THE PROXIMITY EFFECTS OF THE PLANNED COMMERCIAL PROPERTY DEVELOPMENT AT OR TAMBO INTERNATIONAL AIRPORT ON ADJACENT RESIDENTIAL PROPERTIES

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DECLARATION

I declare that this Research Report is my own unaided work. It is being submitted to the Degree of Master of Science to the University of Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination to any other University.

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ABSTRACT

The two main traditional revenue streams for airports are aeronautical and non-aeronautical revenues. In recent times, factors such as the slowing economic growth, terrorism threats, aircraft fuel hikes and fierce airline competition have contributed in reduced aeronautical revenues. The decline in aeronautical revenues has seen a shift of focus where most international airports now pursue business strategies to increase their non-aeronautical revenues. Airports in developed countries such as Schiphol, Brisbane, Adelaide, Canberra, Perth are recorded in literature to have shifted their focus to exploit the vast undeveloped land within the airport precincts through enabling the undeveloped land to be taken up for commercial property developments. This has allowed these airports to increase their non-aeronautical revenues in light of the declining aeronautical revenues.

In South Africa, Airports Company South Africa (ACSA) announced its intention in year 2010 to unlock undeveloped airport land for commercial property developments within the nine airports that it operates. At O.R. Tambo International Airport (one of airports owned by ACSA), ACSA publicly announced the availability of pieces of land within the airport which can be taken up for commercial developments by private investors. One of the pieces of land is located in close proximity to existing airport adjoining residential houses in a suburb called Bonaero Park. Authors in existing literature have discussed availability of both positive and negative proximity effects of commercial properties on adjoining residential houses.

This study researched the proximity effects of one of the proposed commercial property development at O.R. Tambo International Airport (ORTIA) on the houses in Bonaero Park through analyzing houses sales data of the suburb in the period of 2006 to 2014. A pre-announcement period was defined in the study from 2006 to 2010 and a post-announcement period defined from 2011 to 2014. House sales data from both the pre-announcement and post announcement period was analysed using quantitative methodologies. Qualitative data was gathered through conducting audio recorded interviews with Estate Agents who conducted house sales in Bonaero Park. Findings of the study reveal that the at both the pre-announcement and post-announcement

periods, the South African residential property market was going through a tumultuous period which revealed that the announcement by ACSA to unlock the piece of land located in close proximity to the residential houses in Bonaero Park did not produce positive or negative proximity effects.

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LIST OF ACRONYMS

ACSA – Airports Company South Africa

ORTIA – OR Tambo International Airport

HPM – Hedonic Pricing Model

RDS - Residential Directory Service

EAC – Estate Agent Company

CPD – Commercial Property Development

KM – Kilometer

M - Meters

STRUCTURE OF THE DISSERTATION

Chapter One introduces the background of the research, the research problem, the rationale for undertaking the study and the research structure.

Chapter Two reviews existing literature on the area of study. The literature review covers existing studies in the area of this research and provides the basis for undertaking this study. The review of the literature also provides answers to some of the research sub-questions in order to substantiate the research objectives. Gaps in the existing literature are identified which formed part of the motivation for this study.

Chapter Three defines and describes the research design and methodology used in the study to gather and analyse data. The method of collecting data through the use of mixed methodology defined as a combination of Quantitative and Qualitative methodology s discussed in detail. Ethical principles applied in the study are also discussed.

Chapter Four discusses the findings derived from the Qualitative and Quantitative data analysis methods. Empirical sources from the South African housing industry are also used to analyse and substantiate the data outcomes.

Chapter Five discussed the research findings, conclusion and provides recommendations for future research.

1. CHAPTER ONE:

INTRODUCTION AND RESEARCH PROBLEM

1.1. Research context and background:

The two main revenue streams that are traditionally recognized for airports are the aeronautical and non-aeronautical revenues (Graham, 2009; Freestone, 2011). Aeronautical revenue is generated from passenger transportation, cargo transportation and the usage of airport infrastructure by airlines (Graham, 2009; Freestone, 2011). Non-aeronautical revenue is generated from commercial activities such as retail rental, property rentals, concessions, user pay (e.g. parking) and sales income (Freestone, 2011).

Higher percentage of airport revenue has traditionally been generated from aeronautical airport business, with non-aeronautical revenue forming the balance of the airport business revenue (Zenglein & Muller, 2007). Some authors have recorded a shift towards a steady decline in aeronautical revenues prompting airports to look at alternative channels to increase their declining revenues (Zenglein & Muller, 2007). The decline in aeronautical revenue has been known to occur as a result of restrictive regulations of the aeronautical activities, such as price cap regulations imposed on aeronautical charges (Freestone, 2011).

In more recent times (periods between 2006 to 2015), factors such as the slowing economic growth (resulting in reduced passengers numbers), terrorism threats, aircraft fuel hikes and fierce airline competition have contributed in reduced aeronautical revenues (Stevens, Baker & Freestone, 2010; Freestone, 2011). Graham (2009) discusses a study done by Airport Retail Survey in 2006, where the non-aeronautical revenues in the East, European and American airports were recorded to have averaged 50% of the total airport revenue indicating an increase to reach a balance with the aeronautical revenues. According to Graham (2009), the increase was due to business initiatives by some of the airports based on a drive to increase non-aeronautical revenues in the face of declining aeronautical revenues. The business interventions

from some airports in order to increase non-aeronautical revenues has been to increase commercial activities within airport terminals through increased focus on retailing, advertising, property (hotels, offices, etc), car park and car rental interventions as a drive to increase the aeronautical revenues (Graham, 2009).

Some airports developed more aggressive business strategies to enable them to pursue commercial property developments at the airports - outside the conventional terminal buildings (Morrison, 2009). Most international airports have huge parcels of land within their precincts which are undeveloped (Morrison, 2009). The business strategy by some of the international airports has been to exploit the undeveloped airport land within their precinct in order for the available land to be taken up for commercial property developments (Morrison, 2009; Freestone, 2011).

Schiphol International Airport along with other international airports such as Brisbane, Adelaide, Canberra and Perth have pursued commercial property developments within the airport land. This saw developments such as factory retail outlets, shopping centres, hotels, etc which have been built in the airport land but has no direct relationship to airport operations (Morrison, 2009). The location of these commercial property developments has mostly been on the groundside or landside of the airport to allow for unrestricted access by the public (Morrison, 2009).

Most international airports (e.g. Reno-Spark International Airport, Chicago O'Hare International Airport, Manchester International airport, Schiphol International Airport) are located near residential areas and authors in literature have discussed how homeowners near airports are always weary of developments or expansions of the airport in order to understand the impact of such airport developments on their houses, especially with regards to the impact of the noise externality associated with airports (Tomkins, Topham, Twomey & Ward, 1998; McMillen, 2004; Jud & Winkler, 2006).

In a study of commercial property developments at Australian Airports, Freestone (2011) found that airport commercial property developments tend to create social benefits (e.g. employment opportunities) in their regions. According to Freestone (2011), there is still no consensus from airport authorities, the affected public and the

policy makers on the benefits of airports to the entire airport surrounding property environment (Freestone, 2011).

In South Africa, Airports Company South Africa (ACSA) announced in 2010 its intention to unlock available land for the purposes of commercial property development opportunities within the nine airports that it operates (SA Property Review, 2010). O.R. Tambo International Airport (ORTAI) is also operated by ACSA and is recognized as South Africa's biggest and busiest airport (SA Property Review, 2010). ACSA announced that at ORTIA, there are 240 hectors of land available for commercial developments by private investors (SA Property Review, 2010).

This announcement emulates similar business strategies that other overseas airports such as Schiphol, Brisbane, Adelaide, Canberra, Perth have pursued with the aim to increase the airports' non-aeronautical revenues at the backdrop of the decreasing aeronautical revenue base due to uncontrollable global economic factors and aviation regulations. Similar to the overseas airports, the proposed commercial property development at OR Tambo International Airport is likely to attract attention from communities in close proximity to the airport to specifically understand its impact on the house prices. There are existing residential properties that are located in close proximity to the OR Tambo International airport. The piece of airport land that ACSA aims to unlock for commercial property development is located in close proximity to these existing residential properties.

1.2. Research Problem:

Commercial property developments occurring in close proximity to adjoining houses are likely to have positive or negative externality effect on the existing adjoining houses (Colwell, 1985; Thebodeau, 1990; Song & Knaap, 2004; Aliyu, Kasim & Martin, 2011; Brady & Irwin, 2011). Colwell (1985) undertook a study to investigate the impact of an announced shopping centre development in Urbana, Illinois. The study found that no house price increase was experienced prior to the announcement of the shopping centre. At post announcement, the study found that there was a significant increase in

the price of the houses located further away from the site and there was a reduction in the prices of houses located closer to the site for the proposed shopping centre.

Thibodeau (1990) undertook a study to measure the effect of a proposed high rise office building on existing residential properties. The study found that residential properties located within 1 – 2,5km from the site of the proposed office development benefited from an increased house prices. Houses located more than 2,5km from the site experienced no increase or reduction in the house prices. Aliyu, Kasim & Martin (2011) undertook a study to investigate the announcement effect of a proposed shopping center on residential properties located near the development site. The study found that houses located at a distance closer than 1500 feet (457 meters) to the development site experienced negative house prices at announcement stage. House located at a distance further away than 1500 feet (457 meters) experience positive house process at announcement stage.

The problem is that the literature findings discussed above cannot be generalised to be applicable to a commercial property development within an airport environment. As part of this study, no literature was found which discussed the proximity effect that a planned or existing commercial property development within an airport precinct has had on the prices of houses located in close proximity to that commercial property or to the specific airport where the development occurs. This study thus aims to address this problem by investigating the proximity effect that the planned commercial property development has had on the adjourning houses. As discussed in section 1.1, it was observed that during the period of this study, the commercial property had not been developed, and this study will measure the proximity effect of the development by studying the pre-announcement period and post announcement period.

1.3. Rationale for the study:

As discussed in section 1.1, most international airports have in recent time been pursuing commercial business strategies aimed at increasing their non-aeronautical revenue through undertaking property development opportunities within the available and undeveloped land in the airport precinct. Same strategy is being pursued by OR

Tambo International Airport (ORTIA) when it announced through the media in 2010 that the company had available land which was available for property development by private investors. The study is investigating the proximity effect of the proposed commercial property development at ORTIA on the houses located nearby.

The proximity effect has been measured by studying house sale prices at two crucial periods that were defined in this study. These periods are defined as the pre-announcement and the post-announcement. Pre-announcement period is from 2006 to 2010 and Post announcement period is 2011 to 2014. By studying the two periods, the study aims to derive findings on whether there were any proximity effects that the planned commercial property development at ORTIA has had on the houses near the airport.

The aim of this study is to investigate the proximity effects that one of the planned commercial property development at OR Tambo International airport has had on the market prices of the houses located in close proximity to the airport land earmarked for the commercial property development. The rationale of the study is to investigate the proximity by analyzing the impact on the house prices based on their distance location from the land earmarked for the proposed commercial property development. The distance proximity under study has been purposefully set to be from a minimum of 0 (zero) kilometers and up to a maximum of 3 (three) kilometers distance location of the houses from the land earmarked for the commercial property development.

The rational for selecting the 0 (zero) to 3 (three) kilometer proximity is motivated by the fact that there is more density of the houses from the zero to 3 kilometer distance from the land of the proposed development. Beyond the 3 kilometer distance radius, there are fewer houses. Refer to ***Appendix D*** for the distance radius plotted for the study.

1.4. Objectives of the study:

To achieve the aim of the study, a set of objectives have been put together in order for the study to achieve its aim and also answer the research question. The objectives of the study are as follows;

i. Undertake literature review to understand proximity effects of airports to the nearby houses.

ii. Undertake literature review to understand why airports undertake commercial property developments.

iii. Investigate the exact location of the land where the proposed commercial property will be developed in relation to the existing nearby houses.

iv. To obtain and analyse sales data of houses sold from 2006 to 2014 which are located within the 0 – 3km distance range.

v. Investigate if there are any proximity effect by studying sale prices at pre-announcement period (2006 – 2009) and at post-announcement period (2011 – 2014).

1.5. Research question:

The main research question for this study is as follows;

What proximity effect has the planned commercial property development at OR Tambo International Airport had on the prices of the adjacent houses?

1.6. Research sub-questions:

In order to answer the main research question, research sub questions for this study have been developed and structured in order to substantiate the stated objectives for this study. The research sub-questions for this study are as follows;

i. What are the proximity effects of airports on the nearby houses?

ii. What are the proximity effects of commercial property developments on houses?

iii. Why do airports undertake commercial property developments?

iv. What type of commercial property development is planned at OR Tambo International Airport?

v. What will be the proximity effects of the planned commercial property development on the prices of houses located in close proximity?

The research sub-questions have informed the literature areas which are discussed in Chapter 2.

1.7. Research hypothesis:

The study will test the following single hypothesis;

The planned commercial property developments at OR Tambo international airport has had no proximity effect on the adjacent residential properties.

The hypothesis is developed purely on the basis that it is difficult for house owners to measure the effect of any commercial development before it is built unless they have had in-depth details about the type, the scale and the exact location (proximity) of the proposed commercial development.

In my professional experience, communities start understanding such details when the developers start engagements with communities and the interested ad affected parties. As discussed in section 1.8, I have assumed that no community engagements have taken place after the announcement for the development was made by ACSA in the media.

1.8. Limitations of the study:

ACSA made the announcement of the availability of land for commercial development at the 5 of its airports which are located in various regions of South Africa (SA Property Review, 2010). This study is however limited to investigating the proximity effect of only one of the proposed commercial property development at ORTIA.

This study commenced in 2014 and therefore the post announcement period is from 2010 to 2014 and the post announcement period is from 2011 up to 2014 as discussed in section 1.3. The period of study is thus limited to 2006 up to 2014. As also discussed in section 1.3 and 1.4, the distance radius of the location of the houses from the land earmarked for the commercial property development is limited between a minimum distance of 0 (zero) kilometers and a maximum distance of 3 (three) kilometers.

1.9. Research Assumption:

Authors have discussed that most communities near airports are always weary of the developments in airports located near their houses in order to understand impact of such developments on their houses (Tomkins et al, 1998; McMillen, 2004; Jud & Winkler, 2006). This is because before airports undertake measure developments, they have to announce their intentions through media and eventually start engagements with interested and affected parties to appraise the parties on the extent and impact of the planned developments.

As a consequence, the first assumption for this study is that residents of Bonaero Park became aware of ACSA’s announcement to undertake commercial development at the ORTIA land which is located closer to Bonaero park suburb. As a result of that

awareness, the assumption is that any effect of the announcement on the house prices can be measured through analyising house sales data from a defined period.

1.10. Chapter Summary

Historically the higher percentage of airport revenues was generated through aeronautical revenues. However, in recent times, factors outside the airport authorities control such as price cap regulations imposed on aeronautical charges, slowing economic growth (resulting in reduced passenger numbers), terrorism threats, aircraft fuel hikes and fierce airline competition have resulted in reduction of aeronautical revenues. This resulted in airport authorities implementing strategies to increase non-aeronautical revenues in the face of declining aeronautical revenues.Some of the more recent strategies involved airports unlocking some of the vast undeveloped land within the airport precinct to enable commercial property developments.

OR Tambo international airport announced similar strategy in 2010. These developments have been studied in literature to take place on available pieces of land which are closer to houses neighbouring the airport or located closer to airport boundary. Problem is that airports in terms of their operations and expansion developments have been found in literature to have both positive and negative effect on prices of houses located near airports. The strategies to develop commercial developments at airports on airport land are likely to contribute to either positive or negative externality effect on houses located near airports.

The aim of this study is to undertake a study to investigate the externality effect that the commercial property development proposed by OR Tambo International would have on the houses near the airport. The proximity effect will be measured on the houses located within the 0 – 3 km distance range from the land earmarked for the proposed commercial property development. The study developed objectives to answer the research question. A hypothesis was developed based on the findings of existing literature findings. The literature areas of the study were based on the literature objectives and research sub-questions all aimed at informing research design to answer the main literature question and test the hypothesis

2. CHAPTER TWO:

LITERATURE REVIEW

2.1. Introduction

To study the proximity effects that one of the proposed commercial property developments at O.R. Tambo international Airport is going to have on the prices of the nearby residential houses, it was important to conduct literature review to understand existing literature studies in the area of commercial property development and its proximity effects on residential houses. This study focuses on the proposed commercial development within an airport and it is thus important that literature review also focuses on literature studies in the area of airport proximity effects to create context and literature sources for the study.

According to Saunders, Lewis & Thornhill (2012), literature review is undertaken with the aim of answering the research sub-questions. The literature areas listed below were based on the literature sub-questions of this study which are listed in section 1.10. The literature areas focused on for this study are as follows;

i. Proximity effects of airports on houses – this area is reviewed in section 2.2 and discusses literature studies on the airport proximity effects on nearby residential properties.

ii. Proximity effects of airport expansion developments on houses – this area is reviewed in section 2.3 and discussed literature studies on the impact of airports expansion developments on the residential houses located near the airports.

iii. Proximity effects of airports on their Cities and Regions – this area is reviewed in section 2.4 and discusses literature studies on the impact that airports tend to have on the cities and regions where they are located.

iv. Proximity effects of the Commercial property developments on houses – this area is reviewed in section 2.5 and looks at literature studies that discusses impact of commercial property developments on nearby residential houses.

v. The reasons why some airports are undertaking commercial property developments - this area is reviewed in section 2.6 and discusses the reasons why some airports are undertaking commercial property developments.

vi. The Benefits and Detriments of Commercial Property Developments at Airports – this area is reviewed in section 2.7 and discusses the benefits and detriments of the commercial developments within airports.

2.2. Proximity effects of airport noise on houses

Studies by Tomkins et al.1998; McMillen 2004; Cohen & Coughlin, 2008) discusses the proximity effects of airports on houses located near the airports. These studies investigated the impact of aircraft noise on the houses near the airports by factoring in the aircraft noise externality in Hedonic Price Models (HPM) to measure the impact on market prices / values of houses located in close distances to the airports.

Tomkins et al. (1998) in their study of local economies of airport proximity resulting from aircraft noise externality found that aircraft noise externality is outweighed by attributes such as the benefits of access and employment which communities in surrounding residential properties considered beneficial. The findings of Tomkins et al (1998) suggests that the positive attributes of access and employment opportunities are valued higher by local residents than the noise externality factor. When these positive attributes were statistically capitalized in a Hedonic Pricing Model (HPM), they resulted in the houses in close proximity to the airport yielding higher market values.

The findings by Tomkins et al. (1998) were later affirmed in the study by Cohen & Coughlin (2008) which looked at how proximity to airport affected house prices around the Hartsfield-Jackson Atlanta International airport. The study by Cohen & Coughlin (2008) also used Hedonic Pricing Model using housing sales data over an eight year period (1995 – 2002). Cohen & Coughlin (2008) found in their study that due to the

airport and the aviation industry specific interventions over time (such as the airport sound proofing programmes, industry noise regulations and technological interventions), this has resulted in reduced aircraft engine noise. When these intervention were factored into the calculation to measure house prices, they produce increased house values. This therefore resulted in positive proximity benefits of airports to the nearby houses (Cohen & Coughlin, 2008).

Cohen & Coughlin (2009) conducted a study to measure the impact of airport noise on nearby houses by analyzing the different airport noise zone levels. They found that houses located within a noise zone with a higher noise decibel levels sold significantly lower compared to those houses that were located in a noise zone with a lower noise decibel. Noise in general (traffic noise, railway noise, etc) is still considered as a negative externality which contributes in reduction of house prices (Duarte & Tamez, 2009).

However, literature studies by McMillen (2004) and Cohen & Coughlin (2009) which focus specifically on aircraft noise suggest that even though aircraft noise has a negative impact on house prices, the aircraft noise is drastically reducing over the years. The reduction of airport noise is as a result of new aircraft engine technology and thus airport noise is becoming less of a negative externality which contributes in discount of house prices (McMillen 2004; Cohen & Coughlin, 2009).

The literature findings discussed above infer that airport noise is still a factor that communities near airports are aware of regardless of the latest technological advances in the development of aircraft engines with reduced noise.

2.3. Proximity effects of airport expansion on houses

According to Prosperi (2007), modern day airports and their surroundings are now developing into centres of metropolitan form even though economic activity around the airport is not taking similar form. Airports expand due to economic growth which sees more demand for flights ultimately resulting in physical expansion of the airport (Tomkins et al, 1998; McMillen, 2004). Jud & Winkler (2006) in their study of the

announcement effects of an airport expansion on the nearby houses found that in pre-announcement period of airport expansion, houses located in close proximity to the airport sold less than those slightly further away from the airport.

After the airport expansion, the study found that the houses located closer to the airport sold at even higher discount than at pre-announcement (Jud & Winkler, 2006). Espey & Lopez (2000) in their study of house prices near Reno-Tahoe International Airport found that the announcement of the physical expansion developments of the airport resulted in airport proximity being a dis-amenity to nearby houses. This was due to the resultant increase in airport flights after the expansion (Espey & Lopez, 2000). According to McMillen (2004), uncertainty by homeowners of airport expansion plans can have negative effect and potentially keep home prices from appreciating.

The literature findings discussed above indicate that airport expansion can have a positive and negative effect on the prices of houses located nearby.

2.4. Airport proximity effects on their Cities and Regions

Airports are important to their immediate regions as contributors not only of employment opportunities but also of regional economic growth (Tomkins et al.1998; Stevens et al, 2010). Tomkins et al. (1998) argues that any negative externality of noise can be overridden by the regional economic benefits of the airport. This is specifically true for larger hub airports which according to McMillen (2004) are viewed by government and local authorities as big contributors of economic growth in their regions in terms of producing employment opportunities.

Freestone (2009) supports the argument that modern airports are now commercial enterprises which contribute in growing the economy of the state and region. Airports are now viewed as neo-liberal spaces which shape the urban space. (Freestone, 2009). According to Freestone (2009), future conflicts between communities, commerce and governments over influential projects are inevitable. Airports are thus important commercial spaces perceived to be shaping urban form beyond the airport fence in their regions (Freestone & Baker, 2011). A region which has an economic hub such as an

airport, is viewed as having absolute competitive advantage as they give such regions higher productivity levels (Martin & Simmie, 2008).

According to Messer (2012), the regional impact of airports will no doubt continue to be felt in terms of the benefits of economic growth. Freestone (2011) warns that the importance of airports in their regions will continue to place further burden on communities to consider the ultimate positive benefits (employment, access, etc.) over perceived negative externalities (noise, traffic, etc.). Communities encounter negative proximity effects of airports (viz; noise, traffic and congestion) which discount the prices of houses. The benefits of employment and access that accrue to communities tend to contribute positively to the prices of houses near airports but an appropriate balance needs to be achieved particularly to ensure that perceptions of the overall regional benefits are factored effectively in the pricing of houses near airports.

2.5. Proximity effects of Commercial Property Developments

According to Poudyal, Hodges, Tonn & Cho (2009), proximity relates to the distance that the one property is located away from another – this has a spatial significance. Poudyal et al. (2009) found that distance plays an important role in understanding the externality effects of one property use over another property use. Residential properties located few street away from the commercial development will experience different externalities than the properties located much further away from the development (Poudyal et al. 2009).

Colwell, Gujral & Coley (1985) studied the impact of a shopping center on the values of surrounding properties. The study focused on the impact of a new shopping center on the fully developed residential properties of Urbana, Illinois. The study aimed to research whether the neighbourhood shopping center will increase, decrease, or both (increase or decrease) the value of residential properties in close proximity. In the study, locational factors were found to be among the primary determents of property values. A Hedonic price model was developed which factored in proximity (distance)

and the before (announcement stage of the shopping center development) and the after-effects.

The findings of the study revealed that no significant price effects were experienced at pre-announcement stage for the houses located in close proximity to the site of the proposed shopping center. (Colwell et al, 1985). At post-announcement period, an increase in sale price of houses was experienced for houses located further away from the site of the shopping center. However, the houses located closer to the site sold lower at post-announcement period.

In a study done by Thibodeau (1990) which also employed the Hedonic Pricing Model (HPM), the proximity effects of a proposed high rise office development on the existing surrounding residential houses were investigated. In the HPM, factors such as the characteristic of the office development site, characteristics of improvements, neighbourhood amenities, proximity variables of distance and the land use regulations were factored into the calculations (Thibodeau, 1990). The study found that the proposed high rise office development had both positive and negative proximity effects (Thibodeau, 1990). The residential houses located from 1000 and 2500 meters from the office development site benefitted through an increased house prices.

For residential properties located beyond 2500 meters, the development had no effect on their values and thus had no benefit. However, Thebodeau (1990) also found that some properties will experience positive externalities and others will experience negative externalities depending on their proximity, in terms of distance, from the office development site. The overall finding of the study suggested that the net effect of the high rise office building increased aggregate residential property values (Thebodeau, 1990).

In a study done by Aliyu et al (2011) looked at proximity effect of a proposed shopping center on surrounding residential properties. The study also employed hedonic regression model to estimate the pre-announcement and post announcement effects of the shopping center on the value of the surrounding residential properties. The study sampled data from 43 single family homes sold between 2003 and 2009. These

properties are located within 3 miles from the proposed shopping centre (Aliyu et al, 2011). The result of the study found that announcement of the shopping center had both positive and negative effect on the value of residential properties. Properties located at a distance closer than 1,500 feet (457 meters) diseconomies seemed to appear which negatively affected their prices and at a distance further than 1,500 feet (457 meters), economies seems to appear which has positive effect on the residential property prices.

In a study to measure the effects of mixed use commercial development on existing house prices, Song & Knaap (2004) found that the increase in the amount of commercial activities within a residential area leads to higher residential property values over time. According to Song & Knaap (2004), their study confirmed that residential properties would benefit through improved accessibility resulting from development of commercial properties in close proximity but will eventually be affected negatively by an increase in traffic and congestion coming from those commercial developments.

Koster & Rouwendal (2012) in their study to measure the impact of mixed land use on residential property values found that only certain type of commercial uses which are perceived to compliment residential uses have a positive effect on residential property prices. There are uses that are considered to be incompatible with residential areas, e.g. Warehouses and manufacturing plants. The uses that the communities sampled in the study found to be compatible with residential uses were business services, education, leisure and retail and healthcare - and thus had a positive effect on values of residential properties Therefore the type of commercial property being developed within an residential area is an important factor in the value addition as perceived by the community (Koster & Rouwendal, 2012).

2.6. The reasons why some airports are undertaking commercial property developments.

According to Messer (2012), many airport authorities have recognized the potential in the enormous parcels of undeveloped land that they possess. Airports have thus come up with business strategies to unlock these parcels of land for commercial property

developments (Morrison, 2009; Messer, 2012). These business strategies resulted in the mushrooming of commercial property developments within airport precincts which have no direct link to the core airport operation (Morrison, 2009).

Two streams of airport revenue are conventionally recognized for airports, these are the aeronautical and non-aeronautical revenues. Aeronautical revenue is linked directly to passenger volumes, cargo volumes and usage of airport infrastructure. Non-aeronautical revenue is generated from commercial activities - property rentals, concessions, sales and user pay income (Freestone, 2011). In elaborating on the magnitude of commercial revenues for airports, Graham (2009) highlighted that 53% of all revenues in North American, 48% in European airports and averaged at 46% for Asian/pacific airport regions. These figures indicate that there has been a steady increase of non-aeronautical revenue to account for almost 50% of total airport revenue on average.

According to Graham (2009), two factors have motivated airports to pursue such commercial developments. The first being the evolution over time of airports from publicly owned entities to private commercial entities which then gain freedom to pursue profit maximization strategies for their shareholders. The second factor arises from increasing pressure on the aeronautical revenues of the airport as a result of global economic factors. The need to diversify income streams and reduce reliance on aeronautical revenues has been driven by recognizing the declining industry which is vulnerable to economic shocks, terrorism and natural disaster (Freestone, 2011).

Other important factor motivating airport operators in other world regions to pursue non-aeronautical revenues are noted by Steven et al (2010) as attributed to price cap regulations imposed through legislation on aeronautical charges. This in a nutshell highlights the powerful interest said to be driven by perceived link between airport development and economic activity which converge to promote the expansion of aviation industry (Freestone & Baker, 2011). According to Freestone (2011) the discussions within airport property industry players has suggested that the major drivers for these commercial land developments are factors such as availability of alternative

land, rental cost (inclusive of travelling costs), high accessibility and visible metropolitan location that airport land offers.

Schiphol International Airport is a prime and leading example of an airport that has aggressively pursued commercial property developments which have no direct link to the airport operations (Morrison, 2009). Schiphol International airport boasts shopping centres, hotels, etc. which are located on the groundside / landside of the airport allowing for unrestricted access by city residents and some 58,000 employees who work at the airport business district (Morrison, 2009). Schiphol is recorded in literature as a prime example of an airport which competes with other commercial property development companies in its pursuit for what has been termed an airport city (Morrison, 2009).

It is thus clear that some airports are on a drive to unlock existing and dormant pieces of land within the airport precinct for commercial property development. Based on literature, this drive is purely motivated by a strategy to boost non-aeronautical revenue in order to maximize profits which seem to have taken a knock due to declining aeronautical revenues. However the externality effects of these developments need to be studied in light of the currently perceived negative externalities of traffic and congestion as well as the positive externalities of employment and access.

2.7. The Benefits and Detriments of commercial property developments at airport

The commercial property developments occurring within airport land the benefit according to Freestone (2011) is the availability of huge parcels of land which can be unlocked for development for the purposes of high revenue generation. High revenue is generated from the high rentals charged by airport authorities due to the airport proximity benefits enjoyed by the tenants (Freestone, 2011).Freestone (2009) found that benefits to tenants are the prestige airport address, visibility and access for the developers. The fact that airports are integrated into existing urban environments exposes them to constant negotiations with interested and affected parties on perceived

externalities such as noise, air quality, public safety and traffic congestion on any development that airports are willing to pursue in their owned land (Freestone, 2009).

There is keen interest to observe airport developments by communities and other interested parties as they aim to understand the impact on existing property prices, noise, risk to biodiversity and health (Freestone, 2009). Where such property developments are perceived to potentially produce negative externalities such as noise and traffic congestion, Kroesen, Molin, Miedema, Vos, Janssen & Wee (2010) found such negative externalities fell in the category that communities considered as annoyance. Annoyance according to Kroesen et al. (2010) is categorized by communities as the type of noise which cannot be tolerated and is different to airport noise which receives a certain degree of tolerance due to its frequency. The lack of tolerance over traffic congestion and noise from cars is according to Kroesen et al (2010), detrimental to any planned property development and can result in possible community resistance to such development.

