



## IMPACT AND RISK ASSESSMENT

### **The Proposed Development of a Small Beachfront Security Estate on Portions 66 and 67 of the Farm Brakkloof 443, Plettenberg Bay, Western Cape.**

Each potential environmental impact and risk identified was assessed according to specific criteria. These included the nature, extent, duration, consequence, probability and frequency of identified impacts, including the degree to which these impacts can be reversed, may cause irreplaceable loss of resources, and can be avoided, managed or mitigated. The criteria are based on the EIA Regulations, published by the Department of Forestry, Fisheries and the Environment (April 1998) in terms of the Environmental Conservation Act No. 73 of 1989. These criteria include:

#### Nature of the impact

This is an estimation of the type of effect the construction, operation and maintenance of a development would have on the affected environment. This description should include what is to be affected and how.

#### Extent of the impact

Describe whether the impact will be: local extending only as far as the development site area; or limited to the site and its immediate surroundings; or will have an impact on the region or will have an impact on a national scale or across international borders.

#### Duration of the impact

The specialist should indicate whether the lifespan of the impact would be short term (0-5 years), medium term (5-15 years), long term (16-30 years) or permanent.

#### Intensity

The specialist should establish whether the impact is destructive or benign and should be qualified as low, medium or high. The specialist study must attempt to quantify the magnitude of the impacts and outline the rationale used.

#### Probability of occurrence

The specialist should describe the probability of the impact actually occurring and should be described as improbable/unlikely (low likelihood), probable (distinct possibility), highly probable (most likely) or definite (impact will occur regardless of any prevention measures).

#### Reversibility

- Completely reversible – the impact can be reversed with the implementation of minor mitigation measures.
- Partly reversible – the impact is reversible but more intense mitigation measures are required
- Barely reversible – the impact is unlikely to be reversed even with intense mitigation measures
- Irreversible – the impact is irreversible, and no mitigation measures exist

### Irreplaceable loss of resources

Describes the degree to which resources will be irreplaceably lost due to the proposed activity. It can be no loss of resources, marginal loss, significant loss or complete loss of resources.

### Cumulative effect

An effect which in itself may not be significant but may become significant if added to other existing or potential impacts that may result from activities associated with the proposed development. The cumulative effect can be:

- Negligible – the impact would result in negligible to no cumulative effect
- Low – the impact would result in insignificant cumulative effects
- Medium – the impact would result in minor cumulative effects
- High – the impact would result in significant cumulative effects

### Significance

Significance of impacts are determined through a synthesis of the assessment criteria and is described as –

- Low negative – where it would have negligible effects and would require little or no mitigation
- Low positive – the impact will have minor positive effects
- Medium negative – the impact will have moderate negative effects and will require moderate mitigation
- Medium positive – the impact will have moderate positive effects
- High negative – the impact will have significant effects and will require significant mitigation measures to achieve an accepted level of impact
- High positive – the impact will have significant positive effects
- Very high negative – the impact will have highly significant effects and are unlikely to be able to be mitigated adequately
- High positive – the impact will have highly significant positive effects.



## Impacts foreseen during the construction phase for the Preferred Alternative (9 Residential Units):

Project Phase	Construction			
Impact	<b>Clearance of vegetation for the construction of the dwelling and associated infrastructure</b>			
Description of impact	Loss of sensitive dune vegetation, habitat loss for terrestrial wildlife, mortalities to various species unable to evade the disturbance, loss of viable propagules, fragmentation of ecological infrastructure			
Mitigable	Medium	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> <li>Wherever there are sections of undisturbed natural habitat within the development area, they should not be impacted by the building activities and should be conserved as small islands of natural resources for the small wildlife of the area. These animals include skinks, rodents, birds and invertebrates.</li> <li>the removal and translocation of protected plants if found should be undertaken prior to construction clearing activities. A permit is required prior to removal.</li> <li>Protected plants must either be moved to a safer, no-go area on the property or taken to a nursery for temporary storage until rehabilitation takes place.</li> <li>Access by heavy machinery should be limited on the site.</li> <li>Only areas necessary for the development footprint should be cleared and the remainder of the property should be left natural.</li> <li>During the construction phase of the proposed development, disturbance to the primary dune system must be avoided.</li> <li>Laydown areas for construction materials must be contained within the clearing footprint of the proposed development.</li> </ul>			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Low negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
Extent	Limited	Limited to the site and its immediate surroundings	Very limited	Limited to the site and its immediate surroundings
Intensity	High	Natural and/ or social functions and/ or processes are significantly altered	Low	Natural and/or social functions and/or processes are somewhat altered
Probability	Certain / Definite	There are sound scientific reasons to expect that the impact will definitely occur	Probable	Has occurred here or elsewhere and could therefore occur
Confidence	High	Substantive supportive data exists to verify the assessment	Medium	Determination is based on common sense and general knowledge
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Medium	The affected environment will only recover from the impact with significant intervention
Resource irreplaceability	High	The resource is damaged irreparably but is represented elsewhere	Low	The resource is not damaged irreparably or is not scarce
Significance	<b>Minor - negative</b>		<b>Negligible - negative</b>	
Comment on significance	The high infestation of alien species at the site, together with the absence of plant SCC (high confidence) translates to a <b>LOW</b> site sensitivity.			
Cumulative impacts	The impact would result in insignificant cumulative effects			

Project Phase	Construction			
Impact	Landscape Connectivity			
Description of impact	Cut-off of natural dispersal and foraging movement by animals, impacts on suitable link or important corridor, fragmentation of ecological infrastructure			
Mitigable	Low	Mitigation will slightly reduce the significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> <li>The 6m wide servitude along the northern boundary of the development area can serve as a minor corridor for smaller wildlife, linking the wetland to the west with the coastal dunes to the east, provided that it is kept clear of invasive alien plants.</li> <li>Biodiversity conservation of the important coastal foredune habitat that serves as a minor faunal corridor along the edge of the property.</li> </ul>			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
Extent	Limited	Limited to the site and its immediate surroundings	Very limited	Limited to the site and its immediate surroundings
Intensity	Low	Natural and/or social functions and/or processes are somewhat altered	Very low	Natural and/or social functions and/or processes are slightly altered
Probability	Probable	Has occurred here or elsewhere and could therefore occur	Rare / improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
Confidence	High	Substantive supportive data exists to verify the assessment	Medium	Determination is based on common sense and general knowledge
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Medium	The affected environment will only recover from the impact with significant intervention
Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Low	The resource is not damaged irreparably or is not scarce
Significance	<b>Minor - negative</b>		<b>Negligible - negative</b>	
Comment on significance	The natural fauna in the foredune and wetland areas may be intact, but the line of development along the coast has effectively cut-off natural dispersal and foraging movement by animals (with the exception of some birds) between the two habitat types in the area. The study site thus represents a very narrow and relatively natural link between the natural habitats between the foredune area and the wetland. This link is however not considered to be a suitable link or important corridor due to its narrow width and its generally poor condition, translating to a <b>LOW</b> site sensitivity			
Cumulative impacts	The impact would result in insignificant cumulative effects			

Project Phase	Construction			
Impact	Primary Dune System			
Description of impact	Impacts on natural coastal foredune habitat, increased wind erosion			
Mitigable	Medium	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> <li>The primary dune system at the beach front (mostly outside the properties) should not be disturbed during the construction or operational phases of the development.</li> <li>This area must be actively excluded from the developed area and must not suffer the dumping and other negative impacts that so often accompany building projects.</li> <li>The area must be designated as a "No Go" area.</li> <li>If access will be allowed to the beach, then a board walk system will have to be constructed to minimize disturbance of this sensitive area.</li> </ul>			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Low negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
Extent	Limited	Limited to the site and its immediate surroundings	Very limited	Limited to the site and its immediate surroundings
Intensity	Low	Natural and/or social functions and/or processes are somewhat altered	Very low	Natural and/or social functions and/or processes are slightly altered
Probability	Probable	Has occurred here or elsewhere and could therefore occur	Rare / improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
Confidence	High	Substantive supportive data exists to verify the assessment	Medium	Determination is based on common sense and general knowledge
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Medium	The affected environment will only recover from the impact with significant intervention
Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Low	The resource is not damaged irreparably or is not scarce
Significance	Minor - negative		Negligible - negative	
Comment on significance	This is an important coastal habitat that should be conserved for biodiversity conservation, to prevent increased wind erosion and as a minor faunal corridor along the edge of the property.			
Cumulative impacts	The impact would result in insignificant cumulative effects			

Project Phase	Construction			
Impact	Sedimentation			
Description of impact	Sedimentation of the wetland caused by erosion from the construction site.			
Mitigable	Medium	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> <li>A silt fence must be installed perpendicular to the angle of the slope to trap any soil or sediment mobilised from the site during the construction phase. Silt fences must be installed between the site and the Robberg Road, and in between Robberg Road and the buffer.</li> <li>The site must be monitored after every rainfall event to ensure that no sediment is being washed into the wetland by erosion.</li> </ul>			

	<ul style="list-style-type: none"> <li>The laydown area and stockpiles of construction materials or excavated materials must be located on as flat an area as possible and should not drain towards the wetland. If necessary, stockpiles must be protected (e.g. through use of sandbags and/or tarpaulins) to prevent materials being washed downslope towards the wetland.</li> </ul>			
<b>Assessment</b>	<b>Without mitigation</b>		<b>With mitigation</b>	
<b>Nature</b>	Negative		Low negative	
<b>Duration</b>	Short term	Impact will last between 1 and 5 years	Brief	Impact will not last longer than 1 year
<b>Extent</b>	Very limited	Limited to the site and its immediate surroundings	Very limited	Limited to the site and its immediate surroundings
<b>Intensity</b>	Low	Natural and/or social functions and/or processes are somewhat altered	Very low	Natural and/or social functions and/or processes are slightly altered
<b>Probability</b>	Likely	The impact may occur	Rare / improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
<b>Confidence</b>	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
<b>Reversibility</b>	High	The affected environmental will be able to recover from the impact	High	The affected environmental will be able to recover from the impact
<b>Resource irreplaceability</b>	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
<b>Significance</b>	<b>Negligible - negative</b>		<b>Negligible - negative</b>	
<b>Comment on significance</b>	The lower section of the development slopes down towards the wetland. Clearing areas of the site and the road in preparation for construction will expose bare soil which could potentially be mobilised into the wetland during heavy rainfall events. The buffer is however expected to provide good protection under such circumstances.			
<b>Cumulative impacts</b>	The impact would result in insignificant cumulative effects.			

