APPENDIX J: IMPACT ASSESSMENT

IMPACT ASSESSMENT, MANAGEMENT, MITIGATION AND MONITORING MEASURES

Please note: While sections are provided for impacts on certain aspects of the environment and certain impacts, the sections should also be copied and completed for all other impacts.

(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:
Disturbance to subsurface geological layers

Discussion:
Construction and excavation activities will affect the underlying geological layers on site to some extent.

Cumulative impacts:
It is not anticipated that the cumulative impact on subsurface geological layers will be high as the affected substrata is very shallow and the integrity of the underlying ground structures will thus not be sacrificed.

Mitigation:
Due to the nature of the impacts, not much can be done to mitigate the impact, only the severity of it can be managed.

- Mitigation and management for affecting geology is to ensure that removal of geological material and hardening are kept to a minimum and only within proposed development areas.
- Any cumulative impacts due to compaction/hardening of substrata such as damming of storm water elsewhere must be managed and mitigated as per the requirements of the environmental management plan.

Criteria	Layout Alternative 1 Without Mitigation	With Mitigation			No-Go Alternative Without Mitigation	With Mitigation
Extent	2	1			Not Applicable (No construction activities to take place during the No-Go Alternative)	
Duration	5	5				
Magnitude	2	2				
Probability	4	2				
Significance	36-Medium	16-Low				
Status	Medium negative significance if not mitigated	Low negative significance if mitigated				
Reversibility	0%					
Irreplaceable loss of resources	2- Partly Replaceable					
Can impacts be mitigated?	2-Partly, but impact on subsurface geological layers during excavations is inevitable.					

Nature of impact:
Soil erosion

Discussion:
During construction site clearance, access roads for construction, workers camps, etc. will cause a disturbance to the soil and the vegetation cover. This disturbance, unless carefully managed, could spread as a result of unnecessary construction of additional access roads or site clearing outside of approved development footprint. Construction camps, if not fenced and restricted in size, could result in unnecessarily large areas being disturbed. Soil erosion could occur due to wind (wind erosion cause dust pollution) or due to overland flow should rains fall during construction.

Cumulative impacts:
Exposed soil surfaces due to clearing of vegetation could lead to soil erosion and if this is not mitigation could lead to the cumulative impact such as erosion of surrounding vegetation areas outside of the development footprint.

Mitigation:

- Demarcate no-go areas before any land clearing occurs under the supervision of an ECO.

Demarcation must be clearly visible and effective and no-go area must remain demarcated throughout construction phase.

- Access to roads and other areas must be controlled to avoid disturbance of areas outside the development footprint. Personnel should be restricted to the construction camp site and immediate construction areas only.
- Undertake specific erosion monitoring and maintenance throughout the construction phase as and if required.
- Undertake dust suppression as needed.
- Monitor soil erosion on a regular basis and rehabilitate impacted areas as soon as possible under supervision of appointed ECO.
- Appropriate and effective storm water management measures must be put in place to ensure that erosion and environmental degradations outside of the proposed development footprint area does not occur, but the storm water measures implemented must not impede storm water flow to such an extent that it is completely stopped. Current hydrological processes outside of the proposed development footprint area must continue to function as is.
- Rehabilitate or stabilise eroded areas immediately to prevent increase in erosion.
- Should any signs of erosion or artificial recharge be observed the municipality must implement rectification and preventions measures immediately and consult with the appointed ECO before implementing these measures.

Criteria	Layout Alternatives 1 Without Mitigation	Layout Alternatives 1 With Mitigation	Layout Alternative 2		No-Go Alternative Without Mitigation	No-Go Alternative With Mitigation
Extent	3	1			Not Applicable (No construction activities to take place during the No-Go Alternative)	
Duration	5	1				
Magnitude	6	2				
Probability	4	2				
Significance	56 - Medium	8 - Low				
Status	Medium negative significance if not mitigated	Low negative significance if mitigated				
Reversibility	100%					
Irreplaceable loss of resources	2 Partly – while topsoil takes very long to redevelop, loss of topsoil can be prevented if correct mitigation measures are implemented					
Can impacts be mitigated?	2 Partly – Disturbance to topsoil during construction is inevitable, but erosion and increased storm water runoff can be mitigated.					