Airports property managers also face huge upfront investment costs associated with enabling land for developments - bulk infrastructure, stringent approval process (Freestone, 2011). Property developments at airports places huge demand on airport security which needs to ensure that these developments do not pose aviation threats, especially where such businesses are located near terminals and other airside infrastructure (McAllister, 1999). The increase in public access to these developments creates additional security concerns and thus it is important that location of these developments is considered upfront to avoid increased security threats and costs (Messer, 2012). According to Freestone & Baker (2011), the new airports with their multi-land developments will have reduced regional benefits if it has the potential to divert airport related jobs from other locations.

This emphasizes the need to ensure that such developments are not detrimental to other existing businesses within the region. McAllister (1999) & Stevens et al (2010) discusses the development of airport parks in Australia where these developments were typified by the construction of motor vehicle dealerships, hardware and furniture stores,

fast food franchises, etc. which had a negative proximity effects to existing houses and similar businesses around the airport.

There are few benefits discussed but the detriments form part of the huge upfront costs that airports absorb. However, since airports go ahead and push for implementation of these developments, it seems the huge upfront costs coming from the detriments are insignificant compared to the revenues that can be generated in a long run.

2.8. Summary of Chapter:

In order to create context for the study, literature review undertaken in this study discussed proximity effects that airports historically had on nearby houses. Airport noise was discussed as being a negative externality which when factored into a Hedonic Price Model (HPM) by some of the literature studies, had resulted in discounted prices of houses near airports (Espey & Lopez, 2000; Cohen & Coughlin, 2008). However, some literature studies found that the benefits of employment and access when factored into a hedonic price models, yield a positive result on house prices – see Tomkins et al (1998) and Cohen & Coughlin (2009). At the back of these earlier studies, later studies found that airport noise is reducing as a result of newer aircraft engine technology, and this coupled with the benefits of employment and access indicate that airport can also positive proximity effects on prices of houses near airports (Espey & Lopez, 2000; Cohen & Coughlin, 2009).

The area of focus for this study is on the commercial property development with an airport environment and the proximity effects of such a development on nearby houses – no existing literature studies were found in this area. However, to create context, the literature which has been reviewed focused on creating understanding on the general proximity effects of commercial properties on houses. To measure the proximity effects that commercial properties have on houses, it was found that distance was a measure factor which when factored into a hedonic price model yielded positive or negative effects on house prices.

The houses located at a distance much closer to the commercial property experienced reduced house prices compared to houses located at a distance further away (Colwell et al, 1985, Thebodeau, 1990; Aliyu et al, 2011, Koster & Rouwendal, 2012). The type of a commercial property also had a proximity effect on house prices. Literature review has revealed that commercial properties which are considered not compatible with houses (e.g. industrial, warehouse) will have negative effect on house prices (Song & Knaap, 2004; Koster & Rouwendal, 2012). Airports are economic hubs in their regions and contribute in shaping the urban landscape (Martin & Simmie, 2008; Freestone, 2011). There are airport benefits of employment and access that accrue to nearby communities (Tomkins et al, 1998 and Cohen & Coughlin, 2009). However, any development perceived as an expansion of an airport always draws attention of nearby communities (Jud & Winkler, 2006; Prosperie, 2007).

Evidence from literature reveals that airport expansion plans affect nearby house prices at announcement stage (McMillen, 2004; Jud & Winkler, 2006). Literature studies have measured the proximity effects of the commercial development on house prices by factoring in the all the characteristics that influence the prices of houses. This study will conduct an analysis of the proximity effects that the proposed commercial property development at OR Tambo International airport is going to have on the prices of houses located nearby the airport. The effect will be studied by measuring the effect on house prices at the pre-announcement stage (2006 to 2010) of the proposed commercial development as well as at post announcement stage (2010 to 2014).

3. CHAPTER THREE:

RESEARCH DESIGN AND METHODOLOGY

This chapter discusses the research design and methodology applied in this study. The Research Design for this study is discussed in section 3.1, and consists of sub-sub-sections discussing the Rational for conducting this study as a case study – section 3.1.1; Rational for case study design - section 3.1.2; Research Philosophy for the study - section 3.1.3.

Research Methodology is discussed in section 3.2; Quantitative Data Collection and Analysis - section 3.3; Bias in Quantitative data collection – section 3.4; Quantitative Data recording and Analysis approach – section 3.5; Ethics in Quantitative Data Collection and Analysis - section 3.6; Qualitative Data Collection and Analysis – section 3.7; Bias in Qualitative Data collection and Analysis – section 3.8; Qualitative Data recording and Analysis approach – section 3.9; Qualitative Data Access and Ethics – section 3.10 and Chapter Summary is in section 3.11.

3.1. Research Design

According to Creswell (2003) and Saunders et al (2012), research design refers to the research plan that outlines the steps that the researcher will follow to answer the research questions. Yin (2009) further explains that the research design should aim to provide systematic process that links research data with the research question to draw research findings. The process should include the outline and substantiation of the type of study that the researcher will undertake, the tactics (methodology) to be used by the researcher to obtain and analyse the research data, as well as ethical principles to be observed by the researcher pertaining to delivering on that research plan (Yin, 2009). Research design also aims to at creating an action plan which allows the researcher to get from the questions to conclusions (Rowley, 2002).

The pragmatic research philosophy adopted for this study is discussed in section 3.1.3 and outlines the position that I adopted as the researcher based on assumptions made

which are likely to shape the outcomes (as discussed in section 1.9) of this study. The research design outlined in this section discusses the research methodology adopted for this study to obtain and analyse research data. Ethical principles applicable to the methodology of the study are also discussed in sections 3.6 and 3.10.

This study is conducted as a case study research. Case study research is also suitable for exploratory research (Rowley, 2002). Exploratory case study is undertaken to study an area where little is known (Rowley, 2002; Yin, 2009). The observation made is that the phenomenon of commercial property development within a South African airport and its effect on nearby houses is an area that has not been studied extensively in the South African context. This observation is based on the findings made during the period of this study where no existing literature was found available which discusses the proximity effect of airport commercial property developments on prices of residential house located in close proximity to these airport commercial developments within the South African context.

According to Rowley (2002), exploratory case studies needs to also make speculation (hypothesis or proposition) based on literature findings. Data and analysis can then be structured to test the claim and draw findings that will support, refute or be neutral to the speculation (Rowley, 2002). A hypothesis was developed for this study as discussed in section 1.7 based on the literature findings as advocated by Rowley (2002) and Yin (2009).The rationale for conducting the study as a Case Study is discussed below.

3.1.1. Rationale for conducting case study research

Yin (2009) advocates that for a case study research to be undertaken, it must aim to satisfy five (5) reasons;

The first reason emphasizes that the study must ideally test a well formulated theory or propositions (Yin, 2009). This study did not develop a proposition or test a theory. The study developed a hypothesis as discussed in section 1.7, which will be tested as per research design.

The second reason is that the study must ideally analyze an extreme (or unique) case or analyze a phenomenon that few researchers have considered before (Yin, 2009). Proximity effect of the Commercial property development within the airport space but not directly linked to airport aviation business (as proposed at ORTIA) is a fairly unique case and phenomenon in the South African context which had not been studied in detail in South Africa.

The third reason is that the case study must be a representative scenario or typical case for the industry (Yin, 2009). No empirical data was found as part of this study which suggests that other airport authority in South Africa have proposed to undertaken similar commercial property development within its airport precinct. The findings of this study will create a representative scenario for the aviation industry in South African in as far as airport commercial property development is concerned and its effects on houses located in its proximity.

The fourth reason is that the study should produce a revelatory case whereby the researcher has an opportunity to analyze a phenomenon not yet studied or observed (Yin, 2009). A South African airport (OR Tambo International Airport) unlocking its existing land for commercial property development opportunities based on emulating strategies from its overseas airport counterparts is a revelatory case – phenomenon not yet fully studied in South Africa.

The fifth reason is that the case study should anticipate an outcome at two or more different times (Yin, 2009). This study investigated the pre-announcement time and post announcement time in order to study whether the proposed commercial property development had any effect on the prices of nearby houses. This study has satisfied all the reasons which justifies it to be a case study research as discussed by Yin (2009) and is thus justified to be conducted as case study of OR Tambo International Airport in order to investigate the proximity effects of one of the proposed commercial property developments at OR Tambo International Airport.

3.1.2. Rationale for Single case study design

Rowley (2002) highlights that single case studies are suitable for when the phenomenon being studied is special and has something unique to reveal. This study as discussed in section 1.3 is investigating the proximity effect of a proposed commercial property development within the airport space which is not directly linked to the airport aviation business (as proposed at ORTIA) and was thus considered a fairly unique case and phenomenon which had not been studied extensively in the South Africa context. According to Yin (2009) and Saunders et al (2012), the researcher must ensure that the case study research aims to satisfy five (5) important tests which are crucial aspects of a case study design. The five tests are discussed below and how they were applied in this case study research.

The first test pertains to the researcher ensuring that the case study research aligns with the research question, proposition and objectives (Yin, 2009; Saunders et al, 2012). This case study highlighted the research objectives which were aimed at responding to the research questions. No research proposition was developed but the research hypothesis was formulated based on existing literature findings as discussed in section 1.7. The findings of this case study will either support, refute or present a neutral outcome on the proximity effect of the proposed commercial property development on the houses in Bonaero Park, which will be crucial in the test of the hypothesis.

The second test emphasizes that the case study must be either exploratory or explanatory or both (Saunders et al 2012). Exploratory studies are undertaken where little is known in the area of study (Rowley, 2002). This case study research is exploratory in nature as the topic pertaining to the proximity effect of proposed commercial property developments on houses near airports have not been studied in the context of South Africa as discussed in section 1.2.

The third test is that the case study must contain a ‘case’ and ‘unit(s) of analysis’ (Yin, 2009). In this study, OR Tambo International Airport was the case and the proposed commercial development was the unit of analysis. The fourth test is that the case study

should combine two research methodologies - Quantitative and Qualitative (Yin 2009, Saunders, 2012). This case study used both the quantitative and qualitative methods of data gathering and analysis. The quantitative phase of the study deals with gathering of house sales data and the qualitative phase deals with gathering of data through conducting semi-structure interviews as will be discussed in details in section 3.3 & 3.7.

The fifth and final test of a case study research pertains to the use of triangulation for cross validation of data (Yin 2009). This study used the triangulation to cross validate the data which was based on its adoption of the multiple methodology (quantitative and qualitative). A minimum of three data sources are recommended to triangulate data (Yin, 2009). This case study depended on three data sources to produce findings. These data sources are the house sales records of residential houses located near the airport within the 5km radius, the interviews of Estate Agents and the findings from existing literature. This case study has satisfied all the five test crucial tests which according to Yin (2009) and Saunders at al. (2012) are crucial aspects in justifying the case study design.

3.1.3. Research philosophy and approach

According to Saunders et al. (2012), the research philosophy to be adopted in any study is dependent on the research question being asked or the research hypothesis being tested. Choosing a research philosophy allows the researcher to adopt a certain position for their research based on certain assumptions of how research will turn out (Wilkinson, 2003). The testing of a hypothesis should derive meaning when substantiated by data findings from credible sources (Saunders et al. 2012). The hypothesis was derived from literature findings in the area of proximity effects of commercial properties on house prices which came mainly from published journal articles as discussed in section 1.7. Findings derived from data analysis will present findings that will either support, reject or be neutral towards the hypothesis.

This method of deducing findings from analysing research data pointed towards a pragmatic research philosophy where the importance or meaning of an idea (or research findings) are its practical results – practical results derived from data sources

(Wilkinson, 2003). According to Saunders et al. (2012), pragmatic philosophy may also lead to the multiple methods research design. Multiple methods focus on combining qualitative and quantitative research methods as a way of collecting data. This is because qualitative and quantitative research methodologies are best suited test the hypothesis developed for the research through triangulation of data. (Saunders et al. 2012). By embracing both approaches, a pragmatic researcher can decide to use qualitative method to inform quantitative or vice versa (Onwuegbuzie & Leech, 2005).

The deductive aspect of a study can be experienced where research data can create a different outcome – particularly where hypothesis being tested can be refuted by a possibly opposite or neutral outcome (Saunders et al., 2012). Therefore the research philosophy adopted for this study is the pragmatic philosophy because the importance of the findings will be the practical results of the research. The approach used for this research is deductive as the study has been designed to test the hypothesis that has been developed.

3.2. Research Methodology

This section outlines the techniques that will be utilized in this study to obtain research data and how data will be analysed to derive findings. The research techniques or methods chosen for this study were aligned to the study being a case study research based on the philosophy that the study adopted. According to Williams (2007), research methodology refers to the approach that the researcher will take in carrying out the study. The approach can either be quantitative, qualitative or combination of both qualitative and qualitative methodology which is termed multiple methodology (Williams, 2007). This study utilised mixed methodology (combination of quantitative and qualitative methodology) to obtain and analyse data.

Mixed methodology allows for use of both quantitative and qualitative research methods in a single study (Dellinger & Leech, 2007). Mixed method is an extension rather than a replacement of either the quantitative or qualitative approaches as it is able to draw data from both methods in order to eliminate weaknesses in the findings, which can arise if a single approach is utilized (Williams, 2007; Saunders et al. 2012).

3.2.1. Research methodological choice

As discussed above, the methodological choice I have chosen for this research was linked to the research philosophy and approach applied for this study as discussed in section 3.1.3. The multiple methods chosen for this study allowed for the research findings derived from data analysis to be used to test the research hypothesis. In this study, research data and literature findings will be used to validate the research hypothesis. The data that was gathered from the major estate agents of Bonaero Park formed part of the quantitative analysis. According to Williams (2007) and Dellinger & Leech (2007) multiple methods work well in overcoming any gaps and weaknesses in a research that arises due to adoption of one research method.

Diagram 3.1 below indicates the research flow that will be followed for this study;

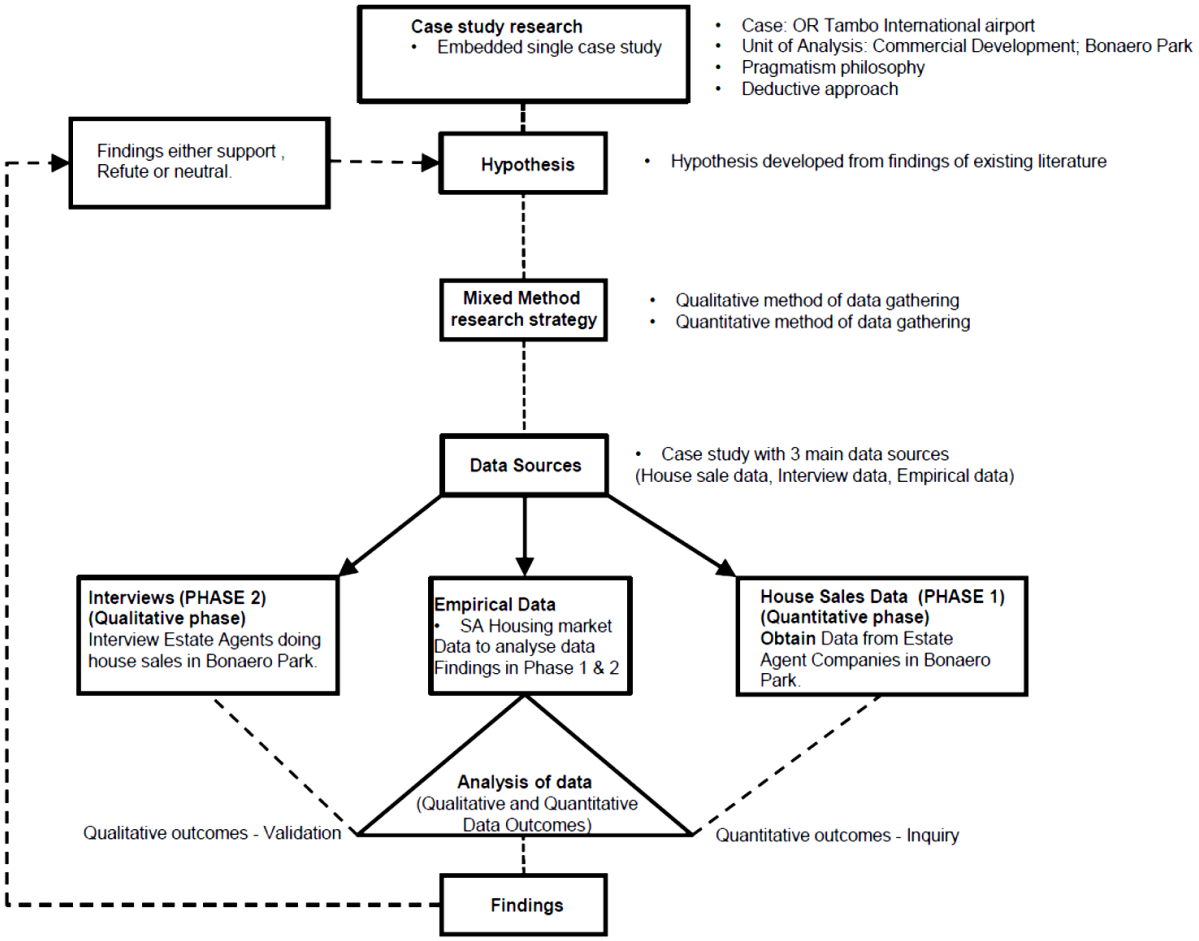


Figure 3.1 – Flow diagram of proposed research design.

3.3. Quantitative data collection and analysis

As discussed in section 3.2.1, this study uses a mixed methodology research design which comprises of quantitative and qualitative methodologies. The mixed methodology works well in overcoming any gaps and weaknesses which arise in research when one method is utilized (Saunders et al. 2012). The quantitative method in this study focuses on collection of house sales data of Bonaero Park from 2006 to 2014 (pre and post announcement periods). The qualitative method focused on collection of data through semi-structured interviews conducted with a selected sample of real estate agent companies who conduct house sales in Bonaero Park. According to Saunders et al. (2012), sequential mixed method involves more than one phase in the data collection and analysis – one phase expanding or elaborating on findings from the other phase. In analyzing the collected data, a sequential mixed methodology was adopted which comprised of two phases.

The first phase was the quantitative analysis of the house sales data. Second phase was the qualitative analysis of data obtained from the interview. Data from the qualitative phase of the study was used to expand or elaborate on the findings of the quantitative phase of the study. In order to adequately conduct quantitative and qualitative data collection, important procedures in research needed to be followed which aligns to the type of study being undertaken. The next section will explain the processes involved in the collection of both the quantitative and qualitative data for the case study research.

3.3.1. Unit of Analysis

According to Yin (2009), the definition of the unit of analysis is similar to that of a case. The unit of analysis can be the phenomenon that is being studied, in the same way that a case can also be the phenomenon being studied (Yin, 2009). A case study can have more than one unit of analysis being studied (Yin, 2009).This study comprised of two units of analyses. The land earmarked for commercial property development at ORTIA is the first unit of analysis and the second unit of analysis for this study was the suburb

of Bonaero Park which is located in close proximity to the land earmarked for commercial property development. A study which focuses on two units of analysis is considered as an embedded case study (Yin, 2009; Saunders et al. 2012). In order to analyse the unit of analysis, data had to be collected from the data sources within the identified population.

3.3.2. Population

According to Blaike (2004), it is important to define a population from which a sample will be drawn before applying a sampling method. A population can be defined as a group of entities (people, companies, stores, etc) that share a common set of characteristics (Zikmund, 2003). The population for this study where the sample will be drawn was identified to be the Estate agent companies that conduct house sales in Bonaero Park.

From the Residential Directory Service (RDS) report which was obtained from the estate agent companies which participated in this study, a count was done of the number of Estate agents who conducted house sales in Bonaero Park from 2006 to 2014 (defined period of study). The RDS report recorded that there were a total of 51 Estate Agent companies who did house sales in Bonaero Park from 2006 to 2014. This number of Estate Agent companies was considered to be the total population of estate agents companies for this study where the sample size was drawn.

3.3.3. Sample size

Sample size refers to the quantity or size of the group or part of the larger population of which data is collected from (Saunders et al. 2012). In research, there are various methods or techniques of selecting sample(s) within a population. This research encountered time constraints and could not peruse what is considered a good sample to be a representation of the population. According to Saunders et al. (2012), where research encounters certain constraints, the purposive selection of a sample becomes a good alternative.

The constraints requiring purposive selection of sample size can be motivated by time constraints, budget constraints, or it is impractical to survey the entire population within the allowed research timeframes (Saunders et al, 2012). As discussed in section 3.3.2, the total of 51 estate agent companies which were reflected to have done house sales in Bonaero Park are perceived as the population. The selection process of estate agent companies approached to participate in this study involved an initial internet search of prominent 'area estate agents' in Bonaero Park. The internet search yielded a list of companies and from that list, only 3 estate agent companies were purposefully selected.

The selection of only the 3 Estate agent companies to form the sample for this study could be perceived as inadequate size of the sample to represent the whole population and perceived as sample bias. The issues pertaining to sample size and possible sample bias is discussed in section 3.4.1 below. However, Mason (2010) & Saunders et al. (2012), states that the advantage of a smaller sample is that it allows for more focused and detailed information to be obtained for the research. A non-random selection process of estate agent companies (sample size) is followed for this study as discussed below.

3.3.4. Sampling technique

When the sample size is selected non-randomly, the sampling technique which Saunders et al., (2012) suggests should be followed is the non-probability sampling technique. Non probability sampling to a large degree provides for subjective technique of selecting samples for a particular purpose rather than the random technique applied under the probability sampling (Saunders et al., 2012).

According to Saunders et al., (2012), non-probability sampling technique is mainly used where convenience in selecting the sample is key due to time constraints, cost of research or impracticality of reaching entire population. The four (4) main techniques of non-probability sampling are quota sampling, purposive sampling, volunteer sampling and haphazard sampling (Saunders et al., 2012).

Based on the process undertaken to select the sample as discussed in section 3.3.3, the selection of the sample for this study is described as purposive sampling. Purposive sampling is mostly used studies where information rich samples need to be selected to provide more data on the phenomenon being studied (Palinkas, Horwitz, Green, Wisdom, Naihua & Kimberly, 2015) The selection of information rich samples involves identification of those samples (individuals or groups) which are considered to be experienced or knowledgeable with the phenomenon under study (Cresswell & Plano Clark, 2011).

3.3.5. Data collection process

Data collection method used for the quantitative phase of this research entailed request of data from the estate agent companies in the sample. An initial phone call was made to the offices of the companies to request permission to speak to the relevant principal responsible for house sales in Bonaero Park. An email was then forwarded to the principal confirming in writing the request done telephonically. Principal responded via email by forwarding the requested data.

The estate agents companies issued the requested data in two documents. The first document was a spreadsheet which contained all the house sales records that the company had done between 2006 and 2014. The house sale data included dependent variables such as house prices, sale date, Seller's details, Buyers details, street address, transfer date and the stand numbers. Refer to ***Appendix B*** for sales data issued by the estate agent companies.

The second document issued was called the Residential Directory Service (RDS) report. The RDS report is a central database document where all sales information is recorded for a particular suburb or town. The information in the RDS report included dependent house attributes variables (e.g. Single or double storey, number of bedroom, number of bathrooms, number of garages, availability of swimming pool, etc) and the house sale prices.

The independent variable of distance of each house from the land identified for commercial property development was not included in the house sales documents and on the RDS report. The distance data for this research was obtained through the use of Google Maps website tool. The Google Map tool allowed for measurement of the linear distances of each house from the land identified for the commercial property development at ORTIA. Refer to ***Appendix E*** which indicates the example of the linear distance data measured which was undertake for each house.

3.4. Bias in quantitative data collection

Bias in research refers to the presence of possible systematic errors in research (Gerhard, 2008). A study which has bias loses its validity and reliability depending on the extent of bias (Sica, 2006). According to Sica (2006), it is almost impossible to completely eliminate bias in research studies but the trick is for the researcher to endeavor minimize extent of bias in the study. According to Lash, Fox & Fink (2009), business research that uses multiple methods is prone to bias in both quantitative and qualitative parts of the study. This study uses multiple methods (quantitative and qualitative) to collect and analyse data as discussed in section 3.2.1 and is thus prone to bias.

In the quantitative part of this study, there were two broad classes of bias which were identified as possibly having the potential to affect reliability and validity of the outcome of this part of the study. These two broad areas of bias were the selection bias (Sica, 2006; Saunders et al., 2012) and measurement bias (Sica, 2006; Saunders et al., 2012). Selection bias deals with the appropriate size of the sample selected for the study in the population (Sica, 2006). Measurement bias according to Sica (2006) can occur in research where the tool used to measure certain information might have a degree of errors in capturing the required information. Saunders et al (2012) discusses measurement bias as occurring as a result of deliberate distortion of data by the researcher in order to influence a particular outcome.

This section below discusses how the selection bias and measurement bias was avoided in the quantitative part of this study to ensure validity and reliability of the data.

3.4.1. Selection Bias:

The house sales data that was used in this research was obtained from the 3 estate agent companies who undertook house sales in Bonaero Park. Selection of these companies as a sample among the entire population of estate agent companies was done through a non-random selection process as discussed in section 3.3.3.Authors have discussed the matter of selection bias which occurs due to non-random selection of sample cases. Selection bias occurs in a non-random sampling technique where the sample size can be perceived as not fully representative of the population (Collier, 1995; Gerhard, 2008; Saunders et al., 2012).

As discussed further in section 3.3.3, a purposeful sampling technique motivated by limited research time was used which resulted in selection of 3 sample cases (data sources) selected haphazardly. The Residential Directory Service (RDS) report received from the Estate Agent companies indicated all the house sales transactions in Bonaero Park from 1999 to 2014. The RDS report showed sales data of all houses that had been registered at the deeds offices and that information was thus taken as confirmed sale transitions. The count on the RDS report indicated that there were a total 51 real estate companies that conducted house sales in Bonaero Park between the periods of 1999 and 2014.

The matter to be considered was on whether the 3 estate agent companies who were selected non-randomly to participate in this study were an adequate representative of the population of estate agents who undertook house sales in Bonaero Park from 2006 to 2014. Initial website research of all estate agent companies operating in Boanero Park revealed that the 3 estate agent companies who were the selected sample size were among the top real estate agent companies who conducted house sales in Bonaero Park.

Information was requested from the 3 estate agent companies in order to analyse further and substantiate these 3 selected companies were indeed among the top estate agent companies in Bonaero Park. The request to the 3 estate agent companies who were selected non-randomly to participate in the study required provision of the following information;

i. Number of house sales done by the company from 2006 to 2014
ii. Total value of house sales done by the company from 2006 to 2014

However, all the 3 Estate agent companies did not respond to the request to disclose this information. An alternative method was devised to come up with information to substantiate the selection of these companies. This method entailed a search on the received RDS report for the following information;

i. Number of sales done by each Estate agent company
ii. Value of sales done by each Estate agent company

This alternative method entailed physical count of the number of sales that each Estate Agent company reflected on the RDS report undertook in Bonaero Park from 2006 to 2014. Out of the 51 Estate agents registered in the RDS report as having conducted house sales in Bonaero Park, a total of 355 sales were counted to have occurred from 2006 to 2014. It must be noted that this number of house sales is lower than what is reported as total sales data utilized for this study as will be discussed in section 4.4.1. This discrepancy occurred due to the information on the RDS report not being a full representation of all entire house sales. The discrepancy could have occurred as a result of some estate agent companies not submitting comprehensive sales information to the company that captures and administer all sales records in the RDS report.

As mentioned earlier, the use of the information shown on the RDS report for this study was on the basis that it was the only data source which the researcher was in possession of and which could provide some level of data to discuss the selection bias due to the lack of response from the request for this type of information from the 3 Estate Agents who participated in the study. Out of the physical count of number of house sales undertaken by each Estate Agent company which did house sales in

Bonaero Park from 2006 to 2014, a spreadsheet was created which showed the total number and price of house sales done by each of the 51 estate agent companies in Bonaero Park from 2006 to 2014 – Refer to ***Appendix C***.

Based on the recorded number of house sales from each of the 51 estate agent companies, another summarized spread sheet (see table 3.3.6 below) was developed which captured the estate agent companies that did more than a total of 10 house sales from 2006 to 2014. Table 3.1 below shows the top 7 Estate Agent companies with the highest number of house sales (exceeding 10 house sales from 2006 to 2014) based on information on the RDS report.

Estate Agency company	**Total Number of Sales**	**Value of total number of sales undertaken (‘R)**
EAC 1	90	67,919,999
EAC 2	62	46,969,000
EAC 3	26	18,670,000
EAC 4	21	15,315,000
EAC 5	16	12,110,000
EAC 6	13	10,247,000
EAC 7	12	8,960,000

Table 3.1 – Top 5 of Estate Agents with highest number of sales

The Estate Agent Companies (EAC) indicated in a colour shade on table 3.1 above are the Estate Agencies that participated in the study and provided house sales data for Bonaero Park. The table shows that the agencies who participated in the study are among the top real estate agencies based on the highest number of house sales they did in comparison to other companies.

Estate Agent Company 1, Estate Agent Company 2 and Estate Agent Company 5 in table 3.3.6, are the Estate Agent companies that participated in the study and provided house sales data for Bonaero Park. 2 out of the 3 estate agent companies who participated in the study, as shown in table 3.1, were numbered first and second

respectively in terms of companies with the highest number of house sales conducted from 2006 to 2014.

Table 3.1 also shows the total Rand value of the total number of sales undertaken by each estate agent company from 2006 to 2014. Table 3.1 shows that the companies who participated in the study are indeed top area agents in comparison to the other estate agent companies on the table, both in terms of the rand value and the total house sales they have undertook. ***Appendix C*** shows the rest of the Estate Agencies which did sales in Bonaero Park and their respective number of house sales and rand value of those sales. On the basis of the total number of sales and the rand value of those house sales that the Estate Agent Companies who participated in the study undertook, it was thus considered that these companies who participated in the study are an adequate sample size to represent the population and was the best method applied in the study to show how selection bias within the sample was minimized.