<b>Project Phase</b>	<b>Construction</b>		
<b>Impact</b>	<b>Waste Pollution</b>		
<b>Description of impact</b>	Pollution of wetland and buffer caused by waste generated by the construction process.		
<b>Mitigable</b>	High	Mitigation exists and will considerably reduce significance of impacts	
<b>Potential mitigation</b>	<ul style="list-style-type: none"> <li>All construction waste generated on-site during construction must be adequately managed. Separation and recycling of different waste materials should be supported.</li> <li>All construction waste materials must be collected and disposed of at a suitable waste facility.</li> <li>No dumping of construction material within the wetland or wetland buffer may take place.</li> <li>The buffer and wetland area must be monitored on a weekly basis to clean-up any waste that may have been blown from the construction site; and</li> <li>Adequate sanitary facilities and ablutions must be provided for all personnel throughout the project area. Use of these facilities must be enforced (these facilities must be kept clean so that they are a desired alternative to the surrounding vegetation).</li> </ul>		
<b>Assessment</b>	<b>Without mitigation</b>		<b>With mitigation</b>
<b>Nature</b>	Negative		Low negative

<b>Duration</b>	Short term	Impact will last between 1 and 5 years	Brief	Impact will not last longer than 1 year
<b>Extent</b>	Very limited	Limited to the site and its immediate surroundings	Very limited	Limited to the site and its immediate surroundings
<b>Intensity</b>	Low	Natural and/or social functions and/or processes are somewhat altered	Very low	Natural and/or social functions and/or processes are slightly altered
<b>Probability</b>	Likely	The impact may occur	Rare / improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
<b>Confidence</b>	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
<b>Reversibility</b>	High	The affected environmental will be able to recover from the impact	High	The affected environmental will be able to recover from the impact
<b>Resource irreplaceability</b>	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
<b>Significance</b>	<b>Negligible - negative</b>		<b>Negligible - negative</b>	
<b>Comment on significance</b>	Construction activities are likely to generate significant quantities of solid waste that could pollute the wetland and buffer area. In addition, the high numbers of construction workers present on site will generate a significant amount of human waste, which could also pollute the wetland.			
<b>Cumulative impacts</b>	The impact would result in insignificant cumulative effects.			

<b>Project Phase</b>	<b>Construction</b>			
<b>Impact</b>	<b>Construction Vehicles</b>			
<b>Description of impact</b>	Impairment of water quality and disturbance to buffer caused by the operation of vehicles and heavy machinery within close proximity to the wetland.			
<b>Mitigable</b>	High	Mitigation exists and will considerably reduce significance of impacts		
<b>Potential mitigation</b>	<ul style="list-style-type: none"> <li>Construction activities must be confined to clearly demarcated areas so as to prevent unnecessary disturbance to the wetland and buffer.</li> <li>No vehicles are to park or operate within the buffer of the wetland (i.e. all activities must be restricted to Robberg Road or the eastern side of Robberg Road).</li> <li>Excavators and all other machinery and vehicles must be checked for oil and fuel leaks daily. No machinery or vehicles with leaks are permitted to work on site.</li> <li>No fuel storage, refuelling, vehicle maintenance or vehicle depots to be allowed on the slope leading towards the wetland.</li> <li>Refuelling and fuel storage areas, and areas used for the servicing or parking of vehicles and machinery, must be located on impervious bases and should have bunds around them (sized to contain 110 % of the tank capacity) to contain any possible spills. These areas must not be located within any natural drainage areas or preferential flow paths and must be located outside of the buffer of the wetland.</li> <li>The contractors used for the project should have spill kits available to ensure that any fuel or oil spills are clean-up and discarded correctly.</li> </ul>			
<b>Assessment</b>	<b>Without mitigation</b>		<b>With mitigation</b>	
<b>Nature</b>	Negative		Low negative	
<b>Duration</b>	Short term	Impact will last between 1 and 5 years	Brief	Impact will not last longer than 1 year
<b>Extent</b>	Very limited	Limited to the site and its immediate surroundings	Very limited	Limited to the site and its immediate surroundings



<b>Intensity</b>	Low	Natural and/or social functions and/or processes are somewhat altered	Very low	Natural and/or social functions and/or processes are slightly altered
<b>Probability</b>	Likely	The impact may occur	Rare / improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
<b>Confidence</b>	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
<b>Reversibility</b>	High	The affected environmental will be able to recover from the impact	High	The affected environmental will be able to recover from the impact
<b>Resource irreplaceability</b>	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
<b>Significance</b>	<b>Negligible - negative</b>		<b>Negligible - negative</b>	
<b>Comment on significance</b>	Operation of vehicles in close proximity to the wetland could result in spillages or leaks of hydrocarbons (fuel and oil) and could lead to unnecessary disturbance of the wetland and its buffer.			
<b>Cumulative impacts</b>	The impact would result in insignificant cumulative effects.			

<b>Project Phase</b>	<b>Construction</b>	
<b>Impact</b>	<b>Geotechnical restraints due to sandy soils</b>	
<b>Description of impact</b>	Settlement issues, slope stability problems, potential erosion.	
<b>Mitigable</b>	High	Mitigation exists and will considerably reduce significance of impacts
<b>Potential mitigation</b>	<ul style="list-style-type: none"> <li>Areas that are disturbed through building activities (such as the excavations for sewerage pipelines) should be suitably rehabilitated without delay. Failure to do so will have a knock-on effect on biodiversity in the form of an increase in wind erosion, soil exposure and a loss of the soil micro-organisms that are essential for plant growth.</li> <li>Use of complete cover of locally chipped woody material (for example <i>Acacia cyclops</i> stems and branches but not the seed pods).</li> </ul> <p><b>Foundations:</b></p> <ul style="list-style-type: none"> <li>The four stands positioned to the west of the site are on top of the respective dunes and care is required to minimize damage to the surrounding environment and here mini or bored piles could be employed after a platform has been cut.</li> <li>On the remainder of the sites (five eastern stands) where the existing ground level is more even rafts and re-compaction operations can be done and side slopes can be protected by shoring.</li> <li>The founding conditions improve with depth in these dune sand areas.</li> <li>Organic matter, such as roots and humus/topsoil should be removed from the footprint of structures and stockpiled separately for landscaping purposes.</li> <li>Excavations may be highly unstable at angles steeper than 35° and battering or shoring of excavation sidewalls may be required. Lateral support systems may be required along site boundaries.</li> <li>Piled foundations should only be considered for excessively heavy structures as this method is generally uneconomical in the area due to high establishment costs of specialist contractors.</li> </ul>	
<b>Assessment</b>	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Nature</b>	Negative	Negative



<b>Duration</b>	Permanent	Impact may be permanent, or in excess of 20 years	Brief	Impact will not last longer than 1 year
<b>Extent</b>	Very limited	Limited to specific isolated parts of the site	Very limited	Limited to specific isolated parts of the site
<b>Intensity</b>	Very high	Natural and/ or social functions and/ or processes are majorly altered	Low	Natural and/or social functions and/or processes are somewhat altered
<b>Probability</b>	Certain / Definite	There are sound scientific reasons to expect that the impact will definitely occur	Rare / improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
<b>Confidence</b>	High	Substantive supportive data exists to verify the assessment	Medium	Determination is based on common sense and general knowledge
<b>Reversibility</b>	Low	The affected environment will not be able to recover from the impact - permanently modified	Medium	The affected environment will only recover from the impact with significant intervention
<b>Resource irreplaceability</b>	Not relevant		Not relevant	
<b>Significance</b>	<b>Moderate - negative</b>		<b>Negligible - negative</b>	
<b>Comment on significance</b>	The natural angle of repose is at least approximately 40° but excavated faces in the neighboring property remained marginally stable for extended periods at over 50°. This was especially evident where there were fine roots present in the excavated face. Shoring was not required in cut of up to 2m deep.			
<b>Cumulative impacts</b>	Without mitigation, the geotechnical restraints on the site could result in significant destruction to the development site.			

