



Appendix F

Impact assessment in terms of Regulation 22(2)(i) of GN R.543

Preferred Alternative

The preferred alternative may have unwanted impacts on the ecology, geomorphology and visual appearance of the Knysna Estuary. Decisions on the most appropriate management approach at a given site should be driven in part by the desire to minimize these impacts so as to preserve the natural characteristics of the environment.

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The proposed 5 “Holiday Housing” units and restaurant are expected to have impacts on the receiving environment. Firstly, impacts can be expected while the construction work is undertaken, although to a large degree these impacts can be mitigated.

The property size is 4046m². Alternative 1 the preferred alternative will consist of 5 “Holiday Housing” units and a restaurant. The 1st unit will be constructed above the restaurant.

As per the SDP New Building Area footprint:

- Ground Floor Area 782m²
- Top Floor Area 770m²
- Total Floor Area 1552m²
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As per the SDP External Areas:

- Open Patios 500m²
- Open Decks with pergola, handrail & balustrade 98m²
- Open Decks 95m²
- Yard 4.5m²

The proposed 5 accommodation units and restaurant will have a footprint area of 782m² with coverage of **19.32%**

The internal road and parking areas will be 500m². The total area to be transformed is 1282m². This will result in 31.68% coverage of the site.

All human activity within protected area may result in environmental degradation. Moving machinery within the protected area will cause much greater damage, through direct destruction of vegetation and compaction of soils. Mitigation measures and good working practices to minimize impacts are built into the design of construction work and the EMP where all the impacts for construction have been identified with mitigation measures.

Environmental Impacts:

- Embankment erosion resulting in siltation in the Knysna Estuary.
- Water Quality: Pollution of the Knysna Estuary as a result of fuels or hazardous chemicals leaching into the estuary.
- Hydrological functioning of the estuarine systems.
- Flow and water quality of hydrological linkages entering the system.
- Shoreline stability as a result of climate change.
- The effects of flooding on the proposed development and the receiving environment
- Impacts on Ecosystems – biodiversity

➤ Impacts on the Ecological Support Area

(a) **Impacts that may result from the planning, design and construction phase (briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the planning, design and construction phase.**

Potential impacts on geographical and physical aspects:	
Nature of impact:	Soil compaction as a result of the proposed 5 accommodation units, parking , roads and restaurant will have a footprint of 1282m ² with a coverage of 31.68%
Extent and duration of impact:	Throughout the lifespan of the project
Probability of occurrence:	High
Degree to which the impact can be mitigated:	As a result of the construction residential units this impact cannot be mitigated or reversed
Degree to which the impact may cause irreplaceable loss of resources:	No loss of irreplaceable resources are anticipated, as the development will be setback at the 2.85m MSL and the floor heights lifted to 3.2m MSL. The proposed development will occur on already disturbed footprints.
Cumulative impact prior to mitigation:	Storm water run off resulting in erosion.
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Estuarine vegetation serves to bind the sand and mud's located along the estuary embankment. Currently there is an inappropriate stormwater outfall that discharges water from the Brenton road into the salt marsh. This concentrated water results in erosion, undermining of rigid structures and results in shoreline erosion. Re-direct water of hardened structures into rain water

	<p>tanks and natural vegetation.</p> <p>Vegetation within the tidal and upper marsh zones forms a natural buffer for storm water erosion. Setting the proposed development back to the 2.85m MSL and rehabilitating the degraded salt marsh will in all probability mitigate the effect of storm water erosion.</p> <p>Stormwater management plans must be established in conjunction with Knysna Municipality and SANParks to address the current storm water issues on the property.</p>
Cumulative impact post mitigation:	Continuous shoreline erosion
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low
Potential impact on biological aspects:	
Nature of impact:	<p>Loss of vegetation (biodiversity) as a result of construction accommodation facilities and restaurant.</p> <p>As per the specialist ecological analysis report:</p> <ul style="list-style-type: none"> • The largest area on the study site (71%) is categorised as ‘transformed’ and vegetation consist of the garden variety with major infestation by invasive exotic plant species. • A small percentage ($\pm 10\%$ cover) of the area consist of indigenous vegetation, mostly restricted to the Ecotone and salt marsh area, intercepted with dense stands of alien invasive Kikuyu lawn grass. <p>Impact:</p> <ol style="list-style-type: none"> 1. Removal of Alien Invasive Species during construction phase 2. Re-instatement of Salt marsh vegetation in areas currently prone to invasion by Kikuyu lawn grass adjacent to the Salt Marsh Area.
Extent and duration of impact:	Throughout the lifespan of the project