3.4.2. Measurement bias:

Sica (2006) also discusses that measurement bias occurs due to discrepancy in the measuring tools used by researchers to gather data. The measuring tool might not be properly calibrated to produce accurate and reliable measurements and thus resulting in distorted research data (Sica, 2006). In this study, the distance measurement which gave a linear distance measurement (in meters) of the location of sold houses in relation to the land for the proposed commercial development at ORTIA was obtained through the use of the Google Maps linear distance measuring tool.

The Google Maps linear distance measuring tool is a publicly accessible and freely available tool to be utilized through the website. In terms of the accuracy of the Google Maps measuring tool, Google Company placed a disclaimer on their website (Google, 2015) which stated the following;

“GOOGLE AND ITS LICENSORS……MAKE NO REPRESENTATIONS OR WARRANTIES REGARDING THE ACCURACY OR COMPLETENESS OF ANY CONTENT OR THE PRODUCTS.”

Due to the above disclaimer about the accuracy of the Google distance measuring tool, it was thus concluded that the linear distances provided for this study as measured through the Google Maps tool may not be fully accurate. No practical alternative tool could be found and used to provide a more accurate measurement of linear distances required for the purposes of this study. Therefore the fact that the Google Maps tool utilized for measuring linear distances for this study cannot be confirmed to provide hundred percent accurate measurement, the measurement bias could not be controlled.

The other part of measurement bias discussed by Saunders et al., (2012) deals with what is they term as ‘deliberate distortion’ of data resulting from inaccurate recording of data by the researcher. In this study, the documents recording the house sales data received from the 3 estate agencies varied slightly. When the 3 Estate Agencies were approached for access to data, each agency was requested to only provide their house sales records from 2006 to 2014. Estate Agency 1 and 2 provided the requested data. However Estate Agent Company 3 only provided the multi sales listing (RDS report) and told me to search for their sales within the issued list.

The house sales data received from Estate Agent Company 3 thus provided additional house sales data (i.e. data from other estate agent companies including those done by Estate agent 1 and 2). The study was then faced with additional data which a deicision needed to be taken by the researcher on whether to utilize or not utilize this additional data for the study. It was decided that in order to utilize the additional information, a two-fold process to check the information would need to be undertaken.

The first process involved checking for house sales data only specific to Estate Agent Company 3 and at the same time was able to check and eliminate duplications of information that might have already been provided by Estate Agent Company 2 and 3. This process was beneficial as it achieved the goal of eliminating duplicated sales record as well as keeping additional house sales data that was recorded as sold by

other Estate Agent companies besides the 3 Estate Agent Companies who participated in this study. Due to the process as discussed of checking and eliminating duplicated sales records, out of a total of 1306 house sales records, only 861 house sales record were considered usable for this study as will be discussed further in section 4.1.1.

The second process involved taking the 861 house sales records and subject these sales records to another process which ensured the data was suitable for use in this research. This process will be discussed in section 4.1.1 where the 1306 house sales were matched against the RDS report to ensure that their house attributes were recorded. Only those houses whose attributes were found to be recorded in the RDS report were ultimately considered as suitable data for use in this study as discussed in section 4.1.1.

The first and second process undertaken as discussed above could be perceived as deliberate distortion of data and classified as measurement bias which Sica (2006) warned about. However, to further ensure that inclusion of additional sales record was not deliberate distortion of data by including sales data from companies that were never part of the data sources for this research, the second part as discussed above provided more reasons why this data was included and considered suitable for use in this study.

In fact, the use of sales data after analyses in the second part proved that there was no deliberate distortion which ensured that there was no measurement bias in the data used for this study.

3.5. Quantitative Data recording and Analysis approach

The house sales information received from the estate agent companies who participated in this study was put together and recorded separately in a table format on an Excel spreadsheet in order to capture the pertinent information of each sold house. The spreadsheet captured pertinent information of sale date, sale price, the type of property (i.e. sectional titled or freehold), the house attributes (i.e. single storey, double storey, number of garages, swimming pool, etc), the linear distance (measuring location of the each house from the land earmarked for commercial property development) and

the physical address of the sold house. Refer to ***Addendum B*** for the spreadsheet indicating the list of house sales data put together from the from the estate agent companies.

The data was arranged using a filter tool on the Excel spreadsheet in order to allow for ease of filtering required data to produce the type of graphs and bar-charts required for data analysis.

3.6. Ethics in Quantitative Data collection and Analysis

To collect data from the data sources that were selected to participate in this study, permission for access to company data had to be obtained. The principles of data access observed in this study in line with research ethics are discussed below.

3.6.1. Research Access:

The house sales data obtained from the 3 estate agent companies was requested and received through emails. This is considered in research as a traditional type of data access where correspondence method to request access and receive data is through an email which is in an electronic format (Halse & Honey, 2005). When the introductory email was issued to the Principal of the Estate Agency, it was stated in writing on the email that the information was required for the purposes of research only.

3.6.2. Observed ethics:

It was emphasized in writing on the access email to the Principal that the name of the company as a data source will not be revealed in the research report without prior written consent from the estate agent company. It was also emphasised in writing on the email that permission to publish any data received from the estate agent company or publishing names of the company's employees partaking in the study, will be obtained in writing from the estate agent company and also from the employee. This ensured that the research ethic principles of informed consent, confidentiality & anonymity of data source, voluntary and right of participation were fulfilled (Greaney, Sheehy, Heffernan, Murphy, Mhaolrunaigh & Heffernan; 2012).

3.7. Qualitative data collection and analysis

The qualitative phase of this study involved conducting semi-structured interviews with the employees of the Estate Agencies that provided the house sales data for Bonaero Park. These employees were professional Estate Agents that conducted house sales in Bonaero Park. This was the second phase of the mixed method which when combined with the first phase (quantitative analysis) led to sequential mixed method of data collection (Dellinger & Leech, 2007).

The aim of conducting the semi-structured interviews was to obtain expert opinions from the professional estate agents on some of the data outcomes from the quantitative data analysis in order to meet the objectives of the study. Interviews were requested through the principals or senior estate agents from each Estate Agency. A set of questions were produced under the themes which were structured from the quantitative data outcome. The following themes were developed from the quantitative data analysis phase;

a) Interviewee's professional profile.
b) House sales trends in Bonaero Park – period from 2006 to 2014.
c) Property development trends in Bonaero Park.
d) Known airport proximity effect on house sales in Bonaero Park – current and historical.
e) Airport proposed expansion and related developments – impact on sales in Bonaero Park.

As this is an exploratory case study to explain the relationship between the two main variables of house price and distance as measures of the proximity effect, the semi-structured interviews were considered suitable to provide professional opinion on the observations from the quantitative data analysis.

3.7.1. Population

A population can be defined as a group of entities (people, companies, stores, etc) that share a common set of characteristics (Zikmund, 2003). The population for this phase of

the study was all the Estate Agents who conducted house sales in Bonaero Park. Instead of investigating the population of Estate Agents who conducted house sales in Bonaero Park, for the proposes of this study, It was considered logical to request from the companies that provided quantitative research data (house sales data) to provide an estate agent that could participate in the this part of the study.

The request to the each Estate Agency that participated in this study was to recommend an Estate Agent in their current employ that had conducted house sales in Bonaero Park during the period in study. Each Estate Agency that provided house sales data agreed to recommend one professional Estate Agent from its employ to participate in the interviews for the study.

3.7.2. Sample Size

Sample size refers to the quantity or size of the group or part of the larger population of which data is collected from (Saunders et al., 2012). The three (3) professional estate agents (one from each estate agent company that provided quantitative data) were requested to be interviewed in order to provide their expert opinion. The estate agents agreed to be interviewed and thus formed the sample case for the qualitative phase of the study. The size of the sample was considered in the backdrop of the study following the non-probability sampling technique.

According to Costello (2003) and Mason (2010) unlike probability sampling, the non-probability sampling follows no specific rules on the adequate sample size. Saunders et al., (2012) emphasises that the size of the sample, in non-probability sampling depends on what the research is trying to find out (research objectives). The 3 Estate Agents who agreed to participate in this study were thus considered an adequate sample size for the purpose of this research and were considered capable to offer appropriate expert opinion based on their collective long house sales history in Bonaero Park (within the 2006 to 2014 period) as discussed further in section 4.2.1.

3.7.3. Sampling Technique

The sampling technique used in this qualitative phase of research is similar to that used for the quantitative phase of the research. The technique used to select the 3 estate agents is the purposive sampling which is part of the non-probability sampling. Purposive sampling technique can involve selecting cases on purpose due to their availability which can be negotiated through a contact (Stake, 2010; Saunders et al., 2012). The contact in this study is construed to be each of the Estate Agency Principal who referred us to the estate agent within the agency.

The selection of information rich samples involves identification of those samples (individuals or groups) which are considered to be experienced or knowledgeable with the phenomenon under study (Cresswell & Plano Clark, 2011). The Principal was requested to select and Estate Agent who has participated in the house sales in Bonaero Park. The specific request is based on the importance of having a knowledgeable and experienced agent who will be interviewed and be able to provide information based on their experience in doing house sales in Bonaero Park.

3.7.4. Data Collection Process

Semi-structured interviews were conducted with Estate Agents from the 3 estate agency companies which provided house sales data. According to King (1994) & Costello (2003), interviews provide an appropriate platform for the researcher to see the topic from the interviewee's perspective and thus evaluate why and how the interviewee reached that perspective. Similar set of pre-determined questions were posed to each interviewee and expert opinion obtained to provide valuable professional insight which was used at data analysis to provide findings for the study.

The interviews were conducted face to face in the company offices of each estate agent and an audio recorder was used to record the interviews. Written notes were taken down during the interview in order to record events that were considered highlights coming out of the interview. Interviewees were briefed before the start of the interview to only present their professional opinions in answering all the questions as there was

no right or wrong answers. The duration of each interview was capped to a minimum of 20 minutes and maximum of 30 minutes.

3.7.5. Questions Design

The interviews were conducted as semi-structured and thus required no questionnaires to be issued prior to the interview (Saunders et al, 2012). Only a set of similar pre-determined questions were prepared and each interviewee was asked those similar questions (Oppenheim, 1992) - Refer to ***Appendix F*** for questions sheet.

The questions were formulated to be 'probing questions' in order to encourage a response from the interviewee that offers explorative answers which seek to provide expert opinion. According to Saunders et al (2012), probing questions allow for exploration of responses which are critical to the research topic. As the questions were designed in order to obtain expert opinion from the interviewee, this was achieved by creating context during the interview of the outcomes of the quantitative data analysis.

3.7.6. Data Quality issues

According to Saunders et al (2012), qualitative research can have some data quality issues. These issues relate to mainly three (3) areas viz; reliability, validity and generalizability of data. Reliability arises due to lack of standardization of the semi-structured interviews (Saunders et al., 2012). Reliability is often concerned with the premise that if same research was conducted by another researcher, following the same research plan, whether the research will yield similar results. Reliability of data emanating from semi-structured interviewees can be tested through a process of bias management. During data recording and analysis, bias was managed as discussed in section 3.2.18 below.

3.8. Bias in qualitative data collection and analysis

As also discussed in section 3.4, bias refers to the presence of possible systematic errors in research (Gerhard, 2008). It is almost impossible to completely eliminate bias

in research studies but the trick is for the researcher to endeavor minimize extent of bias in the study (Sica, 2006). In the qualitative phase of this study, there were two broad classes of bias which were identified to potentially affect reliability and validity of the outcome of the qualitative part of the study. The two broad areas of bias identified were participation bias and interviewer bias (Saunders et al., 2012).

3.8.1. Participation bias:

Participation bias refers to convenient non-random selection of data sources which might not be an adequate representation of the population (Goddard & Melville, 2001; Saunders et al, 2012). As discussed in section 3.3.4, sample size chosen for data gathering in this phase was based on the principles of non-probability sampling. According to Basit (2010) and Chandra & Sharma (2007), the choice of the sample size in a population should be based on the respondents that are appropriate for the study, to ensure good responses.

Therefore it was considered appropriate that the selection of the sample size in this phase of the study be directly linked to the sample size of companies that provided research data in the quantitative phase of the study. The estate agents who participated in the interviews of this study were from the Estate Agent Companies that participated in the study and provided house sales data. The selection of the Estate Agents who participated in this study was done through convenient sampling which is part of non-random selection of sample in a population. In this phase of the study, sample was obtained through a contact (Company Principal) and motivated by time constraint for the study.

When the sample size is selected non-randomly, the sampling technique which Saunders et al., (2012) suggests should be followed is the non-probability sampling technique. Non probability sampling to a large degree provides for subjective technique of selecting samples for a particular purpose rather than the random technique applied under the probability sampling (Saunders et al., 2012). According to Saunders et al., (2012), non-probability sampling technique is mainly used where convenience in

selecting the sample is key due to time constraints, cost of research or impracticality of reaching entire population.

Time constraint was the major driver for the process in which sample size of 3 estate agents was conveniently selected for this study. The four (4) main techniques of non-probability sampling are quota sampling, purposive sampling, volunteer sampling and haphazard sampling (Saunders et al., 2012). Purposive sampling technique can involve selecting cases on purpose due to their availability which can be negotiated through a contact (Stake, 2010; Saunders et al., 2012). The contact in this study is construed to be each of the Estate Agency Principal who referred us to the estate agent within the agency.

Based on the process undertaken to select sample size through purposive sampling, sample bias could not be avoided but was minimized through adoption of purposive sampling technique which motivated for selection of the 3 estate agents only from the 3 Estate Agencies that participate in the study. These 3 Estate agents were invited and they agreed to participate in the interviews for this study.

3.8.2. Interviewee bias:

According to Saunders et al., (2012), interviewee bias occurs where the non-verbal behavior, comments and tone of the interviewee during the interview can have influence on the responses of the interviewees and create response bias. This can be intentionally or un-intentionally achieved through the interviewer's posing of questions (to influence a particular response), the non-verbal behavior (e.g. cleanliness, dress code, etc) and the way that the interviewer records and interprets the interview data.

The first area where interviewer bias was avoided in the qualitative data collection phase of this study was at the stages of questionnaire development. According to Saunders et al., (2012), phrasing of a question can eliminate bias from the response of a respondent. In the phrasing of the pre-determined question, I took care not to use leading question in order to avoid a bias response. Only probing questions were put

together to allow for an honest professional opinion – Refer to ***Appendix F*** for question sheet.

Saunders et al., (2012) further stated the importance of interviewer's behavior during the interview. The interviewer should behave appropriately during the interview to reduce scope of bias during the interview (Goddard & Melville, 2001 & Saunders et al., 2012). To avoid any bias from the side of the interviewer (the researcher), it was made sure that when posing questions, the interviewer did not produce any verbal and non-verbal gestures and behaviors that could have been construed by the interviewee as reflecting bias in the professional opinion expressed to answer the question.

The interviewer also showed attentive listening skills, maintained a good tone of voice, showed none-exaggerated enthusiasm at the responses from the interviewee and also maintained eye contact occasionally. The interviewer also never projected any personal views to influence the response from the interviewees. The interpretation of the interview data was not biased because the interviewer ensured that the interviewee data was captured in the transcripts as audio recorded during interview.

The process suggested by Saunders et al., (2012) was followed where the researcher sent through written un-edited transcripts of the interview for reading, comments and sign off by the each interviewee. This process ensured that my capturing of the interview data was not bias (Mero-Jaffe, 2011). The researcher went further to ensure that during data interpretation, answers from the interviewees were not distorted in capturing in the research report as suggested by Mero-Jaffe (2011). This distortion was avoided through use of un-edited anonymous word for word quoting of the responses by the interviewee at analyses of the data.

3.9. Qualitative Data recording and Analysis approach

Data was audio recorded during the interviews. The audio recordings were then transcribed within 12 hours after each interview to ensure data was freshly captured and certain aspects observed during the interviews were also recorded in the transcript (e.g. verbal and non-verbal gestures, etc.) while still fresh in my mind. This process assisted

in ensuring that the response data was summarized and documented before the next interview was conducted. Particular themes which came out of the interviews were also analysed to find any similarities or dissimilarities with the observations from the quantitative data analysis phase.

Saunders et al., (2012) emphasizes that there is no standardized approach to analyzing qualitative data. Various methods exist to analyzing qualitative data but this research followed the 'generic approach' as prescribed by Saunders et al., (2012). According to Saunders et al., (2012), the generic approach to qualitative data analysis involves the following five processes;

i. Identification of categorizing or codes which enable data comprehension.
ii. Attaching data from sources to the identified appropriate categories or codes.
iii. Identify relationships and patterns in the categories.
iv. Develop testable propositions.
v. Drawing and verifying conclusions.

This is the data analysis approach that was followed in this study as discussed in detail in the quantitative data analysis in section 4.2.

3.10. Qualitative Data access and Ethics

3.10.1. Research Access:

To request interview participation of the Estate agents in the study, an email was sent to the estate agents who were recommended by the principal within the company to participate in the study. The email contained request for meeting confirming an earlier telephonic discussion. The email also contained attachment of the background of the study and the themes that the questions in the interview focused on. The email clarified that the interview was going to be audio recorded and that no part of the interview data will be published without consent of the interviewee.

3.10.2. Observed research ethics:

During the request for the interview, each interviewee was told that the interview was conducted for the purposes of postgraduate studies only. After the permission for the interview was granted and each interviewee was interviewed, a consent form was issued to each interviewee to sign off and consent to the following;

i. That the interviewee read and understood the research objectives and themes that the interview questions were based on.
ii. That the interviewee was not coerced by the interviewer during the interview to respond in a particular way.
iii. That the participation of the interviewee was voluntary and was free to withdraw from the study at any point.
iv. That the interviewee agreed for the interview to be audio-recorded.

Another consent form was issued regarding consent to use professional and personal information. The consent form for allowed the interviewees to sign off and consent to the following;

i. That the principal agreed that the company name be published in the study as the data source.
ii. That the interviewee agrees or disagrees that their names be published in the study as a data sources.
iii. Or that the interviewee agrees or disagrees to the use of anonymous quotes in the publication.
iv. That the interviewee and principal agrees or disagrees that the final draft report be issued to them for reading prior to publication to make sure that no harm has been caused to the interviewee and the company they work for which provided research data (Greaney & Leech, 2012).

The company principal and the interviewees were requested to sign the consent letters as described above. However, not all principals and estate agents signed and returned the consent forms as requested – refer to **Addendum G** for returned consent forms**.**

3.11. Chapter Summary:

This study was conducted as a case study research. The reason why it was conducted as a case study was due to the phenomenon being studied only occurring at one airport in South Africa – OR Tambo International Airport (ORTIA). ORTIA was the case and two unit of analysis existed in the study. As discussed in sections 3.1 and 3.2, the case study had two unit of analysis and was thus noted as an embedded case study research. The first unit of analysis was the planned commercial property development at ORTIA and the second unit of study was the suburb of Bonaero Park.

Research philosophy based on the method adopted for this study to deduce findings was the pragmatic philosophy. As discussed in section 3.1.3, the stance of the pragmatic philosophy is that the research findings must be derived from practical results. The practical results were derived from data sources for this research. The philosophy chose for this study allowed for multiple methodology to be adopted for this study. The multiple methods were combination of qualitative and quantitative methods of gathering and analyzing research data. The multiple methodology was ideally suited to test the hypothesis developed for the study and eliminate any weakness in the study which could have been present if one research method was utilized.

Data for this study was collected and analysed in two phases. The first phase was quantitative phase and the second phase was the qualitative phase. Quantitative phase involved collection and analysis of sales data of the houses in Bonaero Park within the period defined in the study. The quantitative phase involved collection of data through non-random interviews conducted with Real Estate Agents that conducted house sales in Bonaero Park within the period defined in the study. Combining these methods allowed various methods of collecting and analyzing data as discussed in sections 3.3 and 3.4. Data findings from multiple methods when combine with literature findings and empirical findings allowed for findings of this study to be triangulated (Yeasmin & Rahman, 2012).

4. CHAPTER FOUR:

DATA ANALYSIS

As discussed in section 3.1.3, this is an exploratory study which aims to analyse whether the variables of house prices and the variables of proximity (measured in linear distance) affected and influence each other (Saunders et al., 2012). The study used these two variables to investigate the proximity effect of the proposed commercial property development at OR Tambo International Airport on the houses in Bonaero Park. The proximity effect is measured through studying the house prices variable at the pre-announcement and post announcement periods using the distance variable to analyse the proximity effect.

The house sales data received from the estate agent companies was entered on the Excel spreadsheet and arranged in an ascending order starting from the 2006 up to the more recent 2014. A filter tool was used on the Excel programme which allowed for categorisation of certain data where required during analysis. Categorisation of sold houses was done in Excel spreadsheet in order to differentiate between the types of houses sold. Two main categories were created and given a filter labels on the Excel spreadsheet. These categories are labeled as Freehold and Sectional Title. The makeup of these categories is explained further in section 4.1.3.

Saunders et al., (2012) states the importance of checking data errors to avoid inaccuracies in data capturing. This is important to avoid inaccurate conclusions which can be drawn due to inaccurate capturing of data. To easily identify repeat errors of sold houses, the data was captured on the Excel spreadsheet using the physical address information of each sold house. Excel programme was useful in identifying repeat sales as the programme automatically picked up and highlighted repeat sales when the physical address information was recalled. This made it possible to identify and eliminate repeat sale errors in the sales information.

Tables and Figures were produced as part of the Quantitative data analysis – Phase 1 of the study. An analysis has been done in sections 4.1.1 up to 4.1.6 discussing each table and figures produced to analyse the data. The data from the interviews formed

part of the qualitative analysis which is Phase 2 of the study. Data from the interviews was audio recorded and transcripts of the interviews were subsequently created for the purpose of analysis. The full analysis if interview data is discussed in section 4.2 below. Statistical analysis of data was not employed in this research.

4.1. Quantitative Data Analysis

The commercial property development which is proposed by the OR Tambo International airport (ORTIA) had not yet been built at the time of this study. An announcement was made by ORTIA in May 2010 about various portions of land within the airport perimeter which ACSA is unlocking for take up by interested commercial property developers (SA Property Review, 2010). Figure 4.1 below was obtained from the SA Property Review (2010) article, depicts the ORTIA precinct where various pockets of land that were identified as available for commercial property development.

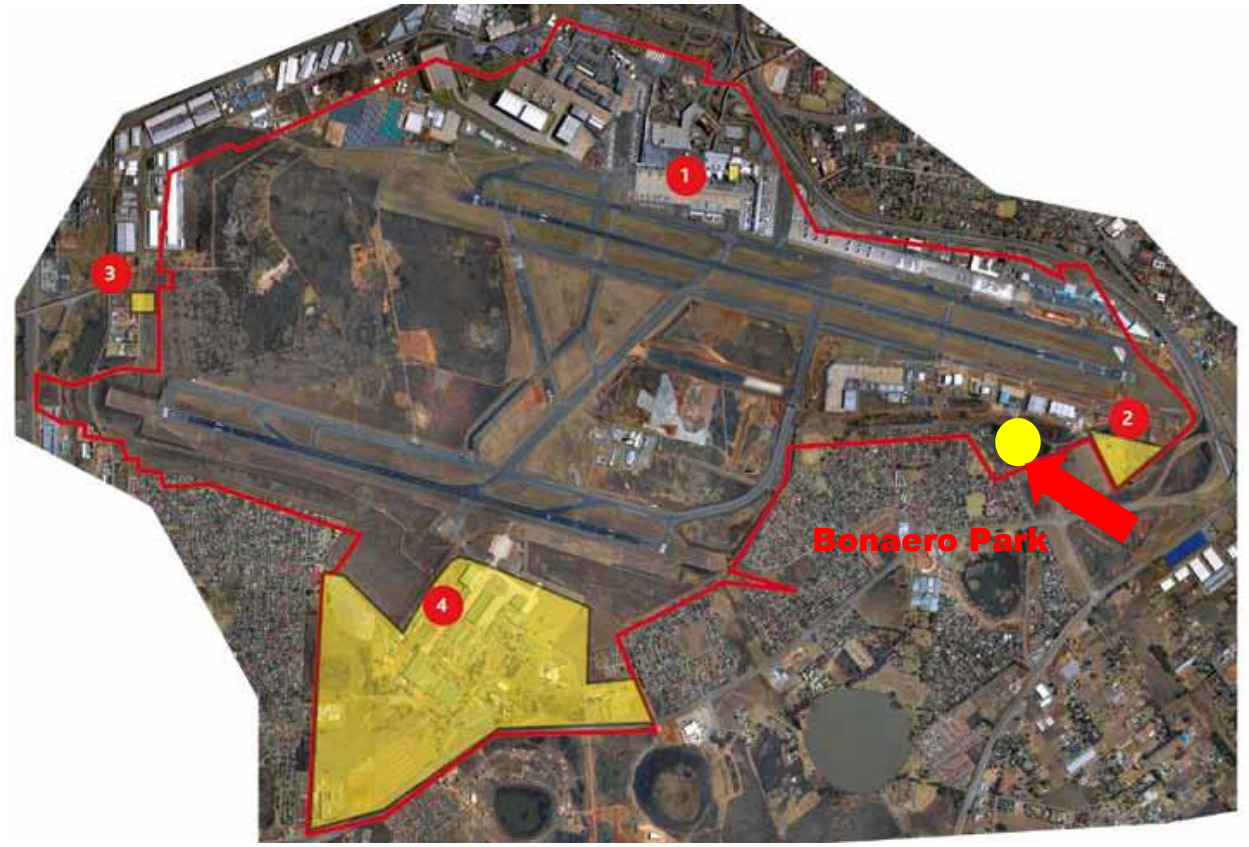


Figure 4.1: Land available for commercial property developments at ORTIA (Source: SA Property Review, 2010)

In diagram 4.1, the thick ‘red’ line depicts the perimeter boundary line of the airport precinct. The land pocket labeled ‘2’ on Figure 4.1 is the land identified in the media article as the land under this study. However, it was discovered during the period of this study that this location was subsequently changed. Internal information from ACSA indicated that the location of the land marked as ‘2’ on Figure 4.1 was later changed to another location. The land was revised and shown (see yellow dot) to be now located even much closer to Bonaero Park as pointed by the ‘red arrow’ on Figure 4.1.

However, the source and the diagram which shows the new location of the land is not referenced in this study due to permission not being obtained from ACSA to publish the revised diagram showing the new location of the commercial development land. As a result of permission not obtained from ACSA to use the revised diagram, I opted to use the diagram published in the media and show the changes pertaining to the location of the land as shown in figure 4.1.

In order to measure the proximity effect that the proposed commercial development has had on the market prices of the houses, the distance variable is important. Poudyal et al., (2009) states that distance plays an important role in understanding the externality effects of one land use over another dissimilar land use. Although their studies employed the use of the Hedonic Price Model, Colwell et al (1985), Thibodeau (1990), Song & Knaap (2004), Aliyu et al (2011), Koster & Rouwendal (2012) also factored in the distance variable in analyzing the proximity effect of commercial properties on the prices of nearby houses.

Linear distance of each sold house from the commercial land was measured using the online Google Distance measure tool. An approximation of the centre of the land was used to offset the distance to the sold house – Refer to ***Appendix E***. The distance ranges were thus plotted from the centre point of the land to the centre point of each house – Refer to ***Appendix E***. Table 4.1 below indicates the number of houses sold which are located within the 1km, 2km, and 3km linear distance ranges (middle column).

Distance	Number of houses sold (2006 to 2014)	Approximate number of existing houses
0 to 1km	319	448
1km to 2km	453	1140
2km to 3km	89	100

Table 4.1 – number of houses sold within the allocated linear distance ranges

A map of the Bonaero Park suburb was obtained from Ekurhuleni metropolitan council website. A physical count on the map of Boanero Park was done to understand the total number of houses located within each allocated distance range. The map count revealed that there were approximately 1676 stands / ERF within overall Bonaero Park suburb. These stands included those that are non-residential and sectional title plots.

A total of approximately 448 existing houses were counted as existing within the 0 to 1km radius. The houses that were observed to be located within this distance range were mainly within the Bonaero Park Proper (first section of the suburb), the Bonaero Park Extension 1 and small section of Bonaero Park Extension 2 which were closest to the land earmarked for the commercial property development.

Within the 1 to 2km radius, there was a physical count of an approximate total of 1140 existing houses. The houses that were observed to be located within this distance range were mainly within the Bonaero Park Extension 2 area. Within the 2 to 3km radius, there was a physical count of an approximate total of 100 existing houses. The houses located within this distance range were observed to be mainly within the Bonaero Park extension 3 which was furthest from the land for the proposed commercial property development.

The above numbers excludes those stands allocated to have non-residential uses (e.g. servitudes, parks, schools) as was observed through zooming and glancing at Google earth satellite map. Based on the above and as indicated in table 4.1, it was observed that in the 1 to 2km range, there were more houses sold in the period under study (2006 to 2014) compared to other distance ranges.

4.1.1. Number of house sales data received

Based on the count made on the house sales reports received from the Estate Agencies, a total of 1306 number of house sales were recorded between 2006 and 2014 in Bonaero Park. The RDS report also provided information of the house characteristics (i.e. number of bedroom, kitchen, dining room, number of garages, swimming pool, etc.) as well as the estimated market price, the actual sold price and average price of the each sold house.

Li & Brown (1980); Sirmans, MacPherson & Zietz (2005); Zietz, Zietz & Sirmans (2008) and Paez (2009) found in their respective studies that house characteristics such as number of bedrooms, number of garages and swimming pool contributes positively to the market price of a house. Therefore in this study, the house characteristics were considered an important element of the sale data of each house in order to understand dependent variables that contribute to the market price of the house.

Each house on the sale list received from each estate agency was matched with information on the RDS report in order to pick up characteristics of each house. Characteristics of some of the sold houses could not be found in the RDS report and I then decided that those houses which could not be matched were not to be included in the final house sales data that was used and analysed in this research. This was done as a further precaution to avoid data bias as discussed in section 3.4.2 under measurement bias.

Figure 4.1 below indicates sold houses whose characteristics were matched in the RDS report and thus shortlisted for use as data for this research. A total of 861 sold houses were matched and thus passed as usable data for this research. A total of 445 sold houses were not matched and thus discarded and not used for this study.

