).

Pretoria North Town is an existing township located approximately 10 kilometres north of Pretoria Central Business District. The Figure 1 shows the spatial boundary of the original farm subdivided into Pretoria North Town, with its subdivision portions.

The period, 2000 to 2012, is specifically selected almost 30 years after the enactment of the first sectional title act to ensure its impact is discernible in the results. Two official sources of spatial data the legal survey record as logged approved and stored by the Surveyor-General's office, Pretoria and the development record as captured and stored by the City of Tshwane Metropolitan Municipality were integrated with research data collected as part of this study in QGIS Open Source Geographic Information Systems (GIS) software and analysed. This was augmented and confirmed through field verifications visits.

## **2. Review of Relevant Literature**

The literature is reviewed in two broad areas: the geospatial analysis techniques as contained in the Quantum Geographical Information Systems (QGIS) application software used for trend analysis and the relevance of sectional title units as an alternative ownership model to freehold and leasehold in urban spaces. In the end, the link between these seemingly unrelated theoretical disciplines is shown through the integration tool within a Geographic Information Systems (GIS).

According to the Chief Surveyor General, cadastral surveying is a division of Geomatics discipline that involves the partitioning of land for the purpose of spatially defining parcels of land and other real rights to facilitate the registration of real rights in the Deeds Registry

(DRDLR, 1992). Real rights on land are defined through cadastral survey records, that include spatial two dimensional plans and in the case of sectional titles, three dimensional illustrations. Cadastral surveying in South Africa is undertaken entirely by persons registered as professional land surveyor with the South African Council for Professional and Technical Surveyors (PLATO) (Republic\_of\_South\_Africa, 1997). The records are interpreted into Title Deed descriptions by notary public before being registered against a legal individual or person in the Deeds Registry (Republic\_of\_South\_Africa, 1937). Should the owner decide to sell part of the land, the Professional Land Surveyor is, again, called in to review and access the land to be sold. In addition, the services of the cadastral surveyor are required whenever a boundary beacon must be found or replaced on that particular land (DRDLR, 1992).

## **2.1 Geospatial Analysis of three Dimensional Spaces**

Quantum Geographic Information Systems (QGIS) is an Open Source Spatial Analysis Software that allows evaluation and assessment of land, its features and developments thereon was used in this study (GIS, 2005). Tsou and Smith (2011) argues that proprietary and open source GIS software are equally important in education, although these authors extend it value to the research and development of spatial spaces.

As open source software, QGIS is available for download, use and optimisation at no extra cost to the user (Tsou and Smith, 2011), making it attractive to third world economies like South Africa. According to Tsou and Smith, the geospatial community has already been impacted with open source software with at least 52% of all web sites browsed using Apache, one of the popular web server software to date (Tsou and Smith, 2011). QGIS has become one of the standard Geographic Information System (GIS) software available for learning, research and innovation studies in spaces.

While QGIS is designed to integrate raster (such as GRASS) and vector (such as ArcGIS) attributes in a GIS, its functionality in handle three dimensional cadastres has not been explored. Three dimensions cadastres are an essential tool to document intense density of real rights that extend spatially and vertically on earth (Forrai and Kirschner, 2002). With the growth and popularity of sectional title units emanating from the need to contain spatial growth of cities outside the city limits, three dimensional cadastres are becoming an essential field of intense research (ZHAN et al., 2006) and the most conducive environment to conduct such research is in the open source environment were the source code is available for optimisation.

## 2.2 Sectional Title Schemes

Sectional titles scheme diagrams basically describe separate or part ownership of units or sections within a complex where both spatial (Y,X) and the third dimension (ht) may be own jointly and separately (Fourie, 1994). Any person interested in that specific sectional title can purchase a section or sections together with the entire share of the common property, which are known as sectional title units. A sectional title may also refer to anything from a mini subtype house, to a semi-detached house, townhouse, a flat or apartment to a duet house (Fourie, 1994).

