

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED BOULDERS WIND FARM NEAR VREDENBURG IN THE WESTERN CAPE

Property Values, Tourism and Economic Issues Assessment Report

***Updated based on comments received from I&APs
August 2019***

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SPECIALISTS DETAILS

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Brief profile: Elena Broughton is a senior professional and the manager of the Innovation & Sustainable Development Unit at Urban-Econ. She has extensive knowledge in various fields of economic development that includes 14 years of experience in undertaking socio-economic impact assessment studies for a variety of private clients spanning the mining, manufacturing, energy, infrastructure, and retail sectors. She also acted as a peer reviewer in several socio-economic impact assessment studies and completed a few strategic socio-economic impact assessments. Her involvement in the field allowed her to develop a sound understanding of the South African environmental legislation and developmental policies and equipped her with a widespread knowledge of socio-economic implications and benefits of various new developments.

SPECIALISTS DECLARATION

I, Elena Broughton declare that--:

- » I act as the independent specialist in this application;
- » I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- » I declare that there are no circumstances that may compromise my objectivity in performing such work;
- » I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- » I will comply with the Act, Regulations and all other applicable legislation;
- » I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- » I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- » all the particulars furnished by me in this form are true and correct; and
- » I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

Urban-Econ Development Economists

Name of company (if applicable):

2.09.2019

Date:

ACRONYMS AND ABBREVIATIONS

CAGR	Compounded Average Growth Rate
DM	District Municipality
DoE	Department of Energy
EIA	Environmental Impact Assessment
GDP	Gross Domestic Product
I&AP	Interested and Affected Parties
LM	Local Municipality
MW	Mega Watt
NEA	Not Economically Active
NT	National Treasury
SAM	Social Accounting Matrix
SMME	Small Medium and Micro Enterprise
St	Saint
VAT	Value Added Tax

1. INTRODUCTION

This document is prepared by **Urban-Econ Development Economists** (Urban-Econ) in response to a request by **Savannah Environmental (Pty) Ltd** (Savannah Environmental) to undertake a **property values, tourism, and economic issues assessment study** to inform the socio-economic impact assessment undertaken by Tony Barbour for the proposed Boulders Wind Farm. The report sought to focus on the issues raised by interested and affected parties (I&APs) with regard to property values and tourism. Moreover, an analysis of potential economic benefits to be created by the project during construction and operation is undertaken.

1.1 Brief description of the project

The Vredenburg Windfarm (Pty) Ltd company proposes to develop a wind farm near Vredenburg, Western Cape. The proposed development is a wind farm with a generating capacity of up to 140 MW to be constructed and operated within a project site identified by the developer. The project is located in the Saldanha Bay Local Municipality (LM) within the West Coast District Municipality (DM) in the Western Cape. The site is located on the West Coast Peninsula and is about 10 km from the Central Business District of Vredenburg.

Following the comments received from the public and other specialists' recommendations, the revised project site for the development of the Boulders Wind Farm was reduced from ten farm portions to five farm portions as outlined on Map 1. These farm portions include:

- » Boebezaks Kraal 2/40
- » Boebezaks Kraal 5/40
- » Frans Vlei 2/46
- » Schuitjes Klip 3/22
- » Het Schuytje 1/21



Map 1: Location of proposed Boulders Wind Farm

1.2 Scope and purpose of the study

The purpose of the study is to determine the key economic parameters applicable to the study area, identify potential benefits and possible negative effects of the proposed project on property values, tourism activities, and the local economy during various the stages of the project's life cycle. The report is prepared in support of the social study and is used as an input into the Socio-Economic Impact Assessment report that is compiled by Tony Barbour.

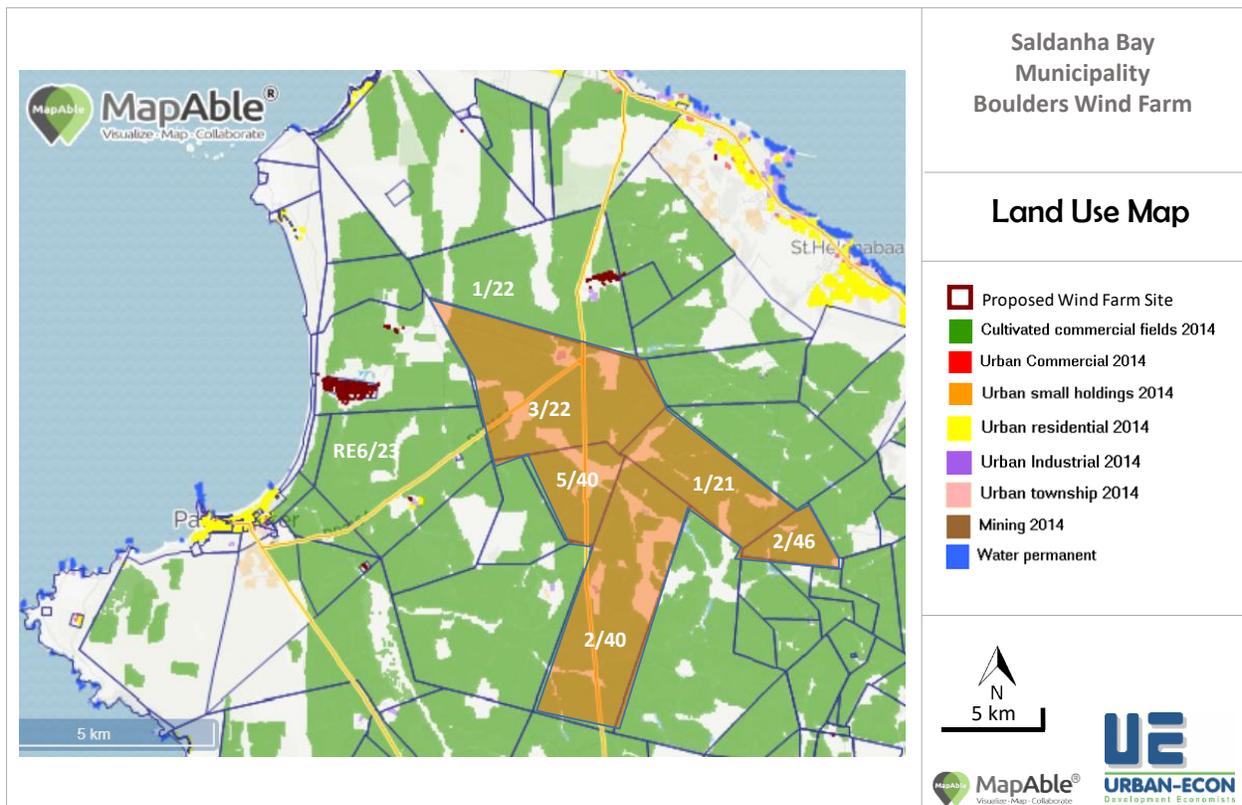
The structure and method of this analysis report is as follows:

- » Create a profile and identify the historical trends of the local economy, the tourism industry, and property dynamics in the zone of influence using secondary data
- » Review concerns raised by various Interested and Affected Parties (I&As) during numerous public engagements related to the project, which were undertaken as part of the Scoping Phase and that were received during the comment period following the EIA report submission
- » Augment the information gathered from secondary sources and gather further insight into the concerns raised during public engagements by engaging with various I&As following a structured interview approach

- » Make use of case studies to offer insight on probable effects of windfarms on property prices.
- » Identify potential negative and positive effects on the local economy, the tourism industry, and property values that might ensue during construction and operation of project given the status quo, observations made during the analysis of the historical trends, and feedback received during engagements with I&APs
- » Assess and evaluate the potential negative and positive impacts identified in terms of the local economy, tourism industry and property values
- » Provide recommendations for mitigations

1.3 Delineation of the zone of influence

As indicated earlier, the revised footprint of the proposed Boulders Wind Farm will stretch over five farm portions. Map 2 indicates the current land uses of the proposed project site and its surroundings. As indicated, all the farm portions house cultivated commercial fields.



Additional land uses identified per farm portion are outlined below.

- » Farm Schuitjes Klip 3/22 is used for sheep mining and encompasses pockets of residential and agricultural buildings (see Picture 1).



Picture 1: Aerial imagery of buildings on Farm Schuitjes Klip 3/22 (Google Earth, 2019)

- » Farm Boebezaks Kraal 2/40 is used for commercial farming and encompasses a pocket of agricultural and residential buildings (see Picture 2).



Picture 2: Aerial imagery of buildings on Farm Boebezaks Kraal 2/40 (Google Earth, 2019)

- » Farm Boebezaks Kraal 2/40 is used for commercial farming and encompasses a pocket of agricultural and residential buildings (see Picture 3).



Picture 3: Aerial imagery of buildings on Farm Het Schuytje 1/21 (Google Earth, 2019)

The potential zone of influence of the proposed project, will not be limited to the above-mentioned farm portions but will extend beyond the boundaries of the project site due to the potential environmental and socio-economic impacts. As such, the following zones of influences are delineated for the purpose of the analysis:

- » Primary zone of influence: For the purpose of the analysis of the impact on property values and the tourism industry, as well as the assessment of potential local economic impacts that could ensue from the project, the primary zone of influence is determined to be the nearby towns of Vredenburg, Paternoster, and St Helena Bay (incl. Britannica Heights).
- » Secondary and tertiary zones of influence: Economic benefits and impacts will not be limited to the site or the nearby towns only. Most of the goods and services that will be purchased for the construction and will be required for operation of the wind farm will be secured from outside the primary zone of influence and specifically from the Western Cape and further inland. Therefore, the Western Cape and the rest of South Africa are defined as the secondary and tertiary zones of influences of the proposed project from an economic perspective.

As part of the case study analysis, St Francis Bay located in the Eastern Cape is also included in the assessment to benchmark some of the trends.

1.4 Methodological approach

1.4.1 Methodology

The following paragraphs describe research and analytical techniques employed for the assessment of the impacts of the proposed project.

a) *Case study approach*

A **case study approach** was employed in order to inform the assessment of the potential effect of wind farm developments on property values and tourism. Two case studies have been selected based on their strong similarities with the proposed Boulders Wind Farm.

- » The first case study was the existing operational West Coast One Wind farm, which is located directly adjacent to the proposed project site. It is constituted of 47 wind turbines. The wind farm was approved in 2012 as part of the Renewable Energy Independent Power Producer Procurement (REIPPP) program. Project construction began in 2013 and commercial operations began in June 2015 (WindLab, 2018). The selection of this case study was motivated by the opportunity to assess the historical trends in property values and tourism flows in the local municipality and selected towns and to identify any possible cause-effect linkages associated with the development of the wind farm before 2013, during the construction period between 2013 and 2015, and after the wind farm started its commercial operations.
- » The second case study included the existing operational Kouga Wind Farm located near a popular tourism town of Saint Francis Bay in the Eastern Cape. The facility provides 80MW of capacity to the grid and includes 32 turbines. It is located next to two already operational wind farms, namely Gibson Bay Wind Farm and Tsitsikamma Wind Farm, with another wind farm - Oyster Bay Wind Farm – to be built in the near future. Kouga Wind Farm was constructed during the same period as the West Coast One Wind Farm and became operational in March 2015. Unlike the West Coast One Wind Farm case study, this case study offers perspectives of property owners and tourism effects once there is a concentration of wind farms in one area.

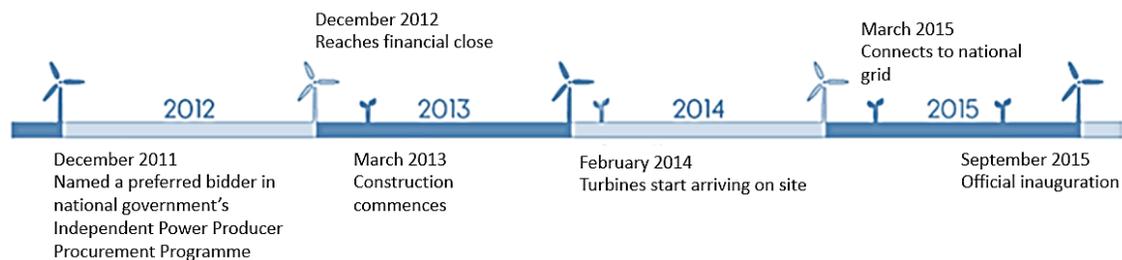


Figure 1: Timeline of Kouga Wind Farm (Kouga wind farm, 2018)

Map 3 illustrates the location of the two case studies.



Map 3: Location of wind farm case studies (Google Earth, 2018)

b) Longitudinal approach

A **longitudinal approach** was applied where property data prior to, during and post construction was analysed. The property data was extracted from Lightstone software. The purpose of this analysis was to identify any changes in the overall trends in property values relative to the ABSA property index and considering the changes in the interest rates over time. It was assumed that any notable differences between the property values and general property trends observed in the country could potentially be attributed to the local conditions. The West Coast One Wind Farm is also assumed to affect these trends.

c) Economic modelling technique

In order to estimate the direct and follow-on effects of the proposed project expenditure, an **economic modelling technique** was utilised. The modelling exercise made use of an economic model developed on the basis of the Western Cape Province's Social Accounting Matrix (SAM) updated to 2018 figures. The SAM is a comprehensive, economy-wide database that contains information about the flow of resources that takes place between the different economic agents, in this case in the provincial economy. A set of models will be developed to quantify the potential issues of the proposed wind farm during construction and operation.

The models will apply to the aspects detailed below. Key economic considerations during construction and operations:

- » Increase in production and GDP-R of the national and local economies due to capital expenditure and operations expenditure
- » Employment creation in local communities and elsewhere in the country
- » Household income will lead to the improved standard of living for households directly or indirectly benefitting from employment opportunities

1.4.2 Data gathering and consultation process

Secondary data was utilised in order to provide a substantive foundation for the study. The following secondary data sources were employed:

- » Stats SA Census, 2011
- » Quantec Research Standardised Regional Data, 1995–2013
- » Official Tourism, Trade & Investment Promotion Agency for Cape Town and the Western Cape: www.wesgro.co.za
- » West Coast accommodation information: https://www.tripadvisor.co.za/Attractions-g312653-Activities-Western_Cape.html
- » West Coast National Parks: https://www.sanparks.org/parks/west_coast/
- » West Coast Attractions: <https://www.safarinow.com/destinations/west-coast/popularattractions.aspx>
- » West Coast Accommodation: <https://www.lekkeslaap.co.za>
- » Western Cape SAM
- » FNB property index
- » Lightstone Software
- » Mapable

The study also made use of the Visual Impact Assessment report compiled by Coastal and Environmental Services (CES) in December 2018 and consulted with the Visual Impact Assessment study undertaken by LoGIS in November 2018. The economic specialist made use of the CES study for the information on the potential visual impact of the project on various sensitive receptors because the LoGIS study did not include visual sensitivity maps and assessment ratings for the revised layout of wind turbines.

To augment and supplement the property and tourism data the following tourism product owners and real estate agents were interviewed during the study:

Table 1: Key respondents interviewed

Company		Position of respondent	Area
Real estate agents			
1.	Infoprop	Agent	Paternoster
2.	Remax	Principal	St Helena Bay
3.	West Coast Properties	Agent	St Helena Bay
4.	Rawson	Agent	St Helena Bay
5.	Allen's Real Estate	Agent	Vredenburg
6.	Chas Everitt	Agent	Vredenburg
7.	Remax	Agent	St Francis Bay
8.	Harcourts	Agent	St Francis Bay
9.	Pam Golding Properties	Agent	St Francis Bay
Tourism product owners			
1.	Ouma se Kombuis	Co-owner	Paternoster
2.	Oystercatcher's Haven	Manager	Paternoster
3.	Paternoster Hotel	Reception manager	Paternoster
4.	Statkis Restuarant	Manager	Paternoster
5.	Smuggler's cottage	Manager	Paternoster
6.	The Square Spoon	Owners	Paternoster
7.	Blikkie Pizzeria	Manager	Paternoster
8.	Goblin's Inn	Manager	St Helena Bay
9.	Saint Helena Hotel	Reception manager	St Helena Bay
10.	Graze Neighbourhood Eatery	Owner	Vredenburg
11.	Anchorage Guesthouse	Owner	Vredenburg
12.	Vredenburg Boutique Hotel	Manager	Vredenburg

The on-site interviews in the Western Cape took place between the 23rd and 25th of May 2018. Telephonic interviews with the real estate agents in the St Francis Bay area took place on the 1st of June 2018. It should be noted that the following parties who were approached for discussions indicated their disinterest in engaging with the specialist on the matter:

- » Golden Key Guesthouse (Vredenburg)
- » Gilcrest Place (Paternoster)
- » Lew Geffen Sotheby's International Realty (Paternoster)
- » Oyster Catcher's Lodge (St Helena Bay)

1.5 Assumptions and Limitations

- » The tourism and the property market are subject to many forces and a single factor such as the development of a wind farm would not be the only aspect affecting the dynamics of these sectors.

- » The secondary data sources used to compile the socio-economic baseline (dynamics of the economy), although not exhaustive, can be viewed as being indicative of broad trends within the study area.
- » It is assumed that questions asked during the interviews for data collection were answered accurately and truthfully by respondents and to the best of their abilities and knowledge. The attitudes of the respondents towards the project is assumed to remain reasonably stable over the short- to medium-term.
- » During the time of the visit to the study area, due to the low season, the areas was devoid of tourists who could be interviewed with respect to their perceptions of wind farms. This shortcoming was mitigated by making use of tourism related data for each town in the primary zone of influence sourced from WESGRO, which was further augmented with the information obtained during interviews with tourism product owners.

2. AN ASSESSMENT OF POTENTIAL WIND FARM EFFECTS ON TOURISM

The purpose of this chapter is to provide an overview of the tourism industry size, composition, and trends in the zone of influence and identify the factors that impacted on the trends historically. The focus of the assessment is to try and determine whether the development of the existing West Coast One Wind Farm has had any negative impact on the tourism numbers and the revenue derived by the local tourism industry. This insight will inform the assessment of the potential effect that the proposed Boulders Wind Farm may have on the local tourism industry in the future.

2.1 Tourism industry overview in the zone of influence

Historically, tourism has been a driving force behind the economic development in this region of the Western Cape. In essence, the local tourism sector has deep roots in the region and has engrossed itself in almost every aspect of the local populace.

The key tourism significance of the proposed wind farm relates to its strategic location within the Cape West Coast Peninsula. The regional road, R399, provides the most direct link between the towns; therefore, it is likely that the proposed Boulders Wind Farm will be visible to residents and tourists travelling on this road to the area.

Key tourism attractions for this area include the beach fronts hosting numerous aquatic species, the nature reserves, a wind farm and the natural visual aesthetic of the area. Catering facilities, golf estates, beauty spas, and fun parks additionally drive the attraction of tourists into the area and contributes to the local tourism economy. Therefore, in support of these, accommodation and catering business continuously thrive. In the August and September period, the wildflower season attracts numerous tourists into the region.

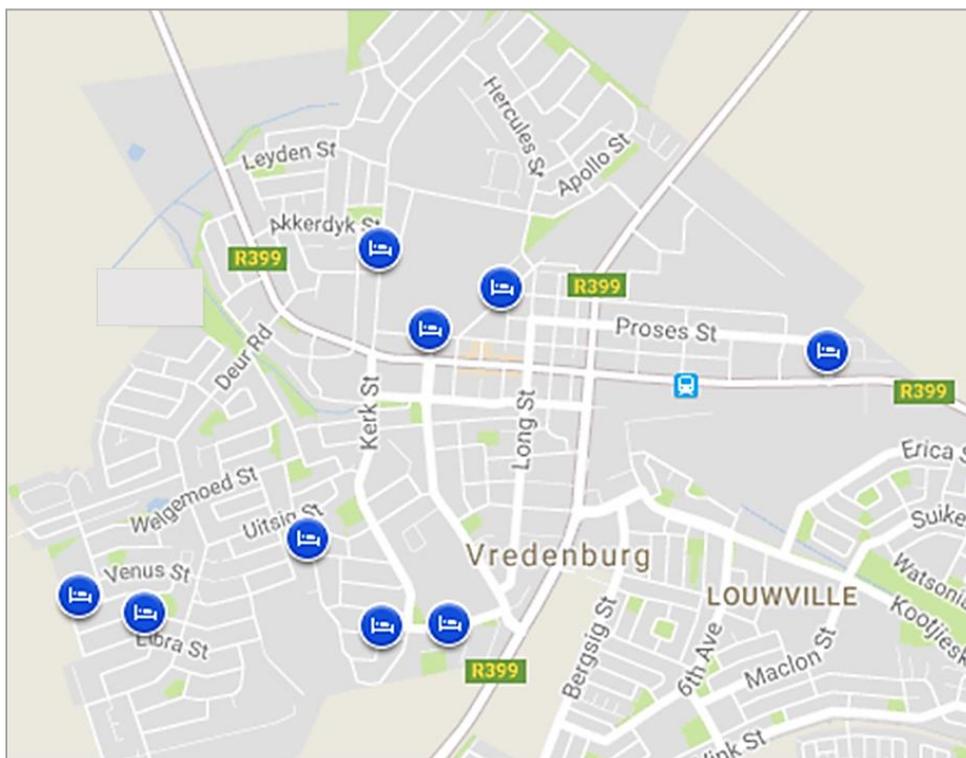
2.1.1 Tourism profiles of the Primary Zone of Influence

a) Vredenburg

Vredenburg is the administrative centre and the West Coast's commercial hub for the surrounding rural communities of wheat, sheep, and dairy farmers; it also has a number of fish factories and outlets.

Although Vredenburg is located inland, it is ideally situated as a base for day trips to the surrounding West Coast towns and attractions. Within 40 km of Vredenburg are both the West Coast Fossil Park; the beaches of Paternoster; and the Cape Columbine Nature Reserve. In addition, in close proximity are Langebaan and the West Coast National Park, for fauna and flora, as well as Jacobsbaai and St Helena Bay.

The diagram below shows the accommodation offerings in Vredenburg, which are modest when compared to those of St Helena Bay and Paternoster.



Map 4: Accommodation offerings in Vredenburg

WESGROW statistics of tourism visitation for the town of Vredenburg based on 837 responses suggest that the town is mostly visited by domestic tourists on a day trip that is taken by leisure. Business tourists also comprise a significant minority of visitors.