Nature of impact:
Compaction of soil

Discussion:
Heavy construction machinery will compact the soil on the site.

The compaction will lead to a change in soil structure and function. It will furthermore affect the micro-organisms in the soil detrimentally (these species may migrate to other areas where possible while some individuals may die). Soil compaction will lead to a lower growth rate in vegetation.

Cumulative impacts:
Soil compaction of areas outside of the development footprint can lead to lower growth rate in vegetation and erosion.

Mitigation:

- Undertake construction activities only in areas where required. Avoid all other areas outside of approved development footprint area.
- Cross areas with machinery as little as possible (work effectively) and make use of existing access and internal roads as far as possible.
- Rehabilitate impacted areas outside of approved development footprint area immediately upon construction completion.

Criteria	Layout Alternative 1 Without Mitigation	Layout Alternative 1 With Mitigation			No-Go Alternative Without Mitigation	No-Go Alternative With Mitigation
Extent	2	1			Not Applicable (No construction activities to take place during the No-Go Alternative	
Duration	1	1				
Magnitude	6	4				
Probability	4	3				
Significance	36 - Medium	18 - Low				

Status	Medium negative significance if not mitigated	Low negative significance if mitigated			
Reversibility	80%				
Irreplaceable loss of resources	1-No				
Can impacts be mitigated?	2-Yes development and construction vehicles to be restricted only to demarcated footprint areas				

Nature of impact:
Increase in and accumulation of storm water runoff

Discussion:
Removal of vegetated areas may cause an increase in storm water runoff and excavations may lead to accumulation/damming thereof on the site and surrounds.

Cumulative impacts:
Increase in storm water runoff could cause erosion and/or damming of water which may lead to additional negative impacts like further habitat degradation and transformation.

Mitigation:

- Undertake storm water management measures as recommended in the environmental management program.
- Monitor for erosion. Should erosion be present, undertake maintenance activities to rectify and prevent further erosion.
- Demarcate no-go areas before construction commences and maintain demarcation throughout construction phase.
- All roads need to be maintained and monitored. Visible signs of possible erosion must be immediately rehabilitated.
- Monitor impacted areas for erosion and accumulation of water on an ongoing basis and implement mitigation measures as and if required.
- Stormwater discharge flow must be managed and restricted in such a manner that it does not cause erosion.
- Rehabilitate or stabilise eroded areas immediately to prevent increase/spread of erosion.
- Appropriate and effective storm water management measures must be put in place to ensure that erosion and environmental degradations outside of the proposed development footprint area does not occur, but the storm water measures implemented must not impede storm water flow to such an extent that it is completely stopped. Current hydrological processes outside of the proposed development footprint area must continue to function as is.
- Conduct and complete construction activities as far as possible during the dry summer months.
- Only excavate materials from proposed construction sites as according to approved layout plans.
- Do not remove any plant or soil materials from outside of the development areas.
- Do not create any additional access routes.

Criteria	**Layout Alternative 1**				**No-Go Alternative**	
	Without Mitigation	**With Mitigation**			**Without Mitigation**	**With Mitigation**
Extent	2	1			Neutral (Site remains as is)	
Duration	5	2				
Magnitude	10	6				
Probability	5	3				
Significance	85 - High	27 – Low				
Status	High negative significance if not mitigated	Low negative significance if mitigated				
Reversibility	100%					
Irreplaceable loss of resources	2 Partly – While increase in storm water runoff is inevitable erosion can still be prevented and mitigated if required.					
Can impacts be mitigated?	2 Partly – While increase in storm water runoff is inevitable erosion can still be prevented and mitigated if required.					

POTENTIAL IMPACTS ON BIOLOGICAL ASPECTS

Nature of potential impact:
Impacts of construction activities on the hydrological functioning of the site and surrounds which includes the Breerivier and a non-perennial tributary

Discussion:
Construction activities may temporarily impact hydrological processes i.e. stormwater runoff.