In 1971, the Sectional Title Act 66 of 1971 made it possible, for the first time in South Africa, for flats and other portions of building portrayed in the third dimension to be represented with individually and common ownership of defined portions. There presented an opportunity to grow cities upwards, without sideward encroachment to competing rural and urban demands (Birkett, 2003). Sectional Title living has grown in popularity over the last decade for reasons which include heightened security and a more communal way of living. Sectional titles tend to be more affordable which makes it easier for young people to own their own property. However, buying into a sectional scheme has its advantages and disadvantages (Bartlett, 2012)

The Sectional Title allows for the divisions of buildings into parts that may be defined as common property or individual ownership on single or multiple buildings. It also allows for exclusive use and/or ownership areas of defined parts such as, yards, garages, car parking, verandas, stores and common use and/or ownership of other areas such as pool, common garden, visitors parking etcetera. Whilst full title land ownership deals with two dimensions space definition, sectional title schemes includes improvements on the land, and part ownership in the third dimension.

The role of the land surveyor and/or the architect is to legally portray graphically and alphanumerically the two dimension space and this third dimension for unique representation of 3-dimensional real rights representation. The resultant sectional title plans are lodged and approval by the Surveyor General (RSA, 1986).

Living in a sectional title has its own unique advantages. Any title-holder in a sectional title complex automatically becomes the scheme's body corporate, granting them part-rights synonymous to full-title and a say on how and by who the complex is managed (Bartlett, 2012). The body corporate is the legal entity that owns and controls the common property in the sectional title scheme. The body corporate receives funds from all the owners by means of levies, which are used to pay for the common expenses of the sectional title schemes

(Bartlett, 2012). Unlike freehold properties or township stands, where the owners have to pay for their own home insurance and upkeep of pavement, garden and exterior of their homes, owners of sectional title units pay a monthly levy from which these expenses are paid (Bartlett, 2012). The levy usually includes insurance premiums, maintenance of the common property, wages and salaries of cleaners, security and other staff involved in maintaining the common property, as well as any water and electricity required for the common property (Paddock, 2008). Sectional title developments generally have good perimeter and entrance security, which is usually included in the monthly levies (Bartlett, 2012). The cost of living in a sectional title is often lower because the cost of maintaining the common property is shared by all owners. Through economies of scale, this ends up being less than freehold owners pay. Sectional title units are also very popular in the rental market and are usually leased easily (Cousins and Hornby, 2002).

Living in a sectional title complex can also have its disadvantages. Unlike full-title ownership, where the owner is in complete control and is financially responsible for the property in its entirety, a person who invests in a sectional title scheme will own part of the scheme, meaning that the owner has invested in and is part of a small community (Parnell, 1992). As a result, they will need to comply with the management rules and conduct rules as determined by the body corporate. The body corporate may adopt rules relating to keeping of pets, play areas and access to communal areas (Miller and Pope, 2000).

The rules and regulations of any particular complex may change, and even though all sectional title investors and owners may not necessarily agree with the changes they would not have the power to change them individually (Fourie, 1994). Owners of sectional title units also do not have the freedom to alter renovate or expand their sections without the approval of the body corporate. In addition, all the owners are jointly and separately liable for the debt of the body corporate, which means that if an owner does not pay his/her share, it may become the other owner's problem as well (Bartlett, 2012).

### **3. Results**

The results are presented in this section in two parts; first the sectional title units logged with and approved by the Surveyor-General and secondly, spatial distribution of sectional title unit's development within the existing developed township of Pretoria North comprising the largest portion of ward 2. The two figures give the results as obtained through this study, without an exhaustive research of the third dimension.