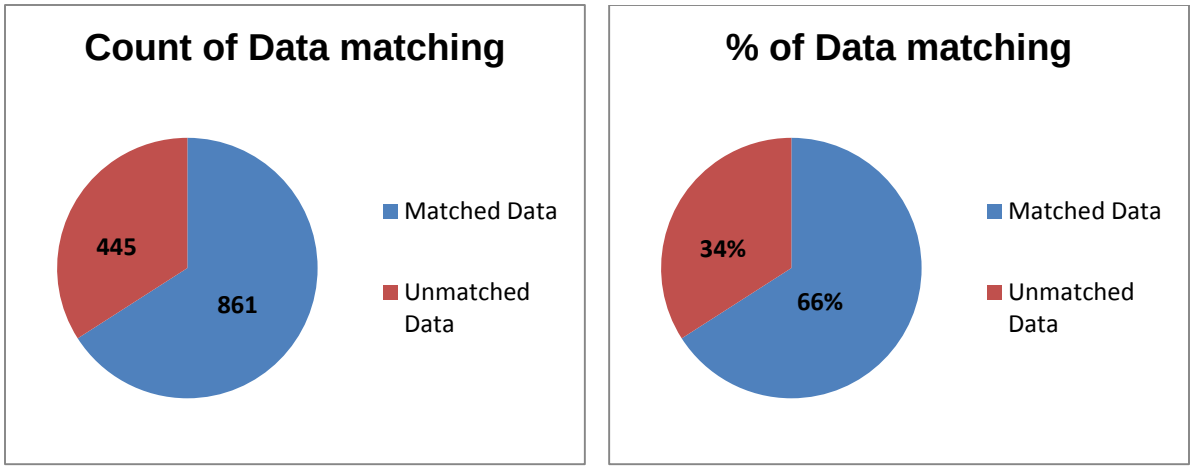


Figure 4.2: Count of matched data

4.1.2. Number of Sold Houses in Bonaero Park

In order to analyse house sales trend within the period under research (2006 to 2014), a bar chart was developed which showed number of houses sold per year. The bar chart as shown in Figure 4.3 below indicates that there were more houses sold in the periods after 2010 compared to the periods leading to year 2010. The bar-chart indicates that the house sales in Bonaero Park have been on a steady increase from 2006 with the exception of 2007 where there was a slight drop in the number of houses sold.

It is observed as shown in Figure 4.3 that the number of sold houses increased considerably from 2011 compare to previous years. The year 2012 shows the highest number of house sales recorded in the period 2006 to 2014. However the number of sales started declining slightly from 2013. It was be noted that the number of house sales recorded for 2014 as indicated in figure 4.3 is not a full depiction of total house sales for the year. This is because the house sales data received from the Estate Agencies for 2014 was up to October 2014 and thus excluded subsequent months up to the end of 2014.

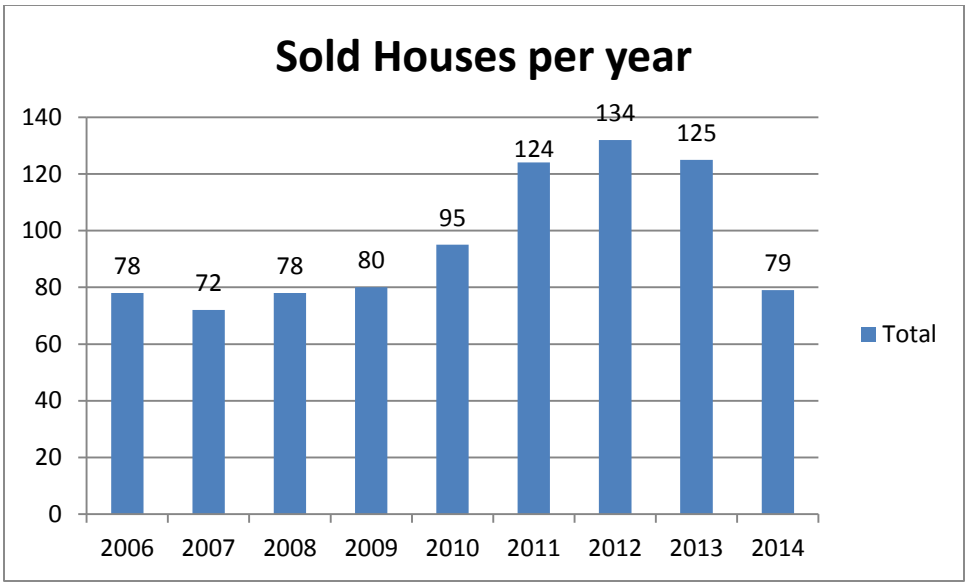


Figure 4.3: Number of sold houses per year

As discussed in section 4.1, ACSA made the announcement in 2010. For the purposes of this study, the pre-announcement period was selected to be from 2006 up to 2010. The post announcement period was from 2011 up to 2014. In analyzing the number of recorded sales between the pre-announcement and post-announcement periods as shown in figure 4.4, there were a total of 403 houses which were sold in the pre-announcement period compared to 462 sold houses in the post-announcement periods. This translates to a 14, 6% increase in number of sales at post-announcement period over the pre-announcement period.

The cause of the increase in house sales at the post-announcement period cannot be assumed to have occurred as a result of the announcement of the commercial property development by ACSA. A further analysis of house sales prices is done in the next sections to study if there were any variations in sold house prices between the pre and post announcement periods.

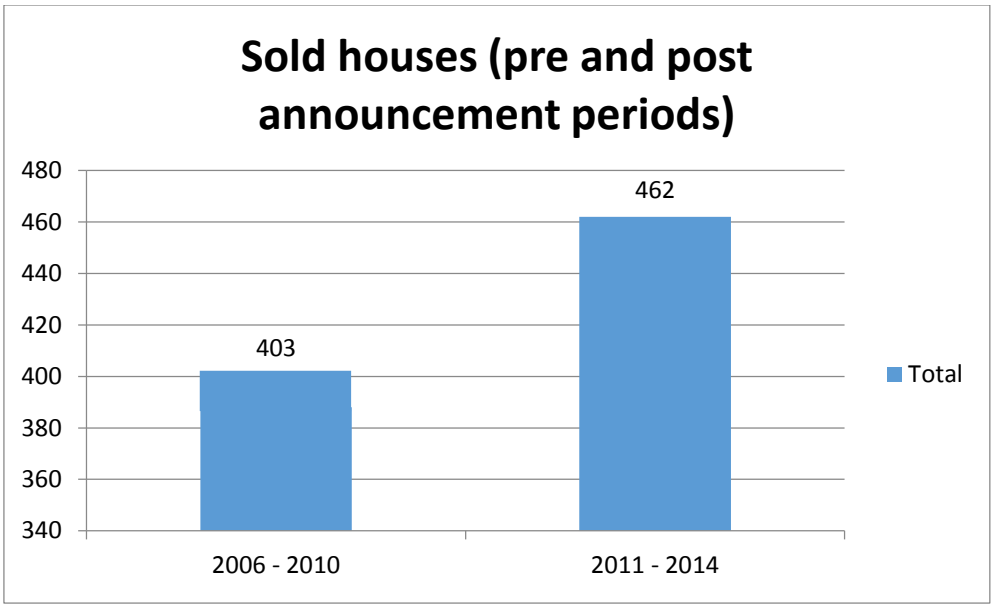


Figure 4.4: Total of sold house at pre and post announcement periods

4.1.3. Prices of sold houses in Bonaero Park

In order to study the price trends of the sold houses, an analysis of the average house sale prices was undertaken. Figure 4.5 below indicates the average house prices recorded per year from 2006 to 2014. In analyzing the pre-announcement period, it was observed that although there were more number of house sales done in years 2009 and 2010 as depicted in figure 4.3, the average sale price in these years reduced compared to the average sale prices in years 2006, 2007 and 2008 – see figure 4.5.

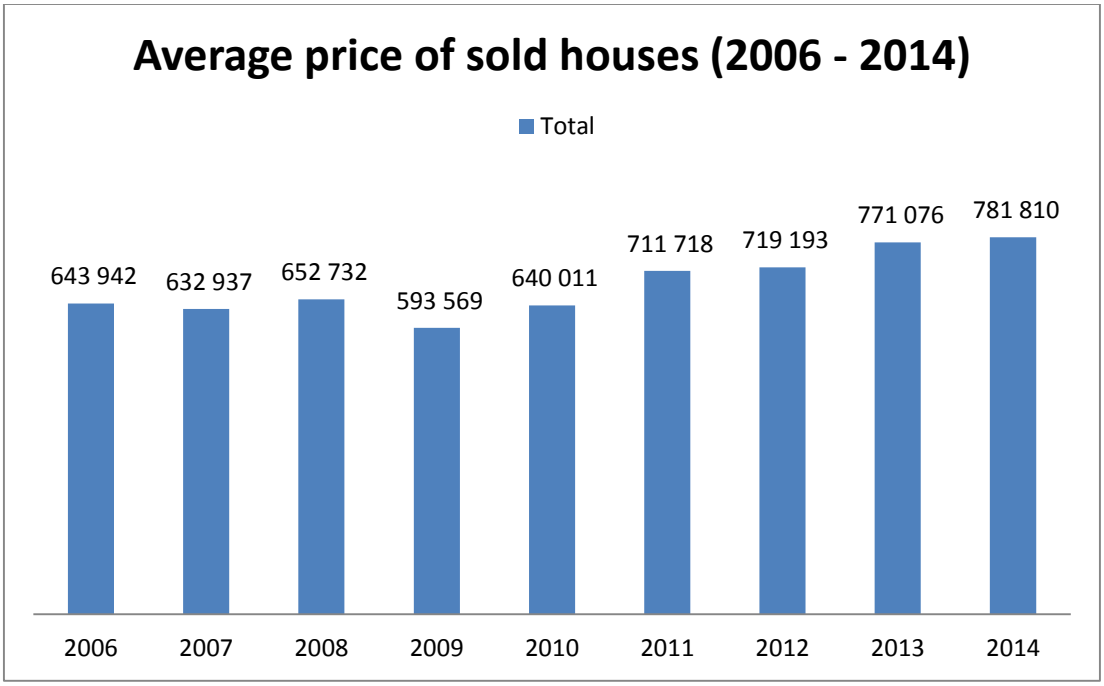


Figure 4.5: Average sale price of sold houses per year

What was observed in the post-announcement period is that house sale prices increased steadily. However, the year 2012 recorded the highest number of houses sold in the whole period of 2006 and 2014 as shown in figure 4.3. Despite the highest recorded number of sales in 2012, the average sale price is lower compared to 2013 and 2014 which respectively showed reduced house sales. As mentioned earlier, sales data for 2014 did not include all the annual sales as the data issued was up to October 2014. Observation as shown in figure 4.5 is that although the sales data was not for the whole year in 2014, the average price was higher than any year in the announcement periods.

In order to have a better understanding of cause of price variation, it was considered important to also analyse the type of house stock that was sold during this period. Houses tend to have varying prices in the market due to the type of house being sold (Zietz et al., 2008). In the data received from the estate agent companies of sold houses, various descriptions of the type of sold houses are indicated. For the purposes of this study, the house description is split into two main categories. These categories are labeled as Freehold and Section Title type houses.

As indicated in Table 4.2 below, the category for stand-alone conventional houses which are built within their individual piece of land, are classified as Freehold. Sectional title category is for all house types described in the house sales document as flats, duplex, townhouse and Cluster.

House types	Category classification
Townhouses, Flats, duplex, cluster	Sectional Title
Single Storey conventional, Double storey Conventional	Freehold

Table 4.2: House category classification

An analysis of the type of houses sold within the period under study (2006 – 2014) is undertaken. Out of the total number of sold houses per year as depicted in figure 4.3, a bar chart was created as per Figure 4.6 below in order to indicate the types of houses sold per year. In the pre-announcement years (2006 – 2010), it was observed that there were more freehold houses sold compared to sectional title houses. Similar trend was observed in the post-announcement period (2011 – 2014), where more freehold houses were sold compared to sectional tittle houses.

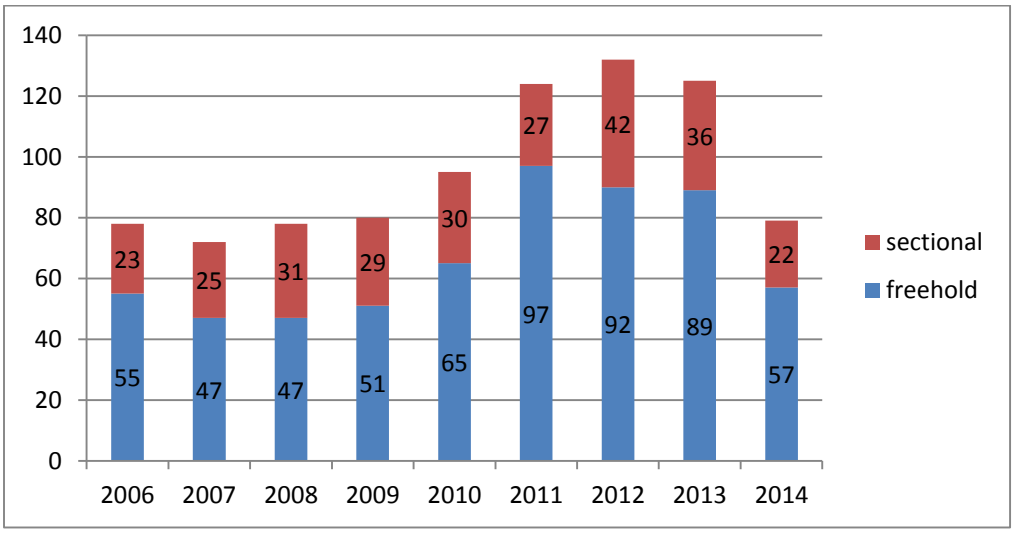


Figure 4.6: Number of sold freehold and sectional title houses

Figure 4.7 below indicates the total number of freehold and sectional title houses sold in both the pre-announcement and post-announcement periods based on information from figure 4.6.

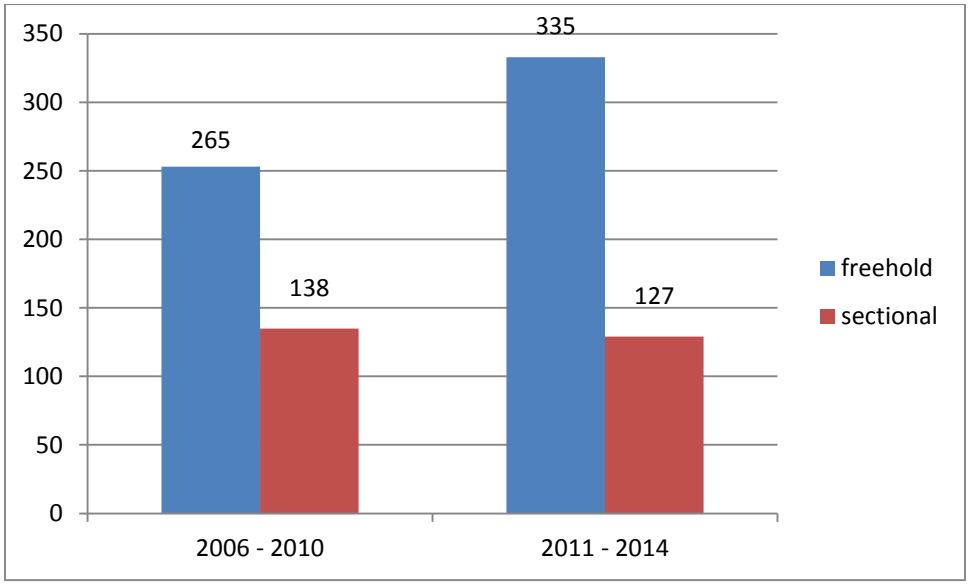


Figure 4.7: Total number of freehold and Sectional Titles houses sold at pre and post announcement periods

Although there were slightly less number of sectional title houses sold at post-announcement period compared to pre-announcement period (see figure 4.1.6), the average price for sectional titles at post-announcement period was recorded as higher compared to the pre-announcement period – see figure 4.8 below.

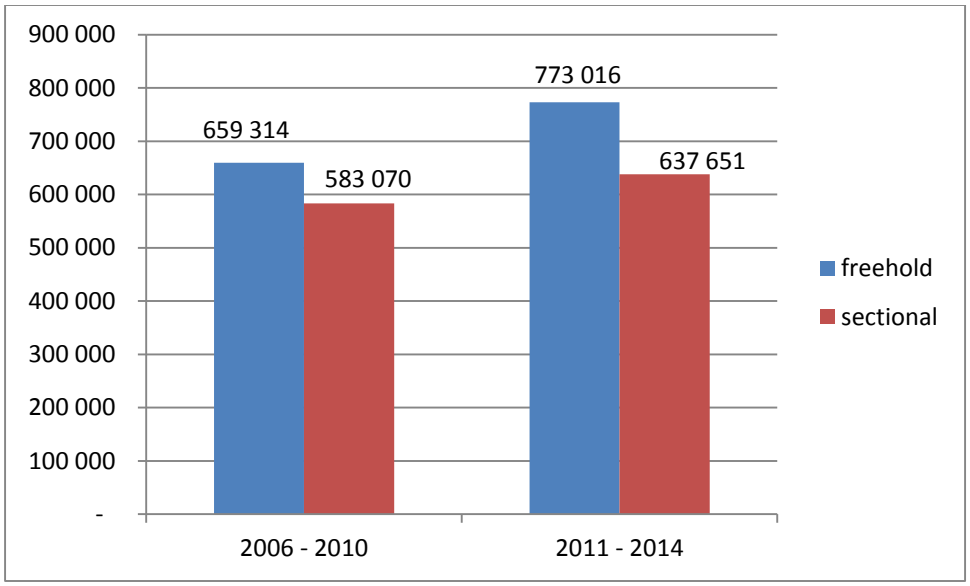


Figure 4.8: Average prices of total number of Freehold and Sectional houses sold at pre and post announcement periods

The analysis done up to this stage does not indicate that there was a huge average price variance between the houses sold at pre-announcement stage compared to the houses sold at post-announcement stage. Although figure 4.7 shows that there were more freehold houses sold at post-announcement period, the variance in the average house price in rands was R113, 702 – an average percentage increase of 17,2 %. For the sectional title houses, it was observed that the average price variance between the pre and post announcement periods was R54, 581 – an average percentage increase of 9, 4%.

Observations discussed in this section indicate a trend of a high increase in the number of sales at post-announcement period (as observed in year 2011). This increase however maintained a trend where more freehold houses were sold at post announcement period compared to sectional title houses sold at pre-announcement period. The only observable discrepancy is with the price variation between of the freehold and sectional title houses at both the pre and post announcement stage.

Proximity relating to the distance location is noted to be an important factor in determining the sale price of a property (Poudyal et al., 2009). In the next section, the locational factor is analysed to study its possible impact on the sale prices of the houses (Jud & Winkler, 2006).

4.1.4. Locational effect measured through the linear distance

In this section, location of the sold houses is analysed using the distance factor applicable to the proximity of the sold houses to the land identified in this study for the development of the commercial property by ACSA. As explained in section 4.1, the land for the commercial property development being studied is located on the boundary of the O.R Tambo International Airport which is closer to the Bonaero Park suburb (see Figure 4.1).

A measurement was done of the proximity in terms of linear distance that each sold house is located away from the land earmarked for the commercial property development by ACSA. As discussed in section 3.3.5, the linear distance measurements were done using the Google Maps application. The linear distance measurement was done from the location of the sold house away from the center of the land for the proposed commercial property development.

As discussed in section 4.1, three (3) distance ranges were applied in this study. It was observed that the closest sold house in terms of location near the land of the proposed commercial property development is approximately less than 200 meters (0.2 km). The furthest sold house was located close to 3000 meters (3km).The minimum distance range applied was zero (0) meters and maximum distance range was three thousand (3000) meters – Refer to ***Appendix D***.

Figure 4.9 below indicates the number of houses sold within the distances ranges at both the pre and post announcement periods. It is observed that there are higher numbers of sold houses within the 1km – 2km distance range. The second highest number of houses sold was in the 0 – 1km range and the lowest was in the 2 – 3km range. This is observed in both the pre-announcement and post-announcement periods as shown in figure 4.9 below.

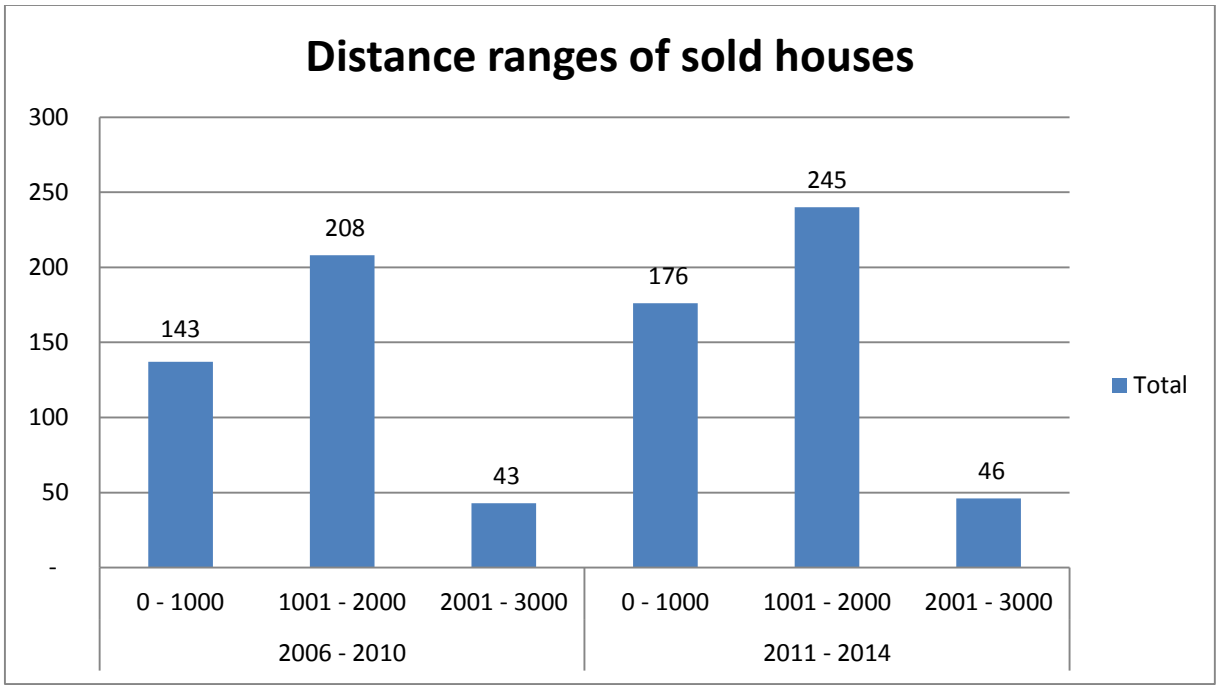


Figure 4.9: Number of houses sold per distance range

It was considered important to analyse the average prices per distance range in order to observe the price variances which could be influenced by proximity. Figure 4.10 below shows the average prices of houses sold which are located within the defined distance ranges. It is observed in figure 4.10 that the average price of houses within the 0 – 1km and 1 – 2km ranges grew slightly at post announcement stage – growth of 14, 8% and 16, 8% respectively. Where there are noticeable observation was with the average price of sold houses within the 2 – 3km range.

The recorded house sales within this distance range (2 – 3km) showed the lowest number of sales in both pre and post announcement periods compared to the houses within the other distance ranges. However, as shown in figure 4.10, despite the lowest recorded number of house sales count, the houses in the 2 – 3km distance range had the highest average price compared to the houses in other distance ranges where higher number of house sales were recorded.

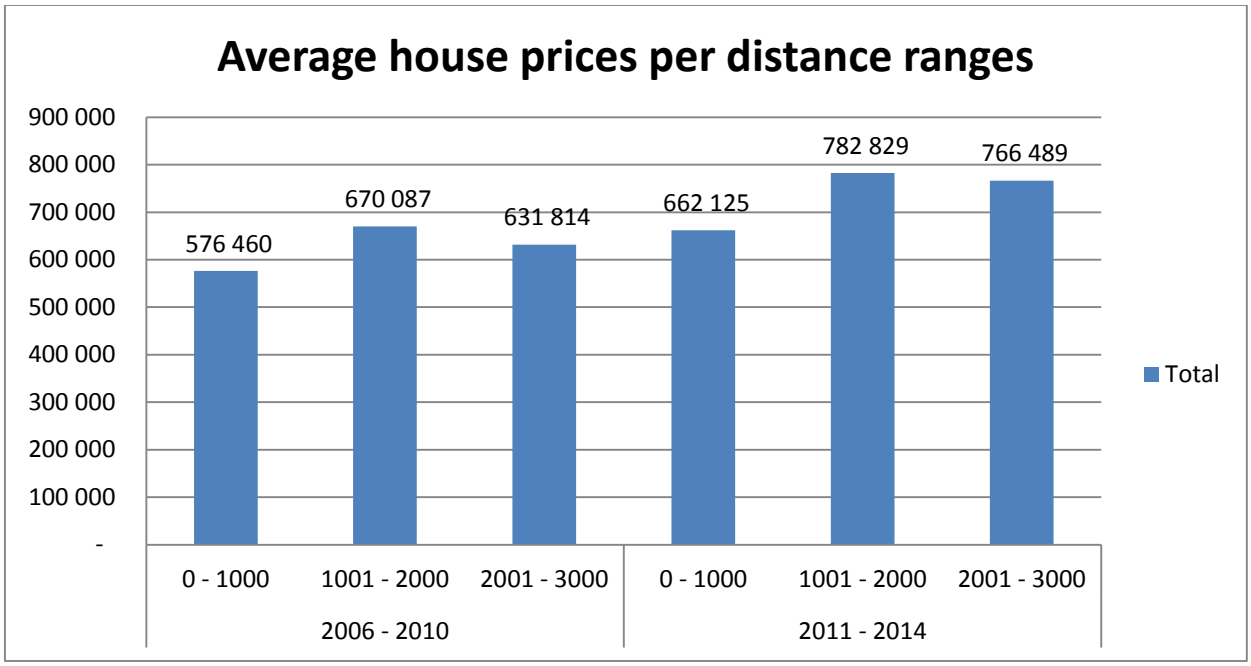


Figure 4.10: Average house prices per distance ranges

At pre-announcement period, a mere 43 number of houses were sold and at post announcement period, a mere 45 number of houses were sold in the 2 – 3km distance range. The average prices of both these number of sales in both periods was recorded at R662, 125 and R766, 489 respectively. In analyzing figure 4.10, the houses located within a 0 – 1km distance range from the land earmarked for the commercial property development sold lower at pre-announcement stage but their average sale price increased by 14,8% at post announcement stage. Sold houses located at the 1 – 2km distance range had their average price increase by 16, 8% at post announcement compared to pre-announcement.

Similar to the analysis done in section 4.1.3, an analysis was done to see what types of properties were sold at the identified distance ranges. What was observed is that in all the distance ranges at both pre and post announcement periods, the number of freehold houses sold was higher compared to the sectional title houses. Figure 4.11 below indicates the property types sold at both pre and post announcement stages.

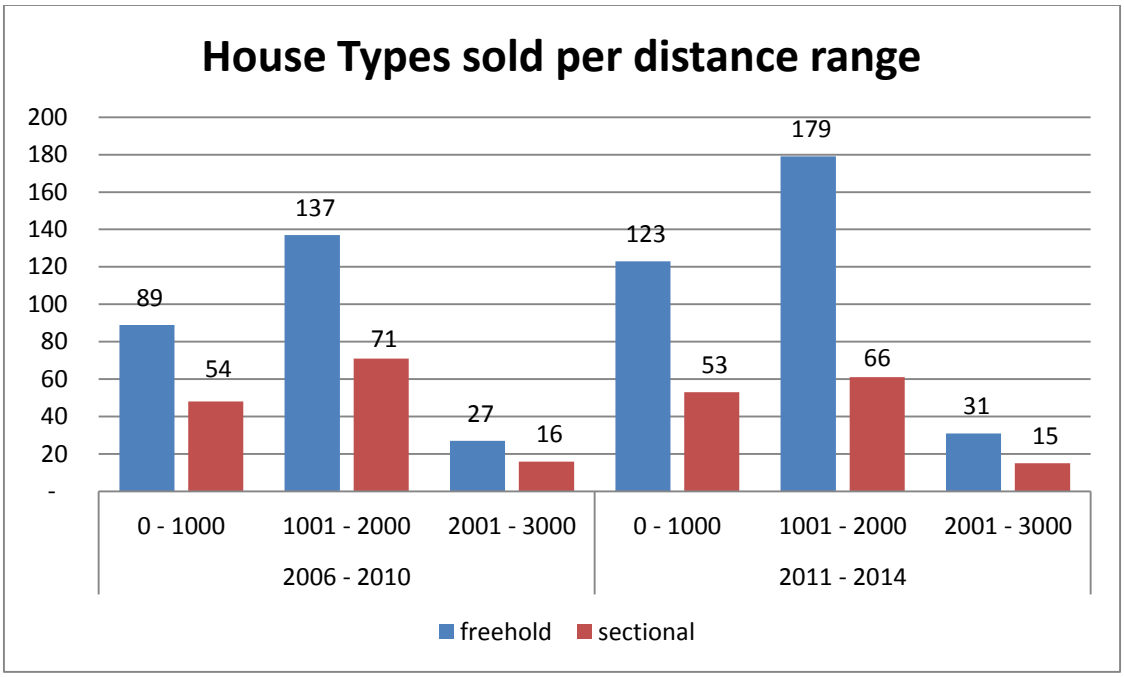


Figure 4.11: Number of Freehold and Sectional Title houses sold at pre and post announcement periods.

A further analysis was done of the average prices of the type of houses per distance ranges. What was observed on figure 4.12 below is that at the 2 – 3km distance range, the combined average sale price for both freehold and sectional title houses was much higher at both the pre and post announcement stages despite low number of houses sold. The average prices of both sectional title and freehold houses at the distance range of 0 – 1km increased slightly at post-announcement period compared to the post announcement period.