<b>Project Phase</b>	<b>Construction</b>			
<b>Impact</b>	<b>Noise pollution</b>			
<b>Description of impact</b>	Noise caused by machinery and staff			
<b>Mitigable</b>	Low	Mitigation does not exist; or mitigation will slightly reduce the significance of impacts		
<b>Potential mitigation</b>	<ul style="list-style-type: none"> <li>Construction activities must only take place during normal working times between 07:00-17:00 on weekdays.</li> <li>Machinery may be fitted with silences to dampen noise.</li> <li>Staff must be reminded that they are working within a residential area and noise levels must be kept low.</li> </ul>			
<b>Assessment</b>	<b>Without mitigation</b>		<b>With mitigation</b>	
<b>Nature</b>	Negative		Negative	
<b>Duration</b>	Brief	Impact will not last longer than 1 year	Brief	Impact will not last longer than 1 year
<b>Extent</b>	Limited	Limited to the site and its immediate surroundings	Limited	Limited to the site and its immediate surroundings
<b>Intensity</b>	Very low	Natural and/ or social functions and/ or processes are slightly altered	Negligible	Natural and/ or social functions and/ or processes are negligibly altered

<b>Probability</b>	Almost certain / Highly probable	It is most likely that the impact will occur	Almost certain / Highly probable	It is most likely that the impact will occur
<b>Confidence</b>	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
<b>Reversibility</b>	High	The affected environmental will be able to recover from the impact	High	The affected environmental will be able to recover from the impact
<b>Resource irreplaceability</b>	Not relevant		Not relevant	
<b>Significance</b>	<b>Minor - negative</b>		<b>Negligible - negative</b>	
<b>Comment on significance</b>	Some extent of noise pollution during construction is expected; however, with mitigation the impact will be reduced.			
<b>Cumulative impacts</b>	No cumulative impacts exist.			

<b>Project Phase</b>	<b>Construction</b>			
<b>Impact</b>	<b>Visual impact</b>			
<b>Description of impact</b>	Visual & aesthetic consequences of the proposed project			
<b>Mitigable</b>	Medium	Mitigation exists and will notably reduce significance of impacts		
<b>Potential mitigation</b>	<ul style="list-style-type: none"> <li>The Architectural Design Guidelines proposed for the development must be adopted to mitigate the colours, heights, disturbance areas, maximum footprint, vegetation, etc, which will all contribute to a smaller visual impact on the landscape.</li> <li>The necessary measures be implemented during the construction phase to protect the natural vegetation, to control the noise, dust and visual intrusion.</li> <li>Appoint a Landscape consultant to recommend and implement the introduction of an indigenous landscape plan to protect the existing indigenous vegetation and to prepare a landscape plan for implementation in the private and common areas.</li> <li>Implement external lighting restrictions and guidelines.</li> </ul>			
<b>Assessment</b>	<b>Without mitigation</b>		<b>With mitigation</b>	
<b>Nature</b>	Negative		Negative	
<b>Duration</b>	Short term	Impact will last between 1 and 5 years	Short term	Impact will last between 1 and 5 years
<b>Extent</b>	Limited	Limited to the site and its immediate surroundings	Limited	Limited to the site and its immediate surroundings
<b>Intensity</b>	Low	Natural and/ or social functions and/ or processes are somewhat altered	Very low	Natural and/or social functions and/or processes are slightly altered
<b>Probability</b>	Certain / Definite	There are sound scientific reasons to expect that the impact will definitely occur	Likely	The impact may occur
<b>Confidence</b>	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
<b>Reversibility</b>	Medium	The affected environment will only recover from the	High	The affected environmental will be able to recover from the impact

		impact with significant intervention		
<b>Resource irreplaceability</b>	Not relevant		Not relevant	
<b>Significance</b>	<b>Minor - negative</b>		<b>Negligible - negative</b>	
<b>Comment on significance</b>	The proposal is sensitive towards the character of the area and attempts to create a unique sense of place that will blend in and compliment the ambience of the surrounding area.			
<b>Cumulative impacts</b>	No cumulative impacts exist.			

<b>Project Phase</b>	<b>Construction</b>			
<b>Impact</b>	<b>Employment</b>			
<b>Description of impact</b>	Empowerment of the local community members living in the area relating to temporary employment opportunities			
<b>Mitigable</b>	Medium	Mitigation only exists to ensure that the positive impact is followed through.		
<b>Potential mitigation</b>	<ul style="list-style-type: none"> <li>Use existing social structures and communication channels to ensure social representation.</li> <li>Use local labour and source local materials as far as possible.</li> </ul>			
<b>Assessment</b>	<b>Without mitigation</b>		<b>With mitigation</b>	
<b>Nature</b>	Negative		Positive	
<b>Duration</b>	Short term	Impact will last between 1 and 5 years	Short term	Impact will last between 1 and 5 years
<b>Extent</b>	Local	Extending across the site and to nearby settlements	Local	Extending across the site and to nearby settlements
<b>Intensity</b>	Low	Natural and/ or social functions and/ or processes are somewhat altered	Low	Natural and/ or social functions and/ or processes are somewhat altered
<b>Probability</b>	Rare / improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere	Almost certain / Highly probable	It is most likely that the impact will occur
<b>Confidence</b>	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
<b>Reversibility</b>	Not relevant		Not relevant	
<b>Resource irreplaceability</b>	Not relevant		Not relevant	
<b>Significance</b>	<b>Negligible - negative</b>		<b>Negligible - positive</b>	
<b>Comment on significance</b>	Due to the proposed development being on a small-scale, there is a low difference in impacts between without mitigation and with mitigation. However, as the impact would be positive for the local community to be employed during construction, mitigation is recommended to ensure this occurs.			
<b>Cumulative impacts</b>	Minor upliftment for the local community.			

**Impacts foreseen during the operational phase for the Preferred Alternative (9 Residential Units):**

<b>Project Phase</b>	<b>Operation</b>			
<b>Impact</b>	<b>Visual / Sense of place</b>			
<b>Description of impact</b>	Visual impacts of structures / aesthetic consequences due to incorrect or excessive lighting, especially outdoor lighting			
<b>Mitigable</b>	Medium	Mitigation exists and will notably reduce significance of impacts		
<b>Potential mitigation</b>	<ul style="list-style-type: none"> <li>• Municipal by-laws need to be adhered to.</li> <li>• Re-vegetation and Landscaping of open space areas with suitable indigenous vegetation.</li> <li>• Systematic removal and follow-up operations of invasive alien plants.</li> <li>• Adhere to Architectural Guidelines and Design Manual.</li> </ul>			
<b>Assessment</b>	<b>Without mitigation</b>		<b>With mitigation</b>	
<b>Nature</b>	Negative		Negative Low	
<b>Duration</b>	Permanent	Impact may be permanent, or in excess of 20 years	Brief	Impact will not last longer than 1 year
<b>Extent</b>	Limited	Limited to the site and its immediate surroundings	Limited	Limited to the site and its immediate surroundings
<b>Intensity</b>	Low	Natural and/ or social functions and/ or processes are somewhat altered	Negligible	Natural and/ or social functions and/ or processes are negligibly altered
<b>Probability</b>	Probable	Has occurred here or elsewhere and could therefore occur	Rare / improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
<b>Confidence</b>	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
<b>Reversibility</b>	Medium	The affected environment will only recover from the impact with significant intervention	High	The affected environmental will be able to recover from the impact
<b>Resource irreplaceability</b>	Not relevant		Not relevant	
<b>Significance</b>	<b>Minor - negative</b>		<b>Negligible - negative</b>	
<b>Comment on significance</b>	<p>Lighting, specifically outdoor lighting is not only aesthetic, but it provides a level of security to property owners. Therefore, outdoor lighting is essential, but should be implemented in a way which does not cause negative impacts to neighbours.</p> <p>The planned residential development will be similar to existing and planned residential developments to the north and south of the property. The site lies within the urban edge for Plettenberg Bay and the proposed upmarket residential development is compatible with surrounding land uses. The proposal is sensitive towards the character of the area and attempts to create a unique sense of place that will blend in and compliment the ambience of the surrounding area.</p>			
<b>Cumulative impacts</b>	Without mitigation the development would not be meeting design guidelines enforced by the municipality. Specifically design guidelines for the local area.			

<b>Project Phase</b>	<b>Operation</b>			
<b>Impact</b>	<b>Stormwater Management</b>			
<b>Description of impact</b>	Accelerated erosion / pollution into sub-surface water.			
<b>Mitigable</b>	High	Mitigation exists and will considerably reduce the significance of impacts		
<b>Potential mitigation</b>	<ul style="list-style-type: none"> <li>• A storm water drainage system as indicated in the EMPr must be adhered to and the system should lead run- off water away from sensitive areas, in order to prevent any soil erosion.</li> <li>• Use rainwater collection tanks to serve as a retention vessel in downpours.</li> <li>• Driveways can be constructed from grass blocks to allow for effective retarding of surface flow and facilitate percolation.</li> <li>• The common roadways will have a kerb and channel side drain where mostly water from the road is collected, transported and transferred to a trapezoidal grass block side drain and discharged into an effective 1,2m deep stilling gabion chamber that will also serve as a silt trap.</li> <li>• The retention chamber will facilitate percolation and will not have an outlet.</li> </ul>			
<b>Assessment</b>	<b>Without mitigation</b>		<b>With mitigation</b>	
<b>Nature</b>	Negative		Low Negative	
<b>Duration</b>	Short term	Impact will last between 1 and 5 years	Brief	Impact will not last longer than 1 year
<b>Extent</b>	Limited	Limited to the site and its immediate surroundings	Very limited	Limited to specific isolated parts of the site
<b>Intensity</b>	Low	Natural and/or social functions and/or processes are somewhat altered	Very low	Natural and/ or social functions and/ or processes are slightly altered
<b>Probability</b>	Almost certain	It is most likely that the impact will occur	Rare / improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
<b>Confidence</b>	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
<b>Reversibility</b>	Medium	The affected environment will only recover from the impact with significant intervention	High	The affected environmental will be able to recover from the impact
<b>Resource irreplaceability</b>	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
<b>Significance</b>	<b>Negligible - negative</b>		<b>Minor - negative</b>	
<b>Comment on significance</b>	The development has a small catchment area. The development has permeable dune sand soil conditions and noticeable runoff is not envisaged. There are also large open areas where runoff can be dissipated.			
<b>Cumulative impacts</b>	Without mitigation this impact could result in potential erosion downhill of the site caused by stormwater flow.			