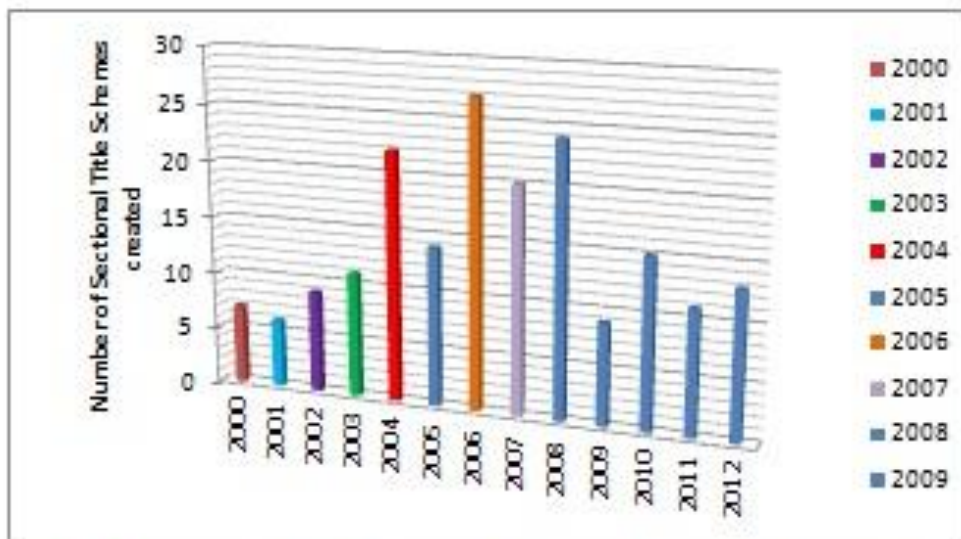


Figure 2: Sectional Title Approvals at Surveyor-General, Pretoria

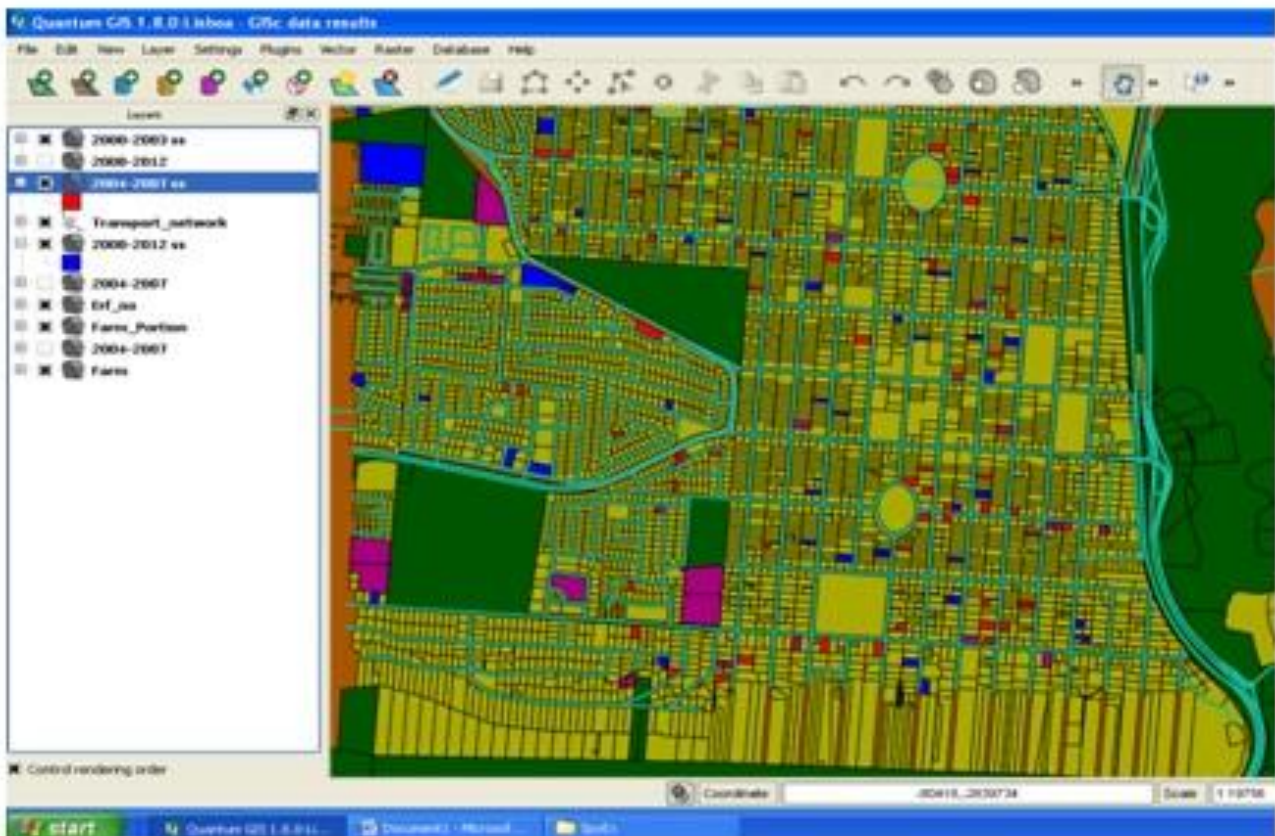


Figure 3: Spatial Analysis of Sectional Title Developments 2000-2003 (purple), 2004-2007 (red) and 2008-2012 (blue)