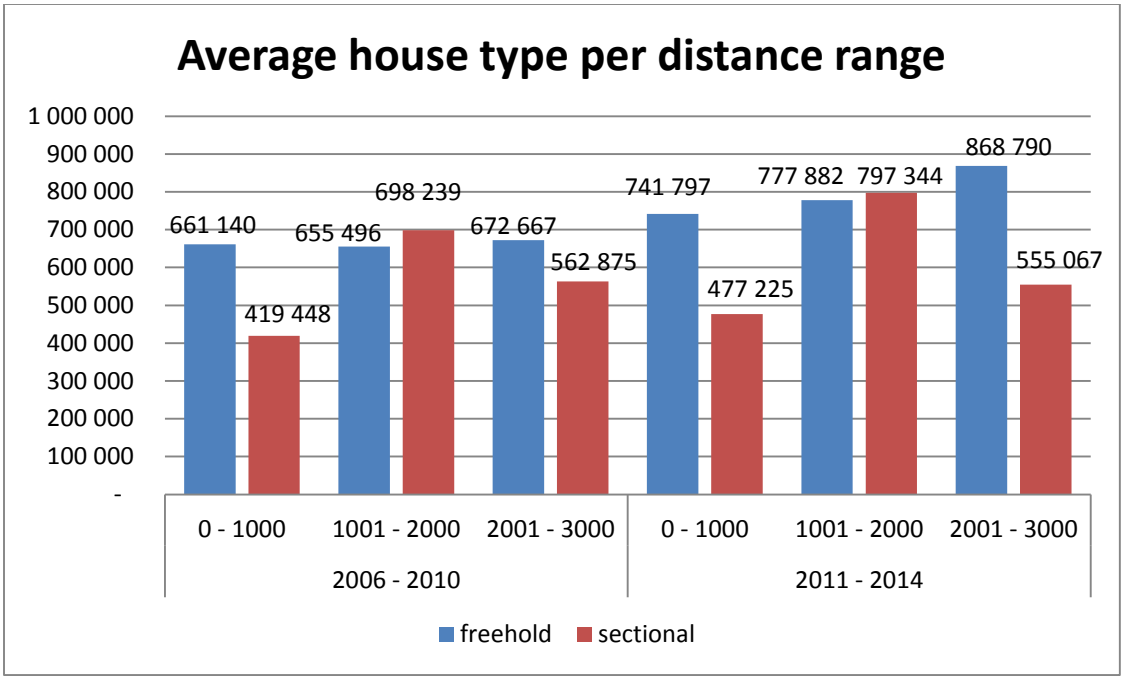


Figure 4.12: Average house prices per property type at pre and post announcement periods.

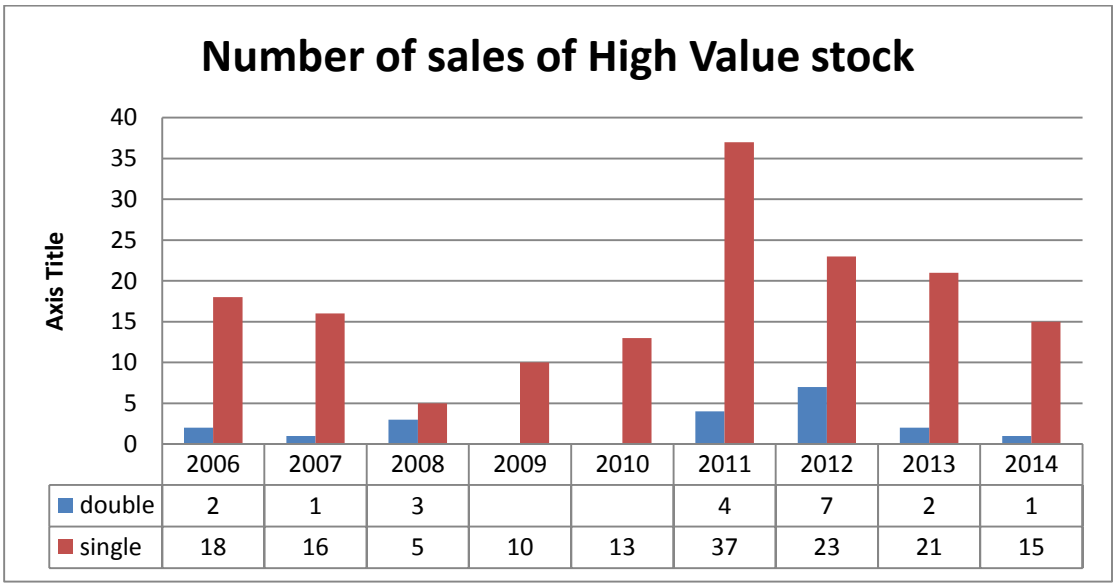
In summary, what was found in studying the average house prices of the houses within the closest distance range (0 – 1km and 1 – 2km) to the land earmarked for commercial property development is that these houses have not been severely affected by their proximity (closeness) to the site at both pre and post announcement periods. This was measured through analysis of the average sale prices as discussed. This finding is despite the fact that the number of house sales recorded in 2011 for both freehold and sectional title houses as depicted in figures 4.9 and 4.11, had a rather reduced average price (see figure 4.10 and 4.12) in comparison to the ratio of low number of sale but higher average sale prices recorded in the 2 to 3km distance ranges. Therefore, a general increase in the average house sale price was recorded at post announcement period at all the distances ranges.

In order to further understand if location, in terms of proximity to the commercial development land, might have affected sale prices of the houses, an analysis of what was termed in this study as ‘high value’ house stock was done as discussed in the next section.

4.1.5 .High Valued house stock

High value house stock for the purposes of this study is termed as the houses that had some of the attributes that are discussed in literature as major contributors in pushing up the market value of a house (Li & Brown (1980); Sirmans et al (2005); Zietz et al (2008) and Paez (2009). These houses termed as high value stock are either single or double storey houses which all had swimming pool and garage (whether one or more garages) attributes as discussed in section 4.1.1.

Figure 4.13 below shows the number of the high value houses (single and double storey) sold in the periods 2006 – 2014. As indicated in Figure 4.13, in the 2011 house sale spike, there was a lot more of the single storey high value house stock that was sold than in any other period. However, as discussed in section 4.1.3, Bonaero Park suburb has higher number of single storey housing stock compared to double storey housing stock.

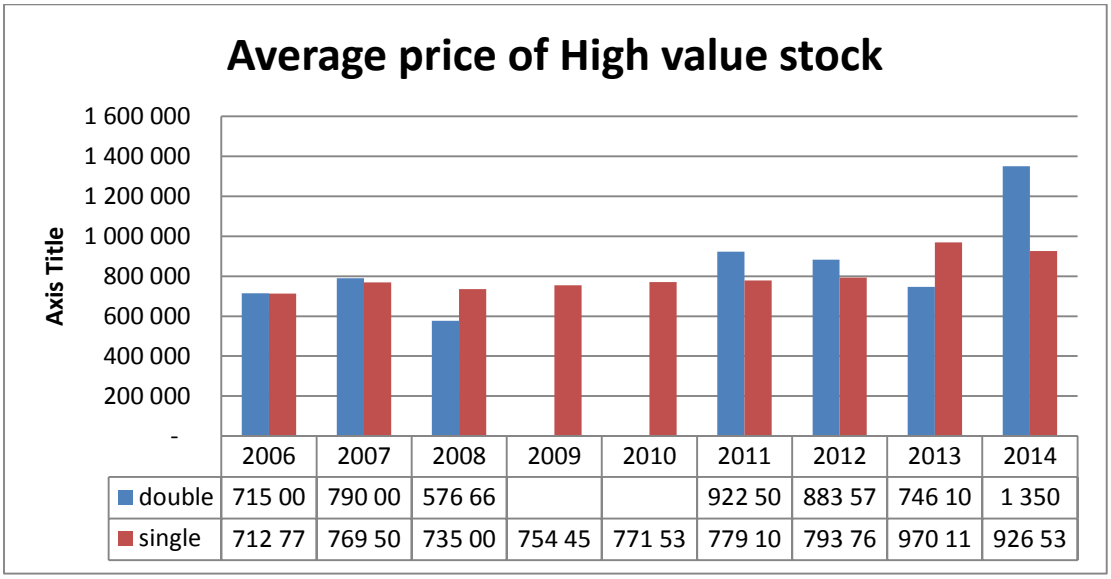


	2006	2007	2008	2009	2010	2011	2012	2013	2014
double	2	1	3			4	7	2	1
single	18	16	5	10	13	37	23	21	15

Figure 4.13: Number of high value house stock sold from 2006 to 2014

The analyses of the average sale prices of the high value stock as shown in figure 4.14 below indicates that although there were more single storey house sales, the average price of these single storey houses was lower than that of the average price of the double storey houses sold in the same year. In fact, at both pre and post announcement

periods, the average price of double storey high valued stock was higher than the average price of single storey. This is despite the fact that less double storey house stock was sold at both periods.



	2006	2007	2008	2009	2010	2011	2012	2013	2014
double	715 00	790 00	576 66			922 50	883 57	746 10	1 350
single	712 77	769 50	735 00	754 45	771 53	779 10	793 76	970 11	926 53

Figure 4.14: Average price of the high value stock from 2006 to 2014

Figure 4.15 below made an assessment of the of the location of the high value stock in terms of the distance ranges in order to assess whether the proximity factor might have contributed to the number of sales as well as average prices of the high value stock. Observation is that although there were more single storey houses sold during the post announcement period at the 0 – 1km distance range, the average sale price was slightly less (R733, 397) compared to the single storey houses sold at the 0 – 1km distance during the pre-announcement period – see figure 4.15 below.

The observation in figures 4.15 and 4.16 further confirms the observation made in figures 4.11 and 4.12 where although there were slightly more number of house sales made at the 0 – 1km distance range during the post announcement period, the average sale price increased marginally compared to that of houses sold in the other distance ranges during the post-announcement period. The only improvement in the average house sale price for both the single and double storey houses was observed at the distances range of 1 – 2km and 2 – 3km at both the pre and post announcement periods.

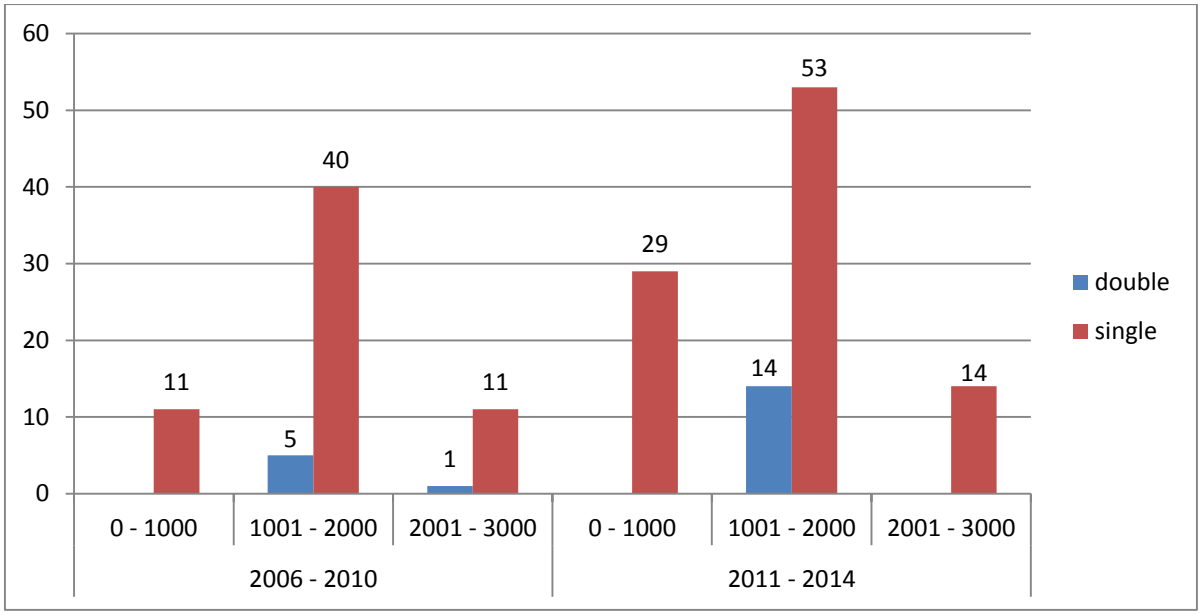


Figure 4.15: Location of sold high value stock within the distance range

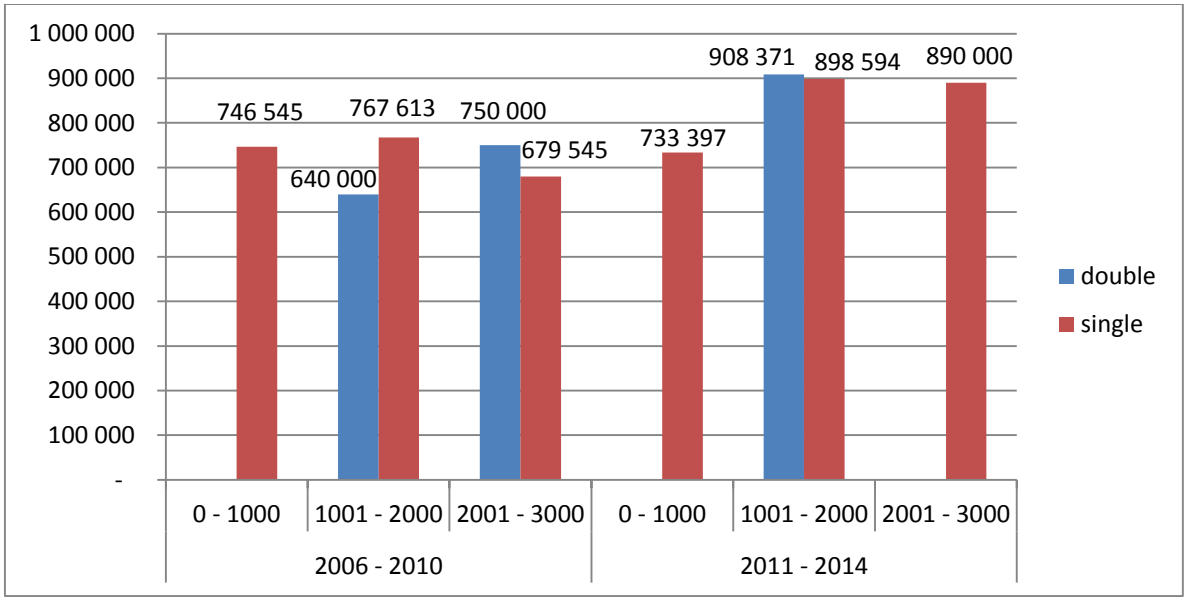


Figure 4.16: Average prices of the sold high value stock within the distance ranges

4.1.5. Repeat sales analysis

The analyses done so far had to some degree been on at a macro level. A micro level analysis was done using data of repeat sale houses in order to further analyse the extent of sale price variations and at what period the variation occurred. The data of repeat sales included only those houses that had at least been sold a minimum of three times between 2006 and 2014. The analysis also aimed at revealing the period (pre or post announcement) where the variations in sale prices occurred in the repeat house sales. Figure 4.17 below shows the 5 houses that were recorded as repeat sales and selected for this analysis. However, it must be noted that the repeat sales selected were only the high value stock houses which are freehold only.

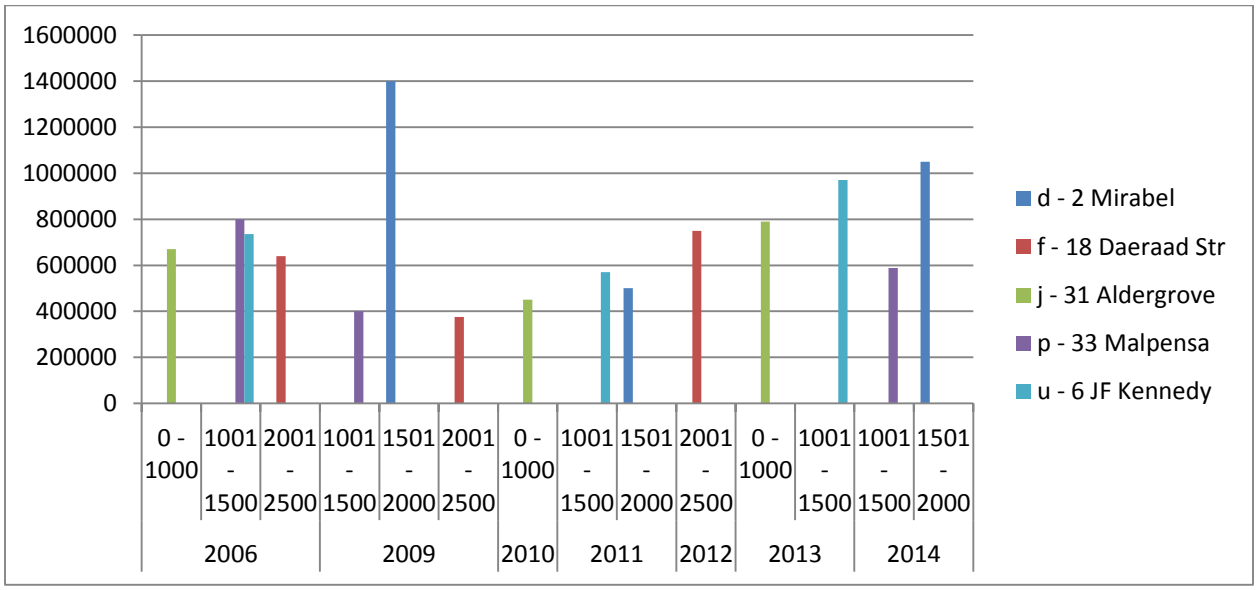


Figure 4.17: Repeat sale houses in the 2006 to 2014 period of study

The houses were identified and labeled in diagram 4.17 using their physical address information of each repeat sale house. For the purposes of only the analysis in figure 4.17, the distance ranges were re-assigned to be from 0 – 1km; 1km – 1,5km; 1,5 – 2km; 2 to 2,5km; 2,5 to 3km away from the location of the land for the proposed commercial property development. 2 Mirabel is located within the 1,5 – 2km distance range; 18 Daeraad is located in the 2 – 2,5km range; 31 Aldergrove is located within the 0 – 1km distance range; 33 Malpensa and 6 JF Kennedy are located within the 1 – 1,5km range.

What was observed in figure 4.17 and also show in more detail for each repeat sale house below in figure 4.18 below, is that 31 Aldergrove only had a reduced sale price in 2010. However in 2013, the sale price increased even much higher than it was in 2006.

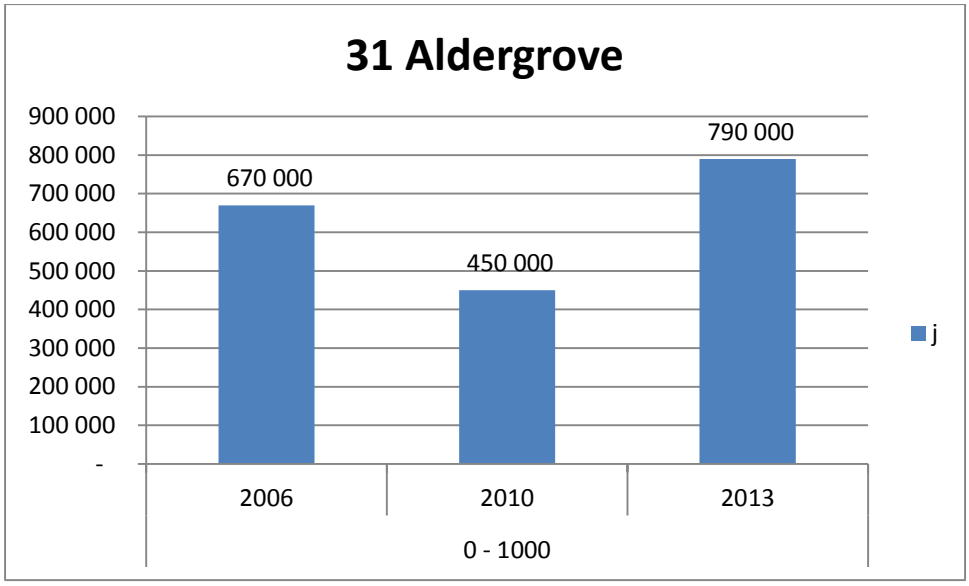


Figure 4.18: Repeat house sale – 31 Aldergrove Road, Bonaero Park.

The bar charts below on figures 4.19 and 4.20 below shows sales information for the two houses located within the 1 – 1,5km distance range. 33 Malpensa had a reduced house sale price on 2009. Unlike 31 Aldergrove as indicated in figure 4.18, 33 Malpensa's resale price in 2014 was much less than its sale price is 2006 (Figure 4.19). 6 JF Kennedy had a reduce price in 2011 compared to 2006. However when 6 JF Kennedy was sold again in 2013, its resale price was much higher than what it was in 2006.

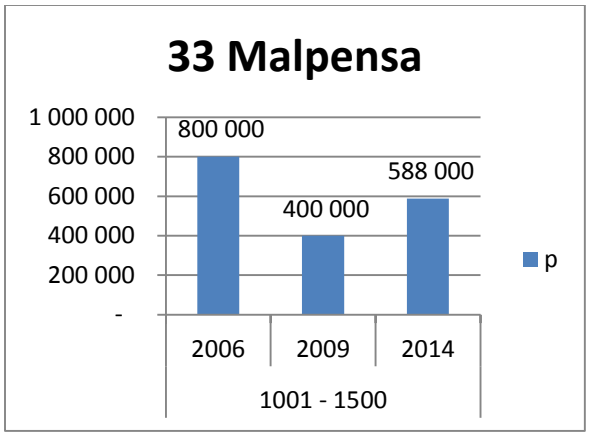


Figure 4.19: Repeat sale – 33 Malpensa

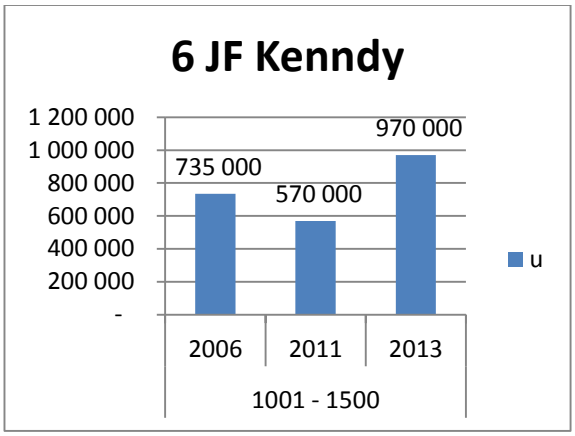


Figure 4.20: Repeat sale – 6 JF Kennedy

2 Mirabel is located within the 1, 5 – 2km range as shown in figure 4.21 below. In 2009, 2 Mirabel was sold at a very high price. In 2011, the house was resold at a price even below the half the price it was sold in 2009. The last resale price in 2011 rose quite high but did not recover above the sale price in 2009.

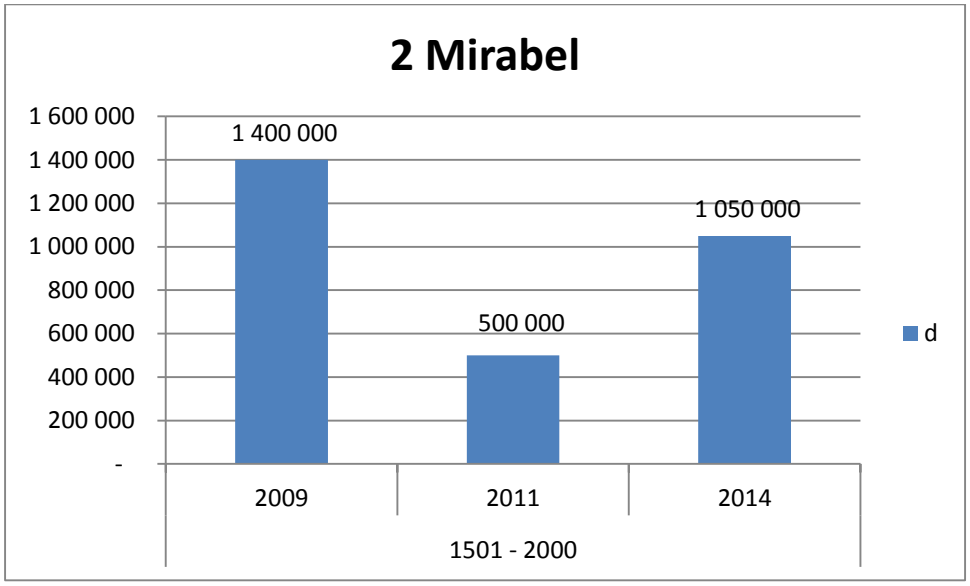


Figure 4.21: Repeat sale – 2 Mirabel, Bonaero Park

18 Daeraad is located at a distance range of between 2 – 2,5km. As shows in figure 4.22 below, the house sold for more in 2006 but its sale price dropped as well in 2009. However at post-announcement period (year 2014), the house sold at an increased price compared to 2011.

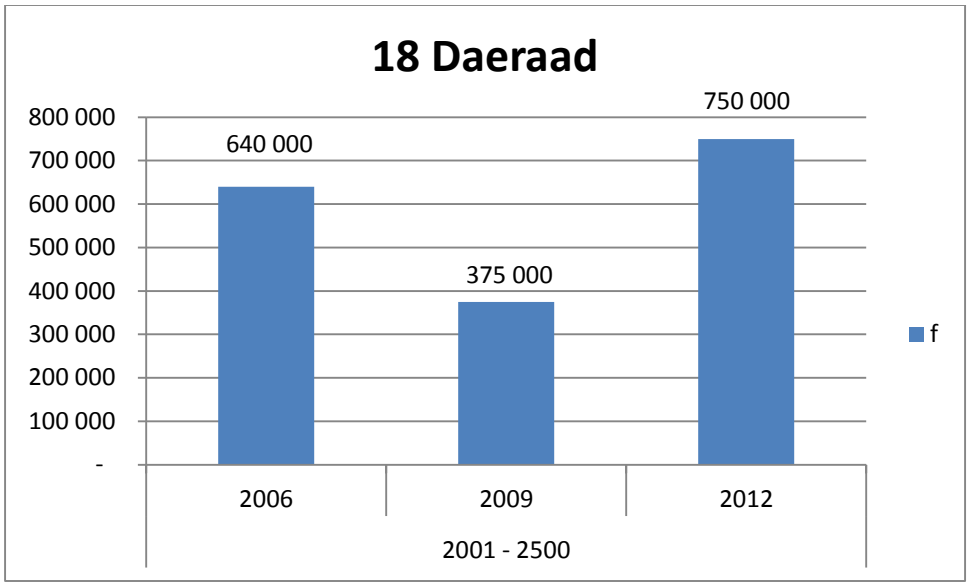


Figure 4.22: Repeat Sale – 18 Daeraad, Bonaero Park

It was not clear why most of the repeat sale houses discussed above had their sale price reduced when sold for the second time within the pre-announcement period. This could be linked to economic conditions affecting the housing market. Most of the repeat sale houses had increased re-sale prices at post-announcement period compared to pre-announcement period – this is with the exception of 2 Mirabel and 33 Malpensa. It is inferred that there was a particular phenomenon that contributed to increased average house prices at post-announcement period compared to post announcement period.

4.2. Summary: Quantitative Data Analysis

As discussed in section 4.1.3, there was more number of house sales done at post-announcement period compared to the pre-announcement period. The overall percentage increase in number of sales between the two periods was 14, 1%. The average sale price was also higher at all the post-announcement years compared to years within the pre-announcement period. The overall percentage increase in average sale price was 17,9% at post-announcement period. To investigate the proximity effect based on the distance location of sold houses from the land of the planned commercial property development, data was analysed using the defined distance ranges to investigate where the highest number of house sales occurred within the overall period

under study. It was found that higher numbers of houses were sold at the 1 to 2km distance range in both pre and post announcement periods.

The number of sold houses in the 0 to 1km distance range increased by 28,5% from pre to post announcement period. This resulted in an increase of 14,9% in the average house price. The number of sold houses in the 1 to 1km distance range increased by 15,4% resulting in the average house price increase of 16,8% from pre to post announcement periods. The number of sold houses in the 2 to 3km distance range increased by 7% resulting in the average house price increase of 21,3% from pre to post announcement periods. This analysis revealed that the highest increase in number of houses sold was in the 0 to 1km distance range, but this resulted in the lowest average house price increase compared to the other distance ranges.

The analysis of high value house stock (single and double storey) as defined and discussed in section 4.1.5 was also done based on the distance location of the high value house from the land of the proposed commercial property development. Out of the total of 178 high value house stock sold from 2006 to 2014, it was found that there was 16,4%, 29% and 2,7% increase in number of high value house stock sold from 0 to 1km, 1 to 2km and 2 to 3km distance ranges respectively. This resulted in the average sale price decrease of -1,8% of the high value house stock located within the 0 to 1km distance range; the average sale price increase of 58,9% of the high value house stock located on the 1 to 2km distance range; and the average sale price increase of 31% of the high value house stock located in the 2 to 3km distance range.

This above analysis revealed that although high value house stock located in the 0 to 1km distance range recorded second highest number of sold houses (16,4%), the average price of the high value stock within this distance range decreased by -1,8% which was the lowest compared to all the other high value house stock located in the other distance ranges. To further investigate the proximity effect, repeat sales of the high value house stock was also analysed as discussed in section 4.1.6. These repeat sale houses which were studied were located within the 0 to 1km, and 1km to 2km and 2km to 3km. The first repeat sale house (31 Aldergrove) was located in the 0 to 1km distance range and was sold 3 times within the period under study (2006 to 2014). The

percentage sale price increase of 31 Aldergrove from when it was sold in 2006 and when it was sold again in 2013 was 27%.

Three repeat sale houses were studied within the 1 to 2km distance range. These houses were 33 Malpensa, 6 JF Kennedy and 2 Mirabel. 33 Malpensa was sold 3 times within the period under study. 33 Malpensa had an overall negative price increase of -3% from when it was sold in 2006 to the last sale in 2014. 6 JF Kennedy was also sold 3 times within the period under study. 6 JF Kennedy registered an overall positive sale price increase of 41% from when it was sold in 2006 to its last sale in 2014. 2 Mirabel was also sold 3 times within the period under study. 2 Mirabel had an overall negative sale price of -11,8% from when it was sold in 2009 to its last sale in 2014.