Project Phase	Operation			
Impact	Stormwater Runoff into Wetland			
Description of impact	Alteration of surface flows into the wetland caused by increased stormwater runoff.			
Mitigable	High	Mitigation exists and will considerably reduce the significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> <li>Stormwater from erven on the west facing slope of the development must be attenuated on site.</li> <li>Stormwater from the access road leading into the development must be attenuated onsite (prior to any discharge into the buffer of the wetland).</li> <li>A suitable stormwater plan must be compiled for the section of Robberg Road that will be tarred and upgraded. The plan must discharge stormwater into the adjacent buffer area without causing any erosion. The runoff velocity of stormwater must therefore be reduced with energy dissipaters prior to discharge into the wetland buffer.</li> </ul>			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Low Negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
Extent	Very limited	Limited to specific isolated parts of the site	Very limited	Limited to specific isolated parts of the site
Intensity	Medium	Natural and/or social functions and/or processes are notably altered	Low	Natural and/or social functions and/or processes are somewhat altered
Probability	Almost certain	It is most likely that the impact will occur	Rare / improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	High	The affected environmental will be able to recover from the impact	High	The affected environmental will be able to recover from the impact
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	Minor - negative		Negligible - negative	
Comment on significance	The development will result in an increase in the area of paved/hardened surfaces. This will generate increased volumes of stormwater runoff which will flow down towards the wetland. The main entrance road leading from Robberg Road into the development is also likely to become an important conduit for stormwater down towards the wetland, as will the upgraded section of Robberg Road. Existing developments along tarred sections of Robberg Road (to the south) have not resulted in obvious impacts the wetland as a result of stormwater runoff. Adequate management of stormwater should therefore effectively minimise the intensity of this impact.			
Cumulative impacts	Without mitigation this impact could result in potential stormwater runoff downhill of the site towards the wetland.			

Project Phase	Operation			
Impact	Impervious Surfaces and Foundations			
Description of impact	Alteration of sub-surface flows into the wetland caused by impervious surfaces and foundations			
Mitigable	High	Mitigation exists and will considerably reduce the significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> <li>Stormwater management should encourage infiltration of water into the soil profile and other on site attenuation (i.e. using grass pavers etc.).</li> </ul>			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Low Negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
Extent	Very limited	Limited to specific isolated parts of the site	Very limited	Limited to specific isolated parts of the site
Intensity	Very low	Natural and/ or social functions and/ or processes are slightly altered	Negligible	Natural and/ or social functions and/ or processes are negligibly altered
Probability	Probable	Has occurred here or elsewhere and could therefore occur	Probable	Has occurred here or elsewhere and could therefore occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	High	The affected environmental will be able to recover from the impact	High	The affected environmental will be able to recover from the impact
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	Minor - negative		Negligible - negative	
Comment on significance	Hardened surface and establishment of foundations for houses may impede sub-surface flows towards the wetland, although these are not expected to form a major or important contribution to the water balance of the wetland. This is supported by the fact that the numerous developments around the wetland do not appear to have affected the size of the wetland area over time.			
Cumulative impacts	Without mitigation this impact could result in the impediment of sub-surface flow to the wetland.			

Project Phase	Construction	
Impact	Landscape Connectivity	
Description of impact	Cut-off of natural dispersal and foraging movement by animals, impacts on suitable link or important corridor, fragmentation of ecological infrastructure	
Mitigable	Low	Mitigation will slightly reduce the significance of impacts
Potential mitigation	<ul style="list-style-type: none"> <li>The 6m wide servitude along the northern boundary of the development area can serve as a minor corridor for smaller wildlife, linking the wetland to the west with the coastal dunes to the east.</li> <li>The eastern and western border of the servitude running along the northern boundary of the development must remain unfenced to allow wildlife to move between the coastal dune system and the wetland. Vegetation within this servitude should also not be cleared and must be maintained in a natural state. Control of alien invasive species must be undertaken if necessary.</li> <li>Biodiversity conservation of the important coastal foredune habitat that serves as a minor faunal corridor along the edge of the property.</li> </ul>	
Assessment	Without mitigation	With mitigation



<b>Nature</b>	Negative		Negative	
<b>Duration</b>	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
<b>Extent</b>	Very limited	Limited to the site and its immediate surroundings	Very limited	Limited to the site and its immediate surroundings
<b>Intensity</b>	Medium	Natural and/or social functions and/or processes are notably altered	Low	Natural and/or social functions and/or processes are somewhat altered
<b>Probability</b>	Almost certain	It is most likely that the impact will occur	Probable	Has occurred here or elsewhere and could therefore occur
<b>Confidence</b>	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
<b>Reversibility</b>	Medium	The affected environment will only recover from the impact with significant intervention	Medium	The affected environment will only recover from the impact with significant intervention
<b>Resource irreplaceability</b>	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
<b>Significance</b>	<b>Minor - negative</b>		<b>Minor - negative</b>	
<b>Comment on significance</b>	The natural fauna in the foredune and wetland areas may be intact, but the line of development along the coast has effectively cut-off natural dispersal and foraging movement by animals (with the exception of some birds) between the two habitat types in the area. The study site thus represents a very narrow and relatively natural link between the natural habitats between the foredune area and the wetland. This link is however not considered to be a suitable link or important corridor due to its narrow width and its generally poor condition, translating to a <b>LOW</b> site sensitivity. The properties fall within an ESA that has been designated as an ecological corridor. It is likely that some wildlife may use the wetland as a refuge and move in between the wetland and the coastal dune system. The development of the property will fragment this ESA which could affect the movement of wildlife.			
<b>Cumulative impacts</b>	The impact would result in insignificant cumulative effects			

<b>Project Phase</b>	<b>Operation</b>			
<b>Impact</b>	<b>Eradication of Alien Vegetation</b>			
<b>Description of impact</b>	Impacts on biodiversity / natural habitats / increased fire risk			
<b>Mitigable</b>	High	Mitigation exists and will considerably reduce significance of impacts		
<b>Potential mitigation</b>	<ul style="list-style-type: none"> <li>All invasive alien plants should be completely cleared from the property, and where a tree or bush cover is desired, replaced with suitable indigenous species.</li> <li>The suitable planting list of trees and shrubs must be used, and is incorporated into this EMP (Section 12).</li> <li>An Alien Control Plan should be compiled to systematically remove and control alien plant species.</li> <li>Follow-up operations must be done.</li> <li>Minimise disturbance to the natural vegetation using low impact manual labour techniques.</li> <li>Reduce fire hazard on site</li> </ul>			
<b>Assessment</b>	<b>Without mitigation</b>		<b>With mitigation</b>	
<b>Nature</b>	Negative		Positive	
<b>Duration</b>	Permanent	Impact may be permanent, or in excess of 20 years	Brief	Impact will not last longer than 1 year

<b>Extent</b>	Limited	Limited to the site and its immediate surroundings	Limited	Limited to the site and its immediate surroundings
<b>Intensity</b>	Very high	Natural and/ or social functions and/ or processes are majorly altered	Medium	Natural and/or social functions and/or processes are notably altered
<b>Probability</b>	Certain / Definite	There are sound scientific reasons to expect that the impact will definitely occur	Rare / improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
<b>Confidence</b>	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
<b>Reversibility</b>	Low	The affected environment will not be able to recover from the impact - permanently modified	Medium	The affected environment will only recover from the impact with significant intervention
<b>Resource irreplaceability</b>	Not relevant		Not relevant	
<b>Significance</b>	<b>High - negative</b>		<b>Moderate - positive</b>	
<b>Comment on significance</b>	The habitats available on the study site are all anthropogenically impacted, to a variable degree, but the current situation is set to deteriorate swiftly due to the devastating impact of invasive alien <i>Acacia cyclops</i> , which in the last few years has spread over much of the site and which will mature to the further detriment of all indigenous plant and animal species.			
<b>Cumulative impacts</b>	Without mitigation the development would not be meeting design guidelines enforced by the municipality. Specifically design guidelines for the local area.			

