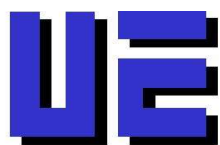
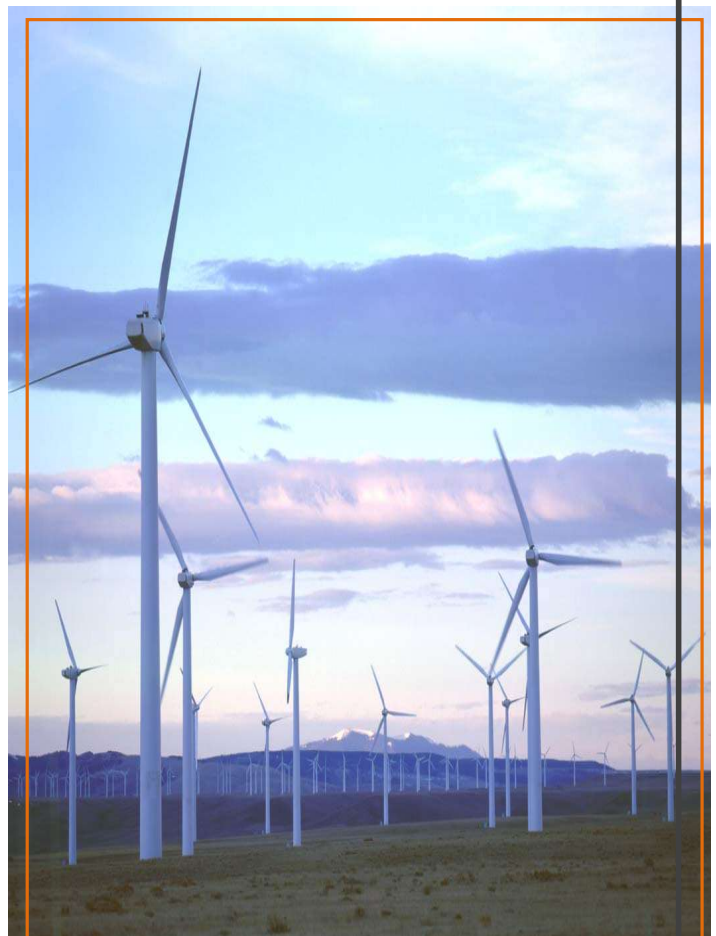


Springbok

**Wind Power Generation
Facility-
Addendum Socio-Economic
Impact Assessment**



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Addendum Socio-Economic Impact Report

1. Introduction

The purpose of this addendum is to inform the Application for Amendment of the Environmental Authorisation (EA) awarded to the windfarm in terms of the socio-economic impacts. The Springbok Wind Energy Facility (WEF) wishes to increase the generating size of the Wind Turbine Generators (WTG) to align to current international WTG models, while reducing the number of WTGs at the WEF. The following changes to the WTG parameters are highlighted in *Table 1* below,

Table 1: Proposed Amendments to Project Description

COMPONENT	AUTHORISED PROJECT	PROPOSED AMENDED OPTION
Number of turbines	37	Maximum of 25 (i.e. potential range of 12 turbines @ 4.5MW to 25 turbines @ 2.0MW - 2.2MW)
Generation capacity per turbine	1.5MW	2.0MW - 4.5MW
Generation capacity of the WEF	55.5MW	Same as authorised (55.5MW)
Rotor diameter	88m	Maximum of 160m
Hub height	80m	Maximum of 140m
Temporary construction pad	40 x 20m	40 x 40m
Permanent affected area (foundation size)	16 x 16m and 2m deep	16 x 16m and 3m deep

The purpose of this addendum is therefore to determine if the proposed changes to the WTGs and WEF layout will impact on the previous socio-economic findings.

2. Socio-Economic Impact Assessment for Proposed Amendments

The following Section compares the previous socio-economic impacts to the proposed new amendments.

2.1 Stimulation of the Local Economy

Both the proposed amended option as well as the authorised project will have positive impacts on the economy of the local area as the economy would be stimulated by increased economic activity from the different economic sectors. During the construction phase this impact will be larger, however this impact would be temporary. During operation, a minimum positive effect will also occur for the authorised project and the proposed amended option, with the most significant impact being on the electricity sector.

Table 2 indicates the comparison of social impact in terms of the authorised project compared to the proposed amended option.

Table 2a: Summary of Impact Assessment, Economic Stimulation, Construction Phase

IMPACTS	AUTHORISED PROJECT	PROPOSED AMENDED OPTION
	Pre-Mitigation	
Potential Impact	Stimulation of Local Economy	Stimulation of Local Economy
Extent of Impact	Regional	Regional
Duration of Impact	Short	Short
Intensity of Impact	Medium (Positive)	Medium (Positive)
Probability of Impact	Definite/High	Definite/High
Significance Rating	Medium (Positive)	Medium (Positive)
Reversibility	Zero	Zero
Irreplaceability	Zero	Zero
Mitigatability	Low	Low
	Post Mitigation	
Potential Impact	Stimulation of Local Economy	Stimulation of Local Economy
Extent of Impact	Regional	Regional
Duration of Impact	Short	Short
Intensity of Impact	Medium (Positive)	Medium (Positive)
Probability of Impact	Definite/High	Definite/High
Significance Rating	Medium (Positive)	Medium (Positive)
Reversibility	Zero	Zero
Irreplaceability	Zero	Zero
Mitigatability	Low	Low