Table 2: Vredenburg tourism statistics for 2018

Indicator	Stats for 2018
Visitors	Overseas: 3.7% (Top: UK, Germany, Netherlands) Domestic: 96.3% (Top: Western Cape Gauteng, Eastern Cape)
	Overnight: 2.9% Day visitors: 97.1%
Purpose	Leisure: 51.1% Business: 28.7%
Profile:	Age: 38-50 (60.9%) Alone: 73.0% Pairs: 22.0%

(WESGRO, 2018)

b) Paternoster

According to the Cape West Coast visitor trends, as published by WESGRO, Paternoster was one of the busiest towns in the region with an increase in tourist flow recorded by the tourism

offices in 2016. The main tourism activities in Paternoster include whale watching and a visit to the Cape Columbine Nature Reserve. This reserve boasts the last manually controlled lighthouse to be built in South Africa. It is characterised by a specific style of architecture that offers a picturesque view of the residential area. Everyday life in Paternoster is still very much associated with the sea and the fishing industry, but it is to this historic fishing village that the visitors come to in order to relax.

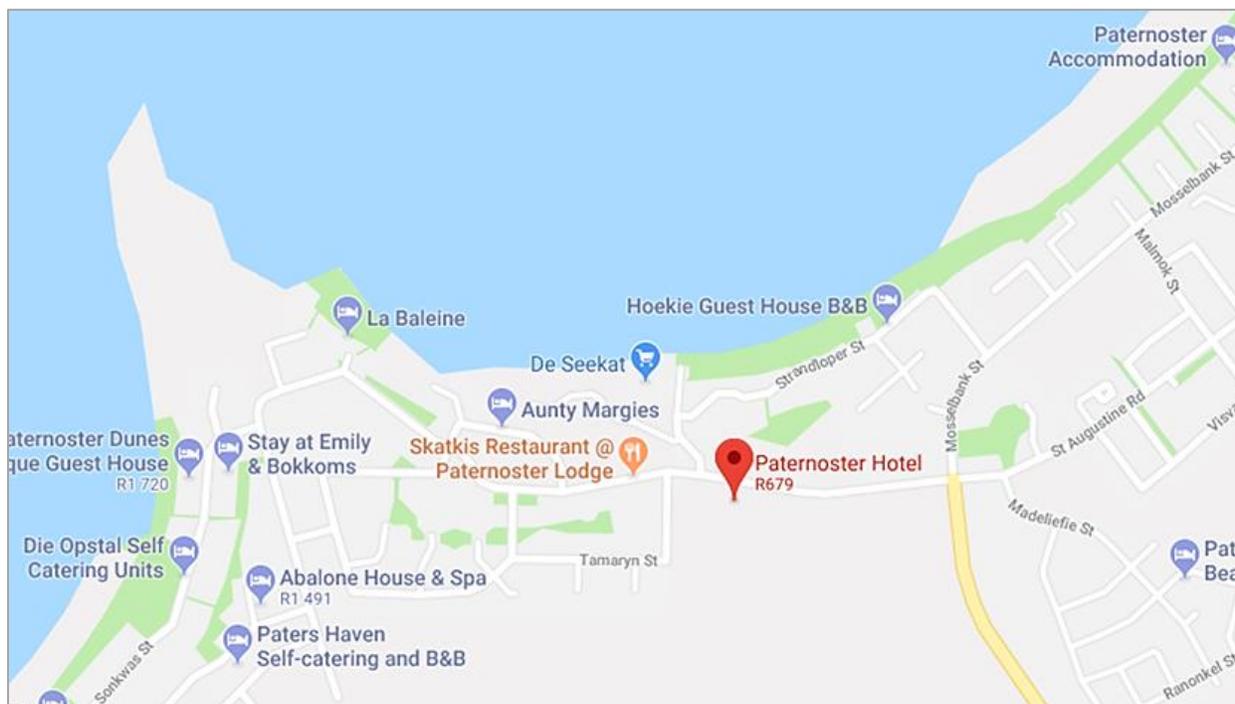
As per the 2018 visitor trends, the majority of the visitors to Paternoster were domestic visitors (64.6%), of which most (61.5%) came from within the Western Cape, while 20.7% were from Gauteng. The international market was made up of mostly Germans (33.5%) and tourists from the United Kingdom (22.3%), which appears to be the same trend as that observed in 2016 (WESGRO, 2018; WESGRO, 2017). Tourists come to Paternoster mainly for leisure with a small percentage coming for events such as Paternoster Spring Crayfish Festival (3 000 visitors) taking place in September, Paternoster Crayfish Wharf Beer and Mussel Festival (500 visitors) taking place in October, Paternoster Crayfish Wharf Bubbly and Oyster Festival (500 visitors) taking place in November and Paternoster Fisherman’s Festival and Crayfish Wharf Christmas Market that both take place in December and attract 500 visitors each. Tourists stay mainly in self-catering accommodation and guesthouses. In 2016, the majority of guests spent between R500 and R1 000 on accommodation, and the same amount was also spent on daily activities (WESGRO, 2017). Lastly, most of the tourists visiting Paternoster are travelling in pairs.

Table 3: Paternoster tourism statistics for 2018

Indicator	Stats for 2018
Visitors	Overseas: 35.4% (Top: UK, Germany, Switzerland) Domestic: 64.6% (Top: Western Cape Gauteng, KwaZulu-Natal)
	Overnight: 2.9% Day visitors: 97.1%
Purpose	Leisure: 95.8% Events: 1.7%
Profile:	Age: 38-50 (42.9%) Alone: 12.3% Pairs:71.7%
Length of stay	2 nights: 15.8% 1 night: 7.3%
Type of accommodation	Self-catering: 22.2% Guesthouse: 6.3% Hotel: 5.6%

(WESGRO, 2018)

The diagram below (Map 5) shows an extensive range of accommodation available in Paternoster, which is indicative of the popularity of this town as a tourist destination. It should be noted though that the tourism industry in Paternoster, as well as other nearby coastal towns is very seasonal as will be discussed further in this section.



Map 5: Accommodation offerings at Paternoster

c) *St Helena Bay*

St Helena Bay is a principal fishing centre. It is well known for its snoek, especially during the winter months. Southern right whales can be sighted at the bay during the months of June to November (which has been identified as a low visitor season). The bay is additionally popular for dolphins with schools of over 1 000 dolphins having been sighted at times. In addition, the bay hosts a variety of marine birds, penguins, and large colonies of seals.

Visitor trends for 2016 show that the majority of visitors to St Helena Bay were overnight visitors (91%) with an average stay of two nights. Visitors were led by the domestic market, which contributed 94% of the total number of visitors to the bay. The majority of the visitors were from Western Cape followed by Gauteng. International tourists, who make up a relatively small number of tourists in the area, were predominantly from Germany and Namibia. The majority of the tourists visited the beaches and went for scenic drives and as will be discussed later, tend to visit during peak seasons only. Self-catering accommodation and guesthouses (see Map 6 above) were the preferred form of accommodation used by the tourists, where between R500 and R1 000 was spent per day (WESGRO, 2017).



Map 6: Accommodation offerings at St Helena Bay (TripAdvisor LLC, 2017)

d) St Francis Bay

St Francis Bay is situated midway between Port Elizabeth and Knysna in the Eastern Cape Province. It originated as a fishing camp. It is characterised by a specific style of architecture that offers a picturesque view of the residential area. The tourism offerings are centred on the views, beaches and the canal system (Map 7). Tourism is one of the key economic drivers in the Eastern Cape and for this specific area. The Province accounted for 4.4% of South Africa's international tourists in 2014 and is dominated by domestic travellers. In addition, Cape Saint Francis and Oyster Bay are coastal tourism areas to the west of St Francis Bay.



Map 7: Accommodation offerings in St Francis Bay

2.1.2 Tourist visitation overview

Leisure is the dominant reason for visits to the primary zone of influence. This attests that the tourism offerings in the area have a notable attraction for leisure seekers. The tourism offerings receive a large number of customers annually, mostly during peak seasons. The peak seasons in the primary zone of influence include the Christmas holiday season, Easter holidays, public school holidays and the wildflower season mainly between August and September. The rest of the year (April to August and November) are relatively quiet seasons. In fact, a number of interviewed restaurants have confirmed that they close business between mid-May and mid-July due to the lack of visitors during this time. As evidenced during the site visit that took place at the end of May 2018, the visitor's visibility was drastically low.

About 46% of tourism product owners interviewed stated that they have experienced a **decline in the number of visitors** in the past five years. They attribute this to:

- » The increase in cheaper alternative accommodation (Airbnb)
- » Drought plaguing the Western Cape
- » Deteriorating quality of municipal services
- » For restaurants, less people eat out due to a self-catering preference (braais etc.) and changed spending patterns (less spending on eating out)

A quarter of the tourism businesses interviewed assert that they experienced **an increase in the number of visitors** in the past five years. The reasons for this increase, they argue, are:

- » Good ratings on travel websites
- » Competitive prices
- » Consistency in satisfactory service offering
- » Recent developments in the area attracting developers and professional staff

The remaining **29% tourist product owners interviewed argue that the visitor statistics have remained the same in the past five years**. Therefore, no external factors were identified during the interviews which negatively or positively disturbed the number of visitors they receive.

2.1.3 Tourism business performance overview

Figure 2 below demonstrates the findings that half of the tourism related businesses interviewed experienced a decline in revenue in the past five years. This correlates to the declined visitation numbers discussed above. A mere 16% of interviewed tourism product owners have remained stable in earnings while a third experienced an increase in earnings in the past five years.

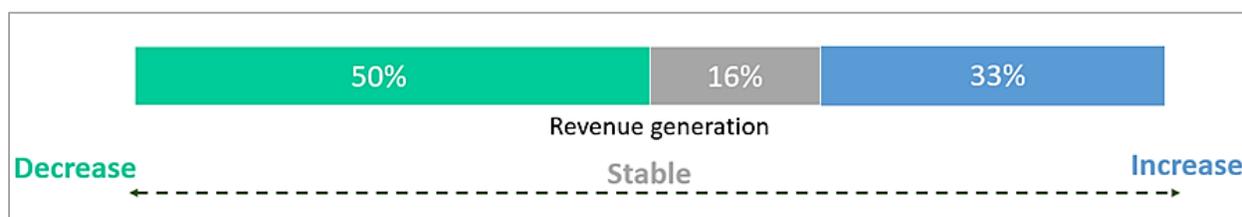


Figure 2: Revenue generation trends in past five years

The drivers of the trends are numerous. For holiday homes, notable reasons for the decrease in revenue include the Airbnb proliferation in the area, offering cheap and alternative forms of accommodation and therefore increasing options for visitors and competition for existing business.

In terms of catering and restaurants, fine-dining establishments are declining while middle-level dining is on the increase. This further attests the changed spending patterns of visitors. Furthermore, restaurant owners commonly assert that self-catering offerings has a negative effect on their business, which includes the Airbnb establishments. Nonetheless, there have been four new restaurants since 2015, increasing the number of restaurants in Paternoster to 18. Furthermore, accommodation has also witnessed increased development. This is indicative that not all businesses are experiencing the same effects.

The new establishments in tourism offerings could be an indicator of the demand that is not met. The accommodation sector is however saturated. The outlook for the local area in terms of the tourism sector is more positive than negative:

- » Two thirds of the interviewed respondents do not have any expansion nor down-scaling plans for the near future, while
- » A third have plans to upgrade and up-scale business, for amongst other reasons, to increase capacity and appeal to a greater market.

2.2 International literature review

In order to augment the insight into the potential impacts of wind farms on tourism, a review of literature have been undertaken that specifically focused on examining the impact of onshore wind farms on tourism in areas that are generally associated with high visual sensitivity to man-made infrastructure. The examined literature was randomly selected and included the impact of wind farms on tourism in selected areas of UK (2014); USA (2013); Scotland (2008); Portugal (2016); and Ireland (2012). The following table summarises the key insights gathered from the review of the research undertaken in the above-mentioned areas.

Table 4: Summary of the reviewed literature

Area	
The impact of wind farms on tourism in New Hampshire, USA (Polecon Research , 2013)	
Area	» New Hampshire, USA
	

<p>Left: https://www.flickr.com/photos/iberdrola/14280519784/</p> <p>Middle: https://ebcne.org/event/ebc-wind-energy-site-visit-iberdrolas-lempster-wind-project/?instance_id=</p> <p>Right: https://www.iberdrola.com/press-room/news/detail/iberdrola-begins-advanced-development-at-its-wild-meadows-wind-farm-new-hampshire-5963060020131003</p>	
Study completion and authors	<ul style="list-style-type: none"> » Study completed in 2013 » Authors: Polecon Research
Methodology	<ul style="list-style-type: none"> » Empirical evidence of introduction of wind farms in the area » Impact of tourism activity is measured before and after a single wind farm put into operation in November of 2008 in Lempster, Sullivan County, New Hampshire
Tourism overview	<ul style="list-style-type: none"> » Visitors to New Hampshire travel to the area for vacation and visiting friends and family, followed by outdoor recreation. » Sightseeing, scenic drives, beaches and national park are among the most common activities reported by tourists
Key findings	<ul style="list-style-type: none"> » Operation of the wind farms started just after the onset of the financial crisis and the US entered recession. » No significant difference in the rooms and meals growth rate, as well as tourism employment, in the Lempster Wind region compared to other regions, after the project was commissioned, was observed, which suggests "that any impacts of the project have been so small as to not be visible in the data" » "Anecdotal information obtained as the result of Iberdrola's presence in Lempster suggests that the Lempster wind farm has increased the level of interest in the town and contributed to increased visits." » There has been a large increase in attendance and camping revenues at state parks closest to Lempster Wind, indicating that "visitors seeking natural and recreational amenities in the region did not avoid the parks in response to the presence of Lempster Wind in the region".
<p>Evolution of the impacts of onshore wind farms on tourism on Northumberland, UK (Northunbria University Newcastle, 2014)</p>	
Area	<ul style="list-style-type: none"> » Northumberland, UK



Left: <https://www.chroniclive.co.uk/news/north-east-news/northumberland-wind-turbines-effect-tourism-8959516>

Right: <https://www.chroniclive.co.uk/news/north-east-news/northumberland-wind-farm-company-snaps-9686608>

Study completion and authors	<ul style="list-style-type: none"> » Study undertaken in 2014 » Northumbria University, Newcastle
Methodology	<ul style="list-style-type: none"> » Desktop research, online surveys and focus group » Perception focus – not historical evidence based
Tourism overview	<ul style="list-style-type: none"> » “Tourism is very important to Northumberland.”
Key findings	<ul style="list-style-type: none"> » Desk-based meta-study revealed that “there is no empirical evidence to-date that wind farms/turbines have a significant impact on tourism either positively or negatively in UK settings.” » The results of the online survey of <u>potential visitors</u> revealed: “The impact of additional wind farms on visitor numbers to Northumberland is present but the majority feel that wind farms are not having an influence on their likelihood to visit the area...For those whose decision to visit would be affected this was primarily because of the impact on scenery and because they are unattractive but overall 61% of the total sample agree that a correctly sited wind farm does not ruin or intrude on the landscape.” » The results of the online survey of tourism product owners revealed: “that 63% of respondents said that wind farms had not impacted upon their businesses. However, the remaining 37% who said that they experienced negative effects is a significant minority...Concerns about negative impacts on landscape and scenery and the effects of this on tourists are uppermost in these responses.” » “The focus group with twelve people representing the voice of concern regarding the impacts of wind farms on tourism in Northumberland revealed a very deep scepticism of any voice

	<p>or research that indicates wind farms are either neutral or beneficial in regard to tourism because, as this opinion has it, this does not square with day to day, real world experience of Northumberland. This is particularly the case regarding certain localities.”</p>
<p>The economic impacts of wind farms on Scottish tourism (Moffat Centre, 2008)</p>	
Area	<p>» Caithness and Sutherland; Stirling, Perth and Kinross; The Scottish Borders; and Dumfries & Galloway</p>
	
<p>Left: http://www.caithness.org/fpb/2013/august/gallery.php?gallery=8&image=36 Right: https://www.geograph.org.uk/photo/2032604</p>	
Study completion and authors	<p>» Completed in 2008 » Moffat Centre, Glasgo Caledonian University, ad Cogentsi</p>
Methodology	<p>» Set to determine the potential number of tourists to be affected, reaction of affected tourists, economic impact of reactions » Focus on replacing myth with evidence and providing policy guidelines for future development » Four case study areas selected with scenic landscape and high tourism importance » Person-to-person surveys of 380 tourists with likelihood of seen a wind farm while visiting the area » Internet survey of current and potential tourists – 600 from UK and 100 from US</p>
Tourism importance	<p>» “Scottish tourism depends heavily on the country's landscape, with 92% of visitors stating that scenery was important in their choice of Scotland as a holiday destination, the natural environment being important to 89% of visitors (Tourism Attitudes Survey 2005).”</p>
Key findings	<p>» Person-to-person surveys: ○ “Three-quarters of people felt wind farms had a positive or neutral impact on the landscape”</p>

	<ul style="list-style-type: none"> ○ "Overseas visitors seemed to be more positive about wind farms than domestic tourists" ○ "Respondents that had seen a wind farm were less hostile than those who had not" ○ "A significant minority (20% to 30%) of tourists preferred landscapes without wind farms. However of these only a very small group were so offended that they changed their intentions about revisiting Scotland." » Internet survey: <ul style="list-style-type: none"> ○ There is perception that "turbines are as prevalent in areas designated as areas of natural beauty as they are in other non-scenic parts of the country." ○ "Tourists are generally unaware of attempts to keep wind farms away from the most scenic areas" ○ "A much higher percentage of respondents indicated that they would not visit an area if a wind farm was constructed (17.8%) than was found in the intercept survey...which is indicative of the level of negative feeling some people have towards wind farms" ○ "Most people ... appear to believe that, from the hotel bedroom, it is better to face an open hillside, rather than a wind farm. The value of the view from a bedroom "was seriously eroded by wind turbines, pylons and telegraph poles". ○ "There appears to be a diminishing marginal loss of value associated with increasing size of wind farms. In effect, it appears that once where has been an intrusion into the scenery, the effect on the value of the landscape of expanding the size is relatively small." » The investigation into intentions of visitors revealed that "the vast majority (93-99%) of those who had seen a wind farm suggested that the experience would not have any effect. Indeed there were some tourists for whom the experience increased the likelihood of return rather than decreasing it." » "Scenery clearly has value" and for the four case study areas "an estimate of the value lost is between a maximum of some 23.2% of the room price (UK values only for extended farms) and a minimum of 17.1% (wind-farm basic 90%UK, 10%US) with a mean of 19.7%.. Taking into account the substantial individual
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	variance into account our confidence range would be between 15% and 25% and these form the bounds for our sensitivity analysis.”
Visitor attitudes on the environment – Wind Farms (Failte Ireland, 2012)	
Area	» Ireland
	
(Failte Ireland, 2012)	
Study completion and authors	<ul style="list-style-type: none"> » Completed in 2012, but presents an update on research that took place in 2007 » Prepared by Millward Browne Landsdowne on behalf of Fáilte Ireland
Methodology	» Surveys were undertaken with holidaymakers at various tourist offices and visitor attractions around the country and a similar size and mix of domestic and overseas visitors was included.
Tourism importance	<ul style="list-style-type: none"> » “Ireland’s scenery has been a cornerstone of international tourism marketing campaigns for decades. In 2012, 91% of overseas holidaymakers to Ireland rated scenery as an important part of a destination with natural/unspoilt environment also rated highly at 91%. The future sustainability of Ireland’s tourism industry is, therefore, inextricably linked to the maintenance of the character and scenic qualities of the Irish landscape.” » “Wind farms tend to be located in upland areas and areas close to the coast where the wind speeds are greatest and these areas also contain some of our most valuable scenic landscapes”
Key findings	<ul style="list-style-type: none"> » “Awareness of wind farms in 2012 is very high amongst visitors to Ireland, with over 95% of visitors claiming to have seen a wind farm before” » “The 2007 research found that the majority of visitors felt that wind farms had either no impact (49%) or a positive impact (32%) on the landscape, whilst 17% felt it had a negative impact. The 2012 research indicated an increase in the polarisation of opinion – with increased positive (47%) and negative responses

(30%) and less neutral responses (23%). It is notable that **those interviewed who did not see a wind farm during their trip held more negative perceptions and opinions on wind farms** to those that did.”

- » “The type of landscape in which a wind farm is sited can have a significant impact on attitudes. Although 21% feel that wind farms have a fairly or very negative impact on sight-seeing, this **figure increases substantially for wind farms in coastal areas (36%) and is even higher from accommodation (38%).**”
- » “Coastal areas (91%) followed by mountain moorland (83%) and fertile farmland (81%) continue to be rated as the most scenic, and unsurprisingly resistance is greatest to wind farms in these areas. For instance, there was a **greater relative negativity expressed about potential wind farms on coastal landscapes (40%), followed by fertile farmland (37%) and mountain moorland (35%).**”
- » “Seven out of 10 (or 71%) of visitors claim that potentially greater numbers of wind farms in Ireland over the next few years would have either no impact or a positive impact on their likelihood to visit Ireland. Of those who feel that the potentially greater number of wind farms would impact positively on future visits, the key driver is support for renewable energy, followed by potential decreased carbon emissions. There has been a slight increase from 21% to 24% in those who say it would impact negatively on their likelihood to visit again due mainly to the negative aesthetics of wind farms followed by preferences for alternative renewable energy sources.”
- » **“Those who have not seen a wind farm on this visit have more negative opinions regarding the theoretical impact of a wind farm on their sightseeing compared to those who have actually seen one.** This suggests there are some negative associations with wind farms that in reality do not materialise for those who have seen them.”
- » “Given the scenario where more wind farms are to be built in Ireland in the future, the most widely held view is that this will not impact their likelihood to visit the area again, with a slightly greater majority saying that this would have a positive rather than a negative impact.”