The last repeat sale house studied was located within the 2 to 3km distance range. This repeat sale house was 18 Daeraad. 18 Daeraad was sold 3 times within the period under study. 18 Daeraad had an overall repeat sale price of 8,6% from when it was first sold in 2006 to its last sale in 2012. What was found is that the repeat sales within the 3 distance ranges experienced varying sale price increases. The single repeat sale house located within the 0 to 1km distance range experienced 27% price increase, the 3 repeat sale houses located within the 1 to 2km experienced an average sale price increase of 26% and the single repeat sale house located within the 2 to 3km distance range experienced a sale price increase of 9%. This finding of the analysis of repeat sales seems to be in contradiction with the two findings of average sale prices of sold houses and the price of high value house stock sold within the 0 to 1km distance range which both found negative price growth.

4.3. Qualitative data Analysis

This section analyses data that came from the semi-structured interviews. As discussed in section 3.7, the interviews were done with the Real Estate Agents in order to obtain their professional opinion to support the data outcomes from the quantitative phase of the study. As discussed in section 3.9, the analysis of qualitative data as discussed under this section is categorized as follows;

i. Identification of categorizing or codes which enable data comprehension
ii. Attaching data from sources to the identified appropriate categories or codes
iii. Identify relationships and patterns in the categories
iv. Develop testable propositions
v. Drawing and verifying conclusions

This study did not follow the exact sequence of the generic approach to analyzing qualitative data as prescribed by Saunders et al., 2012. The study included the aspects of the prescribed process as follows;

In section 4.3.1 below, the study explains how the identification of categories was done to enable data comprehension during the analysis. In section 4.3.2, the data from the interviewees (sources) under the categories described under section 4.3.1 is attached. Section 4.3.3, the relationship between the categories is discusses and conclusion are drawn and verified. No proposition is developed as part of the analysis as the study has already developed a hypothesis which the qualitative data outcomes are going to form part of the discussion in section 5.6 of Chapter 5.

4.3.1. Identification of categories for data analysis

As discussed in section 3.7, the questions posed during the interview were based on the following 5 themes;

1. Interviewee's professional profile.
2. House sales trends in Bonaero Park – period from 2006 – 2014.
3. Property development trends in Bonaero Park.
4. Known airport proximity effect on house sales in Bonaero Park – current and historical.
5. Airport proposed expansion and related developments – impact on sales in Bonaero Park.

The above themes align with the research objectives outlined in section 1.4. The themes form the categories where research data is discussed and analysed in order to enable comprehension to the data. The interview question sheet contained questions which align with the areas of the research themes. The three sections are as follows;

1. Section A: Profile of the Interviewee
2. Section B: Unit of Analysis
3. Section C: Research Objectives

Under Section A, there were 7 questions, under Section B there were 6 questions and under Section C there were 9 questions. Refer to ***Appendix F*** for the standard question sheet used during each interview. The responses recorded during the interviews will be discussed below under each of the 3 sections which they fell under.

4.3.2. Interview data discussion

Under this section, two categories of themes are discussed. The first theme discusses the profile of the interview and the second theme discusses the house sales trend of Bonaero Park. Data outcomes from these two themes is analyzed for verification and as discussed in section 4.3.3.

THEME 1: Profile of the interviewees:

There were 3 professional estate agents that were interviewed. As stated in section 3.7, the estate agents were selected on the basis that the company they worked for, provided quantitative data (house sales data) for this research. This is justified in section 3.7.2 as motivated by purposeful sampling under the non-probability sampling technique employed to obtain qualitative data for the study.

The table below provides a summarized profiling of the 3 estate agents interviewed;

Date of interview	Estate Agents	Employment status	Position in Company	Company operational experience	Total professional experience	Sales experience in Bonaero Park	Gender
4 February 2015	Estate Agent 1	Full time agent	Sales agent	+20	7	7	Female
9 February 2015	Estate Agent 2	Full time agent	General Manager	15	15	2	Male
16 February 2015	Estate Agent 3	Full time agent	Branch Manager	8	4	4	Male

Table 4.3 – Profile summary of interviewed Estate Agents

Permission was not granted by all the interviewed estate agent to publish their names in this study – Refer to ***Appendix G*** for consent forms. Therefore for the purposes of this study, each estate agent that participated in this study will be referred to as Estate Agent 1, Estate Agent 2 and Estate Agent 3 respectively. The information contained on table 4.2 was obtained from each Estate Agent during the interview.

As shown in table 4.3, the collective professional experience that all the interviewees had was 13 years of doing house sales in Bonaero Park. The companies (Estate Agencies) they worked for had a combined real estate industry experience of 43 years since the companies have been in existence. The interviewed estate agents had collective experience of 26 years in the real estate industry and 13 years of experience collectively of doing house sales in Bonaero Park. The collective experience profile of the interviewees and their company was considered suitable for this research as discussed in section 3.8.1.

Estate Agent 1 was the first estate agent that was interviewed and is of a female gender. Estate Agent 2 was the second estate agent interviewed and Estate Agent 3 was the third estate agent interviewed and both are of male gender.

Estate Agent 1 started working for their current company after graduating from her Real Estate Agent studies in 2008 and has been working for the Estate Agency which for seven years. She revealed during the interview that she currently lives in Bonaero Park and thus has extensive knowledge of the area both as an estate agent and a residence.

She is also employed full time by the Agency and does a lot of sales in the Greater Kempton Park area which includes Bonaero Park.

Estate Agent 2 is also a fulltime employee who holds a senior position of General Manager in his Agency. He has 15 years' experience in the property sales industry and has been doing sales in the Greater Kempton Park area for 8 years. However he stated during the interview that he has only been involved in doing property sales in Bonaero Park for only 2 years at the time of the interview.

Estate Agent 3 also started working for his current company straight after graduating from university in 2011. He was immediately tasked with doing property sales in Bonaero Park since 2011. Estate Agent 3 has done a lot of property sales in Bonaero Park and pointed out his involvement in the sales strategy for his company to attract younger generation of buyers into the Bonaero Area.

The researcher's general observations during the interviewing of the 3 estate agents, is that Estate Agent 3 was very knowledgeable about the general property trends and behaviors of buyers and sellers in the real estate industry. Estate Agent 3 was also very knowledgeable about the general behavior of buyers specifically for the Bonaero Park suburb and seems to also be very knowledgeable about the spatial history of the suburb. Estate Agent 3 also pride himself of the number of achievements and sales he has undertaken in Bonaero Park.

Estate Agent 1 had never done these type of research interviews before but was eager to participate and provide high level of input. By virtue of the fact that she resides in Bonaero Park, she offered a lot of personal observations and insight about Bonaero Park and the airport (OR Tambo International Airport).

THEME 2: House sales trends in Bonaero Park – 2006 to 2014

Under this theme, the aim was to obtain professional opinions from the interviewees of their understanding of the demographics of Bonaero Park as well as latest property development trends in the area. There were 6 standard questions under this section. In

order to properly discuss the findings of this section, each question posed to the interviewees is listed and then discussed based on the responses received from each interviewee.

Q1: What are the house sales trends in Bonaero park at the moment (Up, down, stable)?

Estate agent 1 was of the opinion that the house sales are currently stable. Estate Agent 2 and Estate agent 3 were of the same opinion that house sales are on the rise at the moment in Bonaero Park. Estate Agent 2 backed up his professional opinion by referring to the Lightstone report for 2014 which reported that there were a total of 127 sales in 2014 which was, according to Estate Agent 2, slightly higher compared to previous years.

In my quantitative data analysis, sales numbers were on the high in Bonaero Park since 2011. As mentioned in section 4.1.2, the number of sales data received for 2014 was only up to the month of October 2014 where the received house sales data reflected a total of only 79 houses sold for the year. Figure 4.23 below indicates number of house sales recorded in the Lightstone 2015 report. According to figure 4.23 below, the total number of house sales in 2014 for both sectional title and freehold is 127 (Lightstone, 2015).

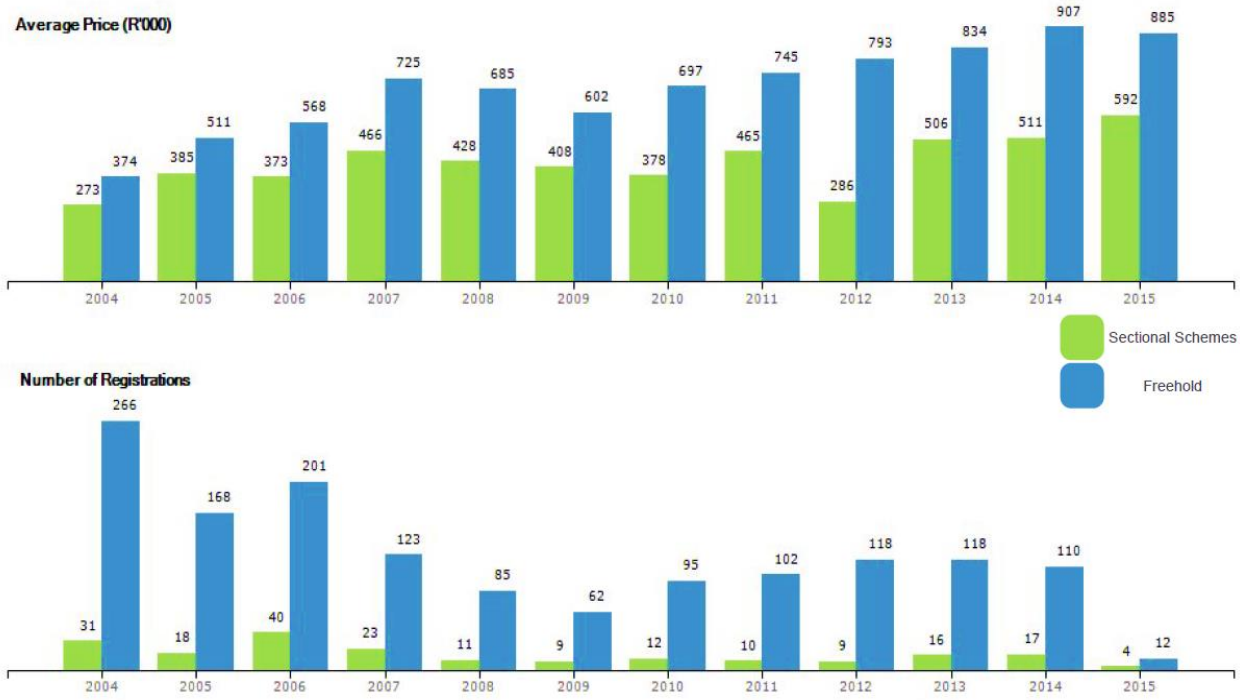


Figure 4.23: Number of sold houses in Bonaero Park from 2004 to 2014 – Source: Lightstone 2015

There are stark variances in number of sales from 2006 to 2014 between data for this study and data from the Lightstone report as can be seen between diagrams 4.3 and 4.23. As discussed in section 4.1.1, house sales data used for this study was reduced to ensure that house sales included for this study contained all the attributes required to make the data usable and credible for analysis. Therefore based on the total number as reflected from the Lightstone report in Figure 4.23, the house sales were reflected to be on the rise as stated by Estate Agent 2 and 3.

Q2: What is the average length of stay in the market of a house on sale in Bonaero Park?

All the estate agents interviewed seems to be of similar opinion that average stay in the market of a house on sale in Bonaero Park is 90 days (3 months).

Estate Agent 1 did not offer any professional opinion on the reasons for the 90 days stay in the market.

Estate Agent 2 offered the following response regarding the 90 days stay in the market;

"…. your stay on the market is not short because the sellers think their houses are worth more than what it is and it then gets priced incorrectly at the start, and with that it then obviously take longer to sell….so if properties were priced correctly at the beginning, it will sell quick. And what I find in the entire area of Kempton Park area is that the minute that you have a property priced correctly, you will sell it within 30 days."

According to Estate Agent 3, the length of stay on the market is dependent on the price of the houses on sale. Estate Agent 3 stated the following during the interview that;

"… just to give you an idea, last year which is 2014, I sold 15 properties within one day of putting it on the market…. this would be your typical property that costs 700 to 800 hundred thousand rands. The properties that tend to sell more than 900 thousands and 1,2 million, tend to stay in the market, I would say for 3 to 4 months."

Based on the opinions of both Estate Agent 2 and 3, it seems the reason for the 90 day average stay of a house on the market is motivated by the sale price.

Q3: What are the demographics of the house buyers in Bonaero Park in terms of Age range; Low, medium or upper class earners? Prevalent race?

In terms of the age range of buyers in Bonaero Park, all the 3 interviewed estate agent agreed that the area is dominated by older owners but in recent years, there has been a noticeable increase in the number of younger buyers in the area.

Estate Agent 2 explained that;

"…the people that live there [in Bonaero Park] are people that have stayed there for more than eleven years. So you find that the people that live there will rather live there for longer than a shorter period… the younger people are trying to move to Bonaero Park because obviously the price is lower….so there you find that your buyers…..your average buyer now….about fifty five percent of all buyers there now are under 35 years old…"

Estate Agent 3 expressed an almost similar opinion that;

"….Bonaero Park is a very old area which was built for the Denel employees, and so a lot of the people that started selling their properties over the last 5 years were very old people…typically 70 to 80 years olds….but now the people that's now buying there…are now younger people….. people within the ages of say 24 to about 35 years.."

Based on the above responses, it seems that the age range of the buyers in Bonaero Park has more recently changed to younger buyers within the age range of 18 to 35 years. Figure 4.24 below from the 2015 Lightstone report on Bonaero Park confirms the opinions of the estate agents.

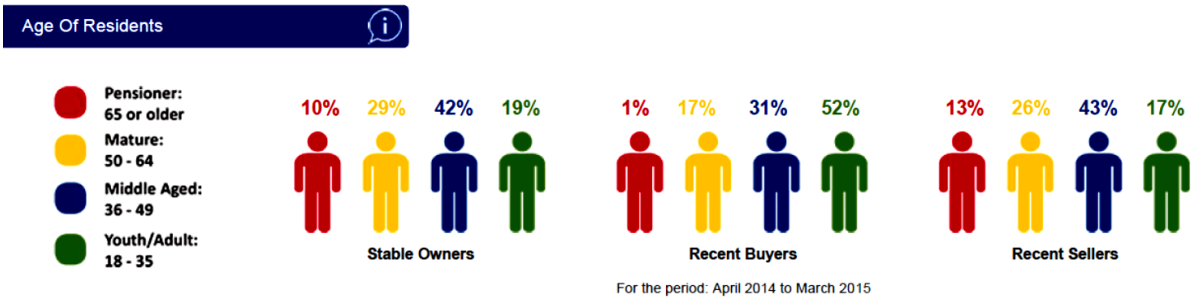


Figure 4.24: Demographics of buyers in Bonaero Park – Source: Lightstone, 2015

In terms of the income bracket of the buyers whether they are low, medium or upper class earners, the interviewed estate agents expressed similar professional opinion that the new buyers are middle class earners.

The Lightstone report as indicated in Figure 4.25 below also indicated that the predominant LSM in the area is LSM 9 High with an income bracket of R24, 000 to R37, 000.

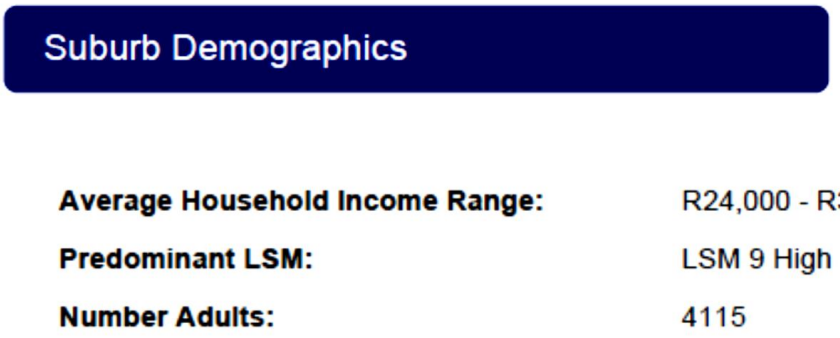


Diagram 4.25: Income range and LSM profile of residents in Bonaero Park – Source: Lightstone, 2015

In terms of prevalent race in Bonaero Park, the question was posed to the interviewees as part of understanding the demographics of people that live in the area. There were varying responses that came out.

Estate Agent 1 stated that;

"…60% whites are 40% blacks live in the area at the moment. A lot of those 60% whites are Afrikaans speaking people."

Estate Agent 2 stated that;

"…it's very much 50/50 split….so it's not that there is one dominant nationality….i would say it's equal….which is about the same as the whole of Kempton Park…"

Estate Agent 3 stated that;

"….most of the younger buyers, the 24 to 35 that bought were white….and most of the old people that bought were black people…. within the age range of let's say 35 to 50.

The professional opinions differed from the interviewed Estate Agents but it was observed that the majority of buyers are middle class white people.

Q4: What are the development trends in terms of new houses being built in Bonaero Park?

In answering this question, there were varying opinions from the estate agents. Estate Agent 1 expressed the following opinion;

"…there are a couple of developments that are going to go up in the area. It's [Bonaero Park] not a very big area for development at the moment….they are developing quite a few Sectional Title developments that are going up…"

Estate Agent 3 was of an almost similar opinion to what Estate Agent 1 said. The following was stated by Estate Agent 2;

"…there is not a lot of land to expand on there [Bonaero Park] at the moment….but there is a sectional title development that might be going up there in the next two years…looking at about 180 sectional title units…"

Estate Agent 3 had a completely different opinion to what Estate agent 1 and 2 said above. Estate agent 3 stated the following;

"Not really. It's because Bonaero Park as you can see on the map [points to projected map of Kempton park] pretty much can't grow any further because Atlas is on the one side….an the airport is on the other side….so it's pretty much cordoned off , there's no scope for growth really."

Based on the professional responses, there might be a few sectional title developments that coming up to Bonaero Park according to what Estate Agent 1 and 2 stated during the interview. Estate agent 1 and 3 have worked extensively in the Bonaero Park area unlike Estate agent 2 which has only 2 years working experience in the area. The opinions of Estate agent 1 and 3 as considered as correct.

Q5: What are the development trends in terms of commercial properties in Bonaero Park?

There were varying professional opinions on this question but it seems the 3 Estate agents have had different observations based on their responses.

Estate Agent 1 expressed the following observations in terms of commercial developments taking place or planned in Bonaero Park;

"…there's a Toyota just opened up, there's a Bearings company….there's quite a few companies that are opening up because there is a lot of land available still there between Bonearo Park and Atlas….so there is a lot of land and there are developing there quite substantially with office parks and all that…"

"….there's no talk of any new shopping centres cause they've got the other Checkers, and they've got the other Spar….so I don't think there's going to be anything in the area."

Estate Agent 2 offered the following professional opinion to the above question;

"None. What is there presently is existing….there's two shopping centre currently there by Temple South….and that is basically in my opinion going to be the extent of commercial."

Estate Agent 3 offered a different opinion to both Estate agent 1 and 2 in the following response;

"Well….if you talk about that (,) there is the matter that's been going around for a while now with the airport said to be planning to take away all those houses in Bonaero Park and building the Aaerotropolis they call it….this has been going on for about 3 years and….i believe it won't happen…but there is a possibility that a big part of Bonaero Park might be totally scrapped and made part of the airport commercial developments (,) hotels…and stuff like that."

Based on the professional responses, there were no new or planned commercial developments during the period of the study or in the near future.

Q6: Is the presence of the airport positively or negatively affecting sales and buying decisions in Bonaero Park?

In offering a professional opinion to this question Estate agent 1 responded as follows;

"…..I don't think so. You get people that either love aeroplanes or hate the sound of aeroplanes. We leave in Bonaero Park, we have aeroplanes going over us all the time….so you either love it or you hate it….and in my opinion I love aeroplanes…."

Estate Agent 2 offered a much different answer to the above and stated the following;

"Look the people complain a lot in Bonaero Park about the noise of the aeroplane… the aeroplane noise factor is definitely prevalent cause if you take that one runway out at the back of Bonaero Park….it is noisy and it's really is extremely noisy…. so that is always going to have a negative effect…..but also with aeroplane fuel sometime….there's a spray….you must actually go over there and you will see that there is a spray on the window of your car….so I would say it negatively affects the value of those values of properties…"

Estate agent 3 also offered his professional opinion on the question as follows;

"It depends on the buyer of course….there's lots of people that buy specifically because it's closer to the airport and they work around there maybe or….they fly a lot….and then you find there's people that don't really like the presence of the airport and they only buy because it fits their price range…so they really that depends."

Based on the professional responses above, it was observed that the presence of the airport was a perception issue. Buyer's opinion was also important and if the buyer perceives the airport to be an attraction to leave next to, then the buyer will not mind buying next to the airport. Responses also seem to suggest that another buyer who was concerned about the intermittent noise of the aeroplanes will however continue to buy a house in Bonaero Park because of the value for money that the houses in Bonaero Park offers. So it was observed that the presence of the airport does not affect buying decision in Bonaero Park as the decision is purely based on the personal perception that a buyer has about the airport.

THEMES 3, 4 & 5: Unit of Analysis – Bonaero Park and the land for CPD

This section discusses interview data that came out from remaining 3 themes described in section 4.3 as follows;

1. Property development trends in Bonaero Park.

2. Known airport proximity effect on house sales in Bonaero Park – current and historical.
3. Airport proposed expansion and related developments – impact on sales in Bonaero Park.

The questions under this section are aimed at discussing findings under each theme which are structured to align with the research sub-questions. 8 questions were posed to the interviewees for the above themes under this section. In order to properly discuss the responses to each question, each question that was posed to the interviewees is listed and then the analysis is discussed based in the responses received from each interviewee.

Q1: What do you think caused the spike in house sales in 2011?

When posing this question, each interviewee was shown the bar-chart presented in figure 4.3 (under section 4.1.2) which shows the number of house sales that was recorded by this study from 2006 to 2014. A short explanation was also given by the researcher to each interviewee on how the house sales information was formulated.

In response to the above question, Estate Agent 1 expressed the following opinion;

"I just think people became relaxed….there was that big scare where ACSA was going to take half of Bonaero Park. But that's not in the cards….So everybody is relaxed and they not scared of what's going to be happening anymore…so I think that's about it."

Estate Agent 2 offered a similar opinion as follows;

"….my opinion is that it was the market correction….remember we had the slump in 2008 and 2009….but the people had to come out of that slump….so that is why there was a huge jump….and you see in 2010 it was still those people who couldn't afford to buy….so people just held on to where they were living and so in 2011…the economy was in a far better state and hence the big jump…"

Estate agent 3 was not in a position to offer a professional response to this question because in 2011 it was his first year when he started doing sales. Estate Agent 3 was therefore not able to compare 2011 sales with sales of previous years because he was

still not an estate agent. Based on the professional responses from Estate Agent 1 and 2, the huge increase in number of house sales in 2011 compared to the years before was purely as a result of people coming into the market when the economic condition was favorable.

Q2: What do you think caused the drop in number of sales from 2013?

Figure 4.3 was also used as the basis of this question. Estate Agent 1 expressed the following professional opinion;

"I think it could be that the interest rates started going up again a little bit….if the interest rate goes up that obviously means they [people] can't buy. So I think it has to do with the interest rates…"

Estate Agent 2 responded to the question as follows;

"I don't think it is anything to be concerned about….it's just purely that there were just less houses in the market for sale, that's all…and obviously people not getting the prices they wanted…"

Estate Agent 3 expressed the following professional opinion;

"That drop there in 2013 is without a doubt due to price increases…It's because of the house prices that went up."

Estate agent 1 and 3 expressed similar professional opinion that the slight drop in the number of house sales in 2013 was purely due to unaffordability by buyers due to increased selling prices.

Q3: Would you say there were more or fewer house sales before 2010 or after 2010 in Bonaero park?

Estate Agent 3 could not respond to this question as he was not and estate agent before 2010. Both estate agent 1 and 2 were of similar opinion that there were definitely fewer number of houses sold in Bonaero Park before 2010.

Q4: What caused fewer or more sales before and after 2010?

All 3 estate agents were unanimous in their response that there were definitely a higher number of house sales recorded after 2010 as compared to before 2010. Estate agent 1 expressed the following reasons for increased house sales after 2010;

"I think everybody just got back to normal…the houses that they did extend [prior to 2010], they couldn't keep up so they just sold them."

Q5: In your professional opinion, what causes the average sale prices at the 2 – 3km distance range to be higher yet there were lower sales?

In asking this question, the estate agents were shown the bar-chart in figure 4.11 which shows sales data of the section titles and freehold sold between the pre and post announcement periods. Estate agent 1 expressed the following opinion to the above question;

"I really don't know….but as I said to you I think it's just a matter of choice…you either love the aeroplanes or you don't…"

Estate agent 2 responded as follows;

"Well it's because people are willing to pay more for not having that airport noise as I said earlier ….the noise factor intimidate them so badly…so they still get the value for the money but they are prepared to pay more….so if I'm 3km away from where the noise is, there is a lot of houses in between that can create that noise buffer….it's the same as having a highway closer to a residential area…the houses closer to the highway will sell for less than the houses further away…"

Estate agent 3 expressed the following professional opinion;

"…the reason why, I would say the prices are higher in that area is because as I explained to you earlier….those properties have big stands and big houses and they can sell anything from 1,2 million to 1,4 million…."

Based on the above responses, it was observed that the estate agents had varying responses to this question. What estate agent 2 eluded to about location seems to be a general opinion from all the interviewed Estate Agents that non-residential use that experience negative externalities like noise (in this instance of the airport), will result in properties located further away from that non-residential use having higher property prices compared to properties located much closer to that non-residential use with a negative externality.

Estate agent 3 was of the professional opinion that characteristics of the houses located at the 3km distance range were bigger houses with big stands hence there higher selling price. Houses located in the distance range of 2 to 3km away from the airport seem to have bigger stands and are also bigger houses. The researcher supports this opinion based on the observation made by looking at the pictorial views from the Google Earth Map of a number of these houses located in this distance range. These properties looked like they had bigger plots or stands and the houses also looked bigger in terms of their footprint profile on the stand **– Refer to Addendum D.**

Q6: Are you aware of an announcement (on 25 May 2010) by the airport (ORTIA) of commercial land developments in its precinct?

Out of the 3 estate agents interviewed, only estate agent 1 and 2 were aware of the announcement made by ACSA in 2010. Estate agent 3 was still at university and thus could not recall hearing about the announcement.

Q7: In your professional opinion, do you think commercial development within the airport precinct will positively or negatively affect house sales and prices in Bonaero Park?

This question was posed in order to tie up with question 6 above but estate agent 3 was also requested to respond and offer his professional opinion despite him not being around the property sales in market when ACSA made the announcement.

Estate agent 1 offered the following response to the question;

"I'm not sure about that…I'm not sure if it's going to affect property prices. Look commercial is more warehousing and more industrial…I don't think it's going to affect house prices at all."

Estate agent 2 responded as follows;

"Yes, it will positively affect it. Definitely…because…it can just be good for us all…."

Estate agent 3 expressed the following opinion to the question;

"I would say positively…definitely."

This question was posed in order to obtain professional opinion on market reaction in Bonaero Park about the planned commercial development at the airport or at any location within the airport precinct. Estate agent 2 and 3 seem to be of the same opinion that commercial property development within any location of the airport precinct will positively affect houses sales and house sales prices in Bonaero Park.

Q8: In your professional opinion, do you think a commercially driven project (e.g. Aerotropolis) linked to airport business will have positive or negative effect on sales in Bonaero Park?

This question was deliberately posed to gauge professional opinion from the estate agents if the commercial developments within and closer to the airport are likely to positively or negatively affect house sales and house prices in Bonaero Park. This is important because the commercial property development opportunities announced by ACSA at OR Tambo international airport might eventually be linked to the whole Aerotropolis proposal that the Ekurhuleni municipality.

Estate agent 1 offered the following response to the question;

"I don't think it's going to have any effect on the sale prices in Bonaero Park at all."

Estate agent 2 expressed the following response;

"I think it will have a positive effect for all properties in the area….including Bonaero Park….because house values will increase and you'll find that there will be more people wanting to work closer to home or leave closer to their work and if that commercial

development is going to be of such a nature that they can actually create jobs….you'll find that people will be willing to obviously pay more to live closer to work because petrol is becoming more expensive and all that and so it's going to be beneficial to the entire area."

Estate agent 3 expressed the following response to the question;

"Positive! The properties in the market which I went to see….and a lot of the people and literally a lot of the people didn't want to put their properties on the market and they were just asking for an evaluation and when I asked them why….there answer would be because of the Aerotropolis. So they were hoping that when the announcement started, it will increase their properties and this was more on the sellers and not the buyers of the property….i think they won't get more out of it but looking at that reaction, it would at least increase the property prices without any question or doubt…even for areas that will exist closer to Bonaero Park."

Estate agent 2 and 3 are of the same opinion and there opinion makes sense because in the area of Bonaero Park, there has not been commercial developments which compliment residential uses (e.g. shopping centre) or developments which do not compliment residential uses (e.g. offices). Therefore the responses from Estate agent 3 expressed what could possibly be the thinking of the sellers and it seems they will either sell now or wait for government to expropriate their land so they negotiate higher sales price. Estate Agent 2 & 3 were also of the opinion that all the commercial development linked to the Aerotropolis (e.g. hotels, offices, etc.) will create a higher property status to Bonaero Park and increase house values.

The researcher is however inclined to strongly consider the opinion expressed by Estate agent 1 purely on the basis that she is not only an estate agent doing sales in Bonaero Park but she's also a resident of Bonaero Park. In all likelihood, she could also be expressing an opinion that a typical residence might express when asked the same question. But then again, what estate agent 3 mentioned as what he heard from most buyers in Bonaero park could also be considered as another opinion from other current residences in Bonero Park

4.3.3. QUALITATIVE DATA VERIFICATION AND CONCLUSION

The discussion of the qualitative data findings under this section is structured under the 5 themes which were discussed in section 4.3.1 and 4.3.2. This section as discussed in section 4.3 will draw conclusion to the data outcomes which will be used to form part of the Findings of the study under Chapter 5.

Theme 1: Interviewee's professional profile

As discussed in section 3.8.1, the question of selection bias was addressed in the process of selecting estate agents to be interviewed for this research. As shown in table 4.2, under section 4.2, the estate agent interviewed had varying professional experience which was considered sufficient. Based on the number of sales and the value of these sales the interviewed estate agent undertook in Bonaero Park, it is inferred that their experience was sufficient to be representative of the entire population of estate agent operating in Bonaero Park as discussed in section 3.4

Theme 2: House sales trends in Bonaero Park – period from 2006 to 2014

The discussion under this theme provides an analysis of the quantitative and qualitative data outcomes of this study. Empirical evidence from the housing market is also used to analyse and discuss the data findings of the study. The discussion focuses on the pre-announcement (2006 to 2010) and the post-announcement (2011 – 2014) periods which are defined for this study and discussed in section 1.3, and are crucial for deriving findings from the qualitative and quantitative data.