Table 2b: Summary of Impact Assessment, Economic Stimulation, Operational Phase

IMPACTS	AUTHORISED PROJECT	PROPOSED AMENDED OPTION
	Pre-Mitigation	
Potential Impact	Stimulation of Local Economy	Stimulation of Local Economy
Extent of Impact	Regional	Regional
Duration of Impact	Permanent	Permanent

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IMPACTS	AUTHORISED PROJECT	PROPOSED AMENDED OPTION
	Pre-Mitigation	
Intensity of Impact	Low (Positive)	Low (Positive)
Probability of Impact	Likely/medium	Likely/medium
Significance Rating	Low (Positive)	Low (Positive)
Reversibility	Zero	Zero
Irreplaceability	Zero	Zero
Mitigatability	Low	Low
	Post Mitigation	
Potential Impact	Stimulation of Local Economy	Stimulation of Local Economy
Extent of Impact	Regional	Regional
Duration of Impact	Permanent	Permanent
Intensity of Impact	Low (Positive)	Low (Positive)
Probability of Impact	Likely/medium	Likely/medium
Significance Rating	Low (Positive)	Low (Positive)
Reversibility	Zero	Zero
Irreplaceability	Zero	Zero
Mitigatability	Low	Low

2.2 Increased Government Income

Both the proposed amended option as well as the authorised project will have positive impacts in terms of increased government income both in the construction and operation phases due to increased spending in the economy due to increased infrastructure investment, civil construction and increased expenditure by employees. This impact will be greater during the construction period; however this is only sustainable during the actual construction period due to company tax, PAYE, UIF and rates and taxes. There will be a positive impact during the operational phase; however this will be less due to the number of anticipated jobs that will be created.

Table 3 indicates the comparison of socio-economic impact in terms of the authorised project compared to the proposed amended option.

Table 3a: Summary of Impact Assessment, Government Income, Construction Phase

IMPACTS	AUTHORISED PROJECT	PROPOSED AMENDED OPTION
	Pre-Mitigation	
Potential Impact	Increased Government Income	Increased Government Income
Extent of Impact	Regional	Regional
Duration of Impact	Short	Short
Intensity of Impact	Low (Positive)	Low (Positive)
Probability of Impact	Definite/High	Definite/High
Significance Rating	Low (Positive)	Low (Positive)
Reversibility	Zero	Zero
Irreplaceability	Zero	Zero
Mitigatability	Low	Low
	Post-Mitigation	
Potential Impact	Increased Government Income	Increased Government Income
Extent of Impact	Regional	Regional

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IMPACTS	AUTHORISED PROJECT	PROPOSED AMENDED OPTION
	Pre-Mitigation	
Duration of Impact	Short	Short
Intensity of Impact	Low (Positive)	Low (Positive)
Probability of Impact	Definite/High	Definite/High
Significance Rating	Low (Positive)	Low (Positive)
Reversibility	Zero	Zero
Irreplaceability	Zero	Zero
Mitigatability	Low	Low

Table 3b: Summary of Impact Assessment, Government Income, Operational Phase

IMPACTS	AUTHORISED PROJECT	PROPOSED AMENDED OPTION
	Pre-Mitigation	
Potential Impact	Increased Government Income	Increased Government Income
Extent of Impact	Regional	Regional
Duration of Impact	Permanent	Permanent
Intensity of Impact	Low (Positive)	Low (Positive)
Probability of Impact	Likely/medium	Likely/medium
Significance Rating	Low (Positive)	Low (Positive)
Reversibility	Zero	Zero
Irreplaceability	Zero	Zero
Mitigatability	Low	Low
	Post-Mitigation	
Potential Impact	Increased Government Income	Increased Government Income
Extent of Impact	Regional	Regional
Duration of Impact	Short	Short
Intensity of Impact	Low (Positive)	Low (Positive)
Probability of Impact	Definite/High	Definite/High
Significance Rating	Low (Positive)	Low (Positive)
Reversibility	Zero	Zero
Irreplaceability	Zero	Zero
Mitigatability	Low	Low

2.3 Diversification of the Local Economy

Economic activity in the Nama Khoi Local Municipality is mainly focused in the main towns, such as Springbok and includes financial and business services and general government services as the main economic sectors.

The proposed land for the wind farm development is vacant land outside of the town of Springbok with no productive activity-taking place. Both the proposed amended option as well as the authorised project have the potential to slightly diversify the economy of the local area since the wind farm development during both the construction (CAPEX) and operational (OPEX) phases of the wind farm development and the various economic markets that will be facilitated, include the construction sector, the trade sector, the personal and business services sector. The main economic market influenced by the proposed wind farm during the operational phase is the electricity sector. Due to the low economic activity in the Local Municipal area, both the proposed amended option as well as the authorised project will lead to a situation whereby a slight diversification of economic activities can be noted. Due to the technical improvements in the new proposed amended option, the supply

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of electricity is estimated to be more efficient and maintenance costs will be reduced, making the proposed amended option more attractive compared to the authorised project.

Table 4 indicates the socio-economic impact in terms of the authorised project compared to the proposed amended option.