Wind farms and rural tourism: A Portuguese case study of residents’ and visitors’ perceptions and attitudes (Silva & Delicado, 2017)

Area	»
	
<p>Left: https://juliedawnfox.com/legend-sortelha-portugal-2/ Right: (Silva & Delicado, 2017)</p>	
Study completion and authors	<ul style="list-style-type: none"> » Completed in 2016 » Researched and written by Silva, L. and Delicado, A.
Methodology	<ul style="list-style-type: none"> » Set of semi-structured interviews conducted in 2012, 2013, and 2016 comprising of 21 residents and 68 visitors » Interviews focused on the respondents' perceptions and attitudes towards wind energy in Portugal and Sortelha
Tourism overview	<ul style="list-style-type: none"> » "Sortelha is a village located in a mountainous area, with stone outcrops of granite, in the municipality of Sabugal, some 30 km from the city of Guarda in central eastern Portugal, close to the border with Spa." » "Sortelha includes two separate places: the walled village, a designated built heritage site, and the outskirts of the village, where the great majority of its about 150 permanent residents live." » "The main sources of income for local families are employment in public or municipal administration, small-scale retail, money transfers from pension and retirement payments, and tourism, complemented by a small-scale agriculture for family consumption. Today, tourism occupies 12% of residents – who work in tourist accommodations (8 units, providing a total of 19 bedrooms), restaurants (2), cafés/snack-bars (4), the tourist office, handicrafts, or home-made food products, but also relies on the built heritage site and its rural setting/landscape."
Key findings	<ul style="list-style-type: none"> » Two wind farms were constructed in 2010-2011 – 39.1 MW and 18.4 MW. » The viewpoint of residents: <ul style="list-style-type: none"> ○ "All residents interviewed were supportive of wind energy generation and utilisation in Portugal...They did, however, show conflicting perceptions and attitudes

	<p>about the siting of the currently existing wind energy facilities in Sortelha. Most of them (14 of 21) declared themselves against it, though only a few (3) have joined the aforementioned opposition movement.”</p> <ul style="list-style-type: none"> ○ “...according to these residents, in contrast to their initial expectations and fears, the wind turbines do not exert a negative outcome on tourism demand, including on return visits. “Tourists continue to come to Sortelha” is a common refrain in their discourses. However, residents have complained that the wind turbines have a detrimental impact on the tourist experience, because of the contrast between the modern wind turbines and the medieval architecture.” ○ “In contrast, a third of the residents interviewed expressed support for the existence of wind farms in Sortelha, with no concerns about it. What is significant is that they all are involved in the wind farms, either directly, as occurs with the local promoter and the owners of the rented land (3), or indirectly, as happens with their relatives (3).” <p>» The viewpoint of visitors:</p> <ul style="list-style-type: none"> ○ “Virtually all respondents reported having seen the wind farms during their visit to the village, considered them noticeable or quite noticeable and believed that they do not constitute a threat to the physical preservation of the heritage site. But most of them (42 of 68) mentioned concerns with the visual impact, particularly the perceived incongruity between the landscape on site and the wind turbines.” ○ “...these negative perceptions of the presence of wind turbines at the destination were counterbalanced by the positive view of wind energy as a “clean”, “environmentally friendly” electricity. Indeed, almost all visitors declared themselves in favour of wind energy generation and utilisation in Portugal, and most of them (43 of 68) accepted the presence of wind turbines in Sortelha.” ○ “Moreover, a clear majority of the visitors, including most of the returnees, stated that they were unaware of the presence of wind farms before arriving in the village. In addition, almost all of them believed that wind turbines do not interfere with their choice of destination, either
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	<p style="text-align: center;">positively (attraction effect) or negatively (avoidance effect)."</p> <p>» "This study has provided empirical evidence from Portugal that wind farms do not make heritage-based rural tourism destinations less attractive. Visitors' perceptions may be considered partly critical, but they have no consequence for the final assessment not to visit the village of Sortelha because of the wind farms. In comparison, the residents' attitudes vary according to the perceived benefits and involvement in the decision-making processes."</p>
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The review of the above-mentioned articles and reports suggests that there is a conflict between public attitude towards clean energy in general and opposition for development of wind energy facilities in the localities that are endowed with scenic landscapes used to attract visitors to the area. Moreover, there appears to be a divergence of views between local residents and tourists, as well as among these two groups of stakeholders which in turns is directly linked to personal attitude towards wind farms and perceptions.

The negative public attitude towards wind energy projects is generally characterised by "not in my backyard" (NIMB) syndrome (Karydis, 2013). Changes to the landscape character, noise, land devaluation and impact on birds are usually cited as the most common impacts of wind farms augmented by limited job creation potential and negative impact on tourism (Karydis, 2013). Despite the various negative impacts that are usually associated with wind projects, negative impact on tourism appears to be a recurring motivator for campaigns against wind farms (Silva & Delicado, 2017).

The concerns of the public with respect to the impact of wind farms on tourism stems from the attitude and perceptions by the same public that wind farms adversely impact on the valuable tourist resources or products that derive their value from visual dimension of the area and specifically the landscape (Silva & Delicado, 2017). As stated in 2008 Moffat Report (2008), "scenery clearly has value" but the studies into relationship between tourism and wind farms continue to show conflicting results. Some studies show that wind farms "may have" impact on tourism, while others reveal that tourism is innocuous or in some instances even benefiting from wind farms (Silva & Delicado, 2017). The studies presented above indeed collaborate this observation:

- » The investigation into impact of wind farms on tourism in New Hampshire, USA revealed that the development of wind farms had no negative effect on tourist visitations; moreover, it appears it had "increased the interest in the town" and lead to the increase in revenues derived by the national parks located in close proximity to Lempster Wind Project location (Polecon Research , 2013). Moreover, it was stated that "visitors seeking

natural and recreation amenities in the region did not avoid the parks in response to the presence of Lempster Wind” (Polecon Research , 2013).

- » The investigation into the impact of wind farms on Northumberland (UK) tourism revealed that the majority of potential visitors’ decision to visit the area is not affected by the presence of wind farms in the area in Northumberland (Northumbria University Newcastle, 2014). However, tourists who generally perceive wind farms to be unattractive also believe these to negatively impact the scenery and would therefore be deterred from visiting an area. The potential negative impact on visitation was also collaborated by the tourism product owners with a significant minority pointing to some negative effects on their businesses (Northumbria University Newcastle, 2014).
- » The 2008 Moffat Report (2008) investigating the impact of wind farms on tourism in four Scottish regions pointed to a substantial individual variance of current and potential tourists’ attitude towards wind farms and the effect thereof on their decision to visit the area. It was revealed though that the majority of tourists are either positive or neutral to wind farms’ impact on natural landscape; however, a significant minority remained to be objecting to seeing wind farms (Moffat Centre, 2008). Importantly though, a very small majority would actually change their decision to re-visit the area (Moffat Centre, 2008). The study also determined that tourists who have seen wind farms before are “less hostile” and objecting to their presents in natural landscape than those who have not (Moffat Centre, 2008). Overall, the study estimated that the potential loss of value of tourism in the area could be around 19.7%, which is also associated with a very low confidence level of 15% to 25% (Moffat Centre, 2008)
- » The investigation into the impact of wind farms on tourism in Ireland (Failte Ireland, 2012) also revealed that about 30% of visitors felt that wind farms were associated with a negative impact and about a quarter of visitors would be impacted by the presence of wind farms either positively or impacted. Noteworthy is that tourists who have not seen wind farm before were more likely to have a negative attitude towards it than those who have seen it (Failte Ireland, 2012).
- » The last case study review – the impact of wind farms on the historical village of Sortelha in Portugal – exposed further differences in views and opinions on wind farms’ impacts on tourism. While significant proportion of local residents of the village objected the development of the wind farms, they later confirmed that both new and return visitors continued coming to the village (Silva & Delicado, 2017). They did complain though that experience of tourists was detrimentally altered (Silva & Delicado, 2017). Visitors to the village acknowledged that wind farms do have a noticeable presence, which negatively impacted on the visual aesthetics of the place; however, this alteration in the scenery did not “interfere with their choice of destination” (Silva & Delicado, 2017).

The conclusion that can be drawn from the above and from other literature reviewed is as follows:

- » Firstly, scenery has a value and attractive landscapes and natural beauty are important factors for tourists visiting a specific area.
- » Secondly, the attitude towards wind farms either positive or negative does not always translate into action, i.e. a negative attitude towards wind farms does not imply that a tourist will not visit or come back to the area. Therefore, the actual losses of tourists, if any, are usually considerably smaller than the share of people with negative attitude towards wind farms.
- » Thirdly, significant majority of tourists support the use of wind energy to generate “clean” electricity and they appear to be even more in favour than wider public of alternative energy sources. Some tourists, though, do have negative attitude towards wind farms but not everyone will be deterred by it from visiting an area. On average, significant minority (25%-35%) have a negative attitude towards wind farms, but it varies with the age.
- » Fourthly, local residents are more likely to have negative perceptions and attitude towards wind farms than tourists due to the NIBY syndrome. This is particularly the case for those residents or stakeholders who are not involved and benefiting from the project in any form or shape.
- » Fifthly, overall public opinion with regard to the negative impacts of wind farms on tourism is higher during the planning stage and considerably lower during the implementation stage (Karydis, 2013; Aitchison, 2012). This is also collaborated by the fact that tourists and local residents who have not seen wind farms before are more likely to have negative perceptions about wind farms than those who have experienced them already. As stated by Aitchison (2012), opposition towards wind farms can fall markedly after they are developed and in operation.

From the above it can be surmised that it cannot be ruled with confidence whether wind farms have or do not have a negative impact on tourism, but those studies that pointed to the possible negative effects report marginal and not detrimental impact on tourism (Aitchison, 2012; Moffat Centre, 2008; The Tourism Company , 2012). It appears that many other factors such as the size and range of wind farms, the demographics of tourists (families with kids are more accepting of wind farms), the landmarks and other physical and environmental attributes of the destinations all contribute to the decision of tourists to visit or re-visit an area. One trend that seems to be common though is that the outcry against wind farms is generally considerably greater during the pre-construction stage than during operations suggesting that initially perceived negative impacts to be associated with wind farms do not always come to fruition.

2.3 Effects of the West Coast One Wind Farm on tourism

All tourism product owners, who were engaged with during the site visit, argued that the **West Coast One Wind Farm did not have an effect on their business and tourism at**

large. In addition, **none of the owners received any complaints about the wind farm from customers.** Others have noted that some **international visitors particularly commented that wind energy facilities were good for energy security but bad for the environment.**

Interviewed product owners further noted that the initial landscape change created a 'visual shock' but currently blends with the environment and is not obtrusive. This corroborates the literature review findings that indicated a greater negative attitude toward wind farms during the pre-construction phase than during operations and clearly shows that in most instances the initial negative perceptions of the interviewed product owners towards wind farms have improved after the project was completed.

It was also indicated that some businesses benefitted from the development of the wind farm as they hosted the West Coast One Wind Farm employees for a notable duration (11 weeks). Considering that the tourism sector in the area is highly seasonal, such benefits could smooth the demand for accommodation and provide security of income for product owners for a temporary period.

2.4 Potential effect of the proposed Boulders Wind Farm on tourism in the area

The region remains well distinguished as a tourism area. Visitor numbers and revenue has decreased for the majority of businesses interviewed. The key causes for the declining performance, as derived from interviews with tourism facilities' owners, were the drought experienced in 2017/2018, increased competition, and the declining purchasing power of tourists that negatively impacted their affordability levels. Having said this, the GDP contribution of accommodation and catering specifically has been gradually increasing, demonstrating the actual growth and positive performance of the tourism sector in the region.

Having noted trends and experiences of interviewed product owners, it is evident that some business owners have experienced a decline, however none attributed it to the existing West Coast One Wind Farm development. Importantly, when enquiring about the expected impact of the proposed Boulders Wind Farm on the tourism activities, the only concern raised by the interviewed parties was that the project should not obstruct the beach view and affect the beauty of the land. Some product owners further indicated that the visitors did not complain about the existing wind farm nor that the number of leisure visitors were negatively impacted by the existing wind farm. On the contrary, those who catered to and accommodated the development staff benefitted positively. It is also worth noting that international tourists appear to be well-accepting of wind energy facilities and do not experience any negative connotations with such projects, except for a concern regarding the environmental impact of such developments.

Further review of the submissions made in response to the impact assessment released for public comment, revealed that concerns of the wider public mostly revolved around the impact of the wind farm on the aesthetics of the area, the perceived change of the area to the industrial sense of place particularly in relation to the town of Paternoster, and the overall impact on tourism:

- » "There is a total lack of industrial activity. A large commercial wind farm will change this. Although feelings towards windfarms are mixed, the net impact can only be negative as some tourists will be deterred, it is only the percentage that is uncertain."
- » "Will tourists still be interested in coming to Paternoster?"
- » Concerns over the loss of employment by tourist facilities particularly in Paternoster, where accommodation and catering facilities drive the economy of the town
- » "The highest impact on the property market and tourism is crime."

At the same time, some of the submission received raised opposite views. Local residents who derive their income from farming argue that instead of benefiting from tourism, the increase in visitors to the area had a negative effect on their standards of living due to impacts on local road infrastructure and risks to their livestock and small wild animals ensued from movement of vehicles on rural roads and stray dogs).

From the above, the residents depending on the nature of income derived by them (i.e. linked to farming or tourism) have opposing views on the potential effects of the wind farm on the local economic activities, including tourism. This is in line with the observations made from the review of various studies presented earlier in the document where the attitude of residents correlated with the economic distribution of benefits or opportunities presented by the development. Importantly, as indicated earlier, the concerns raised with respect to the impact of wind farms on tourism usually remain unrealised judging by the fact that opposition to wind farms tend to markedly reduce post-construction phase.

Having said this, the proposed wind farm will be located in the area where natural landscape and aesthetics are highly valued by both residents and visitors to the area. It will be situated adjacent to the existing West Coast One wind farm but closer to the towns of Paternoster and St Helena Bay including Britannica Heights. Following the initial set of comments and acknowledging the sensitivities of the area, the proposed location of wind turbines is outlined in Figure 3.

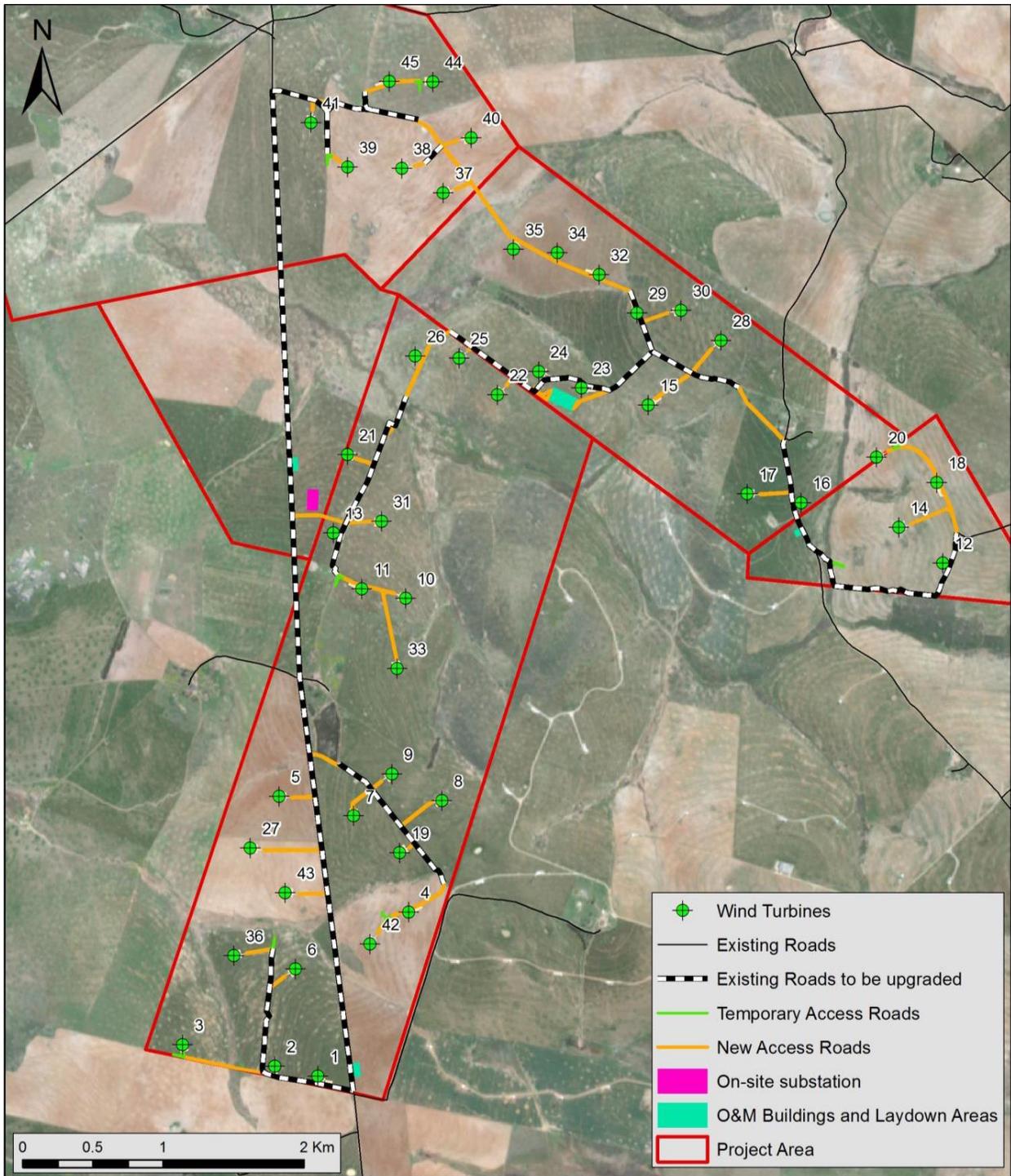


Figure 3: Location of Boulder Wind Farm wind turbines (CES, 2018)

The most recent study of the visual impact of the wind turbines on the sensitive receptors in the area, as illustrated in Figure 4, clearly shows that the cumulative effect (combination of the visibility of turbines and the number of turbines visible from a certain point) is expected

to be high and the associated visible sensitivity also high, particularly when it comes to the town of Paternoster and Britannica Heights (CES, 2018).

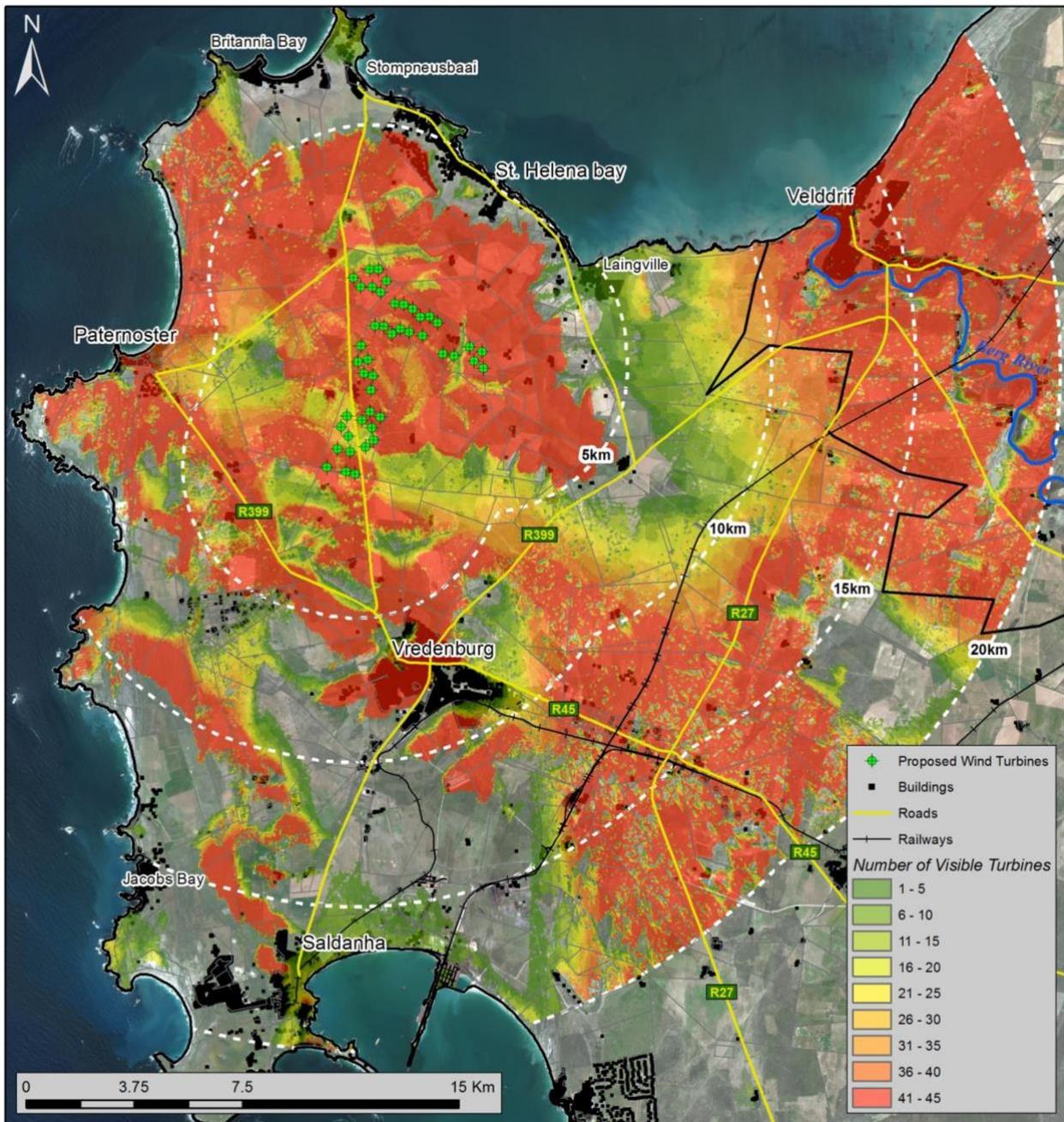


Figure 4: Cumulative viewshed of the 45 proposed wind turbines (CES, 2018)

Considering various groups of sensitive receptors, though, the group-specific sensitivities were determined by the visual specialist to be as follows:

- » Visual exposure and intrusion of the town of Paternoster are **high**, but Visual Absorption Capacity (VAC) and visual intrusion of the proposed wind turbines are **medium** due to the following (CES, 2018):

- * "...majority of the houses at Paternoster are built facing the ocean and that most views towards the proposed Boulders Wind Farm are obstructed, to some degree, by existing buildings, planted vegetation and infrastructure" (CES, 2018, p. 38)
- * "Several wind turbines from the neighbouring operational West Coast One Wind Farm are visible from certain areas in Paternoster" (CES, 2018, p. 38)
- » With respect to Britannica Heights, which also includes a couple of accommodation facilities, will have a **high** visual sensitivity, exposure and visual intrusion, but **low** VAC due to the fact that most houses are built looking towards Paternoster and no tall vegetation could be used to screen the wind turbines (CES, 2018, p. 39).
- » The impact of Kasteelburg, a small hill and rocky outcrop with a "significant cultural" value, will have high visual sensitivity, visual exposure and intrusion. Its VAC though will be of moderate significance as its elevation will screen views of the wind turbines for viewers located on the western side of the hill (CES, 2018, p. 41).
- » Lastly, road users, which include tourists, will also be exposed to the visual impact of the wind turbines, which the visual impact assessment study predicts to be of moderate significance (CES, 2018).