<b>Project Phase</b>	<b>Operation</b>			
<b>Impact</b>	<b>Formal gardens</b>			
<b>Description of impact</b>	Habitat loss for terrestrial wildlife, fragmentation of ecological corridor			
<b>Mitigable</b>	Low	Mitigation will slightly reduce the significance of impacts		
<b>Potential mitigation</b>	<ul style="list-style-type: none"> <li>• Areas that are not required for development purposes should remain natural with indigenous vegetation.</li> <li>• All alien invasive plants must be removed from the site on an on-going basis.</li> <li>• Investing landowners within the proposed development should be encouraged to avoid planting exotic plants in favour of locally indigenous plants.</li> <li>• Many of the dune-scrub plants are easy to propagate and many are available at nearby nurseries. A list of suitable plants is included in this EMP (Section 12).</li> </ul>			
<b>Assessment</b>	<b>Without mitigation</b>		<b>With mitigation</b>	
<b>Nature</b>	Negative		Positive	
<b>Duration</b>	Brief	Impact will not last longer than 1 year	Permanent	Impact may be permanent, or in excess of 20 years
<b>Extent</b>	Limited	Limited to the site and its immediate surroundings	Very limited	Limited to specific isolated parts of the site
<b>Intensity</b>	Negligible	Natural and/ or social functions and/ or processes are negligibly altered	Very low	Natural and/ or social functions and/ or processes are slightly altered
<b>Probability</b>	Highly unlikely / None	Expected never to happen	Almost certain /	It is most likely that the impact will occur

			Highly probable	
<b>Confidence</b>	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
<b>Reversibility</b>	Medium	The affected environment will only recover from the impact with significant intervention	Not relevant	
<b>Resource irreplaceability</b>	Low	The resource is not damaged irreparably or is not scarce	Not relevant	
<b>Significance</b>	<b>Negligible - negative</b>		<b>Minor - positive</b>	
<b>Comment on significance</b>	With mitigation the impact is likely to have more beneficial impact to retaining natural biodiversity, than without mitigation.			
<b>Cumulative impacts</b>	Without mitigation this impact could result in the spread of alien invasive plants and the loss of indigenous vegetation.			

## Impacts foreseen during the construction phase for Alternative 1 (15 Residential Units):

Project Phase	Construction			
Impact	Clearance of vegetation for the construction of the dwelling and associated infrastructure			
Description of impact	Loss of sensitive dune vegetation, habitat loss for terrestrial wildlife, mortalities to various species unable to evade the disturbance, loss of viable propagules, fragmentation of ecological infrastructure			
Mitigable	Medium	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> <li>Wherever there are sections of undisturbed natural habitat within the development area, they should not be impacted by the building activities and should be conserved as small islands of natural resources for the small wildlife of the area. These animals include skinks, rodents, birds and invertebrates.</li> <li>the removal and translocation of protected plants if found should be undertaken prior to construction clearing activities. A permit is required prior to removal.</li> <li>Protected plants must either be moved to a safer, no-go area on the property or taken to a nursery for temporary storage until rehabilitation takes place.</li> <li>Access by heavy machinery should be limited on the site.</li> <li>Only areas necessary for the development footprint should be cleared and the remainder of the property should be left natural.</li> <li>During the construction phase of the proposed development, disturbance to the primary dune system must be avoided.</li> <li>Laydown areas for construction materials must be contained within the clearing footprint of the proposed development.</li> </ul>			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
Extent	Limited	Limited to the site and its immediate surroundings	Very limited	Limited to the site and its immediate surroundings
Intensity	High	Natural and/ or social functions and/ or processes are significantly altered	Low	Natural and/or social functions and/or processes are somewhat altered
Probability	Certain / Definite	There are sound scientific reasons to expect that the impact will definitely occur	Probable	Has occurred here or elsewhere and could therefore occur
Confidence	High	Substantive supportive data exists to verify the assessment	Medium	Determination is based on common sense and general knowledge
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Medium	The affected environment will only recover from the impact with significant intervention
Resource irreplaceability	High	The resource is damaged irreparably but is represented elsewhere	Low	The resource is not damaged irreparably or is not scarce
Significance	Minor - negative		Negligible - negative	
Comment on significance	The high infestation of alien species at the site, together with the absence of plant SCC (high confidence) translates to a <b>LOW</b> site sensitivity.			
Cumulative impacts	The impact would result in insignificant cumulative effects			

Project Phase	Construction			
Impact	Landscape Connectivity			
Description of impact	Cut-off of natural dispersal and foraging movement by animals, impacts on suitable link or important corridor, fragmentation of ecological infrastructure			
Mitigable	Low	Mitigation will slightly reduce the significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> <li>The 6m wide servitude along the northern boundary of the development area can serve as a minor corridor for smaller wildlife, linking the wetland to the west with the coastal dunes to the east, provided that it is kept clear of invasive alien plants.</li> <li>Biodiversity conservation of the important coastal foredune habitat that serves as a minor faunal corridor along the edge of the property.</li> </ul>			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
Extent	Limited	Limited to the site and its immediate surroundings	Very limited	Limited to the site and its immediate surroundings
Intensity	Medium	Natural and/or social functions and/or processes are notably altered	Low	Natural and/or social functions and/or processes are somewhat altered
Probability	Probable	Has occurred here or elsewhere and could therefore occur	Rare / improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
Confidence	High	Substantive supportive data exists to verify the assessment	Medium	Determination is based on common sense and general knowledge
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Medium	The affected environment will only recover from the impact with significant intervention
Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Low	The resource is not damaged irreparably or is not scarce
Significance	Minor - negative		Negligible - negative	
Comment on significance	The natural fauna in the foredune and wetland areas may be intact, but the line of development along the coast has effectively cut-off natural dispersal and foraging movement by animals (with the exception of some birds) between the two habitat types in the area. The study site thus represents a very narrow and relatively natural link between the natural habitats between the foredune area and the wetland. This link is however not considered to be a suitable link or important corridor due to its narrow width and its generally poor condition, translating to a <b>LOW</b> site sensitivity			
Cumulative impacts	The impact would result in insignificant cumulative effects			

Project Phase	Construction			
Impact	Primary Dune System			
Description of impact	Impacts on natural coastal foredune habitat, increased wind erosion			
Mitigable	Medium	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> <li>The primary dune system at the beach front (mostly outside the properties) should not be disturbed during the construction or operational phases of the development.</li> <li>This area must be actively excluded from the developed area and must not suffer the dumping and other negative impacts that so often accompany building projects.</li> </ul>			

	<ul style="list-style-type: none"> <li>The area must be designated as a "No Go" area.</li> <li>If access will be allowed to the beach, then a board walk system will have to be constructed to minimize disturbance of this sensitive area.</li> </ul>			
<b>Assessment</b>	<b>Without mitigation</b>		<b>With mitigation</b>	
<b>Nature</b>	Negative		Low negative	
<b>Duration</b>	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
<b>Extent</b>	Limited	Limited to the site and its immediate surroundings	Very limited	Limited to the site and its immediate surroundings
<b>Intensity</b>	Low	Natural and/or social functions and/or processes are somewhat altered	Very low	Natural and/or social functions and/or processes are slightly altered
<b>Probability</b>	Probable	Has occurred here or elsewhere and could therefore occur	Rare / improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
<b>Confidence</b>	High	Substantive supportive data exists to verify the assessment	Medium	Determination is based on common sense and general knowledge
<b>Reversibility</b>	Low	The affected environment will not be able to recover from the impact - permanently modified	Medium	The affected environment will only recover from the impact with significant intervention
<b>Resource irreplaceability</b>	Medium	The resource is damaged irreparably but is represented elsewhere	Low	The resource is not damaged irreparably or is not scarce
<b>Significance</b>	<b>Minor - negative</b>		<b>Negligible - negative</b>	
<b>Comment on significance</b>	This is an important coastal habitat that should be conserved for biodiversity conservation, to prevent increased wind erosion and as a minor faunal corridor along the edge of the property.			
<b>Cumulative impacts</b>	The impact would result in insignificant cumulative effects			

<b>Project Phase</b>	<b>Construction</b>			
<b>Impact</b>	<b>Sedimentation</b>			
<b>Description of impact</b>	Sedimentation of the wetland caused by erosion from the construction site.			
<b>Mitigable</b>	Medium	Mitigation exists and will notably reduce significance of impacts		
<b>Potential mitigation</b>	<ul style="list-style-type: none"> <li>A silt fence must be installed perpendicular to the angle of the slope to trap any soil or sediment mobilised from the site during the construction phase. Silt fences must be installed between the site and the Robberg Road, and in between Robberg Road and the buffer.</li> <li>The site must be monitored after every rainfall event to ensure that no sediment is being washed into the wetland by erosion.</li> <li>The laydown area and stockpiles of construction materials or excavated materials must be located on as flat an area as possible and should not drain towards the wetland. If necessary, stockpiles must be protected (e.g. through use of sandbags and/or tarpaulins) to prevent materials being washed downslope towards the wetland.</li> </ul>			
<b>Assessment</b>	<b>Without mitigation</b>		<b>With mitigation</b>	
<b>Nature</b>	Negative		Low negative	
<b>Duration</b>	Short term	Impact will last between 1 and 5 years	Brief	Impact will not last longer than 1 year
<b>Extent</b>	Very limited	Limited to the site and its immediate surroundings	Very limited	Limited to the site and its immediate surroundings

<b>Intensity</b>	Low	Natural and/or social functions and/or processes are somewhat altered	Very low	Natural and/or social functions and/or processes are slightly altered
<b>Probability</b>	Likely	The impact may occur	Rare / improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
<b>Confidence</b>	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
<b>Reversibility</b>	High	The affected environmental will be able to recover from the impact	High	The affected environmental will be able to recover from the impact
<b>Resource irreplaceability</b>	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
<b>Significance</b>	<b>Negligible - negative</b>		<b>Negligible - negative</b>	
<b>Comment on significance</b>	The lower section of the development slopes down towards the wetland. Clearing areas of the site and the road in preparation for construction will expose bare soil which could potentially be mobilised into the wetland during heavy rainfall events. The buffer is however expected to provide good protection under such circumstances.			
<b>Cumulative impacts</b>	The impact would result in insignificant cumulative effects.			