Table 4a: Summary of Impact Assessment, Local Economy, Construction Phase

IMPACTS	AUTHORISED PROJECT	PROPOSED AMENDED OPTION
	Pre-Mitigation	
Potential Impact	Diversification of Local Economy	Diversification of Local Economy
Extent of Impact	Regional	Regional
Duration of Impact	Short	Short
Intensity of Impact	Low (Positive)	Low (Positive)
Probability of Impact	Definite/High	Definite/High
Significance Rating	Low (Positive)	Low (Positive)
Reversibility	Zero	Zero
Irreplaceability	Zero	Zero
Mitigatability	Low	Low
	Post-Mitigation	
Potential Impact	Diversification of Local Economy	Diversification of Local Economy
Extent of Impact	Regional	Regional
Duration of Impact	Short	Short
Intensity of Impact	Low (Positive)	Low (Positive)
Probability of Impact	Definite/High	Definite/High
Significance Rating	Low (Positive)	Low (Positive)
Reversibility	Zero	Zero
Irreplaceability	Zero	Zero
Mitigatability	Low	Low

Table 4b: Summary of Impact Assessment, Local Economy, Operational Phase

IMPACTS	AUTHORISED PROJECT	PROPOSED AMENDED OPTION
	Pre-Mitigation	
Potential Impact	Diversification of Local Economy	Diversification of Local Economy
Extent of Impact	Regional	Regional
Duration of Impact	Permanent	Permanent
Intensity of Impact	Low (Positive)	Low (Positive)
Probability of Impact	Definite/High	Definite/High
Significance Rating	Low (Positive)	Low (Positive)
Reversibility	Zero	Zero
Irreplaceability	Zero	Zero
Mitigatability	Low	Low
	Post Mitigation	
Potential Impact	Diversification of Local Economy	Diversification of Local Economy
Extent of Impact	Regional	Regional
Duration of Impact	Permanent	Permanent
Intensity of Impact	Low (Positive)	Low (Positive)
Probability of Impact	Definite/High	Definite/High

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IMPACTS	AUTHORISED PROJECT	PROPOSED AMENDED OPTION
	Pre-Mitigation	
Significance Rating	Low (Positive)	Low (Positive)
Reversibility	Zero	Zero
Irreplaceability	Zero	Zero
Mitigatability	Low	Low

2.4 Employment Creation and Associated Transfer of Skills

Both the proposed amended option as well as the authorised project will have positive employment creation during both the **construction phase and operation phase** given the existing high levels of unemployment in the area. Temporary employment will be created during the construction phase. There will also be an element of skill acquisition. This skill acquisition is valuable in that people that have acquired these skills will be able to search elsewhere for similar construction employment after the completion of the construction phase. It should however be noted that the skill acquisition will probably be limited to on the job training due to the temporary life-span of the employment created by the wind farm construction.

The **operational phase** will in turn create a few permanent employment opportunities, mainly in the form of wind farm technicians, site managers and maintenance staff. It should be noted that these employment opportunities are permanent and ongoing of nature. Additionally, there will also be a two-year contract for carcass searching as part of the bird and bat monitoring.

Table 5 indicates the socio-economic impact in terms of the authorised project compared to the proposed amended option.

Table 5a: Summary of Impact Assessment, Employment, Construction Phase

IMPACTS	AUTHORISED PROJECT	PROPOSED AMENDED OPTION
	Pre-Mitigation	
Potential Impact	Employment and Skills Transfer	Employment and Skills Transfer
Extent of Impact	Regional	Regional
Duration of Impact	Short	Short
Intensity of Impact	Low (Positive)	Low (Positive)
Probability of Impact	Definite/High	Definite/High
Significance Rating	Low (Positive)	Low (Positive)
Reversibility	Medium	Medium
Irreplaceability	Zero	Zero
Mitigatability	High	High
Post Mitigation		
Potential Impact	Employment and Skills Transfer	Employment and Skills Transfer
Extent of Impact	Regional	Regional
Duration of Impact	Short	Short
Intensity of Impact	Low (Positive)	Low (Positive)
Probability of Impact	Definite/High	Definite/High
Significance Rating	Low (Positive)	Low (Positive)
Reversibility	Medium	Medium
Irreplaceability	Zero	Zero
Mitigatability	High	High

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Table 5b: Summary of Impact Assessment, Employment, Operational Phase

IMPACTS	AUTHORISED PROJECT	PROPOSED AMENDED OPTION
	Pre-Mitigation	
Potential Impact	Employment and Skills Transfer	Employment and Skills Transfer
Extent of Impact	Regional	Regional
Duration of Impact	Permanent	Permanent
Intensity of Impact	Low (Positive)	Low (Positive)
Probability of Impact	Definite/High	Definite/High
Significance Rating	Low (Positive)	Low (Positive)
Reversibility	Medium	Medium
Irreplaceability	Zero	Zero
Mitigatability	High	High
	Post Mitigation	
Potential Impact	Employment and Skills Transfer	Employment and Skills Transfer
Extent of Impact	Regional	Regional
Duration of Impact	Permanent	Permanent
Intensity of Impact	Low (Positive)	Low (Positive)
Probability of Impact	Definite/High	Definite/High
Significance Rating	Low (Positive)	Low (Positive)
Reversibility	Medium/ High	Medium/ High
Irreplaceability	Zero	Zero
Mitigatability	High	High

2.5 Increased Pressure on Infrastructure

Both the proposed amended option as well as the authorised project will cause an inflow or an increase of construction workers to Springbok and surrounding areas during the construction phase. These workers would mainly consist of construction labourers as well as additional people who would be in search for employment. This increase of labourers to the local area might put a strain on the current housing conditions in the local town of Springbok and lead to an increase of temporary informal housing/shacks in the area. The increase of labourers can be managed via proper communication with the local and regional communities in order to prevent possible unrest in the towns.