Pre-announcement period: 2006 – 2010

In South Africa, the period 2000 to 2006 was considered a property 'boom' period where average house prices rose up to 20% annually (GlobalPropertyGuide, 2015). This was the period which mostly sat outside the pre-announcement period as defined in this study. In 2008, the period of 'boom' came to an end due to global financial meltdown.

This saw house prices fall by 9% in real terms from 2008 (GlobalPropertyGuide, 2015). In the first quarter of 2009, middle segment average house prices went down in real terms by about 8% (Absa Housing Review, 2009). This was also reflected in house sales data for Bonaero Park where the average house sale price in 2009 dropped compared to 2008 as shown in figure 4.5.

The South African economy was still slightly in recession in 2009 but faced recovery in 2010 due to low inflation and low interest rates which contributed in house prices showing steady growth and rising from the slump (Absa Q1, 2011). Compared to 2009, affordability of houses was on a high in 2010 due to low prices, low interest rates and rising household income (Absa Q1, 2011). House sales data for Bonaero Park received from the Estate Agencies also indicated the steady average house price growth as shown in figure 4.5, are in line with the overall growth in average prices in the South African housing market for medium houses as depicted in figure 4.26 below.

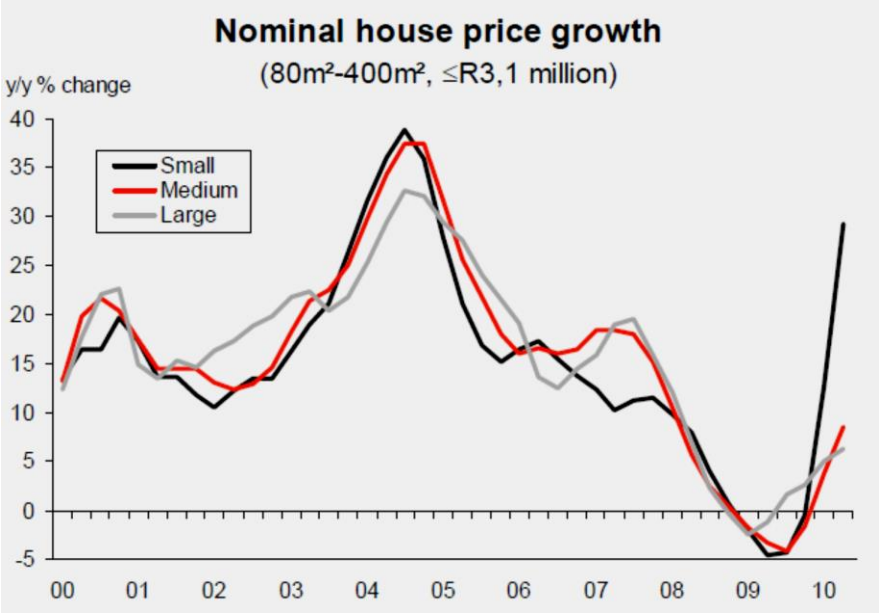


Figure 4.26: House Price growth in South Africa (2001 to 2010) – Source; Absa Housing Review (2010)

The nominal price of a property refers to the market price, selling or purchase price of the property in the open market (Absa Q4, 2013). The nominal price will normally be reflected in a valuation, an offer to purchase, an application for mortgage finance and in the transfer documentation at registration (Absa Q4, 2013). The real price of a property

is the nominal price adjusted for inflation, and is calculated to determine if the value of a property has increased at a rate of above or below the inflation rate (Absa Q4, 2013)

House prices in all provinces in South Africa increased in nominal terms while there were some recorded decreases in some provinces. In Gauteng, house prices grew by 5,4% in nominal terms and 1,1% in real terms. Professional opinion from the interviewed Estate Agents was that the increase in number of house sales as well as the average house prices in 2010 was as a result of the market coming after the slump or recession.

Interviewed estate agents also confirmed that average number of houses sold as well as the average house prices were lower before 2011. This was also the outcome of house sales data where there were less house numbers sold at pre-announcement period. Average house sales prices for Bonaero Park were lower at pre-announcement period compared to post announcement period as shown in figure 4.8.

Post-announcement period 2011 - 2014

House prices decline in first quarters of 2011 due to impact of slow growth in the South African economy (Absa, Q4, 2011). The average house prices remained low for most of 2011 and most consumers could not take advantage of these low prices due to negative economic factors (Absa Q4, 2011). In real terms, middle segment house price growth recorded in most metropolitans was at a decline for most of 2011 but started increasing in the last quarter of 2011 as shown in figure 4.27 below (Absa Q4, 2011).

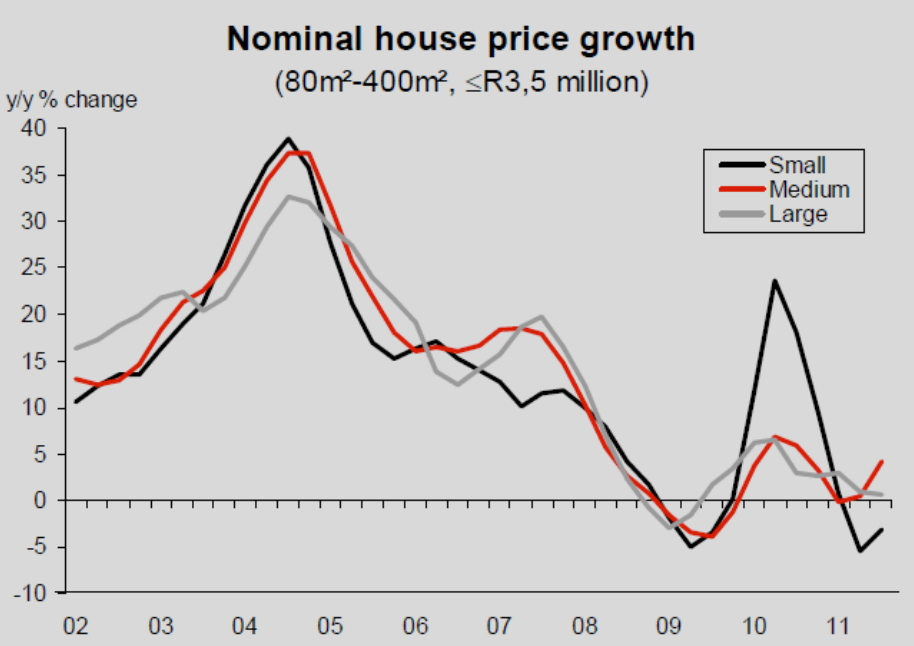


Figure 4.27: Middle Segment house price growth trend in second quarter of 2011 – Source: Absa Q4, 2011.

The house sales data for Bonaero Park indicated a higher increase in number of house sales in 2011 as discussed in section 4.1.2. However the high increase in number of house sales did not translate to a high increase in average house sale prices. This could have been that buyers in Bonaero Park managed to take advantage of low interest rates and bought houses at lower negotiated prices. House average prices increased slightly in the second quarter of 2012 (Absa Q4, 2012). However low consumer confidence was prevalent as a result of economic climate and lot of consumers could not take advantage of reduced average prices and lower interest rates (Absa Q4, 2012). In Bonaero Park, house sales data showed that the numbers of sold houses as well as their average prices were still on a steady increase in 2012.

As shown in figure 4.28 below, house prices were stable in 2013 although price growth in the middle segment fluctuated despite low interest rate (Absa Q4, 2013). Consumer confidence was still low in 2013 as a consequence of negative economic climate even though the house market was favorable compared to previous years (Absa Q4, 2013). What made the market favorable was the lowest interest rate of 8,5% - the lowest ever for the past 40 years (Absa Q4, 2013). By the end of 2013, a year-on-year growth of

7,9% was recorded which was considered a modest growth in real terms as the market was conducive for possibly more growth (Fnb Q4, 2014).

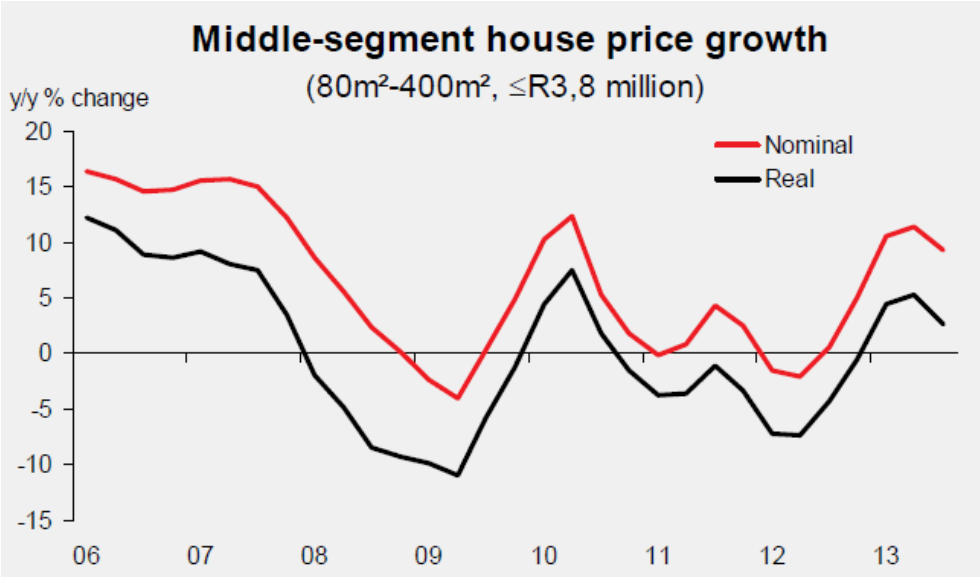


Figure 4.28: Middle Segment house price growth trend in Fourth quarter of 2013 – Source: ABSA Q4, 2013

In Bonaero Park, number of houses sold decreased slightly in 2013 but the average house sale price was slightly higher than 2012 despite slightly lower number of sold houses. As discussed in section 4.2.4 under question 2 (Q2), the interviewed Estate Agents were of the same opinion that the slight drop in number of house sale in 2013 was nothing significant, but merely as a result of an increase in prices of houses in the market. This was also supported by slightly higher average house prices in 2013 as also depicted in the Lightstone (2015) report in figure 4.23. The average nominal prices in the middle segment grew by 9,6% in 2014 from what it was by end of 2013 (Absa Q4, 2014). House prices performed well and were stable in most metropolitans which is predicted to be a start in real growth in the property market despite the slight increase in interest rates in 2014 – See diagram 4.29 below (Absa Q4, 2014).

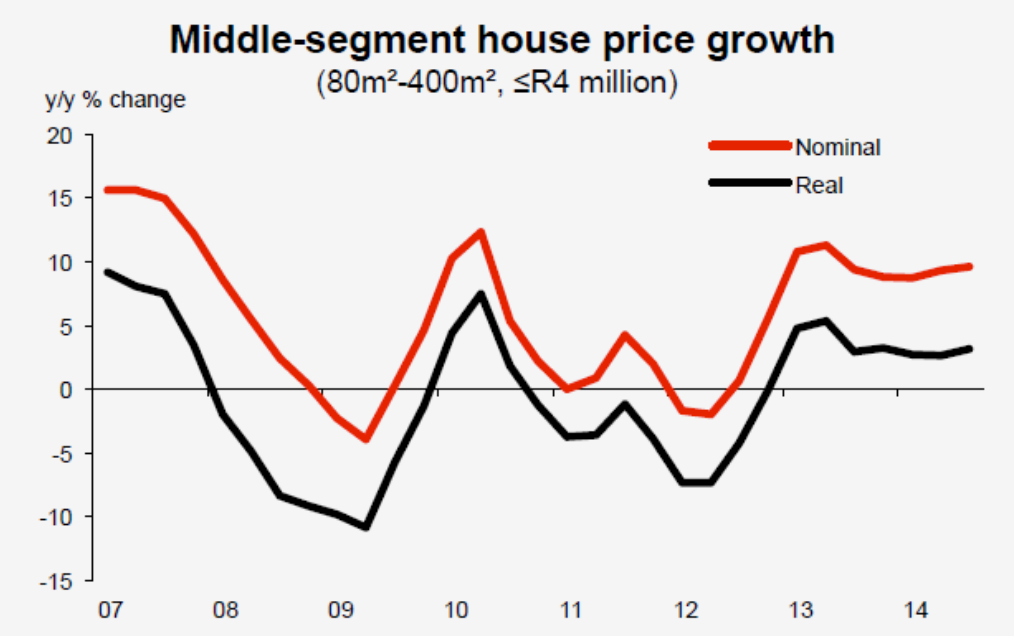


Figure 4.29: Middle Segment house price growth trend in Fourth quarter of 2014 – Source: ABSA Q4, 2014

In Bonaero Park, the data of number of houses sold in 2014 was slightly lower than all the other years within the post-announcement period. However as discussed in sections 4.1.2, in the house sale data for Bonaero Park received for this study was up to October 2015 and not full indication of total house sales for 2014. However as shown in figure 4.23, the total number of houses sold in Bonaero Park was 127 compared to 79 recorded from data for this study. The total average price indicated in figure 4.23 was R900k and R511k (total average price of R709k for both) for freehold and sectional title houses respectively. Data from this study indicated total average price of R771k for both house type. This was an indication that house prices started to normalise in 2014 as also confirmed by Estate agents as discussed in section 4.2.3 under question 2.

The discussion under this theme (theme 2), has found that house prices in Bonaero park at the pre-announcement period were lower as a result of overall market factors in the South African residential market. The increased number of house sales at the post announcement period starting from 2011 where a drastic increase in number of sold houses recorded, was as discussed in this section also influenced by conditions in the South African residential market. In 2011, where the drastic increase was recorded

within the post-announcement period, the market conditions were favorable due to the South African housing market coming out of the recession.

Theme 3: Property development trends in Bonaero Park

In the qualitative phase of the study, an investigation was done through the interviewees of the professional estate agents who participated in the study. As discussed under question 4 (Q4) in section 4.4, although there were few sectional title developments to come up in Bonaero Park, the findings of this study under this theme show that there is limited land available in Bonaero Park for residential developments.

Theme 4: Known airport proximity effect on house sales in Bonaero Park – current and historical.

No existing literature studies were found which discussed whether existence of the OR Tambo International airport in close proximity to Bonaero Park has had any effect on the house prices in Bonaero Park. During the interviews, estate agents were asked to provide a professional opinion on whether the presence of the airport positively or negatively affects sales and buying decision in Bonaero Park. Varying responses were received from the estate agents.

Estate agent 1, was of the opinion that the presence of the airport does not have an effect on sales in Bonaero Park. On the matter of buying decision, Estate agent 1 was of the opinion that it is really about the buyers choices. Other buyers would buy because of the love they have for aeroplanes and other buyers would not buy because they do not like the noise that comes from the aeroplanes. Buying decisions according to Estate Agent 1 are influenced by the buyers like or dislike of the airport aeroplanes activities.

Estate agent 2 voiced a different opinion to Estate Agent 1. Estate Agent 2 was of the professional opinion that the presence of the airport does negatively affect house prices in Bonaero Park. Estate agent 2 made an example with the average price variance of a house in Bonaero Park and further stated that a house sold for 900 thousands in Bonaero Park is much bigger and undervalued if compared to a similar house size

located in another suburb. Estate Agent 2 also discussed the fuel spray issue that apparently most residences whose houses are located closer to the airport runway regard as negative externality effect affective prices of houses.

Estate agent 3 expressed similar opinion to Estate agent 1 that there is no positive or negative effect. According to Estate Agent 3, it all depends on the choice of the buyers. Some buyers buy because of the presence of the airport and the love they have for aeroplanes and some buyers buy because of the value for money they get in Bonaero Park and thus are able to overlook and live with the aeroplane noise factor. The location of the land for the proposed commercial property development which is being studied as part of this research is located at the boundary of the airport as depicted in Figure 4.1. This location of the land is also closer to the older section of Bonaero Park which is closest to the airport boundary, and not too far away from one of the airport runways.

Houses identified in this study located within the 0 to 1km distance range are those houses which are located closest to the land for commercial property development. It can also be said that these are houses located closer to the airport. In analyzing the sale prices of all the houses located within the 0 to 1km distance range (see figure 4.30 below), it is evident that these houses have lower average prices compared to houses located at the 1km to 2km and 2km to 3km distance ranges. Based on the average sale price information, it was assumed that the prices of these houses were lower because of their close proximity to the airport and buyers were able to factor in the negative effect of airport noise when negotiating the sale prices.

However, as discussed in section 4.2.3 under question 6, Estate Agent 3, stated that houses located within the 0 to 1km range are the oldest houses in Bonaero Park and mainly occupied by the old age residents who have neglected their houses and have not been renovating them. According to Estate agent 3, the younger buyers that have been buying in Bonaero Park in recent years have been renovating these houses and selling them at an increased sale prices. The bar-chart below in figure 4.30 indicates the sale average sale prices per year from 2006 to 2014 for the houses sold within the 0 to 1km distance range.

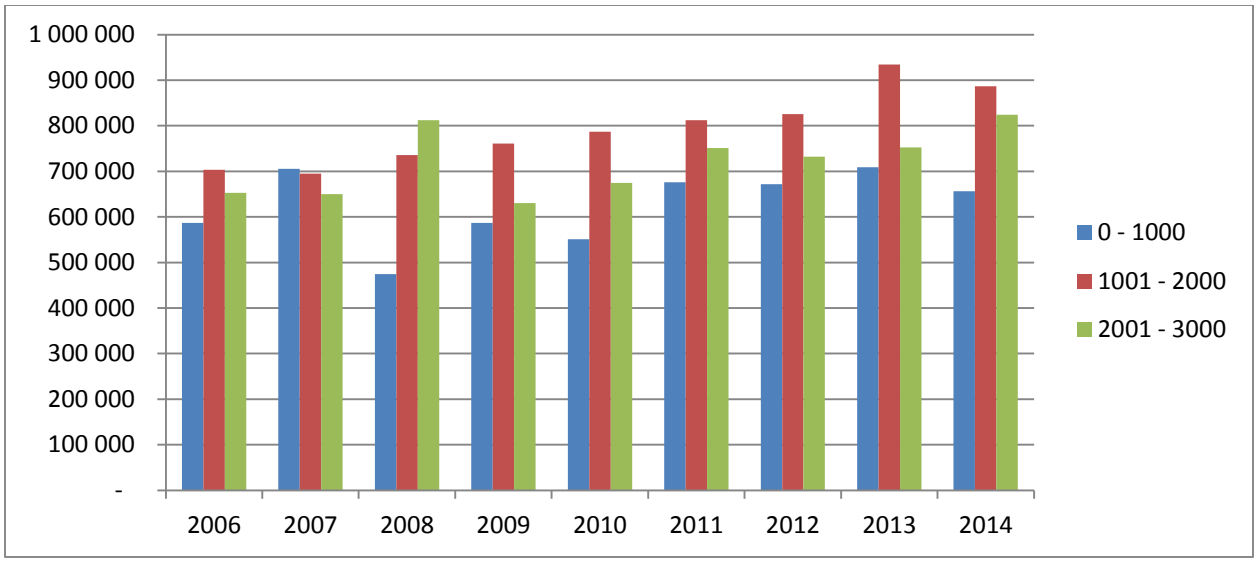


Figure 4.30: Average house prices per distance ranges (2006 – 2014)

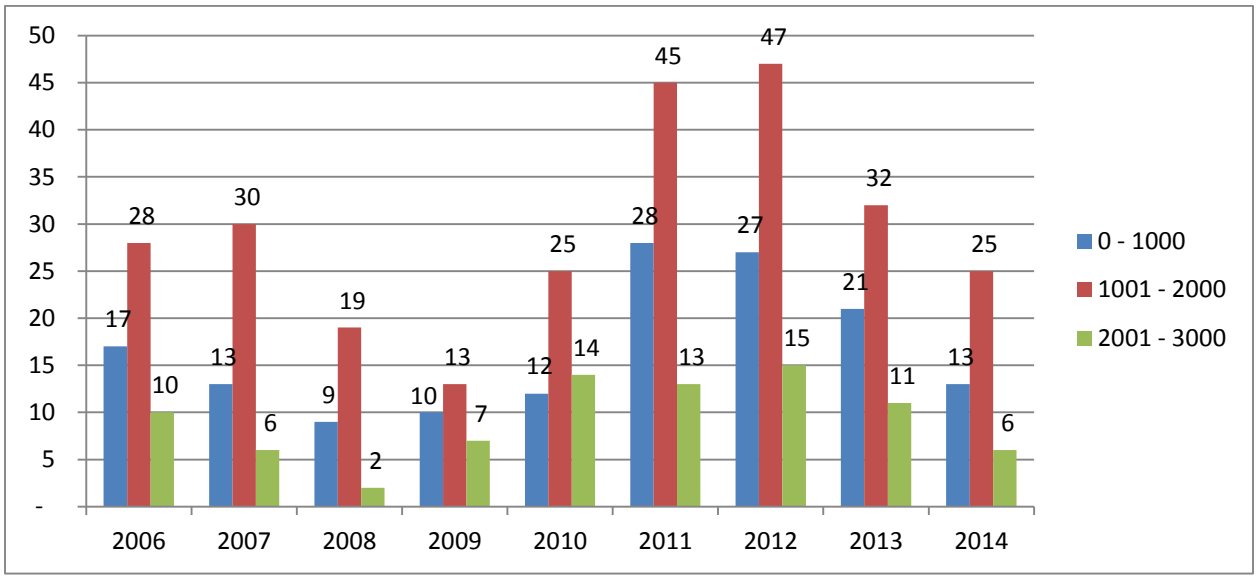


Figure 4.31: Number of house sales recorded per distance range (2006 – 2014)

It was observed in figure 4.10 that average prices for the houses located in the 0 to 1km distance range were lower since 2006 compared to the houses located in the 1km to 2km and the 2km to 3km distance ranges. The exception was in year 2007 where the average house prices seems to be higher in the 0-1km distance range compared to the other distance ranges. It was also not a matter of the number of house stock on sale in the various years which might have influenced the average prices. As shown in diagram 4.31 above, there have always been fewer houses sold within the 0 to 1km distance

ranges from 2006 to 2014.However, what is clear from figure 4.31 is that since 2006 to 2014, there has always been more house stock sold in the market in the 1km to 2km distance range as compared to the 0 to 1km distance range.

Based on the above discussion of price and number of house stock, it can be argued that the presence of the airport has somehow affected sale prices in Bonaero Park. This is seen in terms of the resultant average house sale prices. From 2006 to 2014, more houses have been sold in the 1 to 2km distance range as compared to the 0 to 1km distance range. There has also been a gradual increase of the average sale price in the 1 to 2km distance range from 2006 to 2014. However, in 2011 and 2012 there was a drastic increase in number of houses sold in the 1km to 2km distance range compared to any other years but yet the average price never increased drastically in those 2 years (2011 and 2012).

There could have been other reasons affecting average sale price in 2011 and 2012. According to the discussion in section 4.3.2, house prices declined in South Africa due to the impact of slow growth in the economy despite lower interest rates (Absa, Q4, 2011). This trend continued until second quarter of 2012 and it was reported that consumers' confidence affected average sale prices (Absa Q4, 2012). It was thus inferred that although there were lot of buyers who bought houses within the 1 to 2km distance range, these buyers were always able to negotiate lower sale prices despite lower interest rates. Same can be argued for the higher number of house sales and resultant lower in 2011 and 2012 for the houses in the 0 to 1km and 2 to 3km distance ranges.

In summary, the above argument supports the professional opinion of estate agent 1 and 3 that presence of the airport has never affected average sale prices in Bonaero Park between the periods of 2006 and 2014. This is because since 2006, the average prices in Bonaero Park have been on the increase, and where the average prices have been lower, it has been as a result of the economic trends affecting the property market as a whole throughout South Africa.

Theme 5: Airport proposed expansion and related developments – impact on sales in Bonaero Park.

No literature was found which discusses effect that the expansion of OR Tambo international airport had or will have on the prices of houses in Bonaero Park. However a question was posed to the estate agents interviewed for this research on whether commercial project within the airport precinct will positively or negatively affect house sales in Bonaero Park. All the estate agents were of similar professional opinion that commercial development linked to the airport business would only yield positive effect on the houses in Bonaero Park.

Airports have historically derived most of their revenues from aeronautical (aviation based) activities – i.e. landing, parking and take off of aeroplanes within an airport (Graham, 2009; Freestone, 2011). Over the years, focus within most international airports has shifted towards increasing non-aeronautical activities – i.e. retail, parking, advertising and property revenues (Freestone, 2011). Growth in aeronautical activities is driven primarily by passenger growth and the number of airlines that operate in a particular airport. Growth in the aeronautical activities prompts airports to invest in additional infrastructure such as runways and expansion of terminal buildings to cater for growth (Stevens et al, 2010; Freestone, 2011).

Growth in certain areas of the non-aeronautical activities has been a direct response to aeronautical growth. The non-aeronautical areas that will grow as a direct response to growth in the aeronautical activities will be parking and commercial spaces. Parking buildings will be built and additional commercial (e.g. retail, airline lounges, offices, etc) spaces will be built to cater for the growth. The airport expansion as a direct response to growth in both the aeronautical and non-aeronautical activities has always affected areas surrounding the airports (Tomkins et al, 1998; McMillen, 2004; Jud & Winkler, 2006).

When an announcement is made of an expansion of an airport, communities around the airport observe with keen interest on how that expansion will affect the community areas. Literature studies discussing the impact of an airport expansion have offered various findings on the effect of the expansion of the prices of houses near the airports.

Some studies have found positive affect (Tomkins et al, 1998; Cohen & Coughlin, 2009; Espey & Lopez, 2000; Coughlin, 2008) and some studies have found negative effect (Colwell et al, 1985, Thebodeau, 1990; Aliyu, 2011, Koster & Rouwendal, 2012; Farber, 1998; Rabianski, 2009; Cho, Kim, Roberts, & Kim; 2012) on house prices of houses.

ACSA announced in 2010 that there was land available at the OR Tambo International airport which has been earmarked for development of commercial properties (SA Property Review, 2010). These commercial developments are linked to the non-aeronautical activities of the airport. As discussed in section 2.6, this announcement was as a strategy by ACSA to increase its non-aeronautical revenues at the back of the declining aeronautical revenues (SA Property Review, 2010; Sowetanlive, 2013).

The question was thus posed to the interviewed estate agents in order to understand whether commercially driven expansion of the airport, will have any positive or negative effect of the prices in Bonaero Park. Estate agents expressed varying professional opinions on this question. Estate agent 1 was of the opinion that commercial developments within the airport and other commercial developments linked to airport business will not have any effect on the sales prices in Bonaero Park.

Estate agent 2 was of the opinion that commercial property developments within the airport and around the airport will yield a positive effect on the sales prices. According to estate agent 2, the benefit of employment opportunities will be an advantage as those people benefiting from those employment opportunities will leave closer to the airport and that demand for accommodation will have positive effect on house prices in Bonaero Park. This is in line with other literature findings where airport expansion was found to produce positive proximity effect on house prices (Tomkins et al, 1998; Cohen & Coughlin, 2009; Espey & Lopez, 2000; Coughlin, 2008).

Estate agent 3 also expressed an opinion that commercial property developments within and around the airport precinct which are linked to airport activities will have a positive effect on the sale prices of houses in Bonaero Park. This was because of a possibly higher evaluation price that owners will demand should the government expropriate their houses for airport development or related activities.

Prior to the 2010 announcement, ACSA made other announcements within the 2006 to 2014 period of study. According to an article in the Engineering News (1999), ACSA announced its plans to undertake a study to update its airport master-plan for OR Tambo International Airport. The master-plan was going to include expansion of existing terminal buildings, addition of new terminal buildings, adding a new runway and Environmental consultations (Naco, 2012). ACSA announced that the master-plan study will be undertaken from 2005 and be completed in 2006, while the expansion work for the existing terminal buildings will commence in 2006 and be finalized in 2009 (Engineering news, 2008).

Commitment was also made by ACSA to start investing in a project to construct its midfield terminal and new runway from 2010 (Engineering news, 2008). The midfield terminal and the new runway were going to be constructed closer to the Bonaero Park suburb. Environmental consultation which was going to be done as part of the study meant that consultation meetings would have been held with community forums of affected areas to inform them of the project and its impact on the surrounding environment as well as existing housing areas.

A reaction would have thus been reflected in the house market from the date when ACSA made the announcement. One way of gauging impact would have been to observe the impact on the sales prices of houses after the announcement period. The house sale analysis done as part of this study was for period between 2006 and 2014 of which the announcement period of for the master-plan studies and environmental consultants were concluded in 2006; the start of construction for the existing terminal in 2006; and planned start of construction for the midfield terminal and runway in 2010.

In 2006 which was the announced start of expansion of the existing terminal buildings at ORTIA, figure 4.3 in section 4.1.2 depicts that the number of house sales were stable from 2006 up to 2010. The average sale prices were also stable during this period. According to Estate agent 1 interviewed, ACSA announced possible extension of the runway before the soccer world cup in 2010. However, as discussed in section 4.3 under question 1 (Q1), opinion of Estate Agent 1 was that the announcement got a lot of owners scared and they wanted to sell but there was not a lot of willing buyers.

The general South African property market from 2006 to 2010 was reported to be in a bad state. In 2006 up to 2008, there was a property boom in South Africa where average house prices grew by up to 20% (Absa Q2, 2009). In analyzing the house sale price data of Bonaero Park, the average sale prices between 2006 and 2008 only grew by about 1,5% only. However this percentage variance could be as a result of reduced house sales data for use in this study as discussed in section 4.1.1.

Further empirical data analysis of the average house price as recorded in the Lightstone (2015) report, the average house sale price grew by 20% in Bonaero Park from 2006 to 2008 – Refer to figure 4.23. This growth was in line with the boom period which the South African housing market was experiencing between 2008 and 2009.