<b>Project Phase</b>	<b>Construction</b>			
<b>Impact</b>	<b>Waste Pollution</b>			
<b>Description of impact</b>	Pollution of wetland and buffer caused by waste generated by the construction process.			
<b>Mitigable</b>	High	Mitigation exists and will considerably reduce significance of impacts		
<b>Potential mitigation</b>	<ul style="list-style-type: none"> <li>All construction waste generated on-site during construction must be adequately managed. Separation and recycling of different waste materials should be supported.</li> <li>All construction waste materials must be collected and disposed of at a suitable waste facility.</li> <li>No dumping of construction material within the wetland or wetland buffer may take place.</li> <li>The buffer and wetland area must be monitored on a weekly basis to clean-up any waste that may have been blown from the construction site; and</li> <li>Adequate sanitary facilities and ablutions must be provided for all personnel throughout the project area. Use of these facilities must be enforced (these facilities must be kept clean so that they are a desired alternative to the surrounding vegetation).</li> </ul>			
<b>Assessment</b>	<b>Without mitigation</b>		<b>With mitigation</b>	
<b>Nature</b>	Negative		Low negative	
<b>Duration</b>	Short term	Impact will last between 1 and 5 years	Brief	Impact will not last longer than 1 year
<b>Extent</b>	Very limited	Limited to the site and its immediate surroundings	Very limited	Limited to the site and its immediate surroundings
<b>Intensity</b>	Low	Natural and/or social functions and/or processes are somewhat altered	Very low	Natural and/or social functions and/or processes are slightly altered
<b>Probability</b>	Likely	The impact may occur	Rare / improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has



				rarely been known to result elsewhere
<b>Confidence</b>	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
<b>Reversibility</b>	High	The affected environmental will be able to recover from the impact	High	The affected environmental will be able to recover from the impact
<b>Resource irreplaceability</b>	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
<b>Significance</b>	<b>Negligible - negative</b>		<b>Negligible - negative</b>	
<b>Comment on significance</b>	Construction activities are likely to generate significant quantities of solid waste that could pollute the wetland and buffer area. In addition, the high numbers of construction workers present on site will generate a significant amount of human waste, which could also pollute the wetland.			
<b>Cumulative impacts</b>	The impact would result in insignificant cumulative effects.			

<b>Project Phase</b>	<b>Construction</b>			
<b>Impact</b>	<b>Construction Vehicles</b>			
<b>Description of impact</b>	Impairment of water quality and disturbance to buffer caused by the operation of vehicles and heavy machinery within close proximity to the wetland.			
<b>Mitigable</b>	High	Mitigation exists and will considerably reduce significance of impacts		
<b>Potential mitigation</b>	<ul style="list-style-type: none"> <li>Construction activities must be confined to clearly demarcated areas so as to prevent unnecessary disturbance to the wetland and buffer.</li> <li>No vehicles are to park or operate within the buffer of the wetland (i.e. all activities must be restricted to Robberg Road or the eastern side of Robberg Road).</li> <li>Excavators and all other machinery and vehicles must be checked for oil and fuel leaks daily. No machinery or vehicles with leaks are permitted to work on site.</li> <li>No fuel storage, refuelling, vehicle maintenance or vehicle depots to be allowed on the slope leading towards the wetland.</li> <li>Refuelling and fuel storage areas, and areas used for the servicing or parking of vehicles and machinery, must be located on impervious bases and should have bunds around them (sized to contain 110 % of the tank capacity) to contain any possible spills. These areas must not be located within any natural drainage areas or preferential flow paths and must be located outside of the buffer of the wetland.</li> <li>The contractors used for the project should have spill kits available to ensure that any fuel or oil spills are clean-up and discarded correctly.</li> </ul>			
<b>Assessment</b>	<b>Without mitigation</b>		<b>With mitigation</b>	
<b>Nature</b>	Negative		Low negative	
<b>Duration</b>	Short term	Impact will last between 1 and 5 years	Brief	Impact will not last longer than 1 year
<b>Extent</b>	Very limited	Limited to the site and its immediate surroundings	Very limited	Limited to the site and its immediate surroundings
<b>Intensity</b>	Low	Natural and/or social functions and/or processes are somewhat altered	Very low	Natural and/or social functions and/or processes are slightly altered
<b>Probability</b>	Likely	The impact may occur	Rare / improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere

<b>Confidence</b>	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
<b>Reversibility</b>	High	The affected environmental will be able to recover from the impact	High	The affected environmental will be able to recover from the impact
<b>Resource irreplaceability</b>	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
<b>Significance</b>	<b>Negligible - negative</b>		<b>Negligible - negative</b>	
<b>Comment on significance</b>	Operation of vehicles in close proximity to the wetland could result in spillages or leaks of hydrocarbons (fuel and oil) and could lead to unnecessary disturbance of the wetland and its buffer.			
<b>Cumulative impacts</b>	The impact would result in insignificant cumulative effects.			

<b>Project Phase</b>	<b>Construction</b>			
<b>Impact</b>	<b>Geotechnical restraints due to sandy soils</b>			
<b>Description of impact</b>	Settlement issues, slope stability problems, potential erosion.			
<b>Mitigable</b>	High	Mitigation exists and will considerably reduce significance of impacts		
<b>Potential mitigation</b>	<ul style="list-style-type: none"> <li>Areas that are disturbed through building activities (such as the excavations for sewerage pipelines) should be suitably rehabilitated without delay. Failure to do so will have a knock-on effect on biodiversity in the form of an increase in wind erosion, soil exposure and a loss of the soil micro-organisms that are essential for plant growth.</li> <li>Use of complete cover of locally chipped woody material (for example <i>Acacia cyclops</i> stems and branches but not the seed pods).</li> </ul> <p><b>Foundations:</b></p> <ul style="list-style-type: none"> <li>The four stands positioned to the west of the site are on top of the respective dunes and care is required to minimize damage to the surrounding environment and here mini or bored piles could be employed after a platform has been cut.</li> <li>On the remainder of the sites (five eastern stands) where the existing ground level is more even rafts and re-compaction operations can be done and side slopes can be protected by shoring.</li> <li>The founding conditions improve with depth in these dune sand areas.</li> <li>Organic matter, such as roots and humus/topsoil should be removed from the footprint of structures and stockpiled separately for landscaping purposes.</li> <li>Excavations may be highly unstable at angles steeper than 35° and battering or shoring of excavation sidewalls may be required. Lateral support systems may be required along site boundaries.</li> <li>Piled foundations should only be considered for excessively heavy structures as this method is generally uneconomical in the area due to high establishment costs of specialist contractors.</li> </ul>			
<b>Assessment</b>	<b>Without mitigation</b>		<b>With mitigation</b>	
<b>Nature</b>	Negative		Negative	
<b>Duration</b>	Permanent	Impact may be permanent, or in excess of 20 years	Brief	Impact will not last longer than 1 year
<b>Extent</b>	Very limited	Limited to specific isolated parts of the site	Very limited	Limited to specific isolated parts of the site
<b>Intensity</b>	Very high	Natural and/ or social functions and/ or processes are majorly altered	Low	Natural and/or social functions and/or processes are somewhat altered

<b>Probability</b>	Certain / Definite	There are sound scientific reasons to expect that the impact will definitely occur	Rare / improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
<b>Confidence</b>	High	Substantive supportive data exists to verify the assessment	Medium	Determination is based on common sense and general knowledge
<b>Reversibility</b>	Low	The affected environment will not be able to recover from the impact - permanently modified	Medium	The affected environment will only recover from the impact with significant intervention
<b>Resource irreplaceability</b>	Not relevant		Not relevant	
<b>Significance</b>	<b>Moderate - negative</b>		<b>Negligible - negative</b>	
<b>Comment on significance</b>	The natural angle of repose is at least approximately 40° but excavated faces in the neighboring property remained marginally stable for extended periods at over 50°. This was especially evident where there were fine roots present in the excavated face. Shoring was not required in cut of up to 2m deep.			
<b>Cumulative impacts</b>	Without mitigation, the geotechnical restraints on the site could result in significant destruction to the development site.			

<b>Project Phase</b>	<b>Construction</b>			
<b>Impact</b>	<b>Noise pollution</b>			
<b>Description of impact</b>	Noise caused by machinery and staff			
<b>Mitigable</b>	Low	Mitigation does not exist; or mitigation will slightly reduce the significance of impacts		
<b>Potential mitigation</b>	<ul style="list-style-type: none"> <li>Construction activities must only take place during normal working times between 07:00-17:00 on weekdays.</li> <li>Machinery may be fitted with silences to dampen noise.</li> <li>Staff must be reminded that they are working within a residential area and noise levels must be kept low.</li> </ul>			
<b>Assessment</b>	<b>Without mitigation</b>		<b>With mitigation</b>	
<b>Nature</b>	Negative		Negative	
<b>Duration</b>	Brief	Impact will not last longer than 1 year	Brief	Impact will not last longer than 1 year
<b>Extent</b>	Limited	Limited to the site and its immediate surroundings	Limited	Limited to the site and its immediate surroundings
<b>Intensity</b>	Very low	Natural and/ or social functions and/ or processes are slightly altered	Negligible	Natural and/ or social functions and/ or processes are negligibly altered
<b>Probability</b>	Almost certain / Highly probable	It is most likely that the impact will occur	Almost certain / Highly probable	It is most likely that the impact will occur
<b>Confidence</b>	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
<b>Reversibility</b>	High	The affected environmental will be	High	The affected environmental will be able to recover from the impact

		able to recover from the impact		
<b>Resource irreplaceability</b>	Not relevant		Not relevant	
<b>Significance</b>	<b>Minor - negative</b>		<b>Negligible - negative</b>	
<b>Comment on significance</b>	Some extent of noise pollution during construction is expected; however, with mitigation the impact will be reduced.			
<b>Cumulative impacts</b>	No cumulative impacts exist.			