Cumulative impacts:
Due to removal of indigenous vegetation stormwater runoff on the exposed surfaces may lead to erosion of the site and surrounds and stormwater runoff may follow "new" flow paths altering the current hydrological processes of the site and surrounds

Mitigation:

- Clearance of indigenous vegetation must be kept to a minimum clearly demarcating the proposed development area before construction commencement, maintaining the demarcation throughout the construction phase and only clearing the area required for the development.
- Construction activities must be completed as quickly as possible to limit disturbance caused ecology as far as possible.
- All unused construction materials must be removed from site immediately after construction completion.
- No concrete/cement mixing may take place on any permeable soil surface and must at all times be contained within an impermeable mixing area and no mixing waste water may enter the environment.
- No waste pollution may occur due to the construction activities and all waste must be contained and disposed of at the municipal landfill site on a daily basis.
- Revegetation of the impacted undeveloped areas must be done as soon as possible after construction completion and only indigenous vegetation species may be used for rehabilitation and landscaping.

Criteria	Layout Alternative 1 Without Mitigation	With Mitigation			No-Go Alternative Without Mitigation	With Mitigation
Extent	2	1			Not Applicable (No construction activities to take place during the No-Go Alternative)	
Duration	1	1				
Magnitude	6	2				
Probability	5	2				
Significance	45 - Medium	8 – Low				
Status	Medium Negative Significance without Mitigation	Low Negative Significance with Mitigation				
Reversibility	100% Reversible					
Irreplaceable loss of resources	2 – Partly, some loss of indigenous vegetation will occur but will be limited.					
Can impacts be mitigated?	2 – Partly, some loss of indigenous vegetation will occur but will be limited.					

Nature of potential impact:
Impacts of construction activities on indigenous vegetation associated with Endangered – Swellendam Silcrete Fynbos also part of a mapped Protected Area

Discussion:
No viable populations of plant species of conservation concern was specifically recorded on the proposed development site, however the indigenous vegetation is part of the Endangered Swellendam Silcrete Fynbos vegetation, located within a Protected Area – Bontebok National Park and the DFFE Screening Report allocated a plant species theme sensitivity rating of **Medium** to the overall proposed development areas, and it surrounds which the specialist agrees with. However the transformed areas are of **Low sensitivity**. The remaining indigenous vegetation on the sites which have

not been disturbed due to previous developments such as roads, parking and pipelines associated with the existing picnic site is in a good condition in terms of diversity and very limited alien vegetation encroachments.

One *Aspalathus burchelliana* (Endangered) was recorded next to the road edge within the proposed development area. However ongoing human impacts (with or without the proposed development) will most likely lead to the destruction of the specimen if not relocated, hence relocation is proposed by the botanical specialist away from the road edge and outside of the proposed development footprint area

In keeping with the objectives of the Low Intensity Leisure Zone within which the proposed developments falls, the footprint of the proposed developments have been kept to a minimum with placement thereof as far as possible on already disturbed and transformed areas as part of the existing Die Stroom picnic site and placing additional proposed infrastructure such as pipelines and power cables along existing infrastructure routes.

Swellendam Silcrete Fynbos is well represented in the Bontebok National Park. The permanent loss of 0.2ha of Swellendam Silcrete Fynbos which is habitat that can support local plant SCC is not expected to be significant as extensive similar habitat will remain within the park which still supports viable populations of the SCC in the park.

Cumulative impacts:
During construction a total area of ±0.44ha will be impacted upon/cleared however only ±0.2ha of indigenous vegetation will be permanently cleared.

Mitigation:

- Clearance of indigenous vegetation must be kept to a minimum clearly demarcating the proposed development area before construction commencement, maintaining the demarcation throughout the construction phase and only clearing the area required for the development.
- During site clearance topsoil must be separated from subsoil and stored separately (and clearly marked) throughout construction phase. Topsoil must be protected from wind and water erosion and returned to rehabilitated areas as soon as possible to promote successful rehabilitation.
- All unused construction materials must be removed from site immediately after construction completion.
- No waste pollution may occur due to the construction activities and all waste must be contained and disposed of at the municipal landfill site on a daily basis.
- All landscaping of undeveloped and areas disturbed during construction must be done with indigenous vegetation.
- Grass for landscaping must be limited to Cynodon dactylon (kweekgras) or Panicum maximum (buffelsgras), no kikuyu grass (Pennisetum clandestinum) may be used or planted for landscaping of disturbed areas.
- Planted grass such as for the proposed picnic area must be prevented from encroaching further into the remaining and rehabilitating indigenous vegetation landscaped and undeveloped areas.