This could have meant that those owners who were selling could not take advantage of the high prices due to the property boom and were somehow negotiated to sell at extremely low prices. There was however not a lot of house stock sold on the market in Bonaero Park during the boom period which could be assumed that it was as a result of sale price indifferences between buyers and sellers. This assumption is based on the observation as depicted on figure 4.23, that despite the increase in average sale prices during the boom in South Africa, in Bonaero Park, this boom was not reflected in the average sale prices recorded during the boom period.

The majority of sales between 2006 and 2010 also took place in the 1 to 2km distance range. Houses in this distance range were not going to be extremely affected by the new midfield terminal and new runway. Houses that were directly going to be affected by this project were those located in the 0 to 1km distance range. However there was less sales recorded in houses within the 0-1km distance range compared to the higher number of house sales recorded in the 1 to 2km distance range.

In 2009, there was a recession in South Africa due to economic meltdown which also saw average house sale prices drop drastically (Absa, Q2, 2009). In 2010, the recession came to an end, and the house prices started increasing steadily (Absa Q3, 2010). Analysing the house sales in Bonaero Park and the Lightstone report from 2006 to 2010, it was observed that the house sales trends were reflective of the overall South

African property market trends and no anomaly was observed which could be linked to the announcement made by ACSA of its expansion programme and construction of the midfield and new runways which could have affected the prices in Bonaero Park.

The construction of the midfield terminal and new runway also did not take place from 2010 as announced by ACSA. The start of these developments has not occurred to date. Instead, ACSA made an announcement in 2010 about the availability of land within the airport precinct which could be taken up by private investors for commercial property developments (SA Property Review, 2010). In 2010, as indicated in diagram 4.1.3, number of houses sold increased in Bonaero Park compared to years before. Also depicted in figure 4.3, is that from 2010 a sharp increase in the number of sold house was recorded.

The average house prices also started increasing in 2010 and 2011 and the increase in the average sale price could have been as a result of the high number of houses sold. This increase in both number of sales and average sale prices from 2010 was analyzed to investigate whether it occurred as a result of the announcement by ACSA to make land available for commercial property development of which majority of that land was located closer to Bonaero Park.

Estate agents were questioned during the interview to gauge if they were aware of this announcement made by ACSA in 2010. Out of the 3 Estate Agents interviewed, only Estate Agent 2 confirmed that he was aware of the announcement. However when the estate agents were all asked for their professional opinion on whether commercial development within the airport precinct would have positive or negative effect on house sale prices in Bonaero Park, they all responded unanimously that such a development would have positive effect on house sale prices.

An analysis was done to check if the increase in average price recorded in 2011 was directly as a result of higher number of sales or that there was an increase in real terms. This analysis was done by looking at houses that have sold repeatedly between 2006 and 2014 to see if their sale prices increased during this period. Figure 4.31 below depicts the houses which were identified to have been repeat sales. A total of 5 houses

were identified to have been sold at least 2 times before 2010 and subsequently sold at least once after 2010.

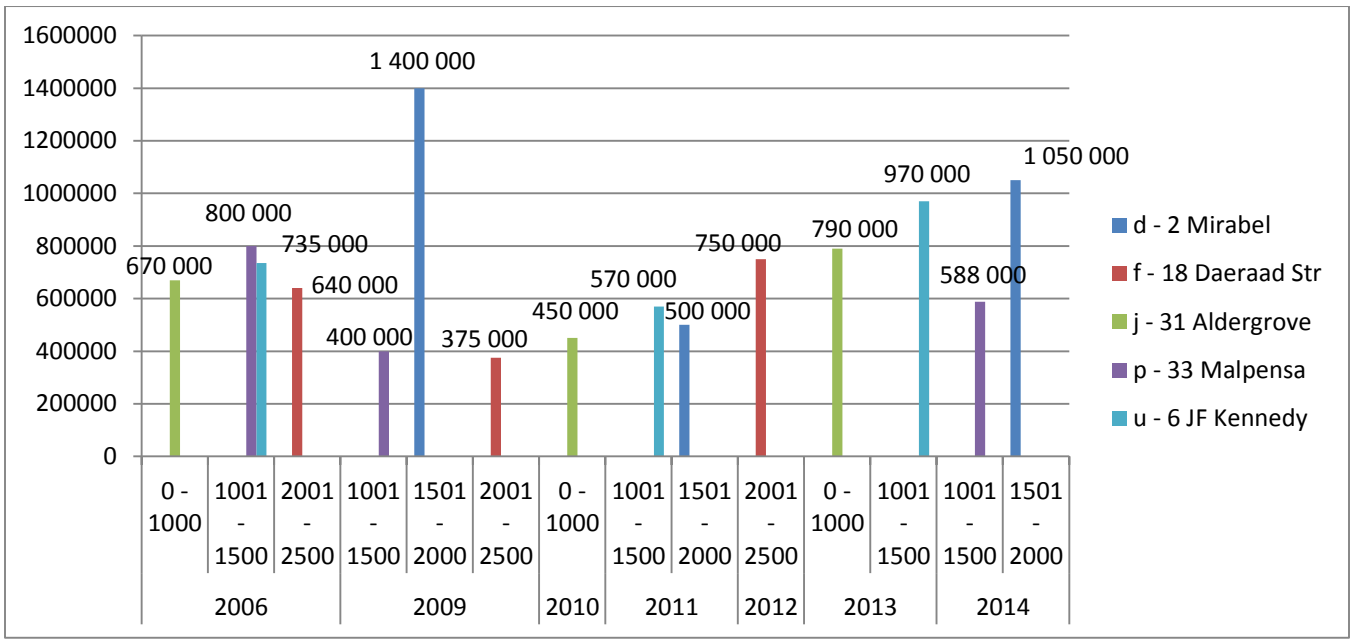


Figure 4.32: average sale prices of repeat sales (2006 – 2014)

As discussed earlier, the boom period was between 2006 and 2008 in South Africa. Out of the 5 houses in figure 4.32, only 4 were sold during the boom period. The 4 houses sold during the boom period were 31 Aldergrove, 33 Malpensa, 6 JF Kennedy and 18 Daerad. Their sale prices varied between the R600 thousand to R800 thousand price mark. The economic recession period in South Africa was in 2009 which also affected the property market and saw drastic decline in average sale prices (Absa Q3, 2010).

Out of the 4 houses which were sold during the boom period, only 2 were recorded to have been sold during the recession year of 2009. These houses are 33 Malpensa and 18 Daeraad – see figure 4.32. The actual sale price of these two houses was R400 thousand and R375 thousands respectively, which equates to a price drop of about 50% and 40% for 33 Malpensa and 18 Daeraad respectively. The recession period ended in the second quarter of 2010 and property prices started increasing in South African after the end of the economic recession (Absa Q2, 2010).

The two houses which were sold during the recession period were also sold after the recession. 18 Daeraad was sold in 2012 and 33 Malpensa was sold in 2014. The sale prices for these houses was R750 thousand and R588 thousand respectively. This translated to a sale price increase of 50% and 32% respectively.

The study found that the sharp increase in the number of houses sold from 2010, the average sale prices also increased. When ACSA announced the commencement of the master-planning work to be conducted between 2005 and 2006, the house market in Bonaero Park should have shown some reaction. It was difficult to deduce whether there was any market reaction by merely measuring house sale prices. The difficult was because at that period of 2006, the property market was at a boom period. However, with community involvement in the environmental studies also conducted during the 2005 to 2006 period, any negative perception by the Bonaero Park community would have revealed itself through the house sales. No abnormal increase or decrease in house sales was recorded in 2006 and there was also no reduction in average house sale prices. As indicated in diagram 4.23 from the Lightstone report (2015), a higher number of house sales were recorded between the periods of 2005 and 2006.

The average prices of these houses in 2005 and 2006 were lower despite the increase in number of registered sales. Based on the data from Lightstone report (2012), the average prices in 2005 and 2006 were even much lower than the average prices during the recession period of 2009 despite the lower sale volumes of house in 2009 compared to 2005. More houses were sold during the periods of 2004 ad 2006 but the average prices remained low.

From 2007 until 2009, the number of house sales reduced, even though the average price was higher during this period compared to period of 2004 and 2006. It can thus be inferred that there was panic that was experienced in the property market in Bonaero Park from 2004 up to 2006. This panic could have resulted from the announcement made by ACSA and subsequent masterplan and environmental consultation studies. It is possible that during the environmental study where the community is consulted, there was panic from the house owners in Bonaero Park which resulted in houses being sold but at a lower price.

As shown in diagrams 4.3 and 4.23, it was observed that from 2010, there was also an increase in number of sales that took place up until 2014. This increase in number of sales however also resulted in an increase in average house sale prices. Drastic increase in number of sales was experienced in 2011 alone and this coupled with an increase in the average prices. Another inference which is made is that the announcement made by ACSA in 2010 to enable land within the airport precinct for property development has a positive effect on sale prices in Bonaero Park. This is argued from the fact that in 2011, the interest rates were low, the economic condition in the South African was not favorable to the consumer. According to the Absa Q3 report (2011), the average house prices remained low for most of 2011 but consumers could not take advantage of these low prices due to negative economic factors which reduced consumers disposable income (Absa Q3, 2011).

However, despite the unfriendly economic factors in 2011, the number of houses sold increased drastically in Bonaero Park in 2011. This also translated to an increase in average sale prices. Estate agents were asked for their professional opinion on what caused the drastic increased in number of sale in 2011. There were varying professional views that were expressed. Estate agent 1 was of the opinion that market opened up when people in Bonaero Park realized that ACSA was not going to build the runway in 2010 as announced. Estate Agent 2 was of similar opinion that it was merely the market correction after the economic slump in 2008 and 2009. Estate agent 3 could not comment as his career had just commenced in that year.

4.4. Chapter Summary:

Multiple methods were adopted in this study for data collection and analysis as discussed in section 3.2. Use of multiple methods divided the study into two phases. Phase 1 was the quantitative study which involved data gathering and analysis of that data. Phase 2 was the qualitative phase which also involved data gathering and analysis of that data.

Data for the quantitative part of the study was obtained from Estate agent companies who undertook house sales in Bonaero Park between the periods of 2006 to 2014. Three Estate Agent companies participated in the study and provided the data. The data received comprised from all the companies comprised of a total number of 2205 houses sold from 2006 to 2014.

However as discussed in section 4.1.1, out of the 1306 sold houses, a thorough check of the credibility of this data for use in the research was done. As discussed in section 4.1.1, the check involved ensuring that all the sold houses had data confirming the following;

i. Date of sale/registration, sale price, physical address and the house attributes could be found on the RDS report.
ii. Houses that did not have any of the above information which was considered crucial for this study were eliminated and not included for use in this study.

Once the check process was finalized, only a total of 861 sold houses were considered to be data that was going to be used for this research. The data of 861 houses sold from 2006 to 2014 was utilized to produce bar-charts and tables to analyse the data. The period between 2006 and 2014 was divided into the two crucial periods (pre-announcement and post announcement periods) in the study to enable analysis of data.

The study aimed to investigate the proximity effect of the proposed commercial property development at ORTIA on the houses in Bonaero Park. Because the commercial development had not taken place during the study, the proximity effect has been measured through studying the impact of the announcement. ACSA made the announcement in May 2010 as discussed in section 4.1. The analysis of the house sales data at the pre-announcement period and post announcement period was crucial to study if the proximity effect. The pre-announcement period was defined as from 2006 to 2010 and the post announcement period was defined as from 2011 to 2014.

As discussed in sections 4.1.2, the data of the sold houses revealed that there was less number of houses sold at the pre-announcement period compared to the post announcement period. At pre-announcement period, there were 403 houses sold and at

post announcement there were 462 houses sold. This translated to a percentage increase of 14% between the two periods. The total average price was lower at pre-announcement period as compared to post announcement period. The total average price at pre-announcement stage was 632,638 and 745,949 at post announcement stage as discussed in section 4.1.3.

The proximity effect was also measured by analyzing sold house data to understand the location of the sold houses from the land of the planned commercial property development. Distance ranges were assigned as discussed in section 4.1.4. Distance ranges were also plotted within the pre and post announcement periods in order to analyse the sale price of the houses in terms of their location from the land of the proposed commercial development.

The analysis revealed that more number of houses was sold at the 1 to 2km distance range at both pre and post announcement periods. The average house price was also higher for houses located at the 1 to 2km distance range. The number of sold houses increased by 16, 8% and the average house price increased by 16,8% at post-announcement period for the houses located within the 1 to 2km distance range. What was also observed is that the number of houses located within the 0 to 1km distance range also increased by 14,8% and the average price also increased by 16,8% at post-announcement period.

At qualitative phase of the study, interviews were conducted with estate agents who had undertaken house sales in Bonaero Park within the period of 2006 to 2014. A total of 3 estate agents participated in the study. These estate agents were non-randomly selected from the companies that participated in the quantitative phase of the study and provided house sales data. The interviewed estate agents all agreed that more houses were sold in Bonaero Park at post announcement period compared to the pre-announcement period as discussed in section 4.3.

The professional opinion of the majority of the estate agent was that favorable economic conditions influenced the high number of house sales in Bonaero Park at post-announcement period. Analysis of the empirical data as discussed in section 4.6.3

revealed that the South African housing market experienced growth from 2011 to 2014 due to the housing market recovering from the recession which between 2008 and 2009. Two of the three interviewed estate agents were not aware of the announcement made by ACSA in 2010 regarding the commercial property development. However, all the interviewed estate agents were in agreement that commercial development within the airport precinct would have a positive effect in the prices of houses in Bonaero Park as discussed in section 4.6.4.

Analysis of the empirical data also revealed that ACSA made an announcement between 2006 and 2010 regarding possible expansion of the airport. As discussed in section 4.6.5, the announcement indicated that ACSA would start development of what was termed 'Mid-field' terminal and construction of a new runway at ORTIA. As discussed in section 4.1.2, the analysis of the house prices between 2006 and 2010 revealed that number of house sales was on a steady increase on Bonaero Park except for periods of recession in 2008 and 2009. This was revealed in house sales data used in this research as shown in diagram 4.3 and also in the house sales records received from Lightstone (2015) as shown on diagram 4.23. The average yearly house price from 2006 to 2010 was also on a steady increase except for 2008 and 2009 where it went down due to the economic recession. No impact was thus observed to have occurred as a result of the announcement by ACSA to expand the airport infrastructure between 2006 and 2014.

When analyzing the house sale data collected and used for this research, analyzing the interview data and also analyzing the empirical data, it has been found that the announcement made by ACSA to develop the commercial property had no effect on the houses in Bonaero Park. This was measured through analysis of both number of houses sold and average house prices at both the defined pre and post announcement periods, and also the analysing the locational (proximity) factor.

5. CHAPTER FIVE:

FINDINGS

5.1. Introduction:

The aim of this study has been to investigate the proximity effects of the planned commercial property development at OR Tambo International airport on the adjacent residential houses in the Bonaero Park. As stated in section 1.4, the objectives of this study were formulated to address the aim of this study. This study has 5 research objectives. Each objective is discussed below to indicate how it was addressed in this study.

5.2. Research Objectives Reinstated

5.2.1. Undertake literature review to understand proximity effects of airports to the nearby houses.

Literature review was undertaken to satisfy this objective of the study. It was found through literature review that airport noise was discussed by authors as being a negative externality which when factored into a Hedonic Price Model (HPM) by some of the studies, resulted in discounted prices of houses near airports (Espey & Lopez, 2000; Coughlin, 2008).

Some reviewed literature studies found that the benefits of employment and access when factored into a hedonic price models, yield a positive result on house prices – see Tomkins et al (1998) and Cohen & Coughlin (2009). Other studies found that airport noise is reducing as a result of newer aircraft engine technology, and this coupled with the benefits of employment and access indicate that airport can also positive proximity effects on prices of houses near airports (Espey & Lopez, 2000; Cohen & Coughlin, 2008). This objective was addressed as discussed above and also answered through the research sub-question as discussed in section 5.4.1.

5.2.2. Undertake literature review to understand why airports undertake commercial property developments.

Literature review undertaken revealed that the higher percentage of airport revenue has normally been regenerated from aeronautical revenue. Aeronautical revenue has been generated from charging airlines fees for landing, parking and through airport taxes. Authors found that a number of factors such as the slowing economic growth (resulting in reduced passengers numbers), terrorism threats, aircraft fuel hikes and fierce airline competition, restrictive regulations of the aeronautical activities and price cap regulations imposed on aeronautical charges (Stevens et al, 2010; Freestone, 2011). These are factors that airport authorities have had no influence on as they were accompanied by stringent regulations from the aviation industry.

In response to the above factors, some airports have investigated business initiatives which focus on increasing the non-aeronautical revenue of the airport which is not as highly regulated. Graham (2009) discusses a study done by Airport Retail Survey in 2006, where the non-aeronautical revenues in the East, European and American airports were recorded to have averaged 50% of the total airport revenue as a result of business interventions by airports to increase non-aeronautical revenues.

Some airports are developing more aggressive business strategies to enable them to pursue commercial property developments at the airports - outside the conventional terminal buildings (Morrison, 2009). Most international airports have huge parcels of land within their precincts which are undeveloped (Morrison, 2009). The business strategy by some of the international airports has been to exploit the undeveloped airport land within their precinct in order for it to be taken up for commercial property developments (Morrison, 2009; Freestone, 2011).

Schiphol International Airport along with other international airports such as Brisbane, Adelaide, Canberra and Perth have pursued commercial property developments within the airport land. This saw developments such as factory retail outlets, shopping centres, hotels, etc which have been built in the airport land but has no direct relationship to airport operations (Morrison, 2009).

This study found through the review of existing literature that, the main reason for airports to have undertaken commercial property developments was purely as a result of a business drive to increase airports' non-aeronautical revenue in the face of declining aeronautical revenue streams.

5.2.3. Investigate the location of the land where of the proposed commercial property will be developed in relation to the houses in Bonaero Park.

The study found that Airports Company South Africa (ACSA) which operates OR Tambo International Airports (ORTIA), announced through the media (SA Property Review, 2010), about the availability of various pieces of land within ORTIA precinct. ACSA indicated the location of the land which was within the airport precinct but at a location that was close to the suburb of Bonaero Park.

As discussed in section 4.1 and shown on Figure 4.1, the position initially shown on the map which was contained in the media article was subsequently revised. The location is now much closer to Bonaero Park suburb compared to what was shown in the media article. The new location is also as indicated in Figure 4.1.

5.2.4. Obtain house sales data of houses sold in Bonaero Park from 2006 to 2014 and investigate if there was any proximity effect by studying sale prices at pre-announcement period (2006 – 2009) and at post-announcement period (2011 – 2014).

This objective was achieved as discussed in detail in section 4.3. The 3 Estate Agent Companies who had undertaken house sales in Bonaero Park from 2006 to 2014 were approached and requested to participate in this study as data sources. As discussed in section 3.2.13, the 2 of the 3 Estate Agency who participated in this study provided data of house sales that they had undertaken in Bonaero Park from 2006 to 2014. Estate Agency 3 provided a comprehensive house sales data of Bonaero Park which did not

only indicate house sales that this company undertook, but also showed house sales data that other Estate Agent companies had done in Bonaero Park from 1999 to 2014.

On receiving the house sales data from the 3 Estate Agencies, data was first checked for errors such as information duplication, sales errors (where prices were not shown) and houses that did not indicate date of registration at the deeds offices. This was the first phase of data check and clean up. The information which made it through the first phase checkup of data was put together in a table format on Excel spreadsheet. The second phase of checking the information entailed checking the information against the RDS report as discussed in section 3.3.5.

House sales data that made it through the matching on RDS report was thus considered suitable for use in this study. Data was further categorised by date of sales on the Excel programme in order to split the sales data between the periods which was defined in this study as the Pre-announcement and Post-announcement periods. Out of the total of 861 house sales data which was considered usable for this study, I found that there were 403 house sales done in the Pre-announcement period and 462 houses sold at the Post-announcement period as discussed in section 4.1.2.

This data was utalised to develop tables and bar charts which were analysed in order to investigate if there has been any proximity effect by studying sale prices at pre-announcement period (2006 – 2009) and at post-announcement period. The outcome of the analyses is discussed in detail in section 4.3.3 and the findings are summarized in section 5.5.

5.3. Analysis of research questions

The main research question for this study as stated in section 1.5 of Chapter 1 is as follows;

What proximity effect has the planned commercial property development at OR Tambo International Airport had on the prices of the adjacent houses?

As stated in section 3.3.1 of Chapter 3, the proposed commercial property development is one of the units of analysis for this study. The aim of the study was to investigate the proximity effect on prices of houses in Bonaero Park which were located closer to the land earmarked for the commercial property development. To study the proximity effect, this research thus studied the house prices at pre-announcement and also at post-announcement periods of the commercial development.

To answer the main research question, the study had to first answer the research sub-question. In order to get broader context of the area of study, the research sub-questions were also answered through undertaking literature review. The research sub-questions were answered in this study as discussed below.

5.4. Research sub-questions;

As discussed in section 4.2, the unlocking of airport land normally zoned for aviation use to a commercial property use is still a new phenomenon in South Africa. As discussed in the literature review in Chapter 2, these type of studies focused on overseas airports. As part of this research, no literature studies were found to have studied this phenomenon in the South African context. The aim of the research objectives and research sub-questions for this study was to provide context to create broad understanding of the proximity effects of commercial property developments in order to derive findings for this study.

This broad context thus assisted in understanding the phenomenon from existing research studies. This understanding was able to guide towards the findings which came out of this study. The discussion of the research sub-questions in the next sections below, is a combination of analysis of both the findings from existing literature studies and findings from this study.

5.4.1. What are the proximity effects of airports to the nearby houses?

Literature reviewed in this study has discussed that there varying findings on proximity effects of commercial property developments on adjacent houses. The effects have

been measured in research through various pricing models which measured the proximity effect by factoring in the distance factor for the location of the houses from the commercial development.

Literature review found that there are varying findings about proximity effects of airports on houses located nearby. Some literature studies found that there were negative proximity effects resulting from exacerbated aircraft noise which negatively affected market prices of the houses located near airports (Tomkins et al, 1998; McMillen, 2004; Jud & Winkler, 2006).

Other studies found that other airports yielded positive proximity effects in some nearby houses when the benefits of employment and ease of access created by the airports were factored into models that calculated proximity effects (Espey & Lopez, 2000; Cohen & Coughlin, 2008). When interviewing the professional estate agents who did house sales in Bonaero Park, this study found that the majority of them were of the professional opinion that airport proximity did not affect house prices in Bonaero Park.

5.4.2. What are the proximity effects of commercial properties on houses?

In terms of existing literature, authors discussed that in general, non-residential uses that are not linked to residential use tend to have negative proximity effect on the houses which is measured through reduced house prices (Kwane Owusu-Edusei et al, 2007; Koster & Rouwendal, 2012). Other authors have stressed that the type and size of a commercial development has a huge impact. Industrial properties located near houses tend to have negative proximity effects (Koster & Rouwendal, 2012) and shopping centres tend to have positive proximity effect on house prices (Kwane Owusu-Edusei et al, 2007).

As discussed in section 4.3.2 in Theme 2 under question 5, this study found that there were not a lot of existing commercial properties near Bonaero Park and thus the interviewed Estate Agents could not give a professional opinion on the proximity effects of these existing commercial developments. As discussed in question 5 under section

4.3.2, existing commercial properties in Bonaero Park have no negative or positive proximity effect on prices of houses in Bonaero Park.

5.4.3. Why do airports undertake commercial property developments?

Literature studies have found that airports undertake commercial property developments in order to increase airport non-aeronautical revenues (Graham, 2009). In recent times the drive there has been a drive by airports to increase non aeronautical revenue stream as a result of declining aeronautical revenues which have been traditionally the higher of the two revenue streams (Freestone, 2011).

It is discussed in literature that the decrease in the aeronautical revenue stream has been as a result of restrictive regulations which are factors outside the airport authorities control such as price cap regulations imposed on aeronautical charges, slowing economic growth (resulting in reduced passengers numbers), terrorism threats, aircraft fuel hikes and fierce airline competition (Stevens et al, 2010; Freestone, 2011).

As discussed in section 1.1, it was found in this study that OR Tambo International airport published in the media its intentions to unlock existing airport land for commercial property development (SA Property Review, 2010). The intention of unlocking land was aimed at increasing the airport revenue (Sowetanlive, 2013). As discussed in section 1.1, General Manager of OR Tambo International Airport announced through the media that ORTIA will make available land for commercial property development with the aim of attracting non-aeronautical revenue.

Based on literature reviewed in section 2.5, overseas airports also undertake commercial property development within the airport land in order to boost non-aeronautical revenue in order to maximize profits which seem to have taken a knock due to declining aeronautical revenues. This study found that the reasons that ACSA planned to undertake the commercial property development at ORTIA was to increase its non-aeronautical revenue stream.

5.4.4. What type of commercial property development is planned at OR Tambo International Airport?

As discussed in section 1.1, this study found that ORTIA was going to unlock its existing and unutilized parcels of land for commercial property use. This study could not access information which will describe the exact type of commercial property development that was going to be developed.

As discussed in question 7 under section 4.3.2, this study found that majority of the interviewed professional Estate Agents were of the opinion that commercial property developments within the airport precinct would positively affect house prices in Bonaero Park.

5.4.5. What is the proximity effects of the planned commercial property developments on the prices of houses in Bonaero Park located in close proximity?

As discussed in section 4.1, the land for the proposed commercial property development was located in close proximity to the existing adjacent houses of a suburb called Bonaero Park. During the period of the study, the commercial property had not been developed and thus this study only investigated the announcement effect to measure the proximity effect that the proposed commercial property has had on the houses in Bonaero Park.

To measure the announcement effect, a pre-announcement and post announcement periods were defined in this study as discussed in section. Data on sold houses in Bonaero Park was obtained from data sources who participated in this study. The house sales data was from 2006 to 2014 in line with the defined pre and post announcement periods. The house price data was analysed through the quantitative phase and also through the qualitative phase of the study as discussed in Chapter 4.

This study found that at Post announcement period, the average house price increased by 14,8% within the 1km distance range from the land which the commercial property

was going to be developed. The average house price at the distance from 1 to 2km increased by 16, 8% at post-announcement period. The average house prices for houses located at 2 to 3km distance range increased by 21,3% at post-announcement stage. However, these average price increases were found to be as a result of the market factors as discussed in section 4.3.2 under Theme 2.

Therefore, the proposed commercial property development at OR Tambo international airport, as announced by ACSA in 2010, has had neutral effect on the adjacent residential properties.

5.5. SUMMARY OF FINDINGS

Based on the analysis done and discussed in detail in Chapter 4 and section 5.4. of Chapter 5, the overall finding of the study is that the announcement of the commercial property development at ORTIA had a neutral effect on the houses in Bonaero Park.

The announcement of the proposed commercial property development by ACSA at O.R. Tambo International Airport did not influence the rise in both the number of house sales and average house price in 2010. The rise both in number of house sales and average house sale price in 2010 was found to be as a result of housing market recovery as discussed in section 4.3.3 under Theme 5.

5.6. Analysis of Research Hypothesis

The research hypothesis for this study as discussed in section 1.14 in Chapter 1 stated that;

The planned commercial property developments at OR Tambo international airport has had no proximity effect on the adjacent residential properties.

Our research finding as summarized in section 5.5 supports the research hypothesis developed for this study. It was found that there is no proximity effect of the planned commercial property development on the houses in Bonaero Park as a result of the announcement made by ACSA in 2010.

5.7. Main Research Question

The main research question which this study aimed to answer through the research sub-question developed from the research objectives as discussed under section 1.12 in Chapter 1 is as follows;

What proximity effect has the planned commercial property development at OR Tambo International Airport had on the prices of the adjacent houses?

Findings of this study as discussed in the research objectives in section 5.2; 5.3; 5.4 and summarized under section 5.5 is that there were no proximity effect that the planned commercial property development at OR Tambo International Airport had on the houses in Bonaero Park.

5.8. CONCLUSION

As discussed in section 1.2, the research problem for this study stated that the existing literature findings which discuss the proximity effects of commercial properties on adjoining houses cannot be generalized to be applicable to a commercial property development within any airport environment. It has been stated in the literature review for this study that no literature was found as part of this study which discussed the proximity effect that a planned or existing commercial property development within an airport precinct has had on the prices of houses located in close proximity to that commercial property or to the specific airport where the development occurs. A study thus needed to be conducted in order to investigate the proximity effect of a commercial property development occurring within an airport land that is located near the existing houses adjoining the airport land. This study also needed to derive findings which can be applicable within the South African context.

This study investigated the proximity effect by studying the sold house data of an existing suburb of Bonaero Park which is located within the 3 kilometer distance radius of the land where the commercial property is going to be built. Because at the time of the study the commercial property had not been developed, the investigate had to

measure the effect on the adjoining houses by studying data of houses sold in Bonaero Park since ACSA announced that the airport land was available for development.

The study measured house sales data at the defined pre-announcement period (2006 to 2010) and house sales data at the defined post announcement period. The data analyses revealed that the announcement of the commercial property development had a neutral effect on the houses located in close proximity to the land earmarked for the commercial property development. In the South African context, the phenomenon of development of commercial property in close proximity has not been studied in detail. This study will create a platform for future studies to explore further commercial developments within the airports and measure its proximity effects on nearby residential houses and other non-airport related uses. The finding of this study will also be significant to both ACSA and the Real Estate Agencies in Bonaero Park.

5.9. RECOMMENDATIONS FOR FUTURE STUDIES

The study used house sales data of Bonaero Park and interviews data from estate agents doing house sales in Bonaero Park to derive findings. Empirical data from South African economic and housing market was also used in data analysis. Recommendation is made for future researchers to develop a hedonic pricing model to measure pre and post-announcement effect of the development and determine whether the announcement of the planned commercial property development had any effect on the houses in Bonaero Park. This resulted in findings that the announcement of the planned commercial property development at OR Tambo International Airport did not produce any positive or negative proximity effects on the adjacent residential properties. Recommendation is being made for future studies to investigate the proximity effect on residential properties once the commercial property has been developed and completed.

APPENDIXES:

Appendix A: Map showing location of the OR Tambo International Airport and adjacent existing houses.

Appendix B: House Sales Data issued by Estate Agents.

Appendix C: Spreadsheet of total number of house sales done by the 51 Estate Agent

Appendix D: Map of Bonaero Park suburb indicating Distance radiuses (1 to 3 KM).

Appendix E: Example of Linear Distance measurement for each sold house.

Appendix F: Standard Interview Questions and Themes.

Appendix G: Consent Forms.

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