From the above, it is clear that the proposed Boulders Wind Farm will negatively impact on the visual aesthetics of the area and the scenery overall. Since as indicated earlier "scenery has value" any visual pollution thereof would likely have a negative effect and reduce the value of the scenery.

The review of Stats SA Domestic Tourism Survey for 2017 (Stats SA, 2018) indicated that on average 2 560 persons visited Paternoster on a monthly basis in 2017; their sole purpose was leisure/vacation/holiday. It is also known that most visitations take place during the months of September to February (except for November). Overall, the town attracted only 0.6% of the total number of people visiting the West Coast on a monthly basis in the same year or 1.4% of all persons visiting West Coast specifically for leisure/vacation (Stats SA, 2018). Therefore, from the West Coast tourism perspective, the town of Paternoster contributes a small percentage towards the tourism in the area. However, it is also known that almost entire town is dependent on tourism activities, albeit it is highly seasonal. Therefore, despite a small overall contribution that the town makes towards West Coast tourist visitation figures, any decrease in tourism visitation to the town itself could have a negative effect on revenues derived from tourism.

As indicated earlier, the negative effects of wind farms on tourists' interest to visit the area have not been confirmed. This corroborates the earlier statement that West Coast One also did not negatively impact the number of tourists visiting the area after its construction. Some IAPs though argue that West Coast One was located further away from the scenic landscape that visitors to Paternoster and St Helena Bay seek; therefore, extrapolating the same trend on the Boulders Wind Farm is incorrect.

Based on the research that relied on perception surveys (i.e. prediction of what might happen if the wind farm is built rather than what actually happened after it was constructed), only some studies report that tourists feel that they may be deterred from the area. Considering that those tourists also value scenic beauty, which is the main attraction of the town of Paternoster, it could be argued that some tourists visiting Paternoster would also feel that they would be deterred from visiting the area again. However, given that the research into the impact of wind farms on tourism in other areas clearly suggest that the perceived impacts are generally higher before construction and markedly reduce during operation of wind farms, the possible losses of tourists, if any, in Paternoster and surrounds would be markedly lower than what is currently perceived by various stakeholders.

Furthermore, about a third of tourists to the town of Paternoster comprise of international tourists from UK, Germany, and Switzerland. As revealed by Moffat Report (2008), overseas visitors tend to be more accepting of wind farms. It can be deduced, therefore, that the visitors from Europe where renewables comprise a high percentage of its energy mix would also be positive or neutral to wind farms and are less likely to perceive them in a negative way than domestic tourists. This again suggests that the potential decline in tourist visitors to the area, if any, is likely to be lower than the significant minority (25% to 35%) that has been generally perceived to be affected in selected research articles.

From the above, the following can be stated:

- » While the development of Boudlers Wind Farm will impact on the value of the scenery associated with the town of Paternoster and its surrounds, there is no evidence to suggest with certainty or any confidence that the area will experience a decline in tourist numbers. Distinct possibility implies something that could clearly happen, but since the presence of Wst Coast One did not lead to any loss of tourists and perception of losses do not materialise during operations, the probability of the impact can only be scored as importable - some possibility, but low likelihood.
- » If some tourists do become deterred as a result of the development of Boulders Wind Farm, their numbers, as suggested in various research studies, are going to be markedly smaller than what is currently perceived by various stakeholders and would unlikely be detrimental to the tourism industry in the area. Therefore, the magnitude of the impact, can only be scored as moderate, i.e. continued processes but in a modified way.
- » The lifetime of the impact, if it occurs, will last for the duration of the project, which is 20 years and is therefore a long-term impact.
- » The impact will extend to nearby towns.

The score for the above are provided in the table below and it illustrates that the significance of the impact will be low. Certain mitigation measures such as introducing a visitor's centre could assist developing a new form of tourism that could also extend the demand for tourism

products into the off-peak season. For example, as was earlier mentioned, the tourist industry in the area is highly seasonal with most of the visitors coming to the area during the months of September to February. At the same time, it was noted that younger population and families with kids in general are more accepting of wind farms and may be attracted to them (Polecon Research , 2013). Brokeal and Alfken (2015) research also suggested that about two thirds of tourists generally are interested to visit wind turbines when information centres are available. Various cases exist where wind turbines attract tourists because they “contribute to better place brand and development of new forms of tourism (‘green tourism’ or so-called ‘turbine bagging’) in peripheral rural localities” (Brokeal & Alfken, 2015). Thus, it is recommended to consider introducing a visitors’ centre to attract a new type of tourists that could also extend the tourism season in the area.

The development of the new form of tourism could reduce the duration of the negative impact from long-term to short-term and at the same time the magnitude of the impact from moderate to low, as indicated below.

Lastly, the impact could be reversed once the wind farm’s operational life cycle expires and it is decommissioned. With respect to the irreplaceable loss, “an impact causes irreplaceable loss when it results in the loss of a resource without substitute, and which cannot be replaced”. Since the proposed mitigation measures could provide a substitute in the form of new tourists to the area, while the decommissioning of the plant could reverse the impact altogether, the impact will not cause irreplaceable loss of resources.

Nature: Potential loss of tourists as a result of the Boulders Wind Farm development and changes in the value of scenery		
	Without enhancement	With enhancement
Extent	Up to nearby towns (3)	Up to nearby towns (3)
Duration	Long-term (4)	Short-term (2)
Magnitude	Moderate (6)	Low (4)
Probability	Improbable (2)	Improbable (2)
Significance	Low (26)	Low (18)
Status (positive or negative)	Negative	Negative
Reversibility	Reversible	Reversible
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	Yes
Mitigation measures:		
» Work with the local tourism attractions and local tourism association to develop new forms of tourism such as “energy tourism” that appeals to domestic tourists with younger children or young population as well as those who are pro-active supporters of green and clean energy		

» Set-up a world-class visitors' centre to create an additional attraction in the area targeting young population and families with children during public holidays (and the months associated with low visitation numbers – March/April and June/July)
Cumulative impact:
» Extension of product offerings in the area and attraction of new visitors
Residual Impacts
None

The development of the wind farm will also increase business tourism to the area and increase the demand for accommodation and catering. Some of the tourism product owners have confirmed that they have benefited during the construction of West coast One and it is expected that the same will be experienced during the construction of Boulders Wind Farm. These benefits though will not be equally distributed among the local accommodation and catering facilities, which reduces its overall significance.

Nature:		
Impact on tourism activities as a result of the Boulders Wind Farm construction phase and increased business tourism in the area.		
	Without enhancement	With enhancement
Extent	Up to nearby towns (3)	Up to nearby towns (3)
Duration	Short-term (2)	Short-term (2)
Magnitude	Minor (2)	Minor (2)
Probability	Probable (3)	Highly Probable (4)
Significance	Low (21)	Low (28)
Status (positive or negative)	Positive	Positive
Reversibility	Reversible	Reversible
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes (enhanced)	Yes (enhanced)
Mitigation measures:		
» Procure local accommodation for out-of-town construction and engineering crew		
» Consider contracting local catering facilities for the provision of catering services		
Cumulative impact:		
» Continued strengthening and support of the local tourism industry		
Residual Impacts		
None		

3 AN ASSESSMENT OF POTENTIAL WIND FARM EFFECTS ON PROPERTY VALUES

The purpose of this section is to provide an analysis of the potential impacts of the proposed project on property values. The analysis is undertaken by firstly looking at the case studies and deriving the key observations with respect to the effect of wind farm developments on property values and then commenting on the expected impacts of the proposed Boulders wind farm.

3.1 Property value versus property prices

Prior to analysing the potential effects of a project on property values, it is important to make a distinction between property values and property price:

- » **Property value** denotes the fair market value of a given property, albeit the actual price of the property may be higher or lower (Jean Folger, 2018). Property value is determined through property valuation, which determines the economic value of real estate (Madlener, 2016).
- » The **actual sale price** (i.e. property price) is dependent on what information the buyer and seller have and the extent to which one or the other seeks to buy or sell the property and any additional incentives the seller offers to entice the buyer (Study, 2018).

The pillars of property valuation are indicated below.

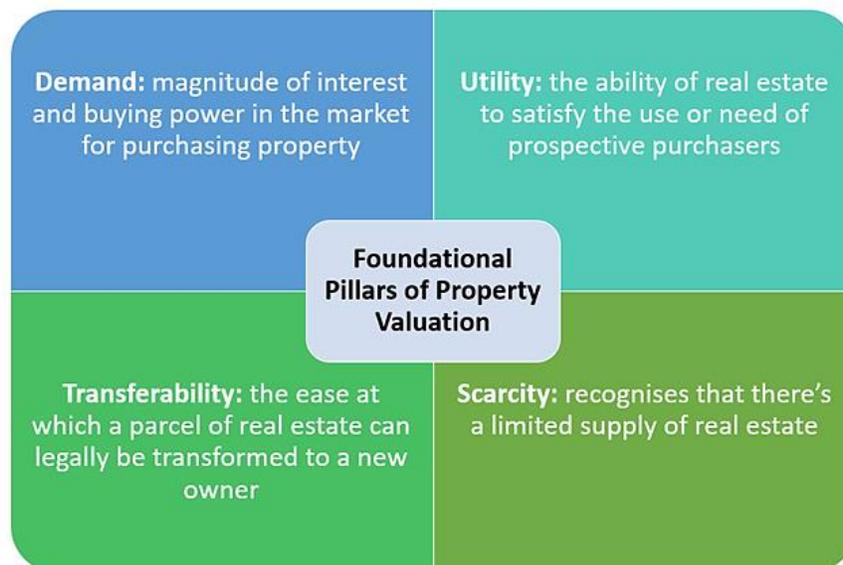


Figure 5: Four Foundational Pillars of Property Valuation (Study, 2018)

Location has long been recognised as the paramount variable in real estate. Therefore, development of neighbouring land can be controversial and often cause nearby landowners

scepticism (Jason Carter, 2011). The four stigmas associated specifically with wind farm developments are (Jason Carter, 2011):

- » Nuisance stigma: sounds or shadow flicker from nearby wind turbines
- » Proximity stigma: turbines make the area appear more developed
- » Scenic vista stigma: an undesirable view (negative visual impact)
- » Wind farm anticipation stigma: the uncertainty surrounding where turbines will be located and the effects the wind farm will have on area residents when development is initially proposed

Not all stigmas affect properties to the same extent. Individual perception of stigmas associated with wind energy developments largely derives from the individual's opinion on wind turbine aesthetics and renewable energy. The predominant perception of wind turbines is that they lower nearby housing values (The Royal Institute of Chartered Surveyors, 2007). The most reliable way to explore the issue is therefore not by polling to gauge public opinion (as it will likely be skewed due to the unknown and perceived nature of the impact), but by analysing property market trends in the areas where such developments have already taken place and deducing the experiences of real estate agents.

3.2 Historical trends and assessment

3.2.1 Overview of the property composition in the primary zone of influence

The primary zone of influence associated with the Boulders Wind Farm is largely characterised by residential property. The residential property in the area is largely comprised of private housing followed by holiday homes which include Bed and Breakfast (B&B) accommodation. Commercial property is also prevalent and includes amongst others hotels and office buildings. Paternoster, however, is largely comprised of holiday home offerings whereas Vredenburg, Saint Helena Bay and Britannica Heights are dominated by private residential homes. A portion of retirement homes are additionally prevalent here. A segment of private residences has been converted to holiday accommodation. The rest is used as a primary residence.

In recent years, new developments in the primary zone of influence have consisted of medium-sized hotels, holiday homes and private residential property. Significant *holiday home developments* took place in Paternoster, while limited tourism expansion took place in Saint Helena Bay (including Britannica Heights) due to regulations of a major regional growth centre set by the local municipality and homeowners association. Paternoster inversely had limited *private home development* as the area is largely tourism oriented.

Saint Helena Bay is a relatively new area in terms of investment given that Langebaan is now developed to capacity, therefore new developments are common. This is attributed to the high land availability and low land prices. Inherently, upgrades and renovations are limited due to the relatively new property stock. Britannica Heights similarly has a concentration of new development. In contrast, Vredenburg has experienced limited property investment. This area is largely occupied by long term residents.

3.2.2 Trends in property ownership

The period of ownership of existing owners offers insight about the areas in terms of:

- » Existing property owner’s views of the area
- » Recent sellers’ views of the area

The property ownership statistics for the area under analysis (Figure 6) suggests that most owners in all towns under analysis are long-term owners who stayed in the area for more than eight years. In Saint Helena Bay, which also encompasses Britannica Heights, the average duration of ownership of property is lower than in the other areas, but it is likely attributed to the fact that the development of the area started later than in the other three towns – most of the properties are still owned by long-term owners. The dominance of long-term owners in all of the areas reviewed, though, suggests that the residents are highly content or rarely have motive to move.

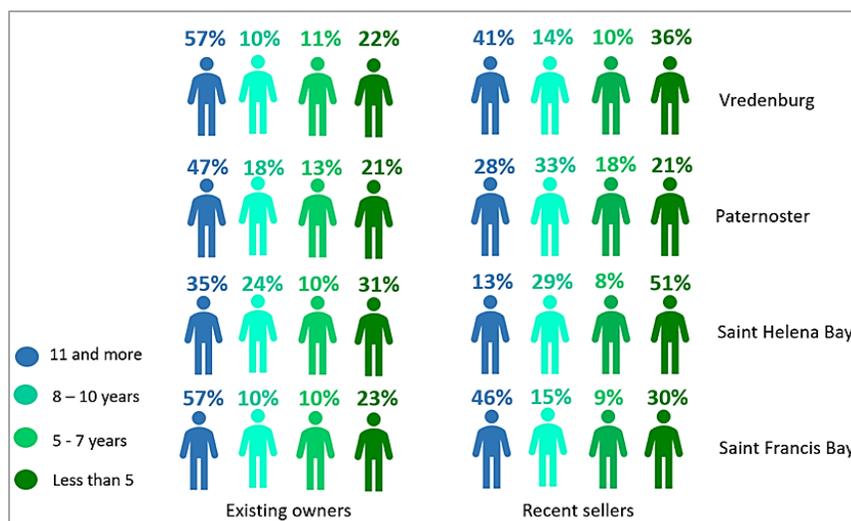


Figure 6: Property ownership statistics for case study areas from May 2017 to April 2018 (Lightstone, 2018)

What is concerning though is the fact that the sale of properties in Vredenburg and Saint Francis Bay have largely come from long-term owners, suggesting that the utility that the

long-term owners derived from owning a property in these two towns have been declining. The reasons behind this could be numerous and would depend on the profiles of the owners themselves. For example, properties could become part of deceased estates (i.e. loss of the original owners), the area could have seen some notable changes that repelled the owners, etc.

It is worth noting though that in Saint Helena Bay, just over half of recent sellers have been owning property for a short period of time, which could imply unmet expectations or undesirable recent changes in the living environment.

Traversing to the Saint Francis Bay case study, it was also observed that the area has seen a similar trend to that of Vredenburg and Saint Helena Bay - 46% of recent sellers were long term residents; nonetheless the demographics of the area continued to increase.

3.2.3 Trends in property prices

This section serves to provide an analysis of average property prices over a period of eight years in our case study areas of Vredenburg, Paternoster, Saint Helena Bay (including Britannica Heights) and Saint Francis Bay. The aim is to gain an insight into the overall trends with respect to property prices in the primary zone of influence. However, it is also known that the primary zone of influence has seen one wind energy project being developed (i.e. the West Coast One Wind Farm) in 2013-2015; therefore looking at the property prices for the past eight years could provide a valuable insight into the property price changes (if any) that took place during the time when first news about the wind farm development in the area started to circulate (i.e. pre-construction or pre-2013), when the wind farm (West Coast One Wind Farm) was developed (i.e. 2013-2015), and once the construction was completed (post-2015).

a) Nationwide property trends and dynamics

Prior to analysing the property trends, and specifically the changes in property prices in the primary zone of influence it is important to understand the general economic conditions that took place during the analysed period and the effects thereof on property prices in the greater area of the Western Cape, as well as on prices of different types of properties – primarily residential and holiday homes.

The macro property trends provide an overview of the housing market performance in the country. In order to determine how the residential market is performing in South Africa, FNB's house price index (HPI) is used to illustrate the performance of the housing market (Figure 7).

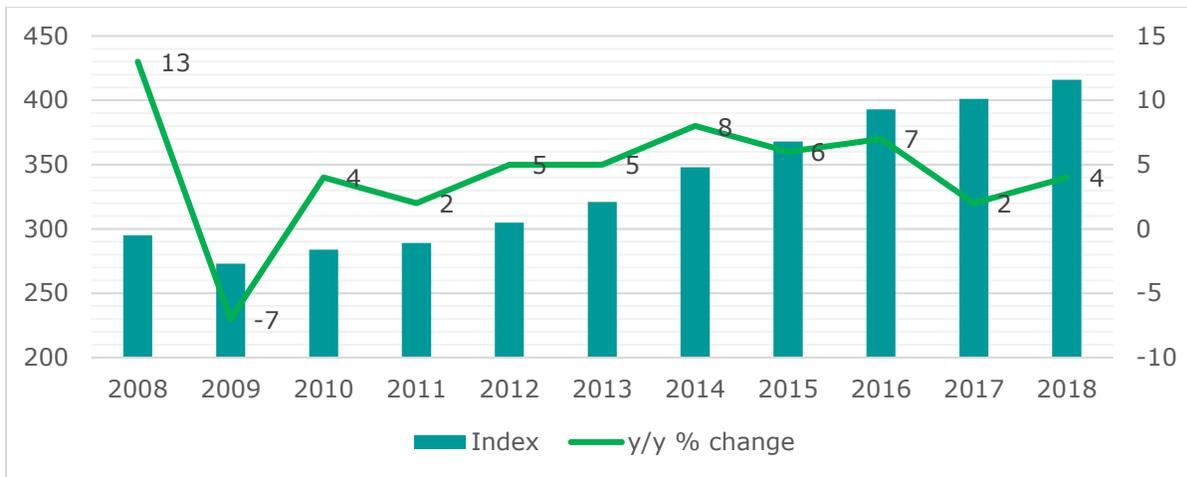


Figure 7: FNB Housing Price Index and Percentage change January 2010- January 2018 (FNB, 2018a)

Based on the FNB house price index, it is clear that South Africa’s residential market has performed well in recent years. With the exception of the 2008-2009 global financial recession, house prices have been on the increase. Importantly, though, considering the period that is being analysed, the property market in the country took a couple of years to recover post-2009 financial crisis. As indicated in the diagram above, the property prices somewhat stagnated in 2011 and showed a steady increase thereafter.

However, the above diagram does not necessarily reflect the property market that mirrors that of the primary zone of influence, which is dominated by holiday homes and tourism accommodation. As indicated in the diagram below (Figure 8), the “holiday town prices deflated more significantly than the major cities during the 2008/9 recession period” and continued to experience a negative growth for the three years afterwards showing a growth in prices only in 2013 onwards and achieving a pre-2008 property price level only in 2015 (FNB, 2018b). This is attributed to the constrained economic and financial times experienced in the country post 2008/2009 financial crisis and the subsequent greater focus of the households on necessities such as primary homes rather than luxuries such as holiday homes.

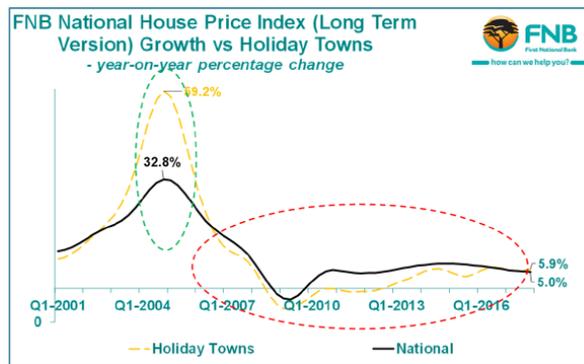
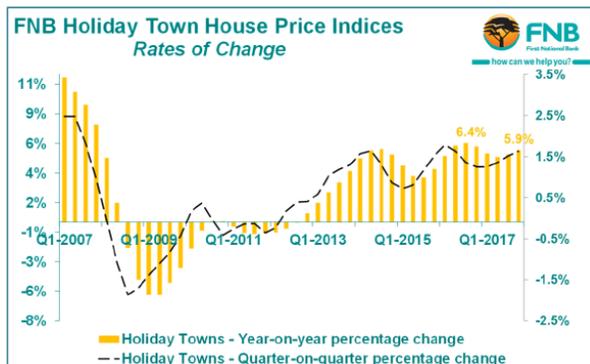
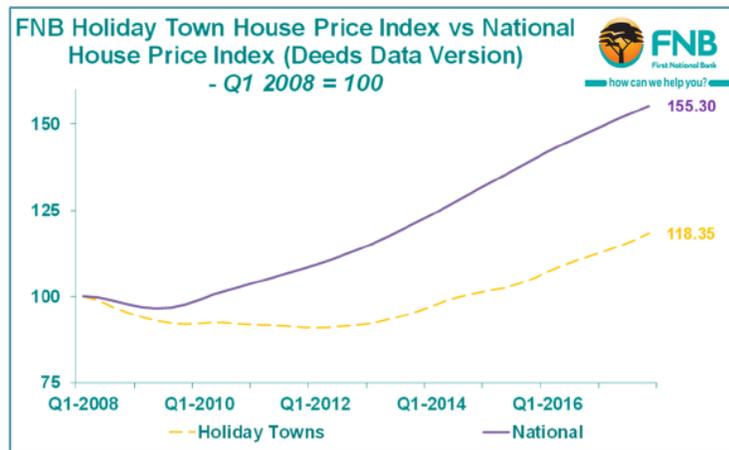


Figure 8: Holiday town house price index versus national house price index (FNB, 2018b)

Since 2015, the holiday home prices have been steadily recovering and it is suggested that the level of holiday home buying nationally has been holding up reasonably in 2017 (FNB, 2018b). Importantly, this trend was supported by the migration of the retiree population from Gauteng to the coastal holiday towns (FNB, 2018b). However, since the house price recovery in holiday towns have been lower compared to the national trends, it may be anticipated that house prices in the primary zone of influence will display similar low growth. Therefore, care should be taken not to misinterpret the decline in house prices or the slow growth in prices for holiday homes as being the effect that the West Coast One Wind Farm had on property values.

Considering the above, the following should be noted when looking at the trends in property prices in the primary zone of influence:

- » The property market experienced a **significant drop in 2008/9**.
- » The **recovery of the property market comprising of primary residences was different to that of holiday homes and holiday towns**.
- » Holiday homes and towns took considerably longer to recover post the financial crisis showing a **negative trend in 2010, 2011, and the first half of 2012**.