### **3.1 Temporal Growth of Sectional Title Approvals**

In the years under study, a total of 188 sectional title schemes were approved within the Pretoria North parts of regions 1 ward 2 as indicated in figure 2. The graph shows the developments per year without reference to the size and area of development or the number of sectional real rights developed thereon.

### **3.2 Spatial Growth of Sectional Title Developments**

The data shown in figures 3 is the spatial growth and spread of sectional title development, conveniently grouped into three temporal periods: 2000 -2003 (purple), 2004 - 2007 (red) and 2008 - 2012 (blue). Figure 3 shows the areas in Pretoria North region 1 ward 2 where all the sectional title units were developed during 2000 to 2003 in purple, 2004 to 2007 in red and 2008 to 2012 in blue. This shows the size and area developed but not the number of separate real rights contained or the third dimension separating real rights vertically.

## **4. Analysis and Discussion**

The study provided a synoptic view of the process and impact of sectional title development in the City of Tshwane metropolitan area. The findings are based on a case study of region 1 ward 2 comprising mainly Pretoria North town as shown on figure 3.

In figure 2, the graphical information is represented to portray the temporal growth of sectional titles units approved by the Surveyor-General in the case study area for the period 2000 until 2012. The graph represents 107 sectional title units logged and approved between 2004 and 2008, being the highest frequency averaging 21.4 sectional title schemes per year. The least temporal growth occurred between 2000 and 2003 averaging 6.6 sectional title schemes per year. Between 2009 and 2012, sectional title scheme growth was averaging 9.6 sectional units per year. The graph shows a peak in schemes approvals occurred in the year 2006 with 27 sectional title schemes approved. The least development occurred in 2001 when 6 sectional title schemes were approved.

The variations in sectional title scheme developments have correlation with economic trends in South Africa as sectional title schemes are commonly developer, not owner driven.

The pattern of this study has been observed and analysed on a 12 year development pattern, which will give an overview on a four year pattern of how many sectional title units were developed and infer on factors that might have caused the results to show the trend indicated. It is visible that sectional titles starting being popular during the years 2004 – 2007 because the findings show that these years, were the most active years so far in my data, in terms of creation of sectional title schemes.



A point to note is also that Sectional Title qualified Professional Land Surveyors were only trained and qualified after the enactment of the sectional title act of 1971. This gives a possibility that the few professional present could not cope with the demand until sufficiently qualified professionals became available. Some professional land surveyors could have shunned sectional title surveys to avoid the complexity of the third dimension with the technology available at the time.

## 5. Conclusions

Cadastral surveying is an ongoing process of surveying in terms of property developments, it is one surveying technique that is growing each decade and it will keep on making our profession strong and recognised.

From the research, it is possible to infer from figure 2 that during the duration between the years 2000 to 2003, not a lot of Sectional title schemes were created because of economic conditions in South Africa. This may be because it was still a few years ago and there were not many property developments and popularity of rental stock noted at that time. Also, the majority of the population were still optimistic of security of tenure emanating from common and divided real rights definitions.

Since cadastral is focusing mostly on the professional side of land surveyors, it is sad to know that survey technicians do not take credit for any of the work which they do; even if they do all the work they never get accreditation. This has been seen from the survey reports in the survey records that no accreditation is made to the person who is the one responsible for making sure that the field work and calculation is being done. This mentality need to change in a way that all the people involved in the field survey and calculation part get accredited for the work that they have done.

An assumption is made that all developments would occur after, concurrently with or before legal definition in a cadastral record logged and approved by the Surveyor-General.

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