Criteria	Layout Alternative 1 Without Mitigation	With Mitigation			No-Go Alternative Without Mitigation	With Mitigation
Extent	1	1			Not Applicable (No construction activities to take place during the No-Go Alternative)	
Duration	5	5				
Magnitude	2	1				
Probability	5	4				
Significance	40 - Medium	28 - Low				
Status	Medium Negative Significance without Mitigation	Low Negative Significance with Mitigation				
Reversibility	100% Reversible					
Irreplaceable loss of resources	2 – Partly, some loss of indigenous vegetation will occur but will be limited.					

Can impacts be mitigated?	2 – Partly, some loss of indigenous vegetation will occur but will be limited.		

Nature of potential impact:
Impacts of construction activities on indigenous vegetation Species of Conservation Concern

Discussion:
One *Aspalathus burchelliana* (Endangered) was recorded next to the road edge within the proposed development area. However ongoing human impacts (with or without the proposed development) will most likely lead to the destruction of the specimen if not relocated, hence relocation is proposed by the botanical specialist away from the road edge and outside of the proposed development footprint area.

In keeping with the objectives of the Low Intensity Leisure Zone within which the proposed developments falls, the footprint of the proposed developments have been kept to a minimum with placement thereof as far as possible on already disturbed and transformed areas as part of the existing Die Stroom picnic site and placing additional proposed infrastructure such as pipelines and power cables along existing infrastructure routes.

Swellendam Silcrete Fynbos is well represented in the Bontebok National Park. The permanent loss of 0.2ha of Swellendam Silcrete Fynbos which is habitat that can support local plant SCC is not expected to be significant as extensive similar habitat will remain within the park which still supports viable populations of the SCC in the park.

Cumulative impacts:
It is not expected that the proposed construction activities will lead to the loss of any plant species of conservation concern.

Mitigation:

- Clearance of indigenous vegetation must be kept to a minimum clearly demarcating the proposed development area before construction commencement, maintaining the demarcation throughout the construction phase and only clearing the area required for the development.
- Search and rescue of viable indigenous vegetation species must be conducted prior to site clearance within the demarcated development areas. Indigenous species rescued can be used for landscaping of impacted construction areas after construction completion. Specific viable species to be rescued prior to site clearance must be identified by a suitable botanical specialist once the proposed development site has been demarcated.
- During site clearance topsoil must be separated from subsoil and stored separately (and clearly marked) throughout construction phase. Topsoil must be protected from wind and water erosion and returned to rehabilitated areas as soon as possible to promote successful rehabilitation.
- One *Aspalathus burchelliana* was recorded next to the road edge within the proposed development area. Ongoing human impacts (with or without the proposed development) will most likely lead to the destruction of the specimen if not relocated, hence relocation is proposed by the botanical specialist away from the road edge and outside of the proposed development footprint area.
- Park management will be responsible for rescue/removal of these plants and to take care of these plants until it can be used on site for landscaping and rehabilitation purposes.
- All unused construction materials must be removed from site immediately after construction completion.
- No waste pollution may occur due to the construction activities and all waste must be contained and disposed of at the municipal landfill site on a daily basis.
- All landscaping of undeveloped and areas disturbed during construction must be done with indigenous vegetation.
- Grass for landscaping must be limited to Cynodon dactylon (kweekgras) or Panicum maximum (buffelsgras), no kikuyu grass (Pennisetum clandestinum) may be used or planted for landscaping of disturbed areas.
- Planted grass such as for the proposed picnic area must be prevented from encroaching further into the remaining and rehabilitating indigenous vegetation landscaped and undeveloped areas.

Criteria	**Layout Alternative 1**				**No-Go Alternative**	
	Without Mitigation	**With Mitigation**			**Without Mitigation**	**With Mitigation**
Extent	1	1			Not Applicable (No	

Duration	5	5			construction activities to take place during the No-Go Alternative)
Magnitude	2	2			
Probability	2	2			
Significance	16 - Low	16 - Low			
Status	Low Negative Significance without Mitigation	Low Negative Significance with Mitigation			
Reversibility	100% Reversible				
Irreplaceable loss of resources	2 – Partly, some loss of indigenous vegetation will occur but will be limited.				
Can impacts be mitigated?	2 – Partly, some loss of indigenous vegetation will occur but will be limited.				

Nature of potential impact:

Impacts of construction activities