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IMPACT AND RISK ASSESSMENT

Proposed Residential Development on Portion 91 of Farm Matjes Fontein 304, Keurboomstrand, Plettenberg Bay, Western Cape Province

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.

<u>Intensity</u>

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

<u>Irreplaceable loss of resources</u>

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

<u>Significance</u>

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.



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Impacts foreseen during the Construction Phase for the Preferred Alternative (73 Residential stands):

Project Phase	Construction					
Impact	Clear	Clearance of vegetation for the construction of the dwelling and associated				
		infrastructure				
Description of		ensitive vegetation, habitat loss t				
impact	species un	able to evade the disturbance,		propagules, fragmentation of		
AA*I* I. I .	A 41'		nfrastructure			
Mitigable	Medium	Mitigation exists and will notable				
Potential mitigation	 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. the removal and translocation of protected plants if found should be undertaken prior to construction clearing activities. A permit is required prior to removal. 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. Access by heavy machinery should be limited on the site. Only areas necessary for the development footprint should be cleared and the remainder of the property should be left natural. Laydown areas for construction materials must be contained within the clearing footprint of the proposed development. A 10-meter buffer zone must be retained along the base of the slope to protect 					
Assessment	ine i	orest margin. Without mitigation		With mitigation		
Nature	Negative	Willion Hilligation	Low negativ	-		
Duration	Permanent	Impact may be permanent,	Permanent	Impact may be permanent,		
		or in excess of 20 years		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 Low The resource is not					
Significance		Minor - negative	•	legligible - negative		
Comment on significance		d area to the north of the devent and will not be directly affected	•	excluded from the proposed		
Cumulative impacts	The impact	would result in insignificant cumu	lative effects			

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Project Phase	Construction					
Impact		Loss of secondary vegetation	within endang	jered ecosystem		
Description of	Loss of habitat on site (within the proposed development footprint), modification of					
impact	ecological processes, spillover effects into surrounding areas due mostly to secondary					
	impacts such as boundary disturbance and alien invasive species spread.					
Mitigable	Medium	Mitigation exists and will notabl	y reduce signi	ficance of impacts		
Potential	• Acc	ess to forested areas during co	onstruction m	ust not be permitted by any		
mitigation		truction personnel. These areas r				
		npile and implement an alien n	•			
	-	ities and areas and provides a p	-	-		
		ertake regular monitoring to dete		sions early so that they can be \mid		
		rolled, as per the Alien Manager				
		abilitation of disturbed areas, a				
	pron	note establishment of site-approp	oriate indigen			
Assessment		Without mitigation		With mitigation		
Nature	Negative		Low negative	e		
Duration	Permanent	Impact may be permanent,	Permanent	Impact may be permanent,		
		or in excess of 20 years		or in excess of 20 years		
Extent	Limited	Limited to the site and its	Very	Limited to the site and its		
		immediate surroundings	limited	immediate surroundings		
Intensity	Medium	Natural and/or social	Low	Natural and/or social		
	functions and/or processes functions and/or process					
		are notably altered	0 1	are somewhat altered		
Probability	Certain /	There are sound scientific	Certain /	There are sound scientific		
	Definite	reasons to expect that the	Definite	reasons to expect that the		
Confidence	High	impact will definitely occur Substantive supportive data	High	impact will definitely occur Substantive supportive data		
Confidence	High	exists to verify the assessment	High	exists to verify the		
	exists to verify the assessment exists to verify the assessment					
Reversibility	Low	The affected environment will Medium The affected environment				
,	2011	not be able to recover from	7710410111	will only recover from the		
		the impact - permanently		impact with significant		
		modified		intervention		
Resource	Low	The resource is not damaged	Low	The resource is not		
irreplaceability		irreparably or is not scarce		damaged irreparably or is		
				not scarce		
Significance		Minor - negative	N	egligible - negative		
Comment on		ion type (Garden Route Shale				
significance		site on the steep slopes are cover		·		
		Afrotemperate Forest, which is		· · · · · · · · · · · · · · · · · · ·		
		nder the National Forests Act. The				
	forested areas are completely excluded from the proposed development (both options)					
	and are not directly affected.					
	The only res	agining non forest vegetation on	cita is cansida	orad to be secondary		
		naining non-forest vegetation on In the basis that no legal soil distu		· · · · · · · · · · · · · · · · · · ·		
		s legally considered to be natura				
		It is, however, not representative	_	_		
		is not considered to be irreplace		anon only dria, being		
Cumulative	·	would result in insignificant cumu				
impacts			AGIIVO OHOCIS			

Project Phase	Construction				
Impact	Loss of individuals of protected tree species				
Description of impact	Loss of habitat on site (within the proposed development footprint), disturbance or loss of protected trees.				
Mitigable	Medium	Mitigation exists and will notab	ly reduce sign	ificance of impacts	
Potential mitigation	If any to thePlant	n existing large trees within prop y trees need to be removed or p e National Forests Act. additional milkwoods in the de	oruned then a	permit is required, according part of the final landscaping.	
	prop	e can be planted along with other ortions and composition should rally at this site.		at that would have occurred	
Assessment		Without mitigation		With mitigation	
Nature	Negative		Low negative		
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Long Term	Impact will last between 16 and 30 years	
Extent	Very limited	Limited to the site and its immediate surroundings	Very limited	Limited to the site and its immediate surroundings	
Intensity	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	
Probability	Probable Has occurred here or elsewhere and could therefore occur		Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere		
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge	
Reversibility	Partly reversible	The impact is reversible but more intense mitigation measures are required	Partly reversible	The impact is reversible but more intense mitigation measures are required	
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	N	egligible - negative	
Comment on significance	The tree species affected is <i>Sideroxylon inerme</i> , protected under the National Forests Act. A total of 4 individuals were seen on site, all of them relatively large individuals. The species is widespread but is a key and dominant component of coastal forests in the Garden Route.				
Cumulative impacts	The impact would result in insignificant cumulative effects				

Project Phase		Construction			
Impact		Loss of habitat for listed threatened animal species			
Description of impact		Loss of habitat for threatened plant and animal species, spillover effects into surrounding areas due mostly to secondary impacts such as dust deposition and alien invasive species			
Mitigable	Medium	Mitigation exists and will notably reduce significance of impacts			
Potential mitigation	Reha marg good Fores:	ct natural forest vegetation adjacent to the proposed development site. bilitate and improve the small dam on site, including introducing pond in vegetation typical of mountain ponds in forested areas. This will provide I habitat for various frogs, including potentially Afrixalus knysnae. It habitats on the upland, steeply-sloping part of the site, have high versity and conservation value, and are designated as sensitive. These areas			

must not be affected by the proposed development. A buffer zone should be retained along the base of the slope to protect the forest margin. For example, steps should be taken to rehabilitate these areas and encourage growth of species, such as *Pterocelastrus tricuspidatus* and *Sideroxylon inerme*, that are mesic and fire-resistant.