Probability of occurrence:	<p>1. Removal of Alien Invasive Species during construction phase</p> <p>2. Re-instatement of Salt marsh vegetation in areas currently prone to invasion by Kikuyu lawn grass adjacent to the Salt Marsh Area during construction phase.</p> <p>This condition needs to be stipulated in the Environmental Authorisation. The probability is high.</p>
Degree to which the impact can be reversed:	This is a positive impact
Degree to which the impact may cause irreplaceable loss of resources:	Continuous clearing during rehabilitation and landscaping of emerging invasives is required particularly surrounding the site. With correct management in all probability the degree to which the impact may cause irreplaceable loss of resources is minimal.
Cumulative impact prior to mitigation:	Loss of ecological corridors
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	High, as a result of poor storm water management currently on the vacant site, the site is showing signs of erosion. Should this continue in all probability the ecological corridor may be lost as a result of erosion.
Degree to which the impact can be mitigated:	High
Proposed mitigation:	<p>It is imperative that impacts on the continuity of ecological processes and corridors be taken into consideration irrespective of the type of land use proposed or envisaged in the region as a whole.</p> <p>The proposed development should allow for a vegetated buffer strip, set back from the estuary banks. Stormwater erosion control measures need to be implemented regardless of development being authorised on the property.</p>
Cumulative impact post mitigation:	No cumulative impacts are foreseen after mitigation measure are implemented
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low

Very-High)	
Potential impact on biological aspects:	
Nature of impact:	Pollution of the salt marshes and wetlands as a result of fuels or hazardous chemicals leaching into the estuary.
Extent and duration of impact:	Throughout the lifespan of the proposed development
Probability of occurrence:	Medium
Degree to which the impact can be reversed:	High
Degree to which the impact may cause irreplaceable loss of resources:	Medium
Cumulative impact prior to mitigation:	Pollution of the Knysna Estuary
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	<p>The pumping station for the sewage must be water proofed sealed to ensure that no water enters the systems or that no effluent leaches out of the system. All the pipes are according to SABS regulations. The pumping station system must have a capacity of 48 hours with a back up pump in place should the first pump break. A flashing light is connected to the pumps and will start flashing should a pump break to notify the manager in order that immediate action can be taken.</p> <p>Ground floor level of the houses and restaurant must be a minimum of 3.2m above mean sea level.</p> <p>All sewer and waste pipes, electrical, air-conditioning, ect. To be concealed in wall cavities or ducts within the wall plane and conform to NBR.</p> <p>This will ensure that no pipes are damaged during</p>

	<p>storm surges and astronomical tides, which will prevent pollution from entering the Knysna Estuary.</p> <p>Fuels, oils and any hazardous material should be stored on counters in the garages and NOT on the floor. This point must be incorporated in the Architectural Guidelines.</p>
Cumulative impact post mitigation:	N/A
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low
Potential impact on biological aspects:	
Nature of impact:	Storm water drainage
Extent and duration of impact:	Throughout the lifespan of the project
Probability of occurrence:	Medium
Degree to which the impact can be reversed:	Medium
Degree to which the impact may cause irreplaceable loss of resources:	Low
Cumulative impact prior to mitigation:	Embankment erosion of the Knysna Estuary
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be mitigated:	Medium
Proposed mitigation:	All storm water from the Brenton road is directed into a pipe and deposited in the Knysna Estuary. Further hardened surfaces from the units and restaurant will accumulate more storm water. Rainwater tanks must be implemented in order to catch storm water from roofs of the buildings. Storm water must be redirected onto natural vegetation on site and not directly deposited into the Knysna Estuary.

	<p>Vegetation within the tidal and upper marsh zones forms a natural buffer for storm water erosion. Setting the proposed development back to the 2.85m MSL and rehabilitating the degraded salt marsh will in all probability mitigate the effect of storm water erosion.</p> <p>Stormwater management plans must be established in conjunction with Knysna Municipality and SANParks to address the current storm water issues on the property.</p>
Cumulative impact post mitigation:	None
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low

Potential impacts on socio-economic aspects:	No negative impacts on the socio-economic aspects are foreseen as the proposed construction of a restaurant and accommodation units will create work opportunities during construction and operational phases.
Nature of impact:	Job creation- Positive Impact
Extent and duration of impact:	During the lifespan of the project
Probability of occurrence:	High
Degree to which the impact can be reversed:	Not a negative impact on socio-economic aspects
Degree to which the impact may cause irreplaceable loss of resources:	Not applicable
Cumulative impact prior to mitigation:	Not applicable
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	High
Degree to which the impact can be mitigated:	Not applicable
Proposed mitigation:	Not applicable

Cumulative impact post mitigation:	Not applicable
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Not applicable

Potential noise impacts:	
Nature of impact:	Impacts associated with general building construction noise
Extent and duration of impact:	Only during construction phase
Probability of occurrence:	High
Degree to which the impact can be reversed:	None
Degree to which the impact may cause irreplaceable loss of resources:	None
Cumulative impact prior to mitigation:	No cumulative impact foreseen
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low
Degree to which the impact can be mitigated:	Low
Proposed mitigation:	Construction work and noise generation only allowed during weekday working hours
Cumulative impact post mitigation:	No cumulative impacts are foreseen after mitigation measures are implemented
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low