- » Although property prices in holiday towns were on the rise from 2013 onwards, the **increase in this market showed a dip in 2015.**

The analysis below serves to track property trends in the selected study areas during three distinct phases namely, pre-construction, construction and operations. The motivation for the separation phases is that each phase has distinct effect on property owners and prospective property owners. During the pre-construction phase, the dominant narrative is about what is planned and the perceived effect on property prices. In the next phase, the construction activity represent development, which may be attractive to some and deterring to others. The last phase of operation represents a changed land use which could be positive or negative to prospective buyers. By overlapping these phases of the West Coast One Wind Farm development with the property trends in the respective areas, it assists in identifying whether there was any correlation between the development of the wind farm and the property prices.

b) *Vredenburg*

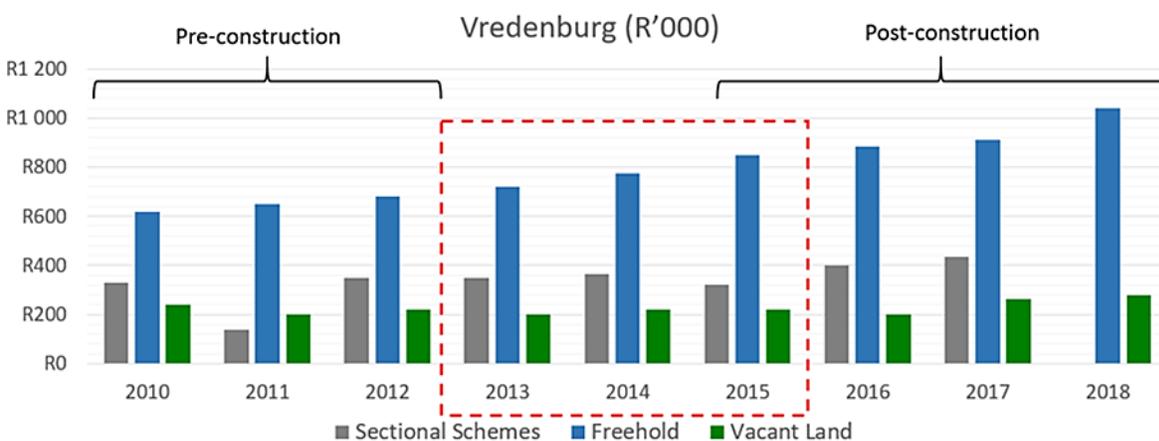


Figure 9: Average property Prices in Vredenburg in the past eight years (Lightstone, 2018)¹

From the graph above, it is evident that:

- » Freehold property has the highest property values in Vredenburg. In addition, freehold property prices have been gradually increasing from 2010 growing by 68% between 2010 and 2018 in absolute value, which is in line with the national trends. Importantly, **no apparent change in the freehold property prices has been identified for**

¹ Based on the following range of registrations during the analysed period as indicated in Lightstone, 2018: section title – 1 to 10 registrations per annum; freehold – 139 to 525 registrations per annum; vacant land – 26 to 136 registrations per annum.

Vredenburg due to the development of West Coast One Wind Farm before, during and after construction.

- » With regard to sectional titles, the prices have fluctuated between R140 000 to R435 000 in the past eight years. This could possibly indicate that some speculation took place prior to construction and during construction of the West Coast One wind farm, which negatively impacted on property prices, but it is clear that **the property prices on sectional titles in Vredenburg continued to increase after construction of the West Coast One Wind Farm was complete.**
- » Land values in Vredenburg have been largely consistent and range from an average of R200 000 to R280 000.

To summarise, prior to the construction of the West Coast One Wind Farm, freehold property prices gradually increased, while sectional schemes and land prices fluctuated. During the construction of the West Coast One Wind Farm, all property prices improved. When operation of the West Coast One Wind Farm commenced, sectional scheme prices declined by 12% whilst land prices remained the same. In the last three years since the operation of the existing wind farm commenced, all property prices increased.

c) *Paternoster*

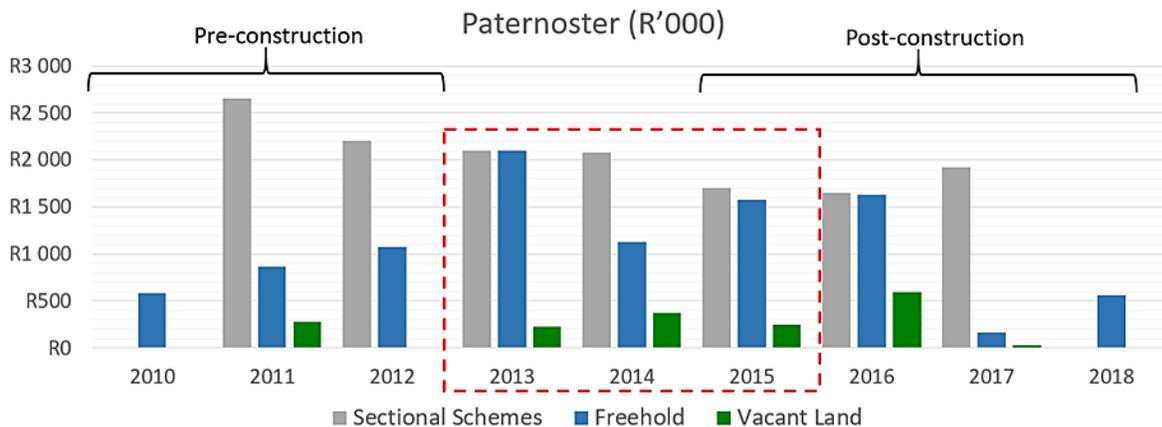


Figure 10: Average property prices in Paternoster in past 8 years (Lightstone, 2018)²

² Based on the following range of registrations during the analysed period as indicated in Lightstone, 2018: section title – 3 to 15 registrations per annum; freehold – 17 to 106 registrations per annum; vacant land – 26 to 136 registrations per annum.

The property trends picture for Paternoster differs drastically from that of Vredenburg as indicated above. It is evident that:

- » **Sectional schemes** in Paternoster are a few times more expensive than the average price of sectional schemes in Vredenburg. As shown previously, the overall trend in the country with respect to property prices for sectional schemes was negative since 2011 with the prices dropping sharply in 2012 and in 2015. Paternoster, though, can be characterised as a holiday town and therefore, the property trends observed in this town would follow a slightly different trajectory as that in Vredenburg. As mentioned earlier, holiday home prices have declined between 2008-2012.

Therefore, the dip in sectional scheme prices prior to the development of the West Coast One Wind Farm could largely be attributed to the unfavourable economic conditions experienced by South Africa at that time. The historical national trends suggest that property prices were recovering from the second half of 2012, while the situation in Paternoster with respect to sectional titles suggests that the property prices continued to decline during 2013-2015, which was also the time when the West Coast One Wind Farm was being constructed. Therefore, it could be argued that some local conditions impacted on the local property prices in Paternoster, which prevented them from following the national trends for holiday home prices during 2013 and 2015. This could be related to the development of the West coast One Wind Farm but could also be linked to the growing demand for freehold properties in the area (as indicated further below). In 2016, though, the prices for sectional titles have recovered and showed a positive trend in 2017 – similar to the national holiday home property market.

- » The **freehold properties** showed a sharp increase in sales prices in 2013 (just at the start of West Coast One Wind Farm construction phase), going against the trends observed with respect to holiday home prices nationally. The prices took a dip in 2014 compared to 2013 but were still higher than that experienced in 2012. This suggests that **the year 2013 was clearly an exceptionally good year for freehold properties in Paternoster** and if considered to be an outlier, it can be suggested that the property prices for freehold properties in Paternoster were largely on a rise showing a steady growth from 2010 up to 2016.
- » The situation with **vacant land prices** in Paternoster also suggests that historically they have shown an upwards trajectory. With no property sales observed just before the construction of the West Coast One Wind Farm and some fluctuation during the construction period.

d) Saint Helena Bay (including Britannica Heights)

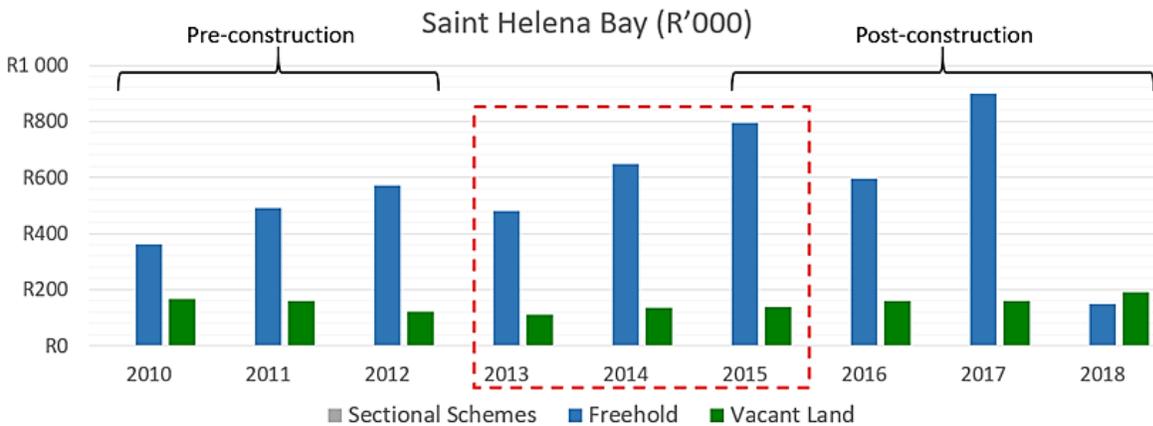


Figure 11: Average property prices in Saint Helena Bay in past 8 years (Lightstone, 2018)³

No sectional scheme properties are situated in Saint Helena Bay. Over the past eight years, freehold property prices reached a peak in 2017 at R900 000, and just a year later drastically declined to the lowest at R150 000. Average land values have been similar in the past eight years.

In the period before the construction of West Coast One, freehold property gradually increased and dissimilarly, land values gradually decreased. The first year of construction witnessed a decline in property prices for both freehold property and land. However, in the second year of construction and first year of operations, both freehold and land prices improved. In the past three years since operations commenced, property prices have not been consistent.

A closer examination of property developments in Britannica Heights shows that the construction of West Coast One has unlikely impacted on the attractiveness and interests of private homeowners to develop residences in the neighbourhood. As can be seen from Picture 4, in January 2013 28 properties in Britannica Heights were developed. By January 2016, as illustrated in Picture 5, the number of residences in the area increased by 12 – to 40, and as of May 2019 includes 51 residences (Picture 6).

³ Based on the following range of registrations during the analysed period as indicated in Lightstone, 2018: section title – no registrations; freehold – 80 to 588 registrations per annum; vacant land – 114 to 488 registrations per annum.

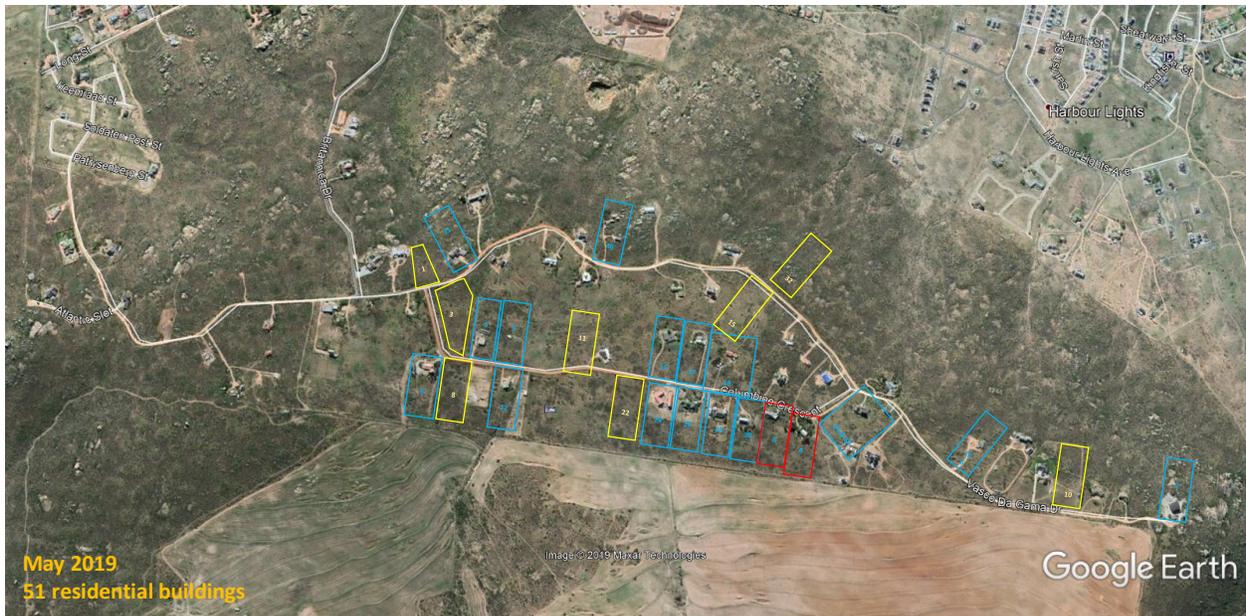


Picture 4: Google imagery of Britannica Heights developments in Jan 2013 (Google Earth, 2019)



Picture 5: Google imagery of Britannica Heights developments in Jan 2016 (Google Earth, 2019)

Most of Britannica Heights residences are located on two main streets – Vasco da Gama and Columbine Crescent. Picture 6 indicates properties that have changed owners since 2007 and for which historical information with respect to property transfers and associated costs is available.



Picture 6: Google imagery of Britannica Heights developments in May 2019 (Google Earth, 2019)

From the property transfer data related to Britannica Heights, it can be observed that the property market was particularly vibrant in the neighbourhood in 2014 (Figure 12). Furthermore, on average, the properties on Vasco da Gama Street exceeded the sales numbers than on the Columbine Crescent, which could be attributed to the greater number of properties on the Vasco da Gama Street in general but also to the fact that these properties are located closer to the St Helena Bay beach.

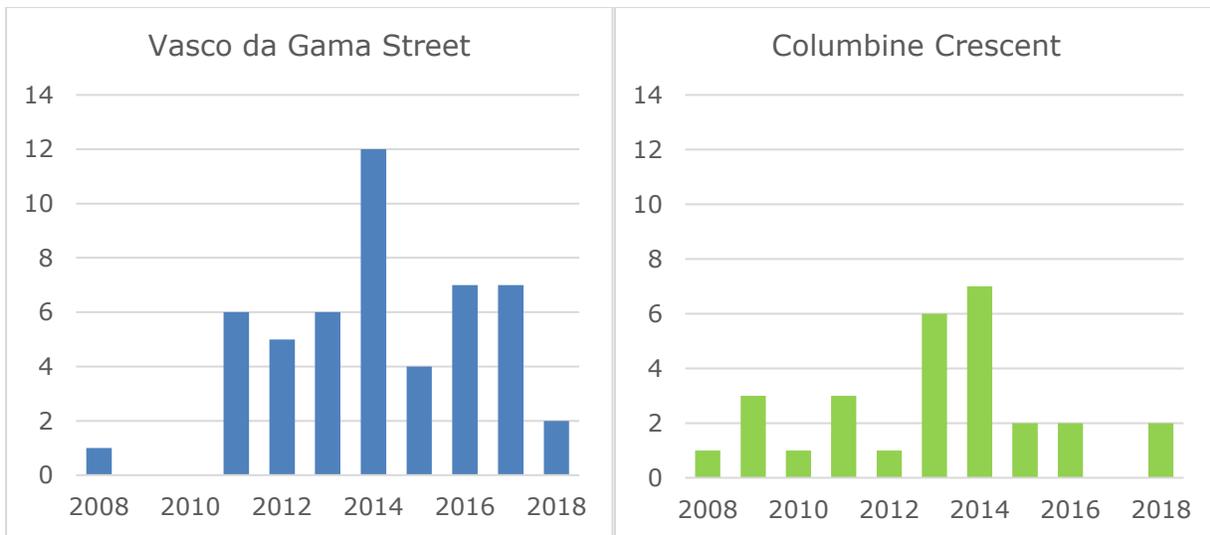


Figure 12: Number of property transactions per annum in Britannica Heights (Lightstone, 2019)

On terms of sales prices, as illustrated in Figure 13, property prices on the Vasco da Gama Street have largely remained stable with some decline observed between 2012 and 2015 and followed by some price recovery. Since this period was also associated with an increase in properties that were traded, the slight decline in prices could also be linked to the increasing supply of properties on the market. With respect to properties on the Columbine Crescent, the overall trend was more positive with average prices growing since 2011. Since the property prices on the Columbine Crescent were initially lower than that on the Vasco da Gama Street, the increase in property prices on the Columbine Crescent could be linked to the prices in the entire precinct approaching equilibrium.

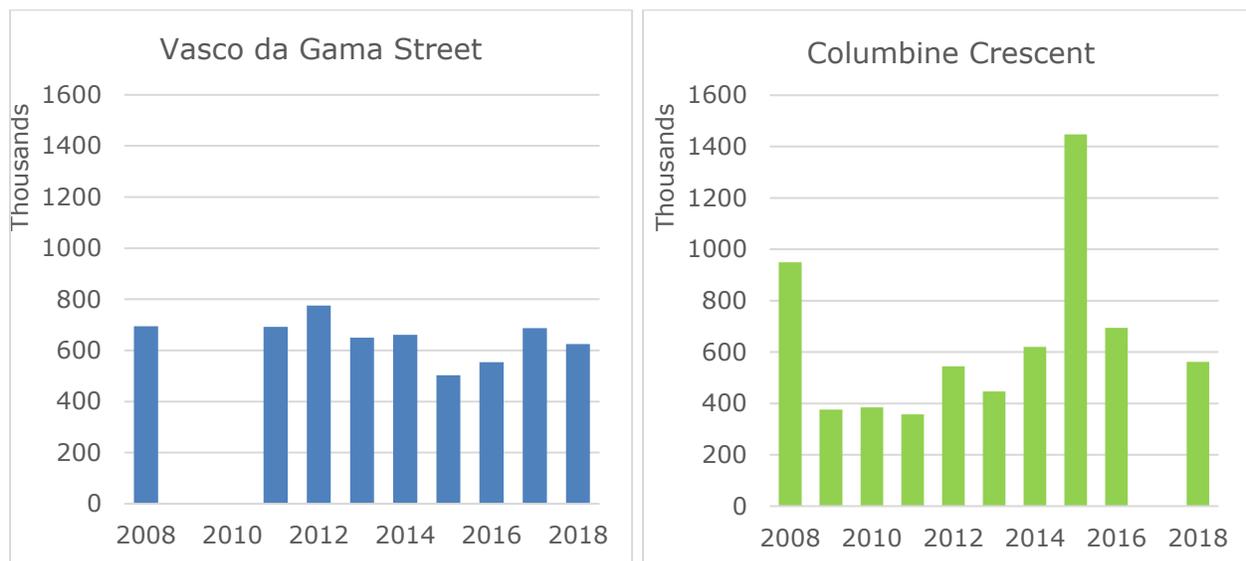


Figure 13: Average property sale price in Britannica Heights (R'000) (Lightstone, 2019)

The review of the property transfers in Britannica Heights in the past few years does not give any indication that the demand or property prices have been negatively impacted by the development of the West Coast One wind farm with the closest wind turbines located some 6 km away from the properties on Vasco da Gama Crescent.

It was also observed that most properties in the precinct that were sold during the analysed period changed ownership one or two times with only a few being sold three or four times during that period (Lightstone, 2019). Since 2007, most sales were among properties located on the Vasco da Gama Street – 55 versus 28 located on the Columbine Crescent (Lightstone, 2019). Noteworthy is that properties located on the Vasco da Gama Street that are closest to the existing West Coast One have changed ownership only once or twice in the past decade (Lightstone, 2019).

e) *Saint Francis Bay*

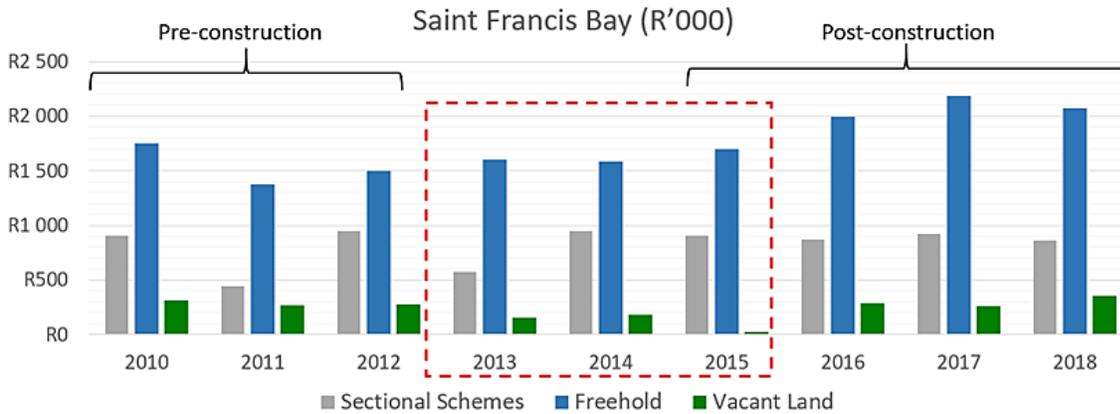


Figure 14: Average property prices in Saint Francis Bay, Eastern Cape (Lightstone, 2018)

As a holiday home town, the property prices for freehold property in Saint Francis Bay declined during 2010-2011, following the same trend observed nationally. Some recovery is noted in 2012, but the freehold property prices in the area stayed stagnant up until 2015, where after it showed a positive increase.

The situation with sectional title property was somewhat different and there clearly has been some negative impacts on the property prices in 2011 and 2013. Interestingly, though, the sectional title property prices showed some increase in 2014 – during the time when the Kouga Wind Farm was in the midst of its construction period, which could be argued that the development of the wind farm did not impact on the owner’s perceptions of the value derived from sectional title properties in the coastal town.

Interestingly, vacant land prices in the area have been declining since 2010 in the town of Saint Francis Bay and only recovered in 2016.

f) *Feedback from interviews with real estate agents*

To augment the Lightstone data presented above, real estate agents were interviewed as indicated earlier in the report. Their views are summarised below and assist in explaining the causes of the peaks and troughs presented in the graphs above.