 An open space management system should be developed to formalize steps for forest protection.

Assessment		Without mitigation		With mitigation	
Nature	Negative	Willion Hilligation	Low negative		
Duration					
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	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	
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	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge	
Reversibility	Partly reversible	The impact is reversible but more intense mitigation measures are required	Partly reversible	The impact is reversible but more intense mitigation measures are required	
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	N	egligible - negative	
Comment on significance	 There is habitat on site that is suspected habitat for threatened plant and animal species. This is the forest habitat, which is outside the proposed development footprint and will not be affected by the proposed development. The species that could potentially occur within this habitat are as follows: Knysna Warbler (Vulnerable) has a moderate probability of occurring in forest margin areas. Crowned Eagle (Near Threatened) - the forests on site may constitute part of the general foraging range but it is unlikely that they are resident on site, or are dependent on it. Tunnelling Dung Beetle (Endangered). The type locality of the species is forest habitats in the Keurboomstrand area. Small antelope (Vulnerable). There is a moderate to high probability of it occurring in the forests on site. 				
Cumulative impacts		I impact affects a negligible pr s and will not directly affect any		e overall habitat available for	

Project Phase	Construction		
Impact	Waste Pollution		
Description of	Pollution of buffer zones and natural areas caused by waste generated by the		
impact	construction process.		
Mitigable	High Mitigation exists and will considerably reduce significance of impacts		
Potential	All construction waste generated on-site during construction must be adequately		
mitigation	managed. Separation and recycling of different waste materials should be		
	supported.		

- All construction waste materials must be collected and disposed of at a suitable waste facility.
- No dumping of construction material within natural areas or buffer zones may take place.
- The buffer and "no-go" areas must be monitored on a weekly basis to clean-up any waste that may have been blown from the construction site.
- 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).

Assessment		Without mitigation		With mitigation	
Nature	Negative		Low negative	e	
Duration	Short term	Impact will last between 1 and 5 years	Brief	Impact will not last longer than 1 year	
Extent	Very 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	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	
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	Negligible - negative Negligible - negative				
Comment on significance	Construction activities are likely to generate significant quantities of solid waste that could pollute buffer zones and natural areas. In addition, the high numbers of construction workers present on site will generate a significant amount of human waste, which could pollute the environment.				
Cumulative impacts	The impact	would result in insignificant cumu	ulative effects.		

Project Phase	Construction
Impact	Construction Vehicles
Description of	Pollution caused by the operation of vehicles and heavy machinery.
impact	
Mitigable	High Mitigation exists and will considerably reduce significance of impacts
Potential mitigation	 Construction activities must be confined to clearly demarcated areas so as to prevent unnecessary disturbance the surrounding environment. No vehicles are to park or operate within "no-go" areas. 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. No fuel storage, refuelling, vehicle maintenance or vehicle depots to be allowed near natural spring and dam. 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 buffer zones.					
	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.					
Assessment	dity	Without mitigation	discaraca co	With mitigation		
Nature	Negative		Low negative	<u> </u>		
Duration	Short term	Impact will last between 1 and 5 years	Brief	Impact will not last longer than 1 year		
Extent	Very 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	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		
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		Negligible - negative		egligible - negative		
Comment on significance	Operation of vehicles could result in spillages or leaks of hydrocarbons (fuel and oil) and could lead to unnecessary disturbance of natural areas.					
Cumulative impacts	The impact would result in insignificant cumulative effects.					

Project Phase		Construc	ction
Impact		Disturbance / rem	oval of topsoil
Description of		Disturbance of topsoil, potential so	il erosion and the loss of topsoil
impact			
Mitigable	High	Mitigation exists and will considerably re	duce the significance of impacts
Potential mitigation	•	knock-on effect on biodiversity in the fo exposure and a loss of the soil micro-org Organic matter, such as roots and he footprint of structures and stockpiled sep. The stockpiling of topsoil for use in rehability stockpiles must not exceed 1.5m in heigh similar, to prevent erosion and any invastit must be removed. Soil disturbance during the removal of comuch as possible. The site must be stabilised where necess	d without delay. Failure to do so will have a rm of an increase in wind erosion, soil ganisms that are essential for plant growth. Immus/topsoil should be removed from the parately for landscaping purposes. Dilitation is required. In the must be covered with shade cloth or sive alien species that begin to grow within the invasive plants must be minimised as ary using available materials, where are soils are covered with wood chips, and by cut alien vegetation on site can be
Assessment	Without mitigation With mitigation		
Nature	Negat		Low Negative

Duration	Short term	Impact will last between 1 and 5 years	Brief	Impact will not last longer than 1 year			
Extent	Limited	Limited to the site and its immediate surroundings	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	Almost certain	It is most likely that the impact will occur	Likely	The impact may occur			
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment			
Reversibility	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			
Resource irreplaceabilit y	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce			
Significance		Negligible - negative Minor - negative					
Comment on significance	Clearing areas of the site in preparation for construction will expose bare soil which may lead to the potential loss of topsoil through runoff and incorrect storage. This is not envisaged to be a significant impact with mitigation measures in place. Topsoil can be reused on site for rehabilitation purposes.						
Cumulative impacts		tigation this impact could result in po	otential erosion dov	vnhill of the site caused			

Project Phase	Construction					
Impact	Noise pollution					
Description of impact		Noise caused by m	achinery and	l staff		
Mitigable	Low	Mitigation does not exist; significance of impacts	or mitigation	will slightly reduce the		
Potential mitigation	 Construction activities must only take place during normal working times between 07:00-17:00 on weekdays. Machinery may be fitted with silences to dampen noise. Staff must be reminded that they are working within a residential area and noise levels must be kept low. 					
Assessment	Witho	ut mitigation		With mitigation		
Nature	Negative		Negative			
Duration	Brief	Impact will not last longer than 1 year	Brief	Impact will not last longer than 1 year		
Extent	Limited	Limited to the site and its immediate surroundings	Limited	Limited to the site and its immediate surroundings		
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	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		

Confidence	Medium	Determination is based	Medium	Determination is based on	
		on common sense and		common sense and general	
		general knowledge		knowledge	
Reversibility	High	The affected	High	The affected environmental	
		environmental will be		will be able to recover from	
		able to recover from		the impact	
		the impact		·	
Resource	Not relevant		Not		
irreplaceability			relevant		
Significance	Minor	r - negative	N	legligible - negative	
Comment on	Some extent of noi	se pollution during constru	ction is expec	ted; however, with mitigation	
significance	the impact will be r	reduced.			
Cumulative	No cumulative impacts exist.				
impacts					