During the **operational phase** of the development, very limited pressure would be exerted on the existing infrastructure.

Table 6 indicates the socio-economic impact in terms of the authorised project compared to the proposed amended option.

Table 6a: Summary of Impact Assessment, Infrastructure Pressure, Construction Phase

IMPACTS	AUTHORISED PROJECT	PROPOSED AMENDED OPTION
	Pre-Mitigation	
Potential Impact	Increased Pressure on Infrastructure	Increased Pressure on Infrastructure
Extent of Impact	Local	Local
Duration of Impact	Short	Short
Intensity of Impact	Low (Negative)	Low (Negative)

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IMPACTS	AUTHORISED PROJECT	PROPOSED AMENDED OPTION
	Pre-Mitigation	
Probability of Impact	Definite/High	Definite/High
Significance Rating	Low (Negative)	Low (Negative)
Reversibility	Medium	Medium
Irreplaceability	Medium	Medium
Mitigatability	Medium	Medium
	Post Mitigation	
Potential Impact	Increased Pressure on Infrastructure	Increased Pressure on Infrastructure
Extent of Impact	Local	Local
Duration of Impact	Short	Short
Intensity of Impact	Low (Negative)	Low (Negative)
Probability of Impact	Definite/High	Definite/High
Significance Rating	Low (Negative)	Low (Negative)
Reversibility	Medium	Medium
Irreplaceability	Low	Low
Mitigatability	Medium	Medium

Table 6b: Summary of Impact Assessment, Infrastructure Pressure, Operational Phase

IMPACTS	AUTHORISED PROJECT	PROPOSED AMENDED OPTION
	Pre-Mitigation	
Potential Impact	Increased Pressure on Infrastructure	Increased Pressure on Infrastructure
Extent of Impact	Local	Local
Duration of Impact	Permanent	Permanent
Intensity of Impact	Low (Negative)	Low (Negative)
Probability of Impact	Likely/medium	Likely/medium
Significance Rating	Low (Negative)	Low (Negative)
Reversibility	Medium	Medium
Irreplaceability	Medium	Medium
Mitigatability	Medium	Medium
	Post Mitigation	
Potential Impact	Increased Pressure on Infrastructure	Increased Pressure on Infrastructure
Extent of Impact	Local	Local
Duration of Impact	Short	Short
Intensity of Impact	Low (Negative)	Low (Negative)
Probability of Impact	Definite/High	Definite/High
Significance Rating	Low (Negative)	Low (Negative)
Reversibility	Medium/ High	Medium/ High
Irreplaceability	Low	Low
Mitigatability	Medium	Medium

2.6 Altering Land Use Patterns

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For both the proposed amended option as well as the authorised project a large area of the land outside of the town of Springbok would thus be permanently altered in a positive pattern since the land will be used for sustainable economic activity. It can therefore be seen that the change in land use pattern in the local area of Springbok could be seen as an alternation for the benefit of the area and the economy as a whole. In addition the WEF is located in a central position which will offset any electrical losses that occur due to transmitting electricity to the region.

Table 7 indicates the socio-economic impact in terms of the *authorised project compared to the proposed amended option*.

Table 7a: Summary of Impact Assessment, Land-Use Patterns, Operational Phase

IMPACTS	AUTHORISED PROJECT	PROPOSED AMENDED OPTION
	Pre-Mitigation	
Potential Impact	Altering Land Use Patterns	Altering Land Use Patterns
Extent of Impact	Regional	Regional
Duration of Impact	Permanent	Permanent
Intensity of Impact	High (Positive)	High (Positive)
Probability of Impact	Definite/high	Definite/high
Significance Rating	High (Positive)	High (Positive)
Reversibility	High	High
Irreplaceability	Low	Low
Mitigatability	Low	Low
	Post Mitigation	
Potential Impact	Altering Land Use Patterns	Altering Land Use Patterns
Extent of Impact	Regional	Regional
Duration of Impact	Permanent	Permanent
Intensity of Impact	High (Positive)	High (Positive)
Probability of Impact	Definite/high	Definite/high
Significance Rating	High (Positive)	High (Positive)
Reversibility	High	High
Irreplaceability	Low	Low
Mitigatability	Low	Low

2.7 Increased Traffic and Congestion

According to the Addendum to the Traffic Impact Assessment (TIA)¹ conducted for the Springbok wind farm in March 2017 for the Application for Amendment of the EA, the original proposed wind farm site is mainly accessible via the existing rural road network. Although it was recommended that gravel roads should be upgraded, the low average daily traffic (ADT) associated with the proposed amendments does not warrant a sealed surface and the cost of the upgrade does not justify the expected ADT volumes. As such the anticipated increase in traffic volumes was considered insignificant. It was recommended that the gravel roads should be maintained on a regular basis.