As indicated by the real estate agents interviewed during the study, both positive and negative patterns in the property market has occurred in the Saldanha Bay region in the recent years:

- » On the one hand, a stimulated performance in commercial and industrial property emerged due to the Saldanha-related activity. This has additionally led to an increase in

rental and residential prices. Moreover, holiday accommodation in the area is saturated creating an abundance in supply and negatively impacting on the property prices.

- » On the other hand, limited investment in all property types in the Vredenburg area has taken place. This is argued to be a result of low market confidence due to the expropriation issue. Vredenburg specifically has less returns compared to Paternoster and Langebaan.

The **experience of all real estate agents interviewed asserts that wind farm developments have not had a notable effect on the demand and value of surrounding properties**. They state that prospective buyers have mostly been indifferent to the presence of wind farms. One real estate agent from Saint Helena Bay stated that one property owner complained that they would not have purchased the property had they known about the development of the West Coast One Wind Farm. This is the only opposing case that was presented.

3.3 International literature review

The study by Urbis (2016) stated that the review of international literature and research in Australia on the impact of wind farms on property values suggested that the majority of published reports conclude that "there is no impact or limited definable impact of wind farms on property values". Studies that reported some negative impact on property values were in countries with higher population densities and a great number of traditional residential and lifestyle properties affected by wind farms (Urbis, 2016).

Hoen et al (2009, p. ix), though, stated that "concerns about the possible impact of wind energy facilities on the property values of nearby homes are reasonably well established" but the research into actual impact is often flawed by the fact that it relies on the views of homeowners and real estate agents, simple statistical techniques, and small datasets among others. To address the shortcomings mentioned above, Hoen et al (2009) made use of hedonic price model that investigated the actual sales prices of homes and collected information on 7 459 transactions from ten communities surrounding 24 existing wind farms spread across multiple parts of the USA.

First of all, Hoen et al (2009, p. ix) observed that "concerns about the possible impact of wind power facilities on residential property values can take many forms" but can be divided into three main categories:

- » "**Area Stigma**: A concern that the general area surrounding a wind energy facility will appear more developed, which may adversely affect home values in the local community regardless of whether any individual home has a view of the wind turbines" (Hoen, et al., 2009, p. ix).

- » **"Scenic Vista Stigma:** A concern that a home may be devalued because of the view of a wind energy facility, and the potential impact of that view on an otherwise scenic vista" (Hoen, et al., 2009, p. ix).
- » **"Nuisance Stigma:** A concern that factors that may occur in close proximity to wind turbines, such as sound and shadow flicker, will have a unique adverse influence on home values" (Hoen, et al., 2009, p. ix).

The investigation into the various stigmas on property price making use hedonic price model found "no persuasive evidence of any of the three potential stigmas: neither the view of the wind facilities nor the distance of the home to those" of having "consistent, measurable, and statistically significant effect on home sales prices" (Hoen, et al., 2009, p. xii). The summary of the results is also provided in the table below.

Table 5: Impact of Wind Projects on Property Values: Summary of Key results of the research conducted by Berkley Lab in the USA

Statistical Model	Is there statistical evidence of:			Section Reference
	Area Stigma?	Scenic Vista Stigma?	Nuisance Stigma?	
Base Model	No	No	No	Section 4
View Stability	Not tested	No	Not tested	Section 5.1
Distance Stability	No	Not tested	No	Section 5.1
Continuous Distance	No	No	No	Section 5.2
All Sales	No	No	Limited	Section 5.3
Temporal Aspects	No	No	No	Section 5.4
Orientation	No	No	No	Section 5.5
Overlap	No	Limited	No	Section 5.6
Repeat Sales	No	Limited	No	Section 6
Sales Volume	No	Not tested	No	Section 7
"No"	<i>No statistical evidence of a negative impact</i>			
"Yes"	<i>Strong statistical evidence of a negative impact</i>			
"Limited"	<i>Limited and inconsistent statistical evidence of a negative impact</i>			
"Not tested"	<i>This model did not test for this stigma</i>			

(Hoen, et al., 2009)

More specifically:

- » **On Area Stigma:** "To investigate Area Stigma, the model tests whether the sales prices of homes situated anywhere outside of one mile and inside of five miles of the nearest wind facility are measurably different from the sales price of those homes located outside of five miles. No statistically significant differences in sales prices between these homes are found" (Hoen, et al., 2009, p. xii), as indicated in the figure below.

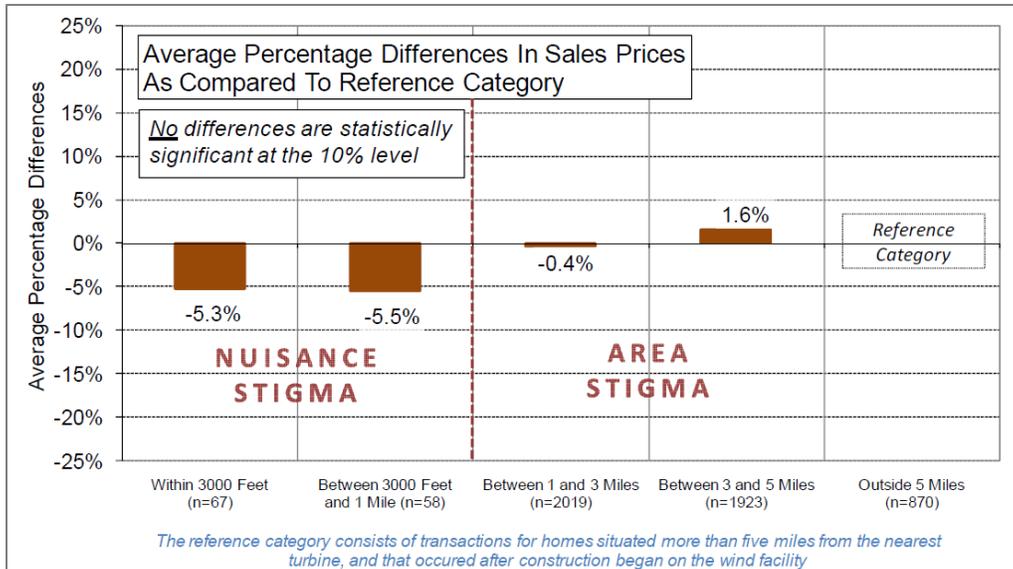


Figure 15: Base Model Results: area and nuisance stigma (Hoen, et al., 2009)

- » **Scenic Vista Stigma:** "For Scenic Vista Stigma, the model is first used to investigate whether the sales prices of homes with varying scenic vistas - absent the presence of the wind facility - are measurably different. The model results show dramatic and statistically significant differences in this instance" (Hoen, et al., 2009, p. xii) as outlined in Figure 16. This means that "home buyers and sellers consider the scenic vista of a home when establishing the appropriate sales price" (Hoen, et al., 2009, p. xii). "Nonetheless, when the model tests for whether homes with minor, moderate, substantial, or extreme views of wind turbines have measurably different sales prices, no statistically significant differences are apparent" (Hoen, et al., 2009, p. xii).

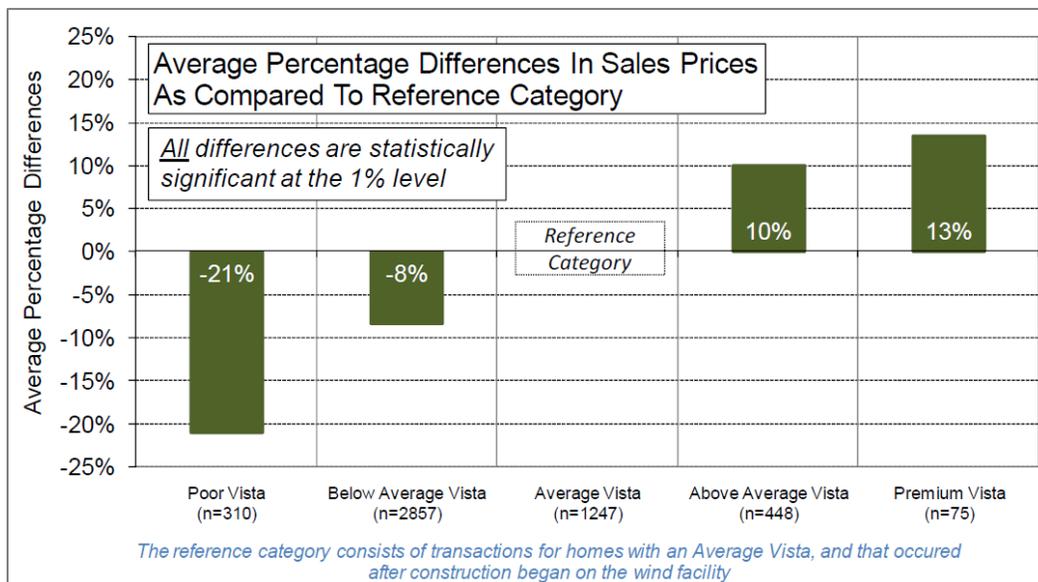


Figure 16: Basic Model Results: Scenic Vista (Hoen, et al., 2009)

- » **Nuisance Stigma:** “For Nuisance Stigma, the model is used to test whether the sales prices of homes situated inside of one mile of the nearest wind energy facility are measurably different from those homes located outside of five miles. Although sample size is somewhat limited in this case, the model again finds no persuasive statistical evidence that wind facilities measurably and broadly impact residential sales prices” (Hoen, et al., 2009, p. xii) as was also illustrated in Figure 15.

The researchers further state that “the analysis cannot dismiss the possibility that individual homes or small numbers of homes have been or could be negatively impacted,” and “if these impacts do exist, they are either too small and/or too infrequent to result in any widespread, statistically observable impact” (Hoen, et al., 2009, p. xvii). The study by Carter (2011) in Illinois, US also revealed that wind farms did not have any negative effect on property prices in Lee County. “No evidence of a consistent negative effect on house prices” was also found by Heblich et al (2016, p. 3) in the study of impact of wind turbines on house prices in Scotland. On the other hand, the study by RenewableUK (2014) suggested that prices of homes have dropped prior construction but recovered after the wind farm was erected suggesting that there was “no long-term negative impact on house prices”.

From the review of the above information it can be deduced that the presence of wind farms does not automatically result in the reduced property values. Moreover, it appears that there is no direct correlation between wind farms and property values over the long-term. However, individual cases of property prices being negatively impacted by the presence of wind farms cannot be discarded, as potential buyers may use that factor as an opportunity to try and reduce their costs of buying a property or indeed perceive wind farms to devalue the attraction of a specific location. Furthermore, if negative impact on property prices occurs, it appears to be temporary and limited to the pre-construction period. This again suggests that perception of the possible impact of wind farms on the scenic value tends to be higher before developments and reduce after, as was suggested earlier in the report.

3.4 Potential effect of the Boulders Wind farm on property prices

The review of the property trends suggests that depending on the nature of the property (holiday home or prime residence) and the type of property (sectional title, freehold, or vacant land), they all follow different demand and pricing patterns. In time of unfavourable economic conditions, households tend to prioritise primary property ownership over holiday home ownership, which leads to a slump in demand and subsequent decline in property prices for holiday homes. As the economy starts to recover, the demand for holiday homes starts to pick up leading to increases in respective property prices. The former trend was clearly observed during 2010-2012, preceded by the financial crisis of 2008/9; while the latter trend was noted post 2013.

As a result, the towns of Vredenburg and St Helena Bay (including Britannica Heights), which are considered to be largely “primary residence” towns, have shown steady growth in property prices post the financial crisis; the opposite is true for Paternoster, which is largely a “holiday home” town, which experienced a decline in property prices during 2010-2012 and showed a steady recovery in the last few years only.

The review of the statistical data related to the properties in the towns located in the zone of influence suggests that sectional titles in popular holiday towns are more sensitive to the local change in conditions compared to freehold properties and vacant land and that the decline in property prices for sectional titles is usually accompanied by the increase in prices of freehold properties.

The above illustrates that numerous factors contribute to the value and price of property and a single component such as a wind farm development cannot be assessed in isolation. Having said this, as indicated earlier in the report, the scenery has value and as was found by Hoen et al (2009, p. xii) “home buyers and sellers consider the scenic vista of a home when establishing the appropriate sales price”. Therefore, it would be plausible to assume that any impacts on the visual aesthetics of the landscape could have an impact on the value of the properties.

As illustrated in Figure 17, aside from isolated farm houses and agricultural buildings within the 5 km radius from the location of wind turbines, the properties in Paternoster and Britannica Heights will have the greatest visual sensitivity to the turbines. Concerns raised during the public participation meetings and submissions made by various Interested and Affected Parties suggests that there is a significant presence of Scenic Vista Stigma due to the extent to which wind turbines will be visible from properties in Paternoster and Britannica Heights. Indeed, the view from the properties in Britannica Heights – particularly those that are located on the “valley side of the hill” - and properties in Paternoster – particularly those that are situated on the outskirts of the town and are not screened off by other buildings – will be altered. The question, however, remains whether the change in the Scenic Vista will translate into the decline in property values and if it impacts the property values, the extent to which values could be reduced.

As mentioned previously, property investors and buyers have differing preferences and perceptions and specifically vary in their attitudes towards wind farms. While some buyers may be dissuaded to locate near a wind farm development, it is evident from West Coast One and Kouga Wind Farm case studies that there are buyers who are indifferent to the presence of wind farms in scenic areas while some find them attractive. The interviews with nine property agencies operating in the areas where West Coast One and Kouga Wind Farm are located revealed that wind farm developments did not affect demand nor prices of property in the towns surrounding West Coast One and those located near Kouga Wind Farm. The

review of historical property price trends in relation to the development stages of the analysed wind farms further confirms that there is no clear linkage between the property price dynamics and developments of wind farms. This is considering the fact that the closest wind turbine to properties in Oyster Bay in the Eastern Cape – a popular tourism destination with numerous self-catering and B&B facilities - is located just 1.7 km away and about 15 wind turbines can be found within 7 km radius from the town.

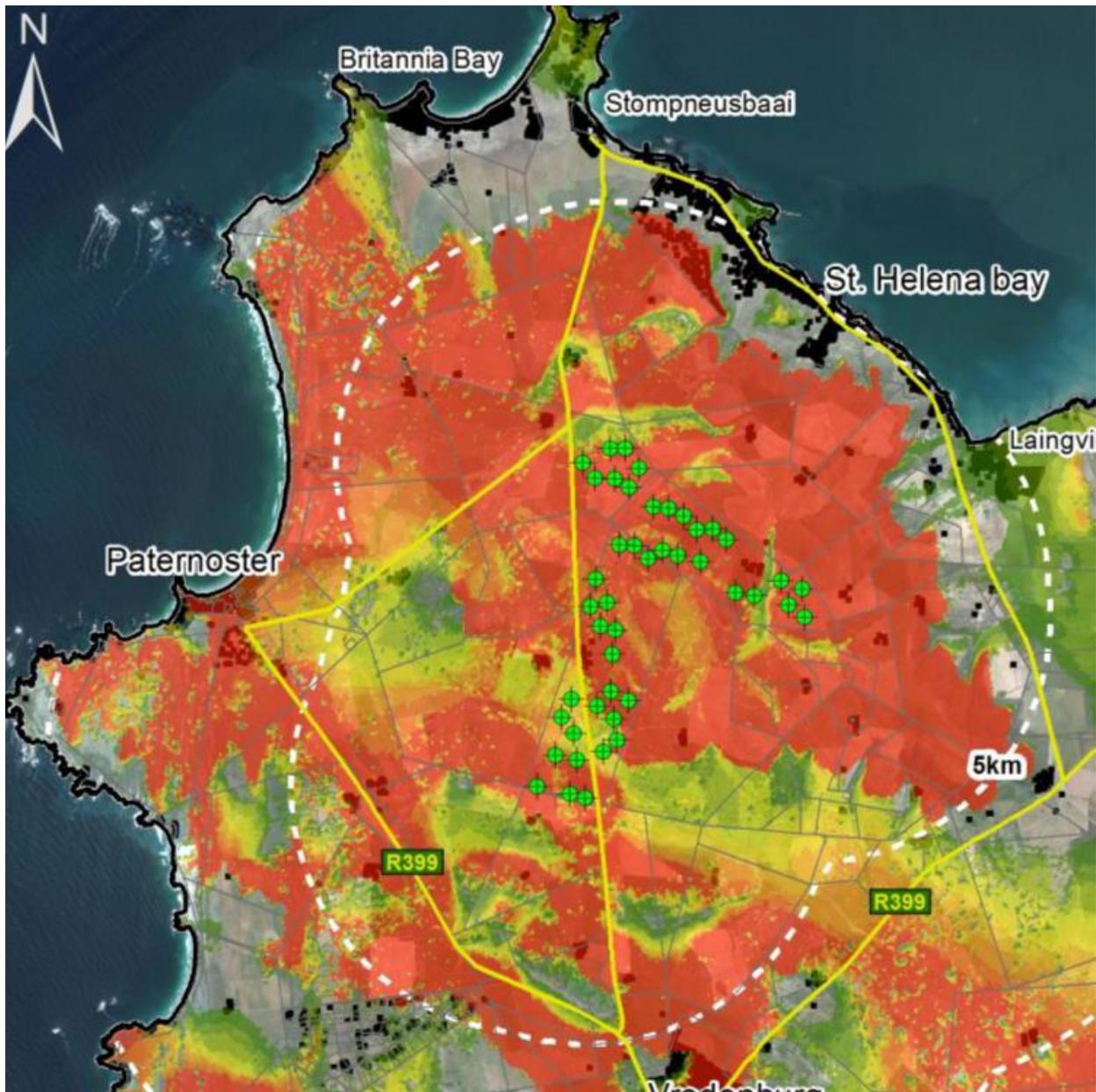


Figure 17: Cumulative viewshed of the 45 proposed wind turbines focusing on the nearby towns (CES, 2018)

The review of international literature further corroborates the absence of direct linkages between wind farm development and property prices with various studies confirming that there is no long-term impact of wind farms on property values. From the above it can therefore be confidently stated that **there will be no long-term negative impacts on prices of properties in the Britannica Heights and in the town of Paternoster. However, isolated cases of property price drop particularly during the pre-construction phase cannot be ruled out altogether.**

Some international studies did find that in individual cases, prices on properties could drop during the planning or pre-construction phase linked to the negative perceptions associated with wind farms by potential buyers. A decline in property prices, if it occurs, though, appears to be in these cases of temporary nature as research suggests that prices do recover once a wind farm is developed. The latter is associated with the notion that negative perceptions are generally higher during the pre-construction phase than when wind farms are in operation.

Therefore, from the above it can be alluded that property prices in selected instances could be negatively impacted – depending on the perceptions of the buyers with respect to wind farms and their willingness to use the presence of wind farms to negotiate costs down. Such cases, however, as indicated by international case studies, will be isolated and importantly will not be permanent. Once the wind farm is developed, the research suggests that property prices, if they were negatively affected by wind farms specifically, do recover.

When it comes to the assessment of the impact on Paternoster and Britannica Heights specifically, the latter does appear to be in higher risk of negotiations for reduced property prices due to the closer proximity of the properties towards wind turbines relative to the town of Paternoster. However, as iterated in this chapter, there is no empirical evidence that shows that wind farms affect property prices in areas of scenic beauty. And if any properties would be impacted, such an impact would be of a temporary nature and reverse once the wind farm is developed (if it is approved).

Last but not least, some existing and potential property owners may often have unsubstantiated perceptions concerning the negative impact of renewable energy projects on property prices in general, which is why it is a frequent concern raised by the I&APs and as shown in international studies not only the case in South Africa but globally. The information contained in this chapter shows that such perceptions cannot be corroborated with any empirical evidence, therefore, it is important to dispel these as early as possible i.e. during planning stages of the project.

Nature:

Effect on property prices due to the perceived negative impact of the wind farm development.

	Without mitigation	With mitigation
Extent	Local (2)	Local (2)
Duration	Medium-term (3)	Short-term (2)
Magnitude	Low (4)	Minor (2)
Probability	Probable (3)	Improbable (2)
Significance	Low (27)	Low (12)
Status (positive or negative)	Negative	Negative
Reversibility	Reversible	Reversible
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	Yes
Mitigation measures:		
<ul style="list-style-type: none"> » Devise and implement awareness campaigns around impacts of wind farms on property values » Organise information sharing forums/talks for property owners and interested property investors attended by property specialists and real estate agents. » Share information on other studies conducted globally with specific focus of impact of wind farms on property values. 		
Cumulative impact:		
<ul style="list-style-type: none"> » None identified 		
Residual Impacts		
<ul style="list-style-type: none"> » Reduced negative perception of wind farm effects on property values and improved acceptance of future projects 		

4 ASSESSMENT OF ECONOMIC IMPACTS

The purpose of this section is to quantify the potential economic benefits and impacts that could be derived from the construction and operation of the proposed Boulders Wind Farm. Overall, the following economic impacts are expected to take place during the construction and operation phases:

- » Increase in economic production and Gross Domestic Product (GDP)
- » Creation of employment opportunities
- » Increase in household income
- » Government earnings through rates and taxes

Each of the above-mentioned impacts are analysed in detail further in this section.

4.1 Effect on production and GDP

4.1.1 State of the Regional and Local Economy

In 2016, the Saldanha Bay Local Municipality's economy was valued at R5 783 million in constant prices, which accounts for close to a third of the economy of the West Coast DM and 1% to the economy of the Western Cape (Quantec, 2017). Over a period of ten years (2006-2016), the municipality's economy grew at a positive compounded annual growth rate (CAGR) of 1.5% per year (Quantec, 2017).

Table 6: Saldanha Bay and Western Cape structure of economies

Economic Sector	Western Cape (GDP in 2016 prices)			Saldanha Bay Municipality (GDP in 2016 prices)		
	GDP (R'mil)	% of GDP	CAGR (2006-2016)	GDP (R'mil)	% of GDP	CAGR (2006-2016)
Agriculture, forestry and fishing	15 323	4%	2,2%	852	15%	2,2%
Mining and quarrying	948	0%	-0,5%	28	0%	-2,5%
Manufacturing	58 767	15%	0,9%	1 266	22%	-0,2%
Electricity, gas and water	6 963	2%	-1,3%	44	1%	-1,4%
Construction	17 028	4%	4,4%	238	4%	3,8%
Trade, catering and accommodation	62 857	16%	2,5%	848	15%	3,2%
Transport, storage and communication	39 581	10%	2,4%	435	8%	-0,7%
Finance and business services	118 082	30%	3,3%	1 088	19%	4,1%
General government	42 208	11%	3,6%	607	10%	3,5%
Community services	25 943	7%	1,9%	377	7%	3,0%
TOTAL	387 700	100%	1,9%	5 783	100%	1,5%

(Urban-Econ calculations based on Quantec, 2017)

The economic sectors with the greatest contribution to the GDP-R (gross domestic product per region) of the Western Cape are the finance and business services sector and the trade, catering and accommodation sector. At a local scale of the Saldanha Bay Municipality, the key GDP-R contributing sectors are manufacturing and business services, wholesale and retail trade, and catering and accommodation. The Catering and Accommodation services has grown by 93% over the past five years (Quantec, 2017). The economic sectors with the least contribution to the overall GDP-R of Western Cape and Saldanha Bay Municipality are the mining and utilities sectors.