<b>Project Phase</b>	<b>Construction</b>			
<b>Impact</b>	<b>Visual impact</b>			
<b>Description of impact</b>	Visual & aesthetic consequences of the proposed project			
<b>Mitigable</b>	Medium	Mitigation exists and will notably reduce significance of impacts		
<b>Potential mitigation</b>	<ul style="list-style-type: none"> <li>The Architectural Design Guidelines proposed for the development must be adopted to mitigate the colours, heights, disturbance areas, maximum footprint, vegetation, etc, which will all contribute to a smaller visual impact on the landscape.</li> <li>The necessary measures be implemented during the construction phase to protect the natural vegetation, to control the noise, dust and visual intrusion.</li> <li>Appoint a Landscape consultant to recommend and implement the introduction of an indigenous landscape plan to protect the existing indigenous vegetation and to prepare a landscape plan for implementation in the private and common areas.</li> <li>Implement external lighting restrictions and guidelines.</li> </ul>			
<b>Assessment</b>	<b>Without mitigation</b>		<b>With mitigation</b>	
<b>Nature</b>	Negative		Negative	
<b>Duration</b>	Short term	Impact will last between 1 and 5 years	Short term	Impact will last between 1 and 5 years
<b>Extent</b>	Limited	Limited to the site and its immediate surroundings	Limited	Limited to the site and its immediate surroundings
<b>Intensity</b>	Medium	Natural and/or social functions and/or processes are notably altered	Low	Natural and/ or social functions and/ or processes are somewhat altered
<b>Probability</b>	Certain / Definite	There are sound scientific reasons to expect that the impact will definitely occur	Likely	The impact may occur
<b>Confidence</b>	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
<b>Reversibility</b>	Medium	The affected environment will only recover from the impact with significant intervention	High	The affected environmental will be able to recover from the impact
<b>Resource irreplaceability</b>	Not relevant		Not relevant	
<b>Significance</b>	<b>Minor - negative</b>		<b>Negligible - negative</b>	
<b>Comment on significance</b>	The proposal is sensitive towards the character of the area and attempts to create a unique sense of place that will blend in and compliment the ambience of the surrounding area.			
<b>Cumulative impacts</b>	No cumulative impacts exist.			

<b>Project Phase</b>	<b>Construction</b>			
<b>Impact</b>	<b>Employment</b>			
<b>Description of impact</b>	Empowerment of the local community members living in the area relating to temporary employment opportunities			
<b>Mitigable</b>	Medium	Mitigation only exists to ensure that the positive impact is followed through.		
<b>Potential mitigation</b>	<ul style="list-style-type: none"> <li>Use existing social structures and communication channels to ensure social representation.</li> <li>Use local labour and source local materials as far as possible.</li> </ul>			
<b>Assessment</b>	<b>Without mitigation</b>		<b>With mitigation</b>	
<b>Nature</b>	Negative		Positive	
<b>Duration</b>	Short term	Impact will last between 1 and 5 years	Short term	Impact will last between 1 and 5 years
<b>Extent</b>	Local	Extending across the site and to nearby settlements	Local	Extending across the site and to nearby settlements
<b>Intensity</b>	Low	Natural and/ or social functions and/ or processes are somewhat altered	Low	Natural and/ or social functions and/ or processes are somewhat altered
<b>Probability</b>	Rare / improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere	Almost certain / Highly probable	It is most likely that the impact will occur
<b>Confidence</b>	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
<b>Reversibility</b>	Not relevant		Not relevant	
<b>Resource irreplaceability</b>	Not relevant		Not relevant	
<b>Significance</b>	<b>Negligible - negative</b>		<b>Negligible - positive</b>	
<b>Comment on significance</b>	Due to the proposed development being on a small-scale, there is a low difference in impacts between without mitigation and with mitigation. However, as the impact would be positive for the local community to be employed during construction, mitigation is recommended to ensure this occurs.			
<b>Cumulative impacts</b>	Minor upliftment for the local community.			

## Impacts foreseen during the operational phase for Alternative 1 (15 Residential Units):

Project Phase	Operation			
<b>Impact</b>	<b>Visual / Sense of place</b>			
<b>Description of impact</b>	Visual impacts of structures / aesthetic consequences due to incorrect or excessive lighting, especially outdoor lighting			
<b>Mitigable</b>	Medium	Mitigation exists and will notably reduce significance of impacts		
<b>Potential mitigation</b>	<ul style="list-style-type: none"> <li>• Municipal by-laws need to be adhered to.</li> <li>• Re-vegetation and Landscaping of open space areas with suitable indigenous vegetation.</li> <li>• Systematic removal and follow-up operations of invasive alien plants.</li> <li>• Adhere to Architectural Guidelines and Design Manual.</li> </ul>			
<b>Assessment</b>	<b>Without mitigation</b>		<b>With mitigation</b>	
<b>Nature</b>	Negative		Negative Low	
<b>Duration</b>	Permanent	Impact may be permanent, or in excess of 20 years	Brief	Impact will not last longer than 1 year
<b>Extent</b>	Limited	Limited to the site and its immediate surroundings	Limited	Limited to the site and its immediate surroundings
<b>Intensity</b>	Medium	Natural and/or social functions and/or processes are notably altered	Low	Natural and/ or social functions and/ or processes are somewhat altered
<b>Probability</b>	Probable	Has occurred here or elsewhere and could therefore occur	Rare / improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
<b>Confidence</b>	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
<b>Reversibility</b>	Medium	The affected environment will only recover from the impact with significant intervention	High	The affected environmental will be able to recover from the impact
<b>Resource irreplaceability</b>	Not relevant		Not relevant	
<b>Significance</b>	<b>Minor - negative</b>		<b>Negligible - negative</b>	
<b>Comment on significance</b>	<p>Lighting, specifically outdoor lighting is not only aesthetic, but it provides a level of security to property owners. Therefore, outdoor lighting is essential, but should be implemented in a way which does not cause negative impacts to neighbours. The planned residential development will be similar to existing and planned residential developments to the north and south of the property. The site lies within the urban edge for Plettenberg Bay and the proposed upmarket residential development is compatible with surrounding land uses. The proposal is sensitive towards the character of the area and attempts to create a unique sense of place that will blend in and compliment the ambience of the surrounding area.</p>			
<b>Cumulative impacts</b>	Without mitigation the development would not be meeting design guidelines enforced by the municipality. Specifically design guidelines for the local area.			

<b>Project Phase</b>	<b>Operation</b>			
<b>Impact</b>	<b>Stormwater Management</b>			
<b>Description of impact</b>	Accelerated erosion / pollution into sub-surface water.			
<b>Mitigable</b>	High	Mitigation exists and will considerably reduce the significance of impacts		
<b>Potential mitigation</b>	<ul style="list-style-type: none"> <li>• A storm water drainage system as indicated in the EMPr must be adhered to and the system should lead run- off water away from sensitive areas, in order to prevent any soil erosion.</li> <li>• Use rainwater collection tanks to serve as a retention vessel in downpours.</li> <li>• Driveways can be constructed from grass blocks to allow for effective retarding of surface flow and facilitate percolation.</li> <li>• The common roadways will have a kerb and channel side drain where mostly water from the road is collected, transported and transferred to a trapezoidal grass block side drain and discharged into an effective 1,2m deep stilling gabion chamber that will also serve as a silt trap.</li> <li>• The retention chamber will facilitate percolation and will not have an outlet.</li> </ul>			
<b>Assessment</b>	<b>Without mitigation</b>		<b>With mitigation</b>	
<b>Nature</b>	Negative		Low Negative	
<b>Duration</b>	Short term	Impact will last between 1 and 5 years	Brief	Impact will not last longer than 1 year
<b>Extent</b>	Limited	Limited to the site and its immediate surroundings	Very limited	Limited to specific isolated parts of the site
<b>Intensity</b>	Medium	Natural and/or social functions and/or processes are notably altered	Low	Natural and/or social functions and/or processes are somewhat altered
<b>Probability</b>	Almost certain	It is most likely that the impact will occur	Rare / improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
<b>Confidence</b>	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
<b>Reversibility</b>	Medium	The affected environment will only recover from the impact with significant intervention	High	The affected environmental will be able to recover from the impact
<b>Resource irreplaceability</b>	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
<b>Significance</b>	<b>Negligible - negative</b>		<b>Minor - negative</b>	
<b>Comment on significance</b>	The development has a small catchment area. The development has permeable dune sand soil conditions and noticeable runoff is not envisaged. There are also large open areas where runoff can be dissipated. A higher density development may result in more runoff with increased hardened surfaces.			
<b>Cumulative impacts</b>	Without mitigation this impact could result in potential erosion downhill of the site caused by stormwater flow.			