Project Phase	Construction				
Impact	Visual impact				
Description of impact	Visual & aesthetic consequences of the proposed project				
Mitigable	Medium	Mitigation exists and will	notably redu	ce significance of impacts	
Potential mitigation	 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. The necessary measures be implemented during the construction phase to protect the natural vegetation, to control the noise, dust and visual intrusion. 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.	external lighting restriction	•		
Assessment		ut mitigation		With mitigation	
Nature	Negative		Negative		
Duration	Short term	Impact will last between 1 and 5 years	Short term	Impact will last between 1 and 5 years	
Extent	Limited	Limited to the site and its immediate surroundings	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	Certain / Definite	There are sound scientific reasons to expect that the impact will definitely occur	Likely	The impact may occur	
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment	
Reversibility	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	
Resource irreplaceability	Not relevant		Not relevant		
Significance	Mino	r - negative	1	Negligible - negative	

Comment on	The proposal is sensitive towards the character of the area and attempts to create a
significance	unique sense of place that will blend in and compliment the ambience of the surrounding
	area.
Cumulative	No cumulative impacts exist.
impacts	

Project Phase	Construction					
Impact	Employment					
Description of	Empowerment of the local community members living in the area relating to temporary					
impact		employment o				
Mitigable	Medium	,	ensure that the	e positive impact is followed		
		through.				
Potential			ommunication	n channels to ensure social		
mitigation	representation					
_		our and source local mate	erials as far as			
Assessment		t mitigation		With mitigation		
Nature	Negative	Г	Positive	T		
Duration	Short term	Impact will last	Short term	Impact will last between 1		
		between 1 and 5 years		and 5 years		
Extent	Local	Extending across the	Local	Extending across the site		
		site and to nearby		and to nearby settlements		
11	Lavi	settlements	1	Night well and all an activity		
Intensity	Low	Natural and/ or social functions and/ or	Low	Natural and/ or social functions and/ or processes		
		processes are		are somewhat altered		
		somewhat altered		are somewhat affered		
Probability	Rare / improbable	Conceivable, but only	Almost	It is most likely that the		
Tiobability		in extreme	certain /	impact will occur		
		circumstances, and/or	Highly	Impaci wiii decoi		
		might occur for this	probable			
		project although this	procacio			
		has rarely been known				
		to result elsewhere				
Confidence	Medium	Determination is based	Medium	Determination is based on		
		on common sense and		common sense and		
		general knowledge		general knowledge		
Reversibility	Not relevant		Not			
			relevant			
Resource	Not relevant		Not			
irreplaceability			relevant			
Significance		ole - negative	N	legligible - positive		
Comment on				there is a low difference in		
significance				owever, as the impact would		
			ployed during	construction, mitigation is		
0 1	recommended to e					
Cumulative	Minor uplittment for	the local community.				
impacts						

Impacts foreseen during the Operational Phase for the Preferred Alternative (73 Residential Stands):

Project Phase	Operation				
Impact	Visual / Sense of place				
Description of	Visual impacts o	f structures / aesthetic cor	nsequences du	ue to incorrect or excessive	
impact	lighting, especially outdoor lighting				
Mitigable	Medium			e significance of impacts	
Potential	 Municipal b 	y-laws need to be adhere			
mitigation	•	•		reas with suitable indigenous	
	vegetation.				
	 Systematic r 	removal and follow-up op	erations of inv	asive alien plants.	
	 Adhere to A 	rchitectural Design Guide	elines and Lanc	dscape Plan.	
	 Create a 10 	m wide buffer between t	he developme	ent and the Keurboom Road.	
	This strip of I	and will be densely veget	ated to obscur	e the development.	
Assessment	Withou	ut mitigation		With mitigation	
Nature	Negative		Negative Lov	W	
Duration	Permanent	Impact may be	Brief	Impact will not last longer	
		permanent, or in		than 1 year	
		excess of 20 years			
Extent	Limited	Limited to the site and	Limited	Limited to the site and its	
		its immediate		immediate surroundings	
		surroundings			
Intensity	Low	Natural and/ or social	Very low	Natural and/or social	
		functions and/ or		functions and/or processes	
		processes are		are slightly altered	
		somewhat altered			
Probability	Probable	Has occurred here or	Rare /	Conceivable, but only in	
		elsewhere and could	improbable	extreme circumstances,	
		therefore occur		and/or might occur for this	
				project although this has	
				rarely been known to	
Carrialanaa	A A a altituda	Datamaia atiana ia la sasad	A 4 = = :=	result elsewhere	
Confidence	Medium	Determination is based	Medium	Determination is based on	
		on common sense and		common sense and	
Dayarailailih.	A A o oliv voo	general knowledge	l li culo	general knowledge The affected environmental	
Reversibility	Medium	The affected environment will only	High	will be able to recover from	
		recover from the		the impact	
		impact with significant			
		intervention			
Resource	Not relevant		Not		
irreplaceability	1101101010111		relevant		
Significance	Minor - negative Negligible - negative				
Comment on				It it provides a level of security	
significance	• • •	9 9	•	but should be implemented in	
3		not cause negative impac	•	•	
	Ample open spaces	s and landscaped streets o	are incorporate	ed into the design to enhance	
	the quality of the n	•	12	2.5	
Cumulative			ot be meeting	design guidelines enforced	
	by the municipality. Specifically design guidelines for the local area.				

Project Phase		Opera	tion		
Impact	Stormwater Management				
Description of impact	Accelerated erosion / pollution into sub-surface water.				
Mitigable	High Mitigatio	n exists and will considerably re	educe the signific	ance of impacts	
Potential mitigation	 The storm water drainage system must be adhered to, and the system should lead runoff water away from sensitive areas to prevent soil erosion. Use rainwater collection tanks to serve as a retention vessel in downpours. Driveways can be constructed from grass blocks to allow for effective retarding of surface flow and facilitate percolation. 				
Assessment		ithout mitigation	W	/ith mitigation	
Nature	Negative		Low Negative		
Duration	Short term	Impact will last between 1 and 5 years	Brief	Impact will not last Ionger than 1 year	
Extent	Limited	Limited to the site and its immediate surroundings	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	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	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	
Resource	Low	The resource is not	Low	The resource is not	
irreplaceability		damaged irreparably or is not scarce		damaged irreparably or is not scarce	
Significance	Neg	gligible - negative	Mi	inor - negative	
Comment on significance	The development portion of the site is flat with no gradient along its southern boundary and has no defined drainage discharge points. The existing flat and permeable conditions allow for natural infiltration.				
Cumulative impacts	Without mitigation stormwater flow	on this impact could result in po	otential erosion o	n the site caused by	

Project Phase	Operation			
Impact	Stormwater Runoff			
Description of	Alteration of surface flows caused by increased stormwater runoff.			
impact				
Mitigable	High Mitigation exists and will considerably reduce the significance of impacts			
Potential	Stormwater from erven must be attenuated on site as far as possible.			
mitigation	Stormwater from access roads must be attenuated onsite (prior to any discharge)			
	into retention ponds).			
	 The runoff velocity of stormwater must be reduced with energy dissipaters prior to 			
	discharge into retention ponds.			
	Stormwater management should encourage infiltration of water into the soil profile			
	and other on site attenuation (i.e. using grass pavers etc.).			