The area includes the **Port of Saldanha Bay**, which hosts an iron ore terminal from where iron ore mined at Kumba Iron Ore is exported, and ArcelorMittal, among other manufacturing companies. The area also hosts the **Saldanha Bay Industrial Development Zone (IDZ)** or, as later designated, a Special Economic zone (SEZ), which is aimed to serve as the primary oil, gas and marine repair engineering and logistics services complex in Africa.

As a result, the transport sector and iron and steel manufacturing are among the key economic drivers in the Saldanha Bay Municipality. Over the years, the manufacturing industry has declined by 0.2% from 2012 to 2017; however, it remains the largest contributing economic sector to the Saldanha Bay Municipality GDP (Quantec, 2017). The decline in the manufacturing sector was offset by the above-average growth rate observed among the tertiary industries except for the trade sector.

2.1.2 Potential effect on production and GDP-R during construction

Since the start of the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP), 452 MW of wind and solar energy capacity spread among nine projects (four wind and five solar) has been procured and connected to the national grid in the Western Cape (DoE, NT, and DBSA, 2017). These projects amounted to R4.5 billion worth of procurement spend, of which R2.8 billion has been localised (DoE, NT, and DBSA, 2017). Therefore, for every 1MW of the procured energy mix from the IPPs in the province (solar and wind), the provincial and national economies derived R6.2 million of domestic production.

The propose Boulder Wind Farm will require an **investment to the tune of R1 520 million**, of which 33% or R494 million will be spent in South Africa. Considering the project's exerted nameplate capacity of 140 MW, for every 1 MW of the wind energy capacity to be developed, the domestic economy will experience an increase in production to the tune of R3.5 million. This expenditure will be directed towards the construction and erection of turbine towers, and construction of the wind farm components such as access roads, turbine towers' foundations, cranes hire, insurances, etc.

The construction will last for just about two years, which is in line with the average duration of similar projects in the past. For example, the establishment of the West Coast One Wind Farm started in June 2013 and the project came online in June 2015. During that period, the procurement of goods and services for the construction of the wind farm will create a direct, as well as a multiplier effect on the economic activities in the local economy of the Saldanha Bay municipality, as well as the provincial economy of the Western Cape, and possibly the national economy. The extent to which each of these economies will benefit will depend on the location of businesses that will be contracted and sub-contracted to provide the related services and goods.

The Western Cape economy is a relatively diverse economy and considering the range of services and goods that will need to be procured for the construction of the wind farm, it is likely that the majority of these services and goods will be sourced from within the Western Cape. This means, that most of the domestic expenditure will likely be localised in the Western Cape, suggesting that the multiplier effects are also likely to ensure within the same province.

It is estimated that a spending of R494 million on procurement of construction-related services, materials, equipment, machinery, and other items required for the development of the proposed Boulder Wind Farm will generate an additional R573 million of production through multiplier effects; therefore, **the project will lead to the increase in domestic production to the tune of R1 066 million over the two-year construction period.** This means that for every R1 million invested in the project, the provincial economy will grow by R2.2 million as a result of direct and spill over effects.

The increase in production will lead to the growth of the GDP. It is estimated that the province's GDP will expand by R342 million, which equates to about R171 million per annum for two years in a row. Considering that the Western Cape's economy was valued at R387 700 million in 2016, the above-mentioned economic stimulus that is to ensue from **the development of the Boulders Wind Farm will increase the provincial economy by roughly 0.04% and sustain this growth for two years.**

The **construction sector will benefit the most** from the project during its construction phase. It will also be the main driver of the indirect and induced impacts. Other sectors that are expected to experience a notable growth throughout the two-year period of construction are **manufacturing and financial and business services.** In terms of manufacturing, businesses operating in such industries as non-metallic mineral products (particularly cement, brick, and concrete manufacturers) and basic metal products will experience the largest increases. At the same time, industries that manufacture goods for household consumption such as food and beverages, clothing, petrol, and plastic products will be the most stimulated

through the induced impact. Importantly, the induced effects of the project expenditure will boost the output of tertiary sectors, and particularly trade, real estate, and insurance.

The development of the proposed wind farm will also have **a positive impact on SMMEs** particularly those located in the Saldanha Bay LM. The exact spend of the project to support SMMEs is not possible to quantify at this stage as it would be directly dependent on the tender awarded to contractors and their practices. Nonetheless, it is envisaged that local small businesses will be involved in onshore haulage, turbine tower erection, health and safety auditing and management, crainage, site security, catering, welfare services, accommodation, civil works, and electrical reticulation.

The project is expected to particularly benefit the tertiary sector of the nearby towns of **St Helena Bay, Paternoster and Vredenburg during the construction phase**. Since the project will not have a construction camp on-site, all out-of-town construction workers will need to be housed in the nearby towns and transported to the site. Therefore, businesses offering accommodation and transportation are expected to experience an increase in the demand for their services, while the local tertiary industries comprising of retail, catering, and personal services are envisaged to benefit as a result of the increase in spending of the construction workers in these towns.

Nature: Increase in economic activity during construction		
	Without mitigation	With mitigation
Extent	Regional (4)	Regional (4)
Duration	Short (2)	Short (2)
Magnitude	Moderate (6)	Moderate (6)
Probability	Definite (5)	Definite (5)
Significance	Medium (60)	Medium (60)
Status (positive or negative)	Positive	Positive
Reversibility	Reversible	Reversible
Irreplaceable loss of resources?	None	None
Can impacts be mitigated?	Yes (Enhanced)	
Enhancement measures:		
» Undertake an audit of local SMMEs that could be used to provide selected services and goods during construction		
» Contract as many local SMMEs as possible, without jeopardising the viability of the project		
Cumulative effects:		
» Development of the local economy		
Residual impacts:		
» SMMEs enhanced track record		

2.1.3 Potential effect on production and GDP-R during operation

During operations, the proposed project economic benefits will be notably smaller, but they will last for a considerably longer period – 25 years. It is envisaged that operations of the wind farm will incur about R63.7 million of annual expenditure. About 15% of this will be spent on tertiary services, such as insurance, security, and monitoring, while the rest will be spent on operating and maintaining the facility.

It is estimated that for every R1 spend on operating and maintaining the facility, there are R2.68 generated throughout the economy. Therefore, it is envisaged that the project, once operational, will contribute to the creation of R170.7 million of business sales throughout the Western Cape economy. This will in turn translate into an annual figure of R49.8 million of GDP. Considering the size of the provincial economy, the proposed project is envisaged to contribute roughly 0.013% to the provincial economy for 25 years. The largest growth will be created in the provincial electricity sector, followed by the tertiary industries such as business services and finance.

Nature: Contribution to the growth of the local and provincial economies for the duration of the Boulders Wind Farm operation phase		
	Without mitigation	With mitigation
Extent	Regional (4)	Regional (4)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Low (4)
Probability	Definite (5)	Definite (5)
Significance	Medium (60)	Medium (60)
Status (positive or negative)	Positive	Positive
Reversibility	Reversible	Reversible
Irreplaceable loss of resources?	None	None
Can impacts be mitigated?	Yes (Enhanced)	
Enhancement measures:		
<ul style="list-style-type: none"> » Undertake an audit of local SMMEs that could be used to provide selected services and goods during operation (i.e. security, transportation, land clearance and road maintenance, etc.) » Contract local SMMEs for on-site related non-technical activities 		
Cumulative effects:		
<ul style="list-style-type: none"> » Development of the local economy 		
Residual impacts:		
<ul style="list-style-type: none"> » SMMEs enhanced track record 		

2.1.4 Potential effect on local economic development due to Socio-Economic Development (SED) and Enterprise Development (ED) commitments

The Independent Power Producer Procurement Programme requires that operators allocate a percentage of their project's Gross Operating Surplus to Socio-Economic Development and Enterprise Development initiatives. It is not stipulated how this money must be spend only that at least 0.6% and 1.5% respectively of GOS should be used to uplift communities within a 50 km radius of the project site through SED and ED initiatives.

In the case of Boulders Wind Farm, the commitments to SED and ED will equate to 2.2% or about R7 million per annum for SED contributions and 0.59% or about R2 million per annum for ED contributions. overall, a total of R185 million is envisaged to be invested into the local communities located within a 50 km radius of Vredenburg.

The Desktop Community Development Plan prepared by ED Platform on behalf of Boulders Wind Farm identified the following potential initiatives and project where the above-mentioned funds could be invested to uplift the community and improve the lives of the local residents:

- » Enterprise development:
 - * Support and development of small-scale commercial businesses in the agricultural and fishery sectors
 - * Establishment of a skills centre for aquaculture and promotion of related businesses
 - * Skills development and commercial support facility to assist with upgrading of public spaces in Vredenburg
- » Socio-economic development:
 - * Early Childhood Development and Primary school support programmes
 - * Vocational, artisan and technical education to build capacity of the local labour force
 - * Provision of material support to foster parents of children removed from primary caregivers due to substance abuse or other social ills
 - * Actions to address communicable diseases among children under 5 years of age and injuries among children under 15 caused by various social factors
 - * Support community safety initiatives

While it is not possible to state with certainty which of the above-mentioned projects will be prioritised and perused when during the operations, the budget of about R9 million Rands available to be invested on a yearly basis for 20 years during the project's operations could notably improve the socio-economic environment in some of the smaller communities that are often do not get prioritised by local government.

To put the above figure in perspective, the annual R9 million to be spent by Boulders Wind Farm on community initiatives equates to about 0.6% of the Saldanha Bay municipal budget and 2.9% of the capital component.

Nature: Stimulation of local economic development in the communities within 50km radius		
	Without mitigation	With mitigation
Extent	Up to nearby towns (3)	Up to nearby towns (3)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Low (4)
Probability	Definite (5)	Definite (5)
Significance	Medium (55)	Medium (55)
Status (positive or negative)	Positive	Positive
Reversibility	Reversible	Reversible
Irreplaceable loss of resources?	None	None
Can impacts be mitigated?	Yes (Enhanced)	
Enhancement measures:		
<ul style="list-style-type: none"> » A detailed three-year plan needs to be developed with a clear outline of the projects that are to be supported or invested in during that period; the plan, though needs to be reviewed annually and updated. » When deciding on the projects to be included in the annual plans, consideration needs to be given to projects located in Paternoster and in St Helena and Britannica Heights to ensure that benefits are more equally distributed among the affected parties. » Any project identified to be included in the plan needs to be consulted about and approved by the community from the area where the project is to be implemented. Moreover, the community should be engaged with during the project identification and planning stage to ensure that it responds to their most prominent needs and receives a buy-in. 		
Cumulative effects:		
<ul style="list-style-type: none"> » Development of the local economy 		
Residual impacts:		
<ul style="list-style-type: none"> » Improved living standards and skills 		

2.1.4 Potential effect on production and GDP-R during decommissioning

The decommissioning phase of the proposed Boulders Wind Farm will last for about 1.5 years. It will include a number of activities, such as disassembly of structures and rehabilitation of land. Aside from the funds that will be spent on decommissioning activities, which will increase the production of construction companies involved in the process, the decommissioning phase will lead to the recovery of metals that could be recycled and reused in other construction activities.

Steel from foundations, tower shafts, steel sections of turbines, switch cabinets, a control cabinet, and transformers will be recovered, cleansed, and milled before re-melting in a blast furnace and selling to other users. In addition, copper and other metallic materials will be recovered and recycled. Recovery of valuable metallic materials on one hand will lead to the generation of revenue for the owner and on the other hand will allow for savings in production costs of companies that will use the recovered materials in their processes.

Nature: Increased production due to decommissioning activities and recovery of valuable resources through recycling		
	Without mitigation	With mitigation
Extent	Regional (4)	Regional (4)
Duration	Very short (1)	Very short (1)
Magnitude	Minor (2)	Low (4)
Probability	Highly probable (4)	Definite (5)
Significance	Low (28)	Medium (45)
Status (positive or negative)	Positive	Positive
Reversibility	Reversible	Reversible
Irreplaceable loss of resources?	None	None
Can impacts be mitigated?	Yes (Enhanced)	
Enhancement measures:		
» Develop and implement a material recovery strategy to optimise the use of valuable metallic materials comprising various components of the wind farm		
» Procure services from local construction business		
Cumulative effects:		
» Improved resource utilisation		
Residual impacts:		
» None envisaged		

4.2 Effect on employment

4.2.1 Labour force and dynamics status quo

Employment is the primary means by which individuals who are of working age may earn an income that will enable them to provide for their basic needs and improve their standard of living. As such, employment and unemployment rates are important indicators of socio-economic well-being. The following paragraphs examine the study area's labour market from a number of perspectives, including the employment rate and sectoral employment patterns.

According to Census 2011 data, the working age population of the Saldanha Bay Municipality was about 74 104 (Statistics South Africa, 2015). Amongst these, 45 152 were economically active (Statistics South Africa, 2015). Not economically active (NEA) persons are those who do not contribute to the production of goods and services either due to age (i.e. students or pensioners), personal circumstances, or lack of desire to seek employment (i.e. discouraged job seekers).

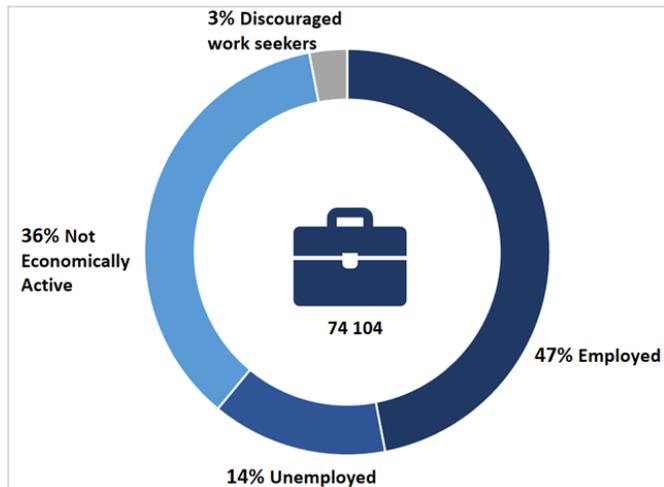


Figure 18: Labour statistics in Saldanha Bay LM (Statistics South Africa, 2015)

According to the latest statistics available from Quantec, the Saldanha Bay Municipality had 47 414 employed people and 8 991 unemployed. This results in an unemployment rate of 15.9%. For comparison, the Western Cape economy had an unemployment rate of 17.7% with a total of 540 210 people being unemployed and actively looking for work (Quantec, 2017).

In the town of Vredenburg, 13 414 of the working age population were employed, whereas 4 709 were unemployed in 2011 (Statistics South Africa, 2015). This indicates a 26% unemployment rate. In the case of Paternoster, the unemployment rate (10%) is significantly lower than that of the municipality and is the closest town in terms of the small population size (Statistics South Africa, 2015). Conversely, Saint Helena Bay has the highest unemployment rate of 30% (Statistics South Africa, 2015).

A majority (80%) of the employed labour work within the formal sector, whereas a minority (20%) work within the informal sector (Statistics South Africa, 2015). Within the formal sector, 41% are semi-skilled, closely followed by 40% low-skilled and the minority remainder are highly skilled (Statistics South Africa, 2015).

The agriculture, forestry and fishing sector employed the largest number of people in the Saldanha Bay Municipality in 2016 (Quantec, 2017). This is attributed to the coastal location with numerous fishing activity. The mining sector conversely employed the least. A decline in employment across most sectors of the economy took place between 2008 and 2010. This can be attributed to the global financial crisis, followed by the national economy's recession observed during this period. The agriculture, forestry and fishing sector particularly experienced a decline in employment numbers from 2007 to 2011 in the area. The exceptions have been the general government and utilities sector, which has consistently experienced growth in employment over the past ten years.

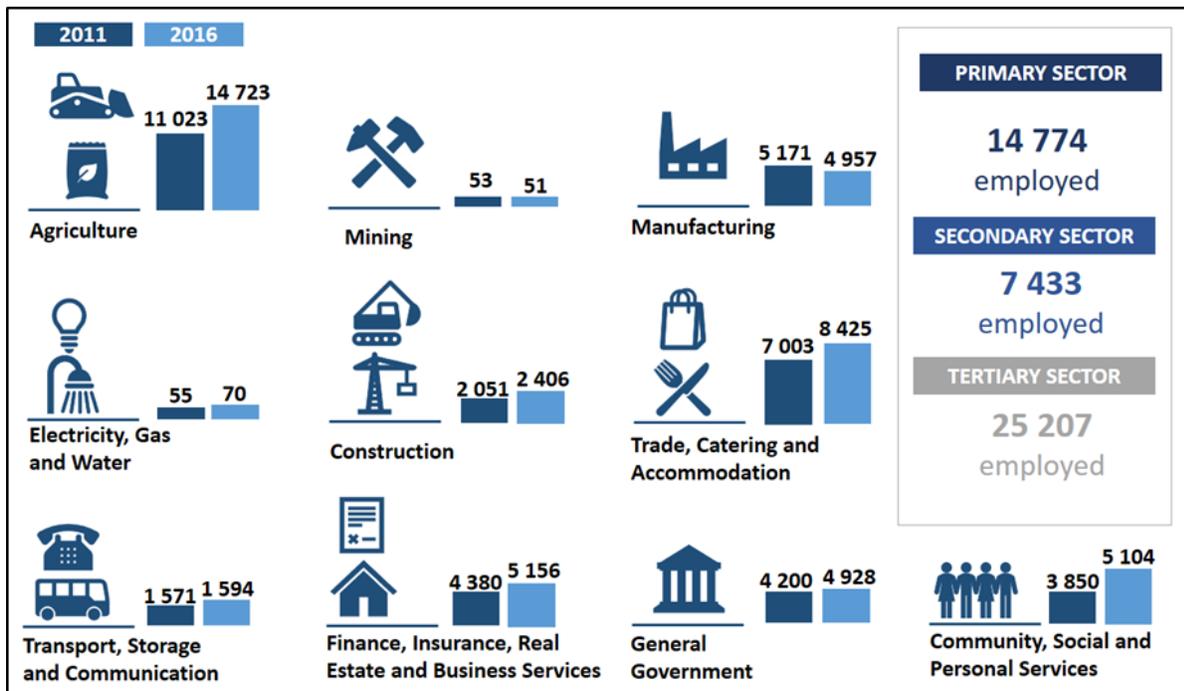


Figure 19: Employment figures per economic sector 2011 and 2016 comparison for Saldanha Bay Municipality (Quantec, 2017)

This illustrates the high reliance that the local economy has on the fishing and agricultural activities, tourism activities, and activities associated with the Saldanha Bay IDZ. Observing 2011 and 2016 employment data, it is evident that most economic sectors have increased their labour absorption during this period with the exception of the manufacturing and mining sectors.

2.2.2 Potential effect on employment during construction

Renewable energy projects create a significant number of employment opportunities during the construction phase. Although, such projects are considered to be capital-intensive, the establishment of renewable energy projects provides an opportunity for making use of labour-intensive techniques and employment of low skilled labour, which is in abundance in South Africa. In the case of the West Coast One Wind Farm, which include 47 wind turbines with a total contracted capacity of 91 MW, since the start of the development of that project and considering the two years of its operation, a total of 511 full-time equivalent jobs have been created (DoE, NT, and DBSA, 2017). Most of these employment opportunities were made available during the construction phase.

The proposed Boulders Wind Farm will have a far bigger contracted capacity but will have a similar number of wind turbines included (up to 45 wind turbines). This though means that the towers will need to be taller and the foundation may need to be bigger than that of the

West Coast One Wind Farm, all of which will require additional labour. It is estimated that a total of **813 direct full-time equivalent person-years will be created during the construction of the proposed Boulder Wind Farm**, 54% of which will be jobs involved in the production and erection of the concrete-based wind towers.

In addition to the direct number of jobs to be created at the construction site, the project will also lead to the creation of employment opportunities through backward linkages. The increase in production of companies due to the growth in demand for goods and services derived from the investment into Boulder Wind Farm is likely to translate into the creation of additional temporary employment. It is estimated that **an additional 1 049 full-time equivalent person-years will be created through the multiplier effects**, some of which will be localised in the nearby towns of Paternoster, Vredenburg and St Helena Bay.

Overall, the project is expected to create a total of 1 861 full-time equivalent person-years, which equates to about 931 jobs created and maintained for two years. The **above annual equivalent of jobs to be created equates to 0.17% of the 2016 provincial unemployment figure**, which suggests that the proposed project may have a small but positive contribution towards the unemployment situation in the province during the two-year construction period.

The number of jobs created for the local labour in the local municipality will be determined by the EPC contractor; however, the developer commits to adhere to the maximum targets set by the Department of Energy with respect to the renewable energy projects in the future bid windows. It should be noted though, that in the case of the West Coast One Wind Farm, three quarters of all direct employment opportunities created during construction were absorbed by local labour (WindLab, 2018). This could be achieved due to the significant portion of the work involved in the construction of renewable energy projects requiring relatively low skills. Therefore, it could be argued that **the potential for employment from the local communities in the case of the proposed Boulder Wind Farm could be significant**. However, the localisation of employment opportunities will not be limited to the direct or on-site construction jobs only; it will also include jobs that will be created in the accommodation, catering, and personal services sectors in the nearby towns that are expected to benefit from the proposed project.