The proposed amended option will reduce truck generation trips as well as an estimated reduction in vehicle trips and therefore the reduction in the number of turbines will also reduce the associated transport impact which will be less than that of the authorised layout.

¹ TIA conducted by ITS Engineers, Springbok Transportation Impacts, Technical Memorandum ITS 2735.3.2, 7 March 2017

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Table 8 indicates the socio-economic impact in terms of the *authorised project compared to the proposed amended option*.

Table 8a: Summary of Impact Assessment, Increased Traffic, Construction Phase

IMPACTS	AUTHORISED PROJECT	PROPOSED AMENDED OPTION
	Pre-Mitigation	
Potential Impact	Increased Traffic, Congestion & Travel Times (Disruption of Mobility)	Increased Traffic, Congestion & Travel Times (Disruption of Mobility)
Extent of Impact	Regional	Regional
Duration of Impact	Medium	Medium
Intensity of Impact	Low (Negative)	Low (Negative)
Probability of Impact	High	High
Significance Rating	Low	Low
Reversibility	Medium	Medium
Irreplaceability	Zero	Zero
Mitigatability	Low	Low
	Post Mitigation	
Potential Impact	Increased Traffic, Congestion & Travel Times (Disruption of Mobility)	Increased Traffic, Congestion & Travel Times (Disruption of Mobility)
Extent of Impact	Regional	Regional
Duration of Impact	Medium	Medium
Intensity of Impact	Low (Negative)	Low (Negative)
Probability of Impact	High	High
Significance Rating	Low	Low
Reversibility	Medium	Medium
Irreplaceability	Zero	Zero
Mitigatability	Low	Low

Table 8b: Summary of Impact Assessment, Increased Traffic, Operational Phase

IMPACTS	AUTHORISED PROJECT	PROPOSED AMENDED OPTION
	Pre-Mitigation	
Potential Impact	Increased Traffic, Congestion & Travel Times (Disruption of Mobility)	Increased Traffic, Congestion & Travel Times (Disruption of Mobility)
Extent of Impact	Local	Local
Duration of Impact	Long	Long
Intensity of Impact	Low (Negative)	Low (Negative)
Probability of Impact	Low	Low
Significance Rating	Insignificant	Insignificant
Reversibility	Medium	Medium
Irreplaceability	Zero	Zero
Mitigatability	Low	Low
	Post-Mitigation	
Potential Impact	Increased Traffic, Congestion & Travel Times (Disruption of Mobility)	Increased Traffic, Congestion & Travel Times (Disruption of Mobility)
Extent of Impact	Local	Local
Duration of Impact	Long	Long
Intensity of Impact	Low (Negative)	Low (Negative)

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IMPACTS	AUTHORISED PROJECT	PROPOSED AMENDED OPTION
	Pre-Mitigation	
Probability of Impact	Low	Low
Significance Rating	Low	Low
Reversibility	Medium	Medium
Irreplaceability	Zero	Zero
Mitigatability	Low	Low

2.8 Safety and Security

For both the proposed amended option as well as the authorised project there will be concerns of safety and security and risk exposure during the **construction phase** due to the increase in people and workers to the surrounding areas, especially in the towns of Springbok, Nababeesb and Okiep. For both the proposed amended option as well as the authorised project the construction phase will result in more people and workers in the area and can pose a safety risk. The client's appointed contractors and construction labourers should be aware of this risk and try to manage it.

Table 9 indicates the socio-economic impact in terms of the *authorised project compared to the proposed amended option*.

Table 9a: Summary of Impact Assessment, Safety, Construction Phase

IMPACTS	AUTHORISED PROJECT	PROPOSED AMENDED OPTION
	Pre-Mitigation	
Potential Impact	Safety and Security	Safety and Security
Extent of Impact	Regional	Regional
Duration of Impact	Short	Short
Intensity of Impact	Low (Negative)	Low (Negative)
Probability of Impact	Likely/medium	Likely/medium
Significance Rating	Low (Negative)	Low (Negative)
Reversibility	Medium	Medium
Irreplaceability	Low	Low
Mitigatability	High	High
	Post Mitigation	
Potential Impact	Safety and Security	Safety and Security
Extent of Impact	Regional	Regional
Duration of Impact	Short	Short
Intensity of Impact	Low (Negative)	Low (Negative)
Probability of Impact	Likely/medium	Likely/medium
Significance Rating	Low (Negative)	Low (Negative)
Reversibility	Medium	Medium
Irreplaceability	Low	Low
Mitigatability	High	High

2.9 Degree of Correspondence with Development Planning

Both the proposed amended option as well as the authorised project will adhere to the principles within the Provincial and District Growth and Development Strategies as well as other Local Strategies such as the IDP. These development strategies aim to reduce poverty and improve the economic condition of the local region and focus on renewable energy and therefore both alternatives will ensure that priority issues are addressed.

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Table 10 indicates the socio-economic impact in terms of the *authorised project compared to the proposed amended option*.