Project Phase	Operation			
Impact	Stormwater Runoff into Wetland			
Description of impact	Alteration of surface flows into the wetland caused by increased stormwater runoff.			
Mitigable	High	Mitigation exists and will considerably reduce the significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> <li>Stormwater from erven on the west facing slope of the development must be attenuated on site.</li> <li>Stormwater from the access road leading into the development must be attenuated onsite (prior to any discharge into the buffer of the wetland).</li> <li>A suitable stormwater plan must be compiled for the section of Robberg Road that will be tarred and upgraded. The plan must discharge stormwater into the adjacent buffer area without causing any erosion. The runoff velocity of stormwater must therefore be reduced with energy dissipaters prior to discharge into the wetland buffer.</li> </ul>			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Low Negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
Extent	Very limited	Limited to specific isolated parts of the site	Very limited	Limited to specific isolated parts of the site
Intensity	Medium	Natural and/or social functions and/or processes are notably altered	Low	Natural and/or social functions and/or processes are somewhat altered
Probability	Almost certain	It is most likely that the impact will occur	Rare / improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	High	The affected environmental will be able to recover from the impact	High	The affected environmental will be able to recover from the impact
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	Minor - negative		Negligible - negative	
Comment on significance	The development will result in an increase in the area of paved/hardened surfaces. This will generate increased volumes of stormwater runoff which will flow down towards the wetland. The main entrance road leading from Robberg Road into the development is also likely to become an important conduit for stormwater down towards the wetland, as will the upgraded section of Robberg Road. Existing developments along tarred sections of Robberg Road (to the south) have not resulted in obvious impacts the wetland as a result of stormwater runoff. Adequate management of stormwater should therefore effectively minimise the intensity of this impact.			
Cumulative impacts	Without mitigation this impact could result in potential stormwater runoff downhill of the site towards the wetland.			

Project Phase	Operation			
Impact	Impervious Surfaces and Foundations			
Description of impact	Alteration of sub-surface flows into the wetland caused by impervious surfaces and foundations			
Mitigable	High	Mitigation exists and will considerably reduce the significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> <li>Stormwater management should encourage infiltration of water into the soil profile and other on site attenuation (i.e. using grass pavers etc.).</li> </ul>			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Low Negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
Extent	Very limited	Limited to specific isolated parts of the site	Very limited	Limited to specific isolated parts of the site
Intensity	Low	Natural and/or social functions and/or processes are somewhat altered	Very low	Natural and/ or social functions and/ or processes are slightly altered
Probability	Probable	Has occurred here or elsewhere and could therefore occur	Probable	Has occurred here or elsewhere and could therefore occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	High	The affected environmental will be able to recover from the impact	High	The affected environmental will be able to recover from the impact
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	Minor - negative		Negligible - negative	
Comment on significance	Hardened surface and establishment of foundations for houses may impede sub-surface flows towards the wetland, although these are not expected to form a major or important contribution to the water balance of the wetland. This is supported by the fact that the numerous developments around the wetland do not appear to have affected the size of the wetland area over time. A higher density development may result in more runoff with increased hardened surfaces.			
Cumulative impacts	Without mitigation this impact could result in the impediment of sub-surface flow to the wetland.			

Project Phase	Construction	
Impact	Landscape Connectivity	
Description of impact	Cut-off of natural dispersal and foraging movement by animals, impacts on suitable link or important corridor, fragmentation of ecological infrastructure	
Mitigable	Low	Mitigation will slightly reduce the significance of impacts
Potential mitigation	<ul style="list-style-type: none"> <li>The 6m wide servitude along the northern boundary of the development area can serve as a minor corridor for smaller wildlife, linking the wetland to the west with the coastal dunes to the east.</li> <li>The eastern and western border of the servitude running along the northern boundary of the development must remain unfenced to allow wildlife to move between the coastal dune system and the wetland. Vegetation within this servitude should also not be cleared and must be maintained in a natural state. Control of alien invasive species must be undertaken if necessary.</li> <li>Biodiversity conservation of the important coastal foredune habitat that serves as a minor faunal corridor along the edge of the property.</li> </ul>	

Assessment	Without mitigation		With mitigation	
<b>Nature</b>	Negative		Negative	
<b>Duration</b>	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
<b>Extent</b>	Very limited	Limited to the site and its immediate surroundings	Very limited	Limited to the site and its immediate surroundings
<b>Intensity</b>	Medium	Natural and/or social functions and/or processes are notably altered	Low	Natural and/or social functions and/or processes are somewhat altered
<b>Probability</b>	Almost certain	It is most likely that the impact will occur	Probable	Has occurred here or elsewhere and could therefore occur
<b>Confidence</b>	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
<b>Reversibility</b>	Medium	The affected environment will only recover from the impact with significant intervention	Medium	The affected environment will only recover from the impact with significant intervention
<b>Resource irreplaceability</b>	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
<b>Significance</b>	<b>Minor - negative</b>		<b>Minor - negative</b>	
<b>Comment on significance</b>	<p>The natural fauna in the foredune and wetland areas may be intact, but the line of development along the coast has effectively cut-off natural dispersal and foraging movement by animals (with the exception of some birds) between the two habitat types in the area. The study site thus represents a very narrow and relatively natural link between the natural habitats between the foredune area and the wetland. This link is however not considered to be a suitable link or important corridor due to its narrow width and its generally poor condition, translating to a <b>LOW</b> site sensitivity. The properties fall within an ESA that has been designated as an ecological corridor. It is likely that some wildlife may use the wetland as a refuge and move in between the wetland and the coastal dune system. The development of the property will fragment this ESA which could affect the movement of wildlife.</p> <p>A higher density development may result in less vegetation within the development for wildlife, especially birds.</p>			
<b>Cumulative impacts</b>	The impact would result in insignificant cumulative effects			

Project Phase	Operation	
<b>Impact</b>	<b>Eradication of Alien Vegetation</b>	
<b>Description of impact</b>	Impacts on biodiversity / natural habitats / increased fire risk	
<b>Mitigable</b>	High	Mitigation exists and will considerably reduce significance of impacts
<b>Potential mitigation</b>	<ul style="list-style-type: none"> <li>All invasive alien plants should be completely cleared from the property, and where a tree or bush cover is desired, replaced with suitable indigenous species.</li> <li>The suitable planting list of trees and shrubs must be used, and is incorporated into this EMP (Section 12).</li> <li>An Alien Control Plan should be compiled to systematically remove and control alien plant species.</li> <li>Follow-up operations must be done.</li> <li>Minimise disturbance to the natural vegetation using low impact manual labour techniques.</li> <li>Reduce fire hazard on site</li> </ul>	
<b>Assessment</b>	<b>Without mitigation</b>	<b>With mitigation</b>

<b>Nature</b>	Negative		Positive	
<b>Duration</b>	Permanent	Impact may be permanent, or in excess of 20 years	Brief	Impact will not last longer than 1 year
<b>Extent</b>	Limited	Limited to the site and its immediate surroundings	Limited	Limited to the site and its immediate surroundings
<b>Intensity</b>	Very high	Natural and/ or social functions and/ or processes are majorly altered	Medium	Natural and/or social functions and/or processes are notably altered
<b>Probability</b>	Certain / Definite	There are sound scientific reasons to expect that the impact will definitely occur	Rare / improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
<b>Confidence</b>	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
<b>Reversibility</b>	Low	The affected environment will not be able to recover from the impact - permanently modified	Medium	The affected environment will only recover from the impact with significant intervention
<b>Resource irreplaceability</b>	Not relevant		Not relevant	
<b>Significance</b>	<b>High - negative</b>		<b>Moderate - positive</b>	
<b>Comment on significance</b>	The habitats available on the study site are all anthropogenically impacted, to a variable degree, but the current situation is set to deteriorate swiftly due to the devastating impact of invasive alien <i>Acacia cyclops</i> , which in the last few years has spread over much of the site and which will mature to the further detriment of all indigenous plant and animal species.			
<b>Cumulative impacts</b>	Without mitigation the development would not be meeting design guidelines enforced by the municipality. Specifically design guidelines for the local area.			

<b>Project Phase</b>	<b>Operation</b>			
<b>Impact</b>	<b>Formal gardens</b>			
<b>Description of impact</b>	Habitat loss for terrestrial wildlife, fragmentation of ecological corridor			
<b>Mitigable</b>	Low	Mitigation will slightly reduce the significance of impacts		
<b>Potential mitigation</b>	<ul style="list-style-type: none"> <li>• Areas that are not required for development purposes should remain natural with indigenous vegetation.</li> <li>• All alien invasive plants must be removed from the site on an on-going basis.</li> <li>• Investing landowners within the proposed development should be encouraged to avoid planting exotic plants in favour of locally indigenous plants.</li> <li>• Many of the dune-scrub plants are easy to propagate and many are available at nearby nurseries. A list of suitable plants is included in this EMP (Section 12).</li> </ul>			
<b>Assessment</b>	<b>Without mitigation</b>		<b>With mitigation</b>	
<b>Nature</b>	Negative		Positive	
<b>Duration</b>	Brief	Impact will not last longer than 1 year	Permanent	Impact may be permanent, or in excess of 20 years
<b>Extent</b>	Limited	Limited to the site and its immediate surroundings	Very limited	Limited to specific isolated parts of the site
<b>Intensity</b>	Negligible	Natural and/ or social functions and/ or	Very low	Natural and/ or social functions and/ or processes are slightly altered

		processes are negligibly altered		
<b>Probability</b>	Highly unlikely / None	Expected never to happen	Almost certain / Highly probable	It is most likely that the impact will occur
<b>Confidence</b>	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
<b>Reversibility</b>	Medium	The affected environment will only recover from the impact with significant intervention	Not relevant	
<b>Resource irreplaceability</b>	Low	The resource is not damaged irreparably or is not scarce	Not relevant	
<b>Significance</b>	<b>Negligible - negative</b>		<b>Minor - positive</b>	
<b>Comment on significance</b>	With mitigation the impact is likely to have more beneficial impact to retaining natural biodiversity, than without mitigation.			
<b>Cumulative impacts</b>	Without mitigation this impact could result in the spread of alien invasive plants and the loss of indigenous vegetation.			