Nature: Creation of temporary employment opportunities during construction		
	Without mitigation	With mitigation
Extent	Regional (4)	Regional (4)
Duration	Short (2)	Short (2)
Magnitude	Moderate (6)	Moderate (6)
Probability	Definite (5)	Definite (5)

Significance	Medium (60)	Medium (60)
Status (positive or negative)	Positive	Positive
Reversibility	Reversible	Reversible
Irreplaceable loss of resources?	None	None
Can impacts be mitigated?	Yes (Enhanced)	
Enhancement measures:		
<ul style="list-style-type: none"> » Employ labour-intensive methods in construction, where feasible, to increase the number of unskilled and low skilled people benefitting from the project's development » Undertake a skills audit in the nearby towns of Paternoster, St Helena Bay and Vredenburg and identify the local skills that could be used during the construction phase » Employ the local labour, based on their skills and capabilities, as far as feasible 		
Cumulative effects:		
<ul style="list-style-type: none"> » Improved employment situation in the area for a short period 		
Residual impacts:		
<ul style="list-style-type: none"> » Skills development 		

2.2.3 Potential effect on employment during operation

During operation, the project will employ about 17 people, majority of who will be technicians. In addition, another 33 full-time equivalent jobs could be created through the multiplier effect primarily within agriculture, trade, business services, and community services sectors. It should be noted though that while the jobs created by the project on -site are expected to be new jobs, the job creation of the multiplier effect is likely to result in the maintenance of the existing positions rather than creation of new positions. Therefore, once operational, Boulders Wind Farm will initially create 17 new jobs and support about 50 jobs on an annual basis for the duration of its operational life – 25 years.

The area is highly reliant on the agricultural and fishery sector as well as jobs created within the tourism industry. The employment in the agricultural sector can be relatively volatile and is seasonal; the same can be said about the tourism sector – employment in this industry varies between off-peak and peak seasons. Although the proposed project will create a relatively small number of jobs, the jobs created will be permanent and will assist in diversifying the employment opportunities in the local economy, therefore, offsetting the fluctuations in the above-mentioned two industries.

Nature:		
Creation of sustainable employment opportunities		
	Without mitigation	With mitigation
Extent	Local (3)	Local (3)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Low (4)
Probability	Definite (5)	Definite (5)

Significance	Medium (55)	Medium (55)
Status (positive or negative)	Positive	Positive
Reversibility	Reversible	Reversible
Irreplaceable loss of resources?	None	None
Can impacts be mitigated?	Yes (Enhanced)	
Enhancement measures:		
<ul style="list-style-type: none"> » Employ from the local labour pool as far as feasible » Identify potential candidates from the local labour pool during construction and train them in-time for the start of operations 		
Cumulative effects:		
<ul style="list-style-type: none"> » Diversification of the local employment profile » Reduced dependency on seasonal employment 		
Residual impacts:		
<ul style="list-style-type: none"> » Improved unemployment figures 		

4.3 Effect of household income

4.3.1 Current situation with regard to income levels

The average monthly household income in the Saldanha Bay Municipality is R10 759 (2011 figures adjusted to 2017 prices), with 6% of households earning no income. Overall, 44% of the households within the Saldanha Bay Municipality earn up to R3 200 per month. A great proportion of the study area observed earns between R1–R3 200 per month, as indicated in Figure 20 below; on average, a household in Paternoster earns about R6 886 (2011 figures adjusted to 2017 prices). In the town of Vredenburg, 6% of the households have no income and 46% earn up to R3 200; their average household income is about R9 847 (2011 figures adjusted to 2017 prices).

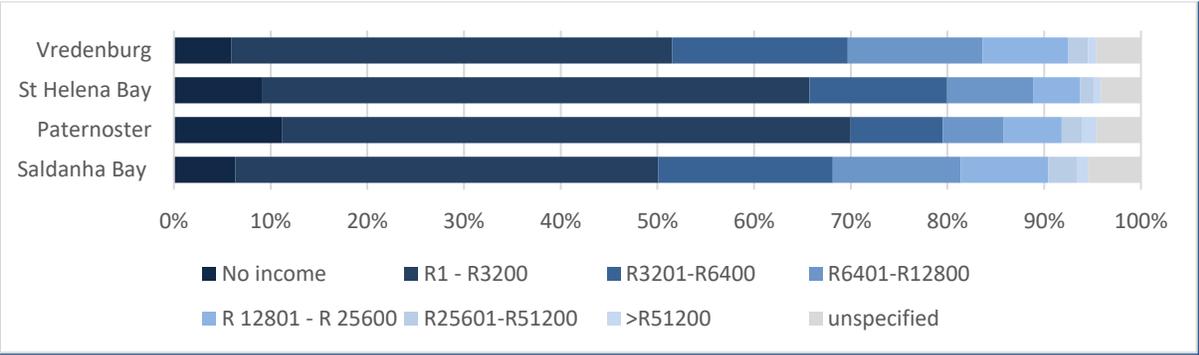


Figure 20: Income levels across study areas (Quantec, 2017)

4.3.2 Potential effect on household income during construction

The establishment of employment opportunities during the construction period will have a positive impact on the welfare of directly and indirectly affected households. As indicated above, the project will create 1 861 full-time equivalent person-years, which equates to about 931 jobs (supported for two years). Although not all of these jobs will be maintained by the same person, it could be argued that at least **931 households could benefit from the project during its construction phase, which will earn them a total of R200 million in income**. Since some of the jobs will benefit the local labour, a portion of the above income will be maintained and spent in the local municipality.

Nature: Increased household income and living standards for a temporary period (construction phase)		
	Without mitigation	With mitigation
Extent	Regional (4)	Regional (4)
Duration	Short (2)	Short (2)
Magnitude	Moderate (6)	Moderate (6)
Probability	Highly probable (4)	Highly probable (4)
Significance	Medium (48)	Medium (48)
Status (positive or negative)	Positive	Positive
Reversibility	Reversible	Reversible
Irreplaceable loss of resources?	None	None
Can impacts be mitigated?	Yes (Enhanced)	
Enhancement measures:		
<ul style="list-style-type: none"> » Employ from the local labour pool as far as feasible » Identify potential candidates from the local labour pool during construction and train them in-time for the start of operations 		
Cumulative effects:		
<ul style="list-style-type: none"> » Improved average household income 		
Residual impacts:		
<ul style="list-style-type: none"> » Improved living standards 		

4.3.3 Potential effect on household income during operation

During operations, the project will spend about R3.5 million on salaries and wages of the directly employed personnel. Considering that there will be about 17 jobs created on-site, the average income earned by the workers at the wind farm will be above the average household income in the local municipality. Furthermore, considering that the average household size in the Saldanha Bay LM is 3.5, it could be argued that a total of 60 people will benefit from the project as a result of the direct employment created by the Boulders Wind Farm. Furthermore, landowners of the farm, where the proposed wind farm is to be developed, will receive rental income, which will improve the overall productive use of the land and benefit the landowners financially.

Nature: Improved household income and living standards during operation		
	Without mitigation	With mitigation
Extent	Local (3)	Local (3)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	Low (4)
Probability	Highly probable (4)	Highly probable (4)
Significance	Medium (44)	Medium (44)
Status (positive or negative)	Positive	Positive
Reversibility	Reversible	Reversible
Irreplaceable loss of resources?	None	None
Can impacts be mitigated?	Yes (Enhanced)	
Enhancement measures: » Employ from the local labour pool as far as feasible		
Cumulative effects: » Increased average household income in the local municipality		
Residual impacts: » Improved living standards		

4.4 Effect of government earnings

4.4.1 Situation with national fiscus

In 2017/18, government revenue experienced a considerable shortfall with the revenue gap growing from R30.7 billion experienced in 2016/17 to R48.2 billion (NT, 2018). The shortfall was largely attributed to lower income tax, VAT and customs duties collected as a result of slowing wage increases, weaker consumer spending, and lower import growth (NT, 2018). The situation therefore is considerably grimmer than that observed during the 2008 financial crisis with the gross debt-to-GDP ratio increasing from 26.0% in 2008/09 to unprecedented 53.3% (NT, 2018).

Government has put a number of interventions in place to prevent the fiscus from being further eroded and jeopardising its ability to deliver services. These interventions include among others an increase in VAT by 1% and increase in the fuel levy (NT, 2018).

A retainer ship between tax revenue growth and economic growth is termed tax buoyancy. In the past few years, it was above 1 meaning that the pace of government revenue growth matched or even exceeded that of economic growth (NT, 2018). However, in the past few years, the tax buoyancy started to drop suggesting of the decreasing tax morality and other problems in the tax collection system in South Africa (NT, 2018).

Considering the above, strengthening tax morality combined with the continued economic development that would ensure growth in personal and income tax, company tax, and VAT – the three top contributors to gross tax revenue in South Africa - will be key to sustaining the future government budgets. While strengthening tax morality will require a number of soft interventions, continued growth can only be assured by means of investment into the economy and increasing productivity levels.

4.4.2 Effect on government revenue due to initial investment into the project

The Boulders Wind Farm construction phase is expected to last about two years; during this time, as indicated above, companies and workers will earn income and pay government taxes such as payroll and income taxes. In addition, the increased spending power will translate into more purchases which should increase the Value Added Tax base for the national government. Overall, it is expected that government will earn up to R175 million in 2018 prices from the initial investment in the wind farm over the two-year period. Considering the 2017/18 gross tax revenue of R1 217 billion, the project could contribute about 0.007% to the national fiscus for two years in a row.

Although the spending of the money earned by government through tax collection is difficult to associate with a specific budget item, any revenue received by national government is allocated towards certain budget items, provinces or local municipalities to support and assist with the improvement of their service delivery. Therefore, without a doubt this revenue will be spent on improving socio-economic conditions of the population one way or another.

Nature: Generation of revenue by government during construction		
	Without mitigation	With mitigation
Extent	National (5)	National (5)
Duration	Short (2)	Short (2)
Magnitude	Low (4)	Low (4)
Probability	Definite (5)	Definite (5)
Significance	Medium (55)	Medium (55)
Status (positive or negative)	Positive	Positive
Reversibility	Reversible	Reversible
Irreplaceable loss of resources?	None	None
Can impacts be mitigated?	Yes (Enhanced)	
Enhancement measures: » Increase procurement of goods and services from within South Africa as far as feasible		
Cumulative effects: » Sustained gross tax revenue by government		
Residual impacts: » Fiscal health		

5 IMPACT STATEMENT

Vredenburg Wind farm Pty (Ltd) is proposing to develop a wind farm with a contracted capacity of up to 140 MW comprising of up to 45 wind turbines. The project is planned to be located in the Saldanha Bay Municipality within the Western Cape Province. The project site will directly affect 10 farm portions near Vredenburg.

A number of concerns were raised during various engagements with the local communities (identified during the Scoping Phase public participation process) including the effects of the proposed project on property values and on the local tourism activities. In order to investigate these concerns, Urban-Econ made use of a longitudinal approach, case study analysis, and survey techniques to gain better insight into the above-mentioned issues and support the assessment through empirical evidence. A total of 21 individuals were engaged with representing the tourism industry and real estate sector in two locations:

- » the Saldanha Bay LM, where the proposed project is to be located and where the West Coast One Wind Farm has been developed back in 2013-2015, and
- » the Kouga LM, which includes Kouga Wind Farm located near the St Francis Bay holiday town.

The investigations revealed the following:

a) With regard to the effect on tourism

The local area, where the proposed project is to be built is a well-recognised tourism area encompassing Paternoster – one of the much-loved coastal holiday towns in South Africa. In the past few years, the town of Paternoster has experienced some decline in tourist spending; however, this was not attributed to the development of the West Coast One Wind Farm but to the unfavourable economic conditions experienced in the country and the changing preferences of the tourists with regard to accommodation and eating out. On the contrary, some of the local tourism product owners who were interviewed during the study in 2018 have experienced a positive effect on their business activities as a result of the development of West Coast One Wind Farm during its construction.

Having said this, the scenic landscape that the area is endowed with has value. Any pollution of the landscape is perceived by some stakeholders to carry a detrimental impact on the economic value derived from the landscape, which is in the case of Boulders Wind farm is tourism. The visual sensitivity mapping undertaken by CES does illustrate that the town of Paternoster and Britannica Heights, which also hosts a few of self-catering facilities, will experience a high visual exposure to the wind turbines, suggesting that the views from these localities looking inland will be altered by the development of wind turbines.

Numerous international studies attempted to assess the impact of wind farms on tourism, especially in the areas where scenery and aesthetics are among the main attractions. None of the studies were able to confirm with any confidence that there is a consistent negative impact of wind farms on tourism. Having said this, in some isolated cases, between 25% and 35% of tourists may be deterred from visiting the area where scenic landscape has been altered. Importantly, though, where negative effects were noted, the responses were based on perceived impact of wind farms on landscape rather than on the actual impact (i.e. before the wind farm was actually built). In other words, the negative impacts on tourism are usually raised as concerns during the pre-construction phase and markedly reduce in their intensity during the operations of wind farms. Indeed, research also suggest that the actual number of tourists who are likely to act after the wind farm is comprise a small percentage.

Based on the above, it can be stated that the proposed Boulders Wind Farm will alter the landscape of the area; however, the negative impact on tourist numbers is going to be markedly smaller than what is currently perceived by various stakeholders and would unlikely be detrimental to the tourism industry in the area.

Since the local tourism industry is highly season, it would be recommended to use the wind farm as an opportunity to create a new form of tourism in the area attracting young population and families with kids, who have been noted to be more neutral and accepting of wind farms. This could also assist in extending the tourism season into off-peak months.

b) With regard to the effect on property values

The review of the property trends suggests that depending on the nature of the property (holiday home or prime residence) and the type of property (sectional title, freehold, or vacant land), they all follow different demand and pricing patterns. In time of unfavourable economic conditions, the demand for holiday homes slows down or contracts leading to a decline in property prices. The opposite is true for the situation when the economy starts to recover or grow. Considering the economic dynamics in South Africa for the past ten years, the former trend was clearly observed during 2010-2012, preceded by the financial crisis of 2008/9; while the latter trend was noted post 2013.

The towns of Vredenburg and St Helena Bay are largely "primary residence" towns, while Paternoster and St Francis Bay in the Eastern Cape are largely "holiday home" towns. As a result, during the recessions and stagnation of South Africa's economy between 2010 and 2012, the prices for property in Paternoster and St Francis Bay declined while property prices in Vredenburg and St Helena Bay, during the same period, grew. From 2013, property prices in all towns recovered and continued to grow.

Considering that the West Coast One and Kouga Wind Farms were developed during 2013 and 2015 and taking into account the external property market conditions at that time, no correlation (positive or negative) between the property price dynamics and developments of these wind farms could be confirmed. This was also attested by real estate agents operating in the Paternoster and St Francis Bay areas, who were interviewed during the study. They asserted that wind farm developments (West Coast One Wind Farm and Kouga Wind Farm) did not affect demand nor prices of property in the two holiday home towns mentioned above. The review of the property transfers in Britannica Heights in the past few years also does not give any indication that the demand or property prices have been negatively impacted by the development of the West Coast One wind farm with the closest wind turbines located some 6 km away from the properties on Vasco da Gama Crescent.

Buyers and investors have a variation of perspectives in terms of wind farms - while some buyers may be dissuaded to locate near a wind farm development, it is evident from the review of development of West Coast One and Kouga Wind Farm on property values that there are buyers who are indifferent while a few may even be attracted by wind farm developments.

The review of international literature investigating the effects of wind farms on property values also corroborated the observation mentioned above. An extensive study of 7 459 transactions in the USA revealed "no persuasive evidence" of having "consistent, measurable, and statistically significant effect on home sales prices" resulting from the view of the wind facilities or distance to wind facilities (Hoen, et al., 2009, p. xii). Further studies in the UK, Australia, and Scotland also confirmed no long-term negative effect on prices. However, in some cases, property values have been seen to drop during the pre-construction phase and recover thereafter, which again suggests that the negative perceptions that buyers have prior to developments of wind farms do not materialise once the facilities are built.

Nonetheless, properties in Britannica Heights and the town of Paternoster will be visually exposed to wind turbines. The Scenic Vista Sigma and Nuisance Stigma, therefore, are highly acute in the area where numerous Interested and Affected Parties have raised concerns with respect to the property values and attractiveness of the area for property investments.

Given the research conducted in other countries, it can be alluded that property prices in selected instances could be negatively impacted – depending on the perceptions of the buyers with respect to wind farms and their willingness to use the presence of wind farms to negotiate costs down. Given the proximity of Britannica Heights to wind farms, it could be further suggested that it will have a greater risk of being affected than properties in the town of Paternoster. However, if any property is negatively impacted, such an impact would be of a temporary nature and reverse once the wind farm is developed (if it is approved).

Having said that, some exiting and potential property owners may often have unsubstantiated perceptions concerning the negative impact of renewable energy projects on property prices in general, which is why it is a concern raised by some I&APs. However, as indicated above, such perceptions cannot be corroborated with any empirical evidence, therefore, it is important to dispel these as early as possible through awareness campaigns and regular engagements with the local property owners prior to the construction phase.

c) With regard to the effect on economy

The proposed project is expected to have a positive impact on the local and provincial economies particularly during the construction phase. A total of R1 049 million of business scales is envisaged to be stimulated by the project's development during the two-year construction period, leading to the creation of about 931 jobs throughout the provincial economy, which will be sustained for two years. Increase in household income and government revenue earnings are secondary effects that will ensue because of spending on the wind farm's development.

During operations, the proposed project will create a minor economic stimulus in the context of the provincial economy. In the context of the local economy, the project will create at least 17 permanent jobs and will diversify the local economic base. Although the number of jobs is relatively small, it is important to realise that many of the jobs in the Saldanha Bay LM are seasonal and are therefore relatively volatile. The proposed project will create permanent employment opportunities, which will improve the lives of up to 60 people in the area.

In addition to the above-mentioned benefits, Boulders Wind Farm will invest around R9 million on an annual basis into socio-economic and enterprise development initiatives among the communities located in the 50 km radius from Vredenburg. This investment will carry for 20 years – while the wind farm is operational – and could notably improve the socio-economic environment in some of the smaller communities that are often overlooked by local government.

In conclusion it can be stated that no red flags could be identified from an economic impact perspective associated with the proposed development activities and operation of the Boulders Wind Farm. While the possibility of negative impacts on tourism and property values cannot be ruled out completely, research shows that if any the impacts on tourism will be marginal while the effect on property prices will dissolve once the wind farm is developed. The chances of the negative impacts on tourism and property values to be realised, however, are small given the research findings of international studies. From economic perspective,

therefore, the project is recommended for approval provided that the proposed mitigation measures are also implemented.

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APPNDIX A: IMPACT RATING METHODOLOGY

Assessment of Impacts

Direct, indirect and cumulative impacts of the issues identified through the scoping study, as well as all other issues identified in the EIA phase must be assessed in terms of the following criteria:

- » The **nature**, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- » The **extent**, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional, and a value between 1 and 5 will be assigned as appropriate (with 1 being low and 5 being high):
- » The **duration**, wherein it will be indicated whether:
 - * the lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
 - * the lifetime of the impact will be of a short duration (2-5 years) - assigned a score of 2;
 - * medium-term (5–15 years) – assigned a score of 3;
 - * long term (> 15 years) - assigned a score of 4; or
 - * permanent - assigned a score of 5;
- » The **magnitude**, quantified on a scale from 0-10, where a score is assigned:
 - * 0 is small and will have no effect on the environment
 - * 2 is minor and will not result in an impact on processes
 - * 4 is low and will cause a slight impact on processes
 - * 6 is moderate and will result in processes continuing but in a modified way
 - * 8 is high (processes are altered to the extent that they temporarily cease)
 - * 10 is very high and results in complete destruction of patterns and permanent cessation of processes
- » The **probability of occurrence**, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale of 1–5, where 1 is very improbable (probably will not happen), 2 is improbable (some possibility, but low likelihood), 3 is probable (distinct possibility), 4 is highly probable (most likely) and 5 is definite (impact will occur regardless of any prevention measures).

- » the **significance**, which shall be determined through a synthesis of the characteristics described above and can be assessed as low, medium or high; and
- » the **status**, which will be described as either positive, negative or neutral.
- » the degree to which the impact can be reversed.
- » the degree to which the impact may cause irreplaceable loss of resources.
- » the degree to which the impact can be *mitigated*.

The **significance** is calculated by combining the criteria in the following formula:

$$S=(E+D+M)P$$

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The **significance weightings** for each potential impact are as follows:

- » < 30 points: Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
- » 30-60 points: Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- » > 60 points: High (i.e. where the impact must have an influence on the decision process to develop in the area).

Assessment of impacts must be summarised in the following table format. The rating values as per the above criteria must also be included. Complete a table and associated ratings for **each** impact identified during the assessment.

Example of Impact table summarising the significance of impacts (with and without mitigation)

Nature: [Outline and describe fully the impact anticipated as per the assessment undertaken]		
	Without mitigation	With mitigation
Extent	High (3)	Low (1)
Duration	Medium-term (3)	Medium-term (3)
Magnitude	Moderate (6)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	Medium (36)	Low (24)
Status (positive or negative)	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	Yes	Yes
Mitigation:		

"Mitigation", means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.

Provide a description of how these mitigation measures will be undertaken keeping the above definition in mind.

Cumulative impacts:

"Cumulative Impact", in relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to existing and reasonably foreseeable impacts eventuating from similar or diverse activities³.

Residual Risks:

"Residual Risk", means the risk that will remain after all the recommended measures have been undertaken to mitigate the impact associated with the activity (Green Leaves III, 2014).

Assessment of Cumulative Impacts

As per DEA's requirements, specialists are required to assess the cumulative impacts. In this regard, please refer to the methodology below that will need to be used for the assessment of Cumulative Impacts.

"Cumulative Impact", in relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to existing and reasonably foreseeable impacts eventuating from similar or diverse activities⁴.

The role of the cumulative assessment is to test if such impacts are relevant to the proposed project in the proposed location (i.e. whether the addition of the proposed project in the area will increase the impact). This section should address whether the construction of the proposed development will result in:

- » Unacceptable risk
- » Unacceptable loss
- » Complete or whole-scale changes to the environment or sense of place
- » Unacceptable increase in impact

The specialist is required to conclude if the proposed development will result in any unacceptable loss or impact considering all the projects proposed in the area.

³ Unless otherwise stated, all definitions are from the 2014 EIA Regulations, GNR 326.

⁴ Unless otherwise stated, all definitions are from the 2014 EIA Regulations, as amended, GNR 326

Example of a cumulative impact table:

Nature: Complete or whole-scale changes to the environment or sense of place (example)

Nature: [Outline and describe fully the impact anticipated as per the assessment undertaken]		
	Overall impact of the proposed project considered in isolation	Cumulative impact of the project and other projects in the area
Extent	Low (1)	Low (1)
Duration	Medium-term (3)	Long-term (4)
Magnitude	Minor (2)	Low (4)
Probability	Improbable (2)	Probable (3)
Significance	Low (12)	Low (27)
Status (positive or negative)	Negative	Negative
Reversibility	High	Low
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	Yes	Yes
Confidence in findings: High.		
Mitigation: "Mitigation", means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible. Provide a description of how these mitigation measures will be undertaken keeping the above definition in mind.		
Residual Risks:		