Table 10a: Summary of Impact Assessment, Planning, Operational Phase

IMPACTS	AUTHORISED PROJECT	PROPOSED AMENDED OPTION
	Pre-Mitigation	
Potential Impact	Degree of Correspondence with Development Planning	Degree of Correspondence with Development Planning
Extent of Impact	Regional	Regional
Duration of Impact	Permanent	Permanent
Intensity of Impact	Low (Positive)	Low (Positive)
Probability of Impact	Likely/medium	Likely/medium
Significance Rating	Low (Positive)	Low (Positive)
Reversibility	Zero	Zero
Irreplaceability	Zero	Zero
Mitigatability	Low	Low
	Post Mitigation	
Potential Impact	Degree of Correspondence with Development Planning	Degree of Correspondence with Development Planning
Extent of Impact	Regional	Regional
Duration of Impact	Permanent	Permanent
Intensity of Impact	Low (Positive)	Low (Positive)
Probability of Impact	Likely/medium	Likely/medium
Significance Rating	Low (Positive)	Low (Positive)
Reversibility	Zero	Zero
Irreplaceability	Zero	Zero
Mitigatability	Low	Low

2.10 Loss of Visual Value

The Visual Impact Assessment 2 identified that the proposed wind farm development will provide land uses very different to the existing site land uses, thus transforming the visual landscape. As the proposed wind farm development is so large in scale, it will visually affect various groups of receptors along the transport corridors, in the rural areas as well as the surrounding communities. The original development concept will make a strong visual statement and will provide a specific pattern in the landscape. It is accepted that the visual impact will always be rated as high. In order to minimise the negative impact in terms of the visual impact of the wind farm outside of Springbok, it was recommended that the turbine masts, rotors and nacelle should all be finished in a non-reflective matte white paint without decals or logos. There must also be no visual clutter, (small buildings, etc) visible on the site.

The turbines in *the proposed amended option* are fewer in number but higher; their visual impact would be greater than for those in *the authorised project*. The amended VIA (2017) states that although the alternative development concept will have fewer turbines, these will be 77% higher and their visual impact would be greater than the authorised project. Visual clutter will be reduced due to fewer turbines; however, the visual scale will increase as the turbines will be more dominant and easier to see. The WEF would therefore have a high significance rating and the degree of that high rating would be somewhat greater than for the previous approved scheme.

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Table 11 indicates the socio-economic impact in terms of the authorised project compared to the proposed amended option.

Table 11a: Summary of Impact Assessment, Visual Impact, Operational Phase

IMPACTS	AUTHORISED PROJECT	PROPOSED AMENDED OPTION
	Pre-Mitigation	
Potential Impact	Loss of Visual Value	Loss of Visual Value
Extent of Impact	Sub-Regional	Sub-Regional
Duration of Impact	Permanent	Permanent
Intensity of Impact	High (Negative)	High (Negative)
Probability of Impact	High	High
Significance Rating	High (Negative)	High (Negative)
Reversibility	Medium	Medium
Irreplaceability	High	High
Mitigatability	Medium	Medium
	Post Mitigation	
Potential Impact	Loss of Visual Value	Loss of Visual Value
Extent of Impact	Sub-Regional	Sub-Regional
Duration of Impact	Permanent	Permanent
Intensity of Impact	High (Negative)	High (Negative)
Probability of Impact	High	High
Significance Rating	High (Negative)	High (Negative)
Reversibility	Medium	Medium
Irreplaceability	High	High
Mitigatability	Medium	Medium

2.11 Noise, pollution and loss of tranquillity

During the **construction phase** of both the proposed amended option as well as the authorised project, noise, pollution and loss of tranquillity will be affected in the surrounding areas due to the construction activities that will take place. The construction's noise will however only cause a short-lived disruption to the surrounding residents. The impacts for the authorised project as well as the proposed amended option are expected to stay the same.

During the **operation phase**, noise, pollution and tranquillity levels will mainly be affected by sound of the WTGs. According to the Noise Impact Scoping Report, the operation of the wind turbines in the authorised project could have a noise impact, as a result of the increase of the noise levels within and around the wind farm site. However this is not expected to generate any clearly audible tones or impulses that may cause community responses at lower noise levels. Based on the Springbok Farm Noise Assessment Proposed Amended Option 2017², for the proposed amended option the potential noise levels will be the same as the main noise impact report and as such the WEF will have no or very little effect on the existing noise levels in the local communities of Bergsig, Concordia, Carolusberg, Springbok and Okiep. The overall impact rating for the proposed amended option is *LOW*. The general recommendations in the main report regarding construction and operation, including the noise monitoring should be adhered to.

Table 12 indicates the socio-economic impact in terms of the authorised project compared to the proposed amended option.

² Demos Dracoulides: Springbok Wind Energy Facility – Noise Impact Assessment Addendum 3 March 2017

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Table 12a: Summary of Impact Assessment, Noise Impact, Construction Phase

IMPACTS	AUTHORISED PROJECT	PROPOSED AMENDED OPTION
	Pre-Mitigation	
Potential Impact	Noise and loss of Tranquillity	Noise and loss of Tranquillity
Extent of Impact	Local	Local
Duration of Impact	Short	Short
Intensity of Impact	Low (Negative)	Low (Negative)
Probability of Impact	Likely/Medium	Likely/ Medium
Significance Rating	Low (Negative)	Low (Negative)
Reversibility	Medium/High	Medium/ High
Irreplaceability	Medium	Medium
Mitigatability	Medium	Medium
	Post Mitigation	
Potential Impact	Noise and loss of Tranquillity	Noise and loss of Tranquillity
Extent of Impact	Local	Local
Duration of Impact	Short	Short
Intensity of Impact	Low (Negative)	Low (Negative)
Probability of Impact	Likely/Medium	Likely/ Medium
Significance Rating	Low (Negative)	Low (Negative)
Reversibility	Medium	Medium
Irreplaceability	Medium	Medium
Mitigatability	Medium	Medium

Table 12b: Summary of Impact Assessment, Noise Impact, Operational Phase

IMPACTS	AUTHORISED PROJECT	PROPOSED AMENDED OPTION
	Pre-Mitigation	
Potential Impact	Noise and loss of Tranquillity	Noise and loss of Tranquillity
Extent of Impact	Local	Local
Duration of Impact	Long	Long
Intensity of Impact	Low (Negative)	Low (Negative)
Probability of Impact	Likely/Medium	Likely/ Medium
Significance Rating	Low (Negative)	Low (Negative)
Reversibility	Medium	Medium
Irreplaceability	Low	Low
Mitigatability	Medium	Medium
	Post Mitigation	
Potential Impact	Noise and loss of Tranquillity	Noise and loss of Tranquillity
Extent of Impact	Local	Local
Duration of Impact	Long	Long
Intensity of Impact	Low (Negative)	Low (Negative)
Probability of Impact	Likely/Medium	Likely/ Medium
Significance Rating	Low (Negative)	Low (Negative)
Reversibility	Medium	Medium
Irreplaceability	Low	Low
Mitigatability	Medium	Medium

2.12 Cumulative Impacts

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Depending on the number of renewable energy facilities that are proposed to be built around the study area, it is highly likely that if the projects are approved by government the demand for goods and services required for construction of similar facilities would grow; this could provide sufficient economies of scale and thus open opportunities for the establishment of new industries in the country and new businesses in the local area, specifically in the sectors that are not well represented in the local economy. In addition, additional facilities could generate:

- Improved energy supply in the country.
- Reduced carbon emissions in generation of electricity.
- Improved labour productivity and employability of construction workers for similar projects.
- Possible development of local skills and expertise in R&D and manufacturing industries related to wind technologies.

If other renewable energy projects are established around the study area, sufficient economies of scale could be created to establish new businesses in the local economies that would supply goods and service required for the operation and maintenance of the facilities that cannot be acquired in the area currently; this would contribute to the local economies' growth and development.

Table 13 indicates the cumulative impacts during both the construction and operation phase.

Table 13a: Cumulative Impact during Construction Phase

CUMULATIVE IMPACTS	AUTHORISED PROJECT		PROPOSED AMENDED OPTION	
	Pre-Mitigation	Post Mitigation	Pre-Mitigation	Post Mitigation
Stimulation of the local economy	Medium (Positive)	Medium (Positive)	Medium (Positive)	Medium (Positive)
Increase in government income	Low (Positive)	Low (Positive)	Low (Positive)	Low (Positive)
Diversification of the local economy	Medium (Positive)	Medium (Positive)	Medium (Positive)	Medium (Positive)
Employment creation and associated transfer of skills	Low to Medium (Positive)	Low to Medium (Positive)	Low to Medium (Positive)	Low to Medium (Positive)
Increase pressure on infrastructure	Low (Negative)	Low (Negative)	Low (Negative)	Low (Negative)
Altering land use patterns	N/A	N/A	N/A	N/A
Increased traffic and congestion	Low (Negative)	Low (Negative)	Low (Negative)	Low (Negative)
Safety and security	Low (Negative)	Low (Negative)	Low (Negative)	Low (Negative)
Degree of correspondence with development planning	N/A	N/A	N/A	N/A
Loss of visual value	N/A	N/A	N/A	N/A
Noise pollution and loss of tranquillity	Low (Negative)	Low (Negative)	Low (Negative)	Low (Negative)

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Table 13b: Cumulative Impact during Operation Phase

CUMULATIVE IMPACTS	AUTHORISED PROJECT		PROPOSED AMENDED OPTION	
	Pre-Mitigation	Post Mitigation	Pre-Mitigation	Post Mitigation
Stimulation of the local economy	Medium (Positive)	Medium (Positive)	Medium (Positive)	Medium (Positive)
Increase in government income	Medium (Positive)	Medium (Positive)	Medium (Positive)	Medium (Positive)
Diversification of the local economy	Low (Positive)	Low (Positive)	Low (Positive)	Low (Positive)
Employment creation and associated transfer of skills	Low to Medium (Positive)	Low to Medium (Positive)	Low to Medium (Positive)	Low to Medium (Positive)
Increase pressure on infrastructure	Low (Negative)	Low (Negative)	Low (Negative)	Low (Negative)
Altering land use patterns	Low (Positive)	Low (Positive)	Low (Positive)	Low (Positive)
Increased traffic and congestion	Low (Negative)	Low (Negative)	Low (Negative)	Low (Negative)
Safety and security	N/A	N/A	N/A	N/A
Degree of correspondence with development planning	Low (Positive)	Low (Positive)	Low (Positive)	Low (Positive)
Loss of visual value	Low (Negative)	Low (Negative)	Low (Negative)	Low (Negative)
Noise pollution and loss of tranquillity	Low (Negative)	Low (Negative)	Low (Negative)	Low (Negative)

These cumulative impacts would be similar for both the proposed amended option as well as the authorised project.

2.13 Decommissioning Phase

Upon the expiry of the Springbok Wind Power Generation Facility lifespan, the facility would need to be disbanded, although ideally the facility would be upgraded to maintain and prolong the lifespan of the facility.

If the facility is decommissioned, the land will be rehabilitated to return it to pre-project conditions. This means that all impacts whether positive or negative, which took place during the operational phase will cease to exist. At the same time spending on the disassembly of the components and rehabilitation of land will increase the demand for construction services and other industries, thus stimulating economic activity in the local area, albeit over a temporary period.

Socio-economic impacts stimulated during the decommissioning phase are expected to be like those which took place during the construction phase. They will also be temporary in nature, but most likely will take a much shorter time than the construction phase. They will also be associated with some expenditure, although it will be considerably less than the investment required during the development phase. Besides the positive impacts on production, employment, household income and government revenue that could ensure from the

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project, some negative impacts could also occur. These would largely be related to a slight increase in noise in the area surrounding the site, increase in traffic congestion and concerns over local safety and security due to a greater number of people accessing the area.

All the positive impacts can be enhanced to increase the benefits to the local communities, while the negative impacts could be mitigated. Mitigations and enhancement measures suggested for the construction phase would apply.

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3 Summary

The above section illustrates that the both the proposed amended option as well as the authorised project will have very similar socio-economic impacts, with estimated slight improvements in terms of efficiency of the system, but with slightly more negative effects in terms of visual impact. Therefore making the new (proposed amended option) alternative slightly more attractive from a socio-economic perspective,

Table 13 provides a summation of the socio-economic impacts that can be expected during the construction and operation phases of the authorised project and the proposed amended option.

Table 13: Summary of Social Impacts on during Construction and Operation

IMPACTS	AUTHORISED PROJECT		PROPOSED AMENDED OPTION	
	Construction	Operation	Construction	Operation
Stimulation of the local economy	✓	✓	✓	✓
Increase in government income	✓	✓	✓	✓
Diversification of the local economy	✓	✓	✓	✓
Employment creation and associated transfer of skills	✓	✓	✓	✓
Increase pressure on infrastructure	✓	✓	✓	✓
Altering land use patterns		✓		✓
Increased traffic and congestion	✓		✓	
Safety and security	✓		✓	
Degree of correspondence with development planning		✓		✓
Loss of visual value		✓		✓
Noise pollution and loss of tranquillity	✓	✓	✓	✓

Table 14 provides an overview of the significance pre- and post-mitigation.

Table 14: Summary of Significance Ratings during Construction Phase

SOCIAL IMPACTS	AUTHORISED PROJECT		PROPOSED AMENDED OPTION	
	Pre-Mitigation	Post Mitigation	Pre-Mitigation	Post Mitigation
Stimulation of the local economy	Medium (Positive)	Medium (Positive)	Medium (Positive)	Medium (Positive)
Increase in government income	Low (Positive)	Low (Positive)	Low (Positive)	Low (Positive)
Diversification of the local economy	Low (Positive)	Low (Positive)	Low (Positive)	Low (Positive)
Employment creation and associated transfer of skills	Low (Positive)	Low (Positive)	Low (Positive)	Low (Positive)
Increase pressure on infrastructure	Low (Negative)	Low (Negative)	Low (Negative)	Low (Negative)
Altering land use patterns	N/A	N/A	N/A	N/A

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Increased traffic and congestion	Low (Negative)	Low (Negative)	Low (Negative)	Low (Negative)
Safety and security	Low (Negative)	Low (Negative)	Low (Negative)	Low (Negative)
Degree of correspondence with development planning	N/A	N/A	N/A	N/A
Loss of visual value	Low Negative	Low Negative	Low Negative	Low Negative
Noise pollution and loss of tranquillity	Low (Negative)	Low (Negative)	Low (Negative)	Low (Negative)

Table 15 provides an overview of the significance pre- and post-mitigation.

Table 15: Summary of Significance Ratings during Operation Phase

SOCIAL IMPACTS	AUTHORISED PROJECT		PROPOSED AMENDED OPTION	
	Pre-Mitigation	Post Mitigation	Pre-Mitigation	Post Mitigation
Stimulation of the local economy	Low (Positive)	Low (Positive)	Low (Positive)	Low (Positive)
Increase in government income	Low (Positive)	Low (Positive)	Low (Positive)	Low (Positive)
Diversification of the local economy	Low (Positive)	Low (Positive)	Low (Positive)	Low (Positive)
Employment creation and associated transfer of skills	Low (Positive)	Low (Positive)	Low (Positive)	Low (Positive)
Increase pressure on infrastructure	Low (Negative)	Low (Negative)	Low (Negative)	Low (Negative)
Altering land use patterns	High (Positive)	High (Positive)	High (Positive)	High (Positive)
Increased traffic and congestion	Insignificant	Insignificant	Insignificant	Insignificant
Safety and security	N/A	N/A	N/A	N/A
Degree of correspondence with development planning	Low (Positive)	Low (Positive)	Low (Positive)	Low (Positive)
Loss of visual value	High (Negative)	High (Negative)	High (Negative)	High (Negative)
Noise pollution and loss of tranquillity	Low (Negative)	Low (Negative)	Low (Negative)	Low (Negative)

The proposed amendments will not result in a change to the significance of the impacts assessed in the authorised project. Additionally, the proposed amendments will not require any changes or additions to the mitigation measures identified in the original socio-economic impact assessment.