Potential visual impacts:	
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Nature of impact:	The proposed development will be visible from the N2.
Extent and duration of impact:	Throughout the lifespan of the project
Probability of occurrence:	High
Degree to which the impact can be reversed:	Medium
Degree to which the impact may cause irreplaceable loss of resources:	Low
Cumulative impact prior to mitigation:	N/A
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	N/A
Degree to which the impact can be mitigated:	High
Proposed mitigation:	During construction phase the proposed development will be screened off from the N2 using green shade cloth.
Cumulative impact post mitigation:	N/A
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	N/A

(b) Impacts that may result from the operational phase (briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the operational phase.

Potential impacts on the geographical and physical aspects:	
Nature of impact:	Storm Water drainage
Extent and duration of impact:	Throughout the project life cycle
Probability of occurrence:	Medium
Degree to which the impact can be	High

reversed:	
Degree to which the impact may cause irreplaceable loss of resources:	Low
Cumulative impact prior to mitigation:	No cumulative impacts are foreseen
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be mitigated:	High
Proposed mitigation:	<p>All storm water drainage measures must be correctly installed and maintained through the project life cycle. Storm water outlets must be designed to capture all rain water in rain water tanks.</p> <p>The rehabilitation of the salt marsh and the alien vegetation removal is important throughout the lifespan of the project.</p> <p>No pollution of surface or ground water may occur. Storm water control and preventative measures must be implemented.</p> <p>No storm water to be discharged directly into lagoon shall be permitted.</p> <p>Storm water damage must be prevented during operational activities a storm water management plan should be approved for during the operational phase.</p>
Cumulative impact post mitigation:	Erosion of the banks of the Knysna Estuary adjacent to the site.
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low

Potential impact biological aspects:	
Nature of impact:	Disturbance of Vegetation and disturbance to Ecotone (area between Knysna Estuary and terrestrial land i.e.

	wetland / salt marsh). 1. Re-invasion of Alien Invasive Plant species during operational phases
Extent and duration of impact:	During the lifespan of the project
Probability of occurrence:	High
Degree to which the impact can be reversed:	High
Degree to which the impact may cause irreplaceable loss of resources:	High
Cumulative impact prior to mitigation:	Alien invasive species can influence species diversity and abundance. The direct effects occur through competition for space, water, soil nutrients and sunlight , eventually leading to population declines and species extinctions. The loss of species leads to a more homogeneous environment which poses a threat to biodiversity.
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Continuous clearing during rehabilitation and landscaping of emerging invasives is required particularly surrounding the site. Invasive Kikuyu grass should be removed, Salt marsh area must be cordoned off and re-establishment of Salt marsh vegetation monitored.
Cumulative impact post mitigation:	No cumulative impacts are foreseen after mitigation
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low

Potential impacts on the cultural-historical aspects:	No impacts on the cultural- historic aspects are foreseen. Western Cape Heritage agreed that there will be no negative or positive impacts on any cultural-historic aspects.
Nature of impact:	Not Applicable.
Extent and duration of impact:	Not Applicable.
Probability of occurrence:	Not Applicable.
Degree to which the impact can be reversed:	Not Applicable.
Degree to which the impact may cause irreplaceable loss of resources:	Not Applicable.
Cumulative impact prior to mitigation:	Not Applicable.
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Not Applicable.
Degree to which the impact can be mitigated:	Not Applicable.
Proposed mitigation:	Not Applicable.
Cumulative impact post mitigation:	Not Applicable.
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Not Applicable.

Potential noise impacts:	
Nature of impact:	Noise associated with restaurant activities
Extent and duration of impact:	During operational phase
Probability of occurrence:	High
Degree to which the impact can be reversed:	Low
Degree to which the impact may cause	Low

irreplaceable loss of resources:	
Cumulative impact prior to mitigation:	N/A
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be mitigated:	Medium
Proposed mitigation:	Noise to be limited to liquor licence requirements.
Cumulative impact post mitigation:	N/A
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium

Potential visual impacts:	
Nature of impact:	The proposed development will be visible from the N2.
Extent and duration of impact:	Throughout the lifespan of the project
Probability of occurrence:	High
Degree to which the impact can be reversed:	Medium
Degree to which the impact may cause irreplaceable loss of resources:	Low
Cumulative impact prior to mitigation:	N/A
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	N/A
Degree to which the impact can be mitigated:	High
Proposed mitigation:	The proposed development should be painted in earthy colours to blend in with the receiving environment. Down and screened lighting to be used.

	An architectural guideline approved by the Knysna Municipality to be implemented to prevent visual pollution.
Cumulative impact post mitigation:	N/A
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	N/A