	The natural spring and small dam must be protected by a 10 m buffer throughout the operational phase.				
	 No stormwater should be put into this dam as the water is of high quality. 				
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		jible - 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. Hardened surface and establishment of foundations for houses may increase sub-surface flows towards the natural spring and small dam. The dam water is of high quality, and pollutants from stormwater runoff entering the dam should be minimised. Adequate management of stormwater should therefore effectively minimise the intensity of this impact.				
Cumulative impacts	Without mitigation this impact could result in the water quality of the dam being compromised.				

Project Phase	Operation				
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	 Incorporate portions of the secondary vegetation area to form part of the open space system within the development, which will link up with the forest area. The proposed open space system should correspond to the position of indigenous vegetation. An open space management system should be developed to formalize such steps for forest protection. Wildlife gaps in the perimeter fence must be installed at appropriate intervals and be of a suitable dimension to allow for the movement of small animals. 				

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		Minor - negative		egligible - negative	
Comment on significance	The proposed development layout makes provision for a 10m buffer along the forest margin and also incorporated portions of the secondary vegetation area to form part of the open space system within the development, which will link up with the forest area.				
Cumulative impacts		would result in insignificant cumu			

Project Phase	Operation					
Impact	Eradication of Alien Vegetation					
Description of impact	Imp	acts on biodiversity / natur	al habitats / ir	ncreased fire risk		
Mitigable	High	Mitigation exists and will a	considerably re	educe significance of impacts		
Potential mitigation	 a tree or but Rehabilitation establishmer A suitable plant the Landscan An Alien Conalien plant Follow-up of Minimise distant techniques 	sh cover is desired, replace on of disturbed areas, as we not of site-appropriate indig lanting list of trees and shru upe Plan. ntrol Plan should be comple pecies. perations must be done.	ed with suitable II as previously enous species bs must be co	invaded areas, should promote		
Assessment	Without mitigation With mitigation					
Nature	Negative Positive					
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Brief	Impact will not last longer than 1 year		

Extent	Limited	Limited to the site and its immediate surroundings	Limited	Limited to the site and its immediate surroundings	
Intensity	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	
Probability	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	
Confidence	Medium	Determination is based on common sense and general knowledge	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	Not relevant		Not		
irreplaceability Significance	High	- negative	relevant	Moderate - positive	
Comment on significance	An ongoing alien invasive management programme should take place on site. This will protect riparian habitats downslope from degradation and could potentially be the biggest contribution to maintaining and protecting biodiversity on site and in surrounding areas.				
Cumulative impacts	_	he development would no ecifically design guidelines	_	design guidelines enforced by area.	

Project Phase	Operation					
Impact	Formal gardens					
Description of	Habitat	loss for terrestrial wildlife, fro	agmentation (of ecological corridor		
impact						
Mitigable	Low	Mitigation will slightly redu	uce the signifi	cance of impacts		
Potential	 Areas that a 	are not required for develor	oment purpos	ses should remain natural with		
mitigation	indigenous	vegetation.				
	 All alien inv 	asive plants must be remov	ed from the s	ite on an on-going basis.		
				nent should be encouraged to		
	avoid plant	ing exotic plants in favour o	of locally indi	genous plants.		
	 Landscaping 	g must be done with locall	y occurring in			
Assessment	Witho	ut mitigation		With mitigation		
Nature	Negative		Positive			
Duration	Brief	Impact will not last	Permanent	Impact may be permanent, or		
		longer than 1 year		in excess of 20 years		
Extent	Limited	Limited to the site and	Very	Limited to specific isolated		
		its immediate	limited	parts of the site		
		surroundings				
Intensity	Negligible	Natural and/ or social	Very low	Natural and/ or social		
	functions and/ or functions and/ or processes					
	processes are negligibly are slightly altered					
	altered					
Probability	Highly unlikely /	Expected never to	Almost	It is most likely that the impact		
	None	happen	certain /	will occur		
			Highly			
			probable			

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

Impacts foreseen during the Construction Phase for Alternative 1 (19 Residential Stands):

Project Phase	Construction					
Impact	Clearance of vegetation for the construction of the dwelling and associated infrastructure					
Description of	Loss of sensitive vegetation, habitat loss for terrestrial wildlife, mortalities to various					
impact	species unable to evade the disturbance, loss of viable propagules, fragmentation of					
impaci	ecological infrastructure					
Mitigable	Medium	Mitigation exists and will notable		ificance of impacts		
Potential		rever there are sections of	•	natural habitat within the		
mitigation	deve	elopment area, they should not	be impacted	by the building activities and		
	shou the c	ld be conserved as small islands area.	s of natural re	sources for the small wildlife of		
	 the removal and translocation of protected plants if found should be undertaken prior to construction clearing activities. A permit is required prior to removal. 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. Access by heavy machinery should be limited on the site. Only areas necessary for the development footprint should be cleared and the remainder of the property should be left natural. Laydown areas for construction materials must be contained within the clearing footprint of the proposed development. 					
		-meter buffer zone must be reta orest margin.	ined along th	e base of the slope to protect		
Assessment	ine i	Without mitigation		With mitigation		
Nature	Negative	Willion Hilligation	Low negativ	-		
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	Very	Limited to the site and its		
		immediate surroundings	limited	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	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	Medium	Determination is based on		
		exists to verify the assessment		common sense and general knowledge		
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	ĕ			
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		legligible - negative		
Comment on significance	The forested area to the north of the development is excluded from the proposed development and will not be directly affected. Additional Private Open Space will not significantly mitigate the disturbance of vegetation as it will be in the transformed/lawned areas. Rehabilitation of these areas may offset loss of secondary vegetation. Some additional secondary vegetation near the forest margins will be retained with fewer stands.					
Cumulative impacts	The impact would result in insignificant cumulative effects					

Project Phase	Construction					
Impact		Loss of secondary vegetation		lered ecosystem		
Description of	Loss of habitat on site (within the proposed development footprint), modification of					
impact	ecological processes, spillover effects into surrounding areas due mostly to secondary					
		impacts such as boundary disturbance and alien invasive species spread.				
Mitigable	Medium	Mitigation exists and will notable				
Potential		ess to forested areas during co				
mitigation		truction personnel. These areas r				
miligation		ppile and implement an alien n				
		ities and areas and provides a p				
	-	ertake regular monitoring to dete	-	_		
		rolled, as per the Alien Manager		siens carry se man mey carr se		
		abilitation of disturbed areas, a		viously invaded areas should		
	pron	note establishment of site-approp	oriate inalgen I	•		
Assessment		Without mitigation		With mitigation		
Nature	Negative		Low negative			
Duration	Permanent	Impact may be permanent,	Permanent	Impact may be permanent,		
		or in excess of 20 years		or in excess of 20 years		
Extent	Limited	Limited to the site and its	Very	Limited to the site and its		
		immediate surroundings	limited	immediate surroundings		
Intensity	Medium	Natural and/or social	Low	Natural and/or social		
		functions and/or processes		functions and/or processes		
		are notably altered		are somewhat altered		
Probability	Certain /	There are sound scientific	Certain /	There are sound scientific		
	Definite	reasons to expect that the	Definite	reasons to expect that the		
		impact will definitely occur		impact will definitely occur		
Confidence	High	Substantive supportive data	High	Substantive supportive data		
		exists to verify the assessment		exists to verify the		
				assessment		
Reversibility	Low	The affected environment will	Medium	The affected environment		
		not be able to recover from		will only recover from the		
		the impact - permanently		impact with significant		
_		modified		intervention		
Resource	Low	The resource is not damaged	Low	The resource is not		
irreplaceability		irreparably or is not scarce		damaged irreparably or is		
		<u> </u>		not scarce		
Significance		Minor - negative		egligible - negative		
Comment on	_	ion type (Garden Route Shale		- · · · · · · · · · · · · · · · · · · ·		
significance		site on the steep slopes are covered to the slope slope slopes are covered to the slope				
		Afrotemperate Forest, which is				
		nder the National Forests Act. The				
		as are completely excluded from	n ine propose	a development (both options)		
		directly affected.				
	The only remaining non-forest vegetation on site is considered to be secondary. However,					
	on the basis that no legal soil disturbance has occurred during the preceding 10 years, it is legally considered to be natural vegetation that is within an Endangered ecosystem. It is, however, not representative of this vegetation unit and, being secondary, is not considered to be irreplaceable.					
	COLISIGERED	ю ре шеріасварів.				
	Additional	Private Open Space will not	significantly	mitigate the disturbance of		
		as it will be in the transformed/l		=		
	_	oss of secondary vegetation. Son				
		ns will be retained with fewer sta		destriction in the state of the		
Cumulative		would result in insignificant cumu				
impacts						
	1					

Project Phase	Construction						
Impact	Loss of individuals of protected tree species						
Description of	Loss of habitat on site (within the proposed development footprint), disturbance or loss of						
impact	protected tre						
Mitigable	Medium	Mitigation exists and will notab					
Potential		n existing large trees within prop					
mitigation		trees need to be removed or p	oruned then a	permit is required, according			
		e National Forests Act.					
		additional milkwoods in the de					
		can be planted along with othe					
		ortions and composition should	reflect habite	at that would have occurred			
A	natur	ally at this site.		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\			
Assessment	N. a. a. a. History	Without mitigation	1	With mitigation			
Nature	Negative	line is an at the any line is a surround and	Low negative				
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Long Term	Impact will last between 16 and 30 years			
Extent	Very	Limited to the site and its	Very	Limited to the site and its			
	limited	immediate surroundings	limited	immediate surroundings			
Intensity	High	Natural and/ or social	Low	Natural and/or social			
		functions and/ or processes		functions and/or processes			
		are significantly altered		are somewhat altered			
Probability	Probable	Has occurred here or	Rare /	Conceivable, but only in			
		elsewhere and could	improbable	extreme circumstances,			
		therefore occur		and/or might occur for this			
		project although this has					
		rarely been known to					
Confidence	Medium	Determination is based on	Medium	result elsewhere Determination is based on			
Confidence	Medium	common sense and general	Medium	common sense and general			
		knowledge		knowledge			
Reversibility	Partly	The impact is reversible but	Partly	The impact is reversible but			
NO COLORD IIII y	reversible	more intense mitigation	reversible	more intense mitigation			
		measures are required		measures are required			
Resource	Low	The resource is not damaged	Low	The resource is not			
irreplaceability		irreparably or is not scarce		damaged irreparably or is			
				not scarce			
Significance		Minor - negative		egligible - negative			
Comment on		cies affected is Sideroxylon inerm					
significance		dividuals were seen on site, all of		, •			
		d but is a key and dominant c	omponent of	coastal forests in the Garden			
	Route.						
	Additional Pr	ivate Open Space will not signifi	cantly mitiaata	the disturbance of protocted			
		ivate Open Space will not signifi- will be in the transformed/lawne					
	-	secondary vegetation.	o dieds, kell	abilitation of these areas may			
Cumulative		vould result in insignificant cumu	lative effects				
impacts		TELECTION IN MISSERIES IN CONTROL					
p v	<u> </u>						

Project Phase		Construction		
Impact		Loss of habitat for listed threatened animal species		
Description of	Loss of habite	Loss of habitat for threatened plant and animal species, spillover effects into surrounding		
impact	areas due mostly to secondary impacts such as dust deposition and alien invasive species			
	spread.			
Mitigable	Medium	Mitigation exists and will notably reduce significance of impacts		

Potential mitigation

- Protect natural forest vegetation adjacent to the proposed development site.
- Rehabilitate and improve the small dam on site, including introducing pond margin vegetation typical of mountain ponds in forested areas. This will provide good habitat for various frogs, including potentially Afrixalus knysnae.
- Forest habitats on the upland, steeply-sloping part of the site, have high biodiversity and conservation value, and are designated as sensitive. These areas must not be affected by the proposed development. A buffer zone should be retained along the base of the slope to protect the forest margin. For example, steps should be taken to rehabilitate these areas and encourage growth of species, such as *Pterocelastrus tricuspidatus* and *Sideroxylon inerme*, that are mesic and fire-resistant.
- An open space management system should be developed to formalize steps for forest protection.

	torest protection.					
Assessment		Without mitigation		With mitigation		
Nature	Negative		Low negative	е		
Duration	Permanent	Impact may be permanent,	Permanent	Impact may be permanent,		
		or in excess of 20 years		or in excess of 20 years		
Extent	Limited	Limited to the site and its	Very	Limited to the site and its		
		immediate surroundings	limited	immediate surroundings		
Intensity	High	Natural and/ or social	Low	Natural and/or social		
		functions and/ or processes		functions and/or processes		
		are significantly altered		are somewhat altered		
Probability	Probable	Has occurred here or	Rare /	Conceivable, but only in		
		elsewhere and could	improbable	extreme circumstances,		
		therefore occur		and/or might occur for this		
				project although this has		
				rarely been known to		
				result elsewhere		
Confidence	Medium	Determination is based on	Medium	Determination is based on		
		common sense and general		common sense and general		
		knowledge		knowledge		
Reversibility	Partly	The impact is reversible but	Partly	The impact is reversible but		
	reversible	more intense mitigation	reversible	more intense mitigation		
		measures are required		measures are required		
Resource	Low	The resource is not damaged	Low	The resource is not		
irreplaceability		irreparably or is not scarce		damaged irreparably or is		
				not scarce		
Significance		Minor - negative		egligible - negative		
Comment on		is habitat on site that is suspect		•		
significance		es. This is the forest habitat, w				
		print and will not be affected by		•		
		pecies that could potentially oc				
	0		nas a moaera	ate probability of occurring in		
		forest margin areas.	1)			
	Crowned Eagle (Near Threatened) - the forests on site may constitute part					
	of the general foraging range but it is unlikely that they are resident on site,					
		or are dependent on it.	waa a a a a a l	the a languity of the experies is		
	0	o Tunnelling Dung Beetle (Endangered). The type locality of the species is				
		forest habitats in the Keurboomstrand area. o Small antelope (Vulnerable). There is a moderate to high probability of it				
	0	occurring in the forests on site		derate to high probability of it		
	الماماء الماماء	<u> </u>		ly politicate the district success		
		tional Private Open Space will rest as it will be in the transformed	-	•		
		at as it will be in the transformed,		s. Kenabilialion of these areas		
Cumulativa		offset loss of habitat in secondar		a averall habitat available for		
Cumulative	The potential impact affects a negligible proportion of the overall habitat available for					

impacts

these species and will not directly affect any individuals.

Impact	Waste Pollution					
Impact	Dollutio			vygata gaparatad by the		
Description of	Pollution of buffer zones and natural areas caused by waste generated by the					
impact	Construction process. High Mitigation exists and will considerably reduce significance of impacts					
Mitigable	High					
Potential mitigation	 All construction waste generated on-site during construction must be adequately managed. Separation and recycling of different waste materials should be supported. All construction waste materials must be collected and disposed of at a suitable waste facility. No dumping of construction material within natural areas or buffer zones may take place. The buffer and "no-go" areas must be monitored on a weekly basis to clean-up 					
	 Adea through facility 	waste that may have been blow quate sanitary facilities and abughout the project area. Use of ties must be kept clean so the unding vegetation).	olutions must k of these facilit	pe provided for all personnel lies must be enforced (these		
Assessment		Without mitigation		With mitigation		
Nature	Negative		Low negative	Э		
Duration	Short term	Impact will last between 1 and 5 years	Brief	Impact will not last longer than 1 year		
Extent	Very 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	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		
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	Negligible - negative Negligible - negative					
Comment on significance	Construction activities are likely to generate significant quantities of solid waste that could pollute buffer zones and natural areas. In addition, the high numbers of construction workers present on site will generate a significant amount of human waste, which could pollute the environment.					
Cumulative impacts	The impact	would result in insignificant cumu	lative effects.			

Construction

Project Phase		Construction		
Impact	Construction Vehicles			
Description of	Pollution caused by the operation of vehicles and heavy machinery.			
impact				
Mitigable	High	Mitigation exists and will considerably reduce significance of impacts		
Potential	• Con	struction activities must be confined to clearly demarcated areas so as to		
mitigation	prev	ent unnecessary disturbance the surrounding environment.		

Project Phase

- No vehicles are to park or operate within "no-go" areas.
- 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.
- No fuel storage, refuelling, vehicle maintenance or vehicle depots to be allowed near natural spring and dam.
- 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 buffer zones.
- 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.

	arry roof of oil spills are clear op arra alsearada competily.				
Assessment		Without mitigation		With mitigation	
Nature	Negative		Low negative	9	
Duration	Short term	Impact will last between 1	Brief	Impact will not last longer	
		and 5 years		than 1 year	
Extent	Very limited	Limited to the site and its	Very limited	Limited to the site and its	
1-1		immediate surroundings		immediate surroundings	
Intensity	Low	Natural and/or social	Very low	Natural and/or social	
		functions and/or processes are somewhat altered		functions and/or processes are slightly altered	
Probability	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	
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	Negligible - negative Negligible - negative				
Comment on	Operation of	of vehicles could result in spillage	es or leaks of h	ydrocarbons (fuel and oil) and	
significance	could lead	to unnecessary disturbance of n	atural areas.	·	
Cumulative	The impact	would result in insignificant cumu	lative effects.		
impacts					

Project Phase	Construction
Impact	Disturbance / removal of topsoil
Description of	Disturbance of topsoil, potential soil erosion and the loss of topsoil
impact	
Mitigable	High Mitigation exists and will considerably reduce the significance of impacts
Potential mitigation	 Areas that are disturbed through building activities (such as the excavations for 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. Organic matter, such as roots and humus/topsoil should be removed from the footprint of structures and stockpiled separately for landscaping purposes. The stockpiling of topsoil for use in rehabilitation is required. Stockpiles must not exceed 1.5m in height, must be covered with shade cloth or similar, to prevent erosion and any invasive alien species that begin to grow within it must be removed.

- Soil disturbance during the removal of alien invasive plants must be minimised as much as possible.
- The site must be stabilised where necessary using available materials, where possible. It is recommended that exposed soils are covered with wood chips, and tree branches used to create berms. Any cut alien vegetation on site can be utilised for this purpose if it is without seed.

Assessment	0	Without mitigation		/ith mitigation		
Nature	Negative		Low Negative			
Duration	Short term	Impact will last between 1 and 5 years	Brief	Impact will not last longer than 1 year		
Extent	Limited	Limited to the site and its immediate surroundings	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	Almost certain	It is most likely that the impact will occur	Likely	The impact may occur		
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment		
Reversibility	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		
Resource irreplaceabilit y	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce		
Significance		Negligible - negative Minor - negative				
Comment on significance	lead to the	Clearing areas of the site in preparation for construction will expose bare soil which may lead to the potential loss of topsoil through runoff and incorrect storage. This is not envisaged to be a significant impact with mitigation measures in place. Topsoil can be reused on site for rehabilitation purposes.				
Cumulative impacts		Without mitigation this impact could result in potential erosion downhill of the site caused by stormwater flow.				

Project Phase	Construction				
Impact		Noise pollution			
Description of		Noise caused by m	achinery and	l staff	
impact					
Mitigable	Low	Mitigation does not exist;	or mitigation	will slightly reduce the	
		significance of impacts			
Potential	 Constructio 	n activities must only take p	olace during	normal working times between	
mitigation	07:00-17:00	07:00-17:00 on weekdays.			
	 Machinery may be fitted with silences to dampen noise. 				
	Staff must be reminded that they are working within a residential area and noise				
	levels must be kept low.				
Assessment	Without mitigation With mitigation				
Nature	Negative		Negative		
Duration	Brief	Impact will not last	Brief	Impact will not last longer	
		longer than 1 year		than 1 year	
Extent	Limited Limited to the site and		Limited	Limited to the site and its	
		its immediate		immediate surroundings	
		surroundings			

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	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	
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge	
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	Not relevant		Not		
irreplaceability			relevant		
Significance	Minor - negative Negligible - negative				
Comment on	Some extent of noise pollution during construction is expected; however, with mitigation				
significance	the impact will be reduced.				
Cumulative	No cumulative impacts exist.				
impacts					

Project Phase	Construction				
Impact	Visual impact				
Description of	Visual & aesthetic consequences of the proposed project				
impact					
Mitigable	Medium	Mitigation exists and will	notably redu	ce significance of impacts	
Potential	 The Archite 	ectural Design Guidelines	proposed for	or the development must be	
mitigation	 adopted to mitigate the colours, heights, disturbance areas, maximum footprint, vegetation, etc, which will all contribute to a smaller visual impact on the landscape. The necessary measures be implemented during the construction phase to protect the natural vegetation, to control the noise, dust and visual intrusion. 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. • Implement	external lighting restrictions	s and auideli	nes.	
Assessment		ut mitigation		With mitigation	
Nature	Negative		Negative		
Duration	Short term	Impact will last between 1 and 5 years	Short term	Impact will last between 1 and 5 years	
Extent	Limited	Limited to the site and its immediate surroundings	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	Certain / Definite There are sound scientific reasons to expect that the impact will definitely occur The impact may occur			The impact may occur	
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment	

Reversibility	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	
Resource	Not relevant		Not		
irreplaceability			relevant		
Significance	Mino	r - negative	N	legligible - negative	
Comment on	The proposal is sensitive towards the character of the area and attempts to create a				
significance	unique sense of place that will blend in and compliment the ambience of the surrounding				
	area.				
Cumulative	No cumulative imp	acts exist.			
impacts					

Project Phase	Construction			
Impact	Employment			
Description of	Empowerment of the local community members living in the area relating to temporary			
impact		employment o		
Mitigable	Medium	,	ensure that the	e positive impact is followed
		through.		
Potential	_		ommunication	n channels to ensure social
mitigation	representation			
		our and source local mate	erials as tar a:	•
Assessment		ıt mitigation	5 '''	With mitigation
Nature	Negative		Positive	
Duration	Short term	Impact will last	Short term	Impact will last between 1
		between 1 and 5 years		and 5 years
Extent	Local	Extending across the	Local	Extending across the site
		site and to nearby settlements		and to nearby settlements
Intensity	Low	Natural and/ or social	Low	Natural and/ or social
intensity	LOW	functions and/ or	LOW	functions and/ or processes
		processes are		are somewhat altered
		somewhat altered		are somewhat affered
Probability	Rare / improbable	Conceivable, but only	Almost	It is most likely that the
,	Karo / Improsocio	in extreme	certain /	impact will occur
		circumstances, and/or	Highly	
		might occur for this	probable	
		project although this		
		has rarely been known		
		to result elsewhere		
Confidence	Medium	Determination is based	Medium	Determination is based on
		on common sense and		common sense and
		general knowledge		general knowledge
Reversibility	Not relevant		Not	
			relevant	
Resource	Not relevant		Not	
irreplaceability	.		relevant	
Significance		<mark>ole - negative</mark>		Negligible - positive
Comment on				there is a low difference in
significance	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.			g construction, mitigation is
Cumulative		the local community.		
impacts		me local continuing.		
inipucis				

Impacts foreseen during the Operational Phase for Alternative 1 (19 Residential Stands):

	Operation				
Impact Visual / Sense of place					
	Visual impacts of structures / aesthetic consequences due to incorrect or excessive				
impact lighting, especially outdoor lighting					
Mitigable Medium Mitigation exists and will notably reduce significance of in	npacts				
Potential • Municipal by-laws need to be adhered to.					
mitigation • Re-vegetation and Landscaping of open space areas with suitable	indigenous				
vegetation.					
Systematic removal and follow-up operations of invasive alien plants.					
Adhere to Architectural Design Guidelines and Landscape Plan.	5 .				
Create a 10m wide buffer between the development and the Keurb This state of the state of					
This strip of land will be densely vegetated to obscure the developmen	ıT.				
Assessment Without mitigation With mitigation					
Nature Negative Negative Low					
DurationPermanentImpact may be permanent, or inBriefImpact will not look than 1 year	istionger				
excess of 20 years					
Extent Limited Limited to the site and Limited to the site	and its				
its immediate immediate immediate surrou					
surroundings	Tan igs				
Intensity Low Natural and/or social Very low Natural and/or so					
functions and/or functions and/or	processes				
processes are are slightly altere	b				
somewhat altered					
ProbabilityProbableHas occurred here orRare /Conceivable, but	•				
elsewhere and could improbable extreme circumst					
therefore occur and/or might oc					
project although					
rarely been known result elsewhere	n to				
Confidence Medium Determination is based Medium Determination is	hased on				
on common sense and common sense of					
general knowledge general knowled					
Reversibility Medium The affected High The affected env					
environment will only will be able to re	cover from				
recover from the the impact					
impact with significant					
intervention					
Resource Not relevant Not					
irreplaceability relevant					
	Minor - negative Negligible - negative				
Comment on significance Lighting, specifically outdoor lighting is not only aesthetic, but it provides a level to property owners. Therefore, outdoor lighting is essential, but should be implementation.	•				
a way which does not cause negative impacts to neighbours.					
a way which does not easse negative impacts to heighboots.					
Ample open spaces and landscaped streets are incorporated into the design to	o enhance				
the quality of the neighbourhood.	2 3				
	Without mitigation the development would not be meeting design guidelines enforced				
impacts by the municipality. Specifically design guidelines for the local area.					

Inoject Thuse	 	01			
Impact	1	Stormwater M			
Description of		Accelerated erosion / pollution into sub-surface water.			
impact					
Mitigable		n exists and will considerably re			
Potential		n water drainage system must			
mitigation	runoff wo	ater away from sensitive areas	to prevent soil er	osion.	
	 Use rainv 	water collection tanks to serve	as a retention ve	ssel in downpours.	
	Driveway	ys can be constructed from gr	ass blocks to allo	w for effective retarding of	
		flow and facilitate percolation.			
Assessment	W	ithout mitigation	W	/ith mitigation	
Nature	Negative		Low Negative		
Duration	Short term	Impact will last between 1	Brief	Impact will not last	
		and 5 years		longer than 1 year	
Extent	Limited	Limited to the site and its	Very limited	Limited to specific	
		immediate surroundings	,	isolated parts of the	
				site	
Intensity	Low	Natural and/or social	Very low	Natural and/ or social	
•		functions and/or processes	,	functions and/ or	
		are somewhat altered		processes are slightly	
				altered	
Probability	Almost certain	It is most likely that the	Rare /	Conceivable, but only	
,		impact will occur	improbable	in extreme	
				circumstances, and/or	
				might occur for this	
				project although this	
				has rarely been known	
				to result elsewhere	
Confidence	High	Substantive supportive data	High	Substantive supportive	
		exists to verify the		data exists to verify the	
		assessment		assessment	
Reversibility	Medium	The affected environment	High	The affected	
,		will only recover from the		environmental will be	
		impact with significant		able to recover from	
		intervention		the impact	
Resource	Low	The resource is not	Low	The resource is not	
irreplaceability		damaged irreparably or is		damaged irreparably	
, , , , , , , , , , , , , , , , , , , ,		not scarce		or is not scarce	
Significance	Negligible - negative Minor - negative				
Comment on		nt portion of the site is flat with i		· · ·	
significance		drainage discharge points. The	-		
	for natural infiltre			and the second s	
Cumulative		Without mitigation this impact could result in potential erosion on the site caused by			
impacts	stormwater flow	·	3.00.0.10		
	2.011117 GIOI 110 W	SIOIMWOIEI IIOW.			

Operation

Project Phase	Operation		
Impact	Stormwater Runoff		
Description of	Alteration of surface flows caused by increased stormwater runoff.		
impact			
Mitigable	High Mitigation exists and will considerably reduce the significance of impacts		
Potential	Stormwater from erven must be attenuated on site as far as possible.		
mitigation	 Stormwater from access roads must be attenuated onsite (prior to any discharge 		
	into retention ponds).		
	The runoff velocity of stormwater must be reduced with energy dissipaters prior to		
	discharge into retention ponds.		
	Stormwater management should encourage infiltration of water into the soil profile		
	and other on site attenuation (i.e. using grass pavers etc.).		

Project Phase

	The natural spring and small dam must be protected by a 10 m buffer throughout the operational phase.			
	 No stormwater should be put into this dam as the water is of high quality 			
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	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. Hardened surface and establishment of foundations for houses may increase sub-surface flows towards the natural spring and small dam. The dam water is of high quality, and pollutants from stormwater runoff entering the dam should be minimised. A lower density development may result in less runoff with fewer hardened surfaces. Adequate management of stormwater should therefore effectively minimise the intensity of this impact.			
Cumulative	Without mitigo	ation this impact could result	in the water qu	ality of the dam being
impacts	compromised.			

Project Phase	Operation		
Impact	L	andscape Connectivity	
Description of	Cut-off of natural dispersal and fo	oraging movement by animals, impacts on suitable link	
impact	or important corridor	, fragmentation of ecological infrastructure	
Mitigable	Low Mitigation will slightly	y reduce the significance of impacts	
Potential	Incorporate portions of the secondary vegetation area to form part of the open		
mitigation	 space system within the development, which will link up with the forest area. The proposed open space system should correspond to the position of indigenous vegetation. 		
	 An open space manage steps for forest protection. 	ment system should be developed to formalize such	

	Wildlife gaps in the perimeter fence must be installed at appropriate intervals and be of a suitable dimension to allow for the movement of small animals.			
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	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
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	N	egligible - negative
Comment on significance	The proposed development layout makes provision for a 10m buffer along the forest margin and also incorporated portions of the secondary vegetation area to form part of the open space system within the development, which will link up with the forest area. Additional Private Open Space may allow for wildlife corridors if managed correctly.			
Cumulative impacts	The impact would result in insignificant cumulative effects			

Project Phase	Operation			
Impact	Eradication of Alien Vegetation			
Description of impact	Impacts on biodiversity / natu	al habitats / increased fire risk		
Mitigable	High Mitigation exists and will a	considerably reduce significance of impacts		
Potential mitigation	 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. Rehabilitation of disturbed areas, as well as previously invaded areas, should promote establishment of site-appropriate indigenous species. A suitable planting list of trees and shrubs must be compiled and incorporated into the Landscape Plan. An Alien Control Plan should be compiled to systematically remove and control alien plant species. Follow-up operations must be done. Minimise disturbance to the natural vegetation using low impact manual labour techniques. 			
Assessment	Without mitigation	With mitigation		
Nature	Negative	Positive		

Duration	Permanent	Impact may be permanent, or in excess of 20 years	Brief	Impact will not last longer than 1 year	
Extent	Limited	Limited to the site and its immediate surroundings	Limited	Limited to the site and its immediate surroundings	
Intensity	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	
Probability	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	
Confidence	Medium	Determination is based on common sense and general knowledge	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	Not relevant		Not		
irreplaceability Significance	High	noggino	relevant	Madarata positivo	
Comment on	High - negative Moderate - positive				
significance	An ongoing alien invasive management programme should take place on site. This will protect riparian habitats downslope from degradation and could potentially be the biggest contribution to maintaining and protecting biodiversity on site and in surrounding areas.				
Cumulative	Without mitigation the development would not be meeting design guidelines enforced by				
impacts	the municipality. Specifically design guidelines for the local area.				

Project Phase	Operation					
Impact	Formal gardens					
Description of impact	Habitat loss for terrestrial wildlife, fragmentation of ecological corridor					
Mitigable	Low Mitigation will slightly reduce the significance of impacts					
Potential mitigation	 Areas that are not required for development purposes should remain natural with indigenous vegetation. All alien invasive plants must be removed from the site on an on-going basis. Investing landowners within the proposed development should be encouraged to avoid planting exotic plants in favour of locally indigenous plants. Landscaping must be done with locally occurring indigenous vegetation. 					
Assessment	Without mitigation		With mitigation			
Nature	Negative		Positive			
Duration	Brief	Impact will not last longer than 1 year	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 specific isolated parts of the site		
Intensity	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		
Probability	Highly unlikely / None	Expected never to happen	Almost certain /	It is most likely that the impact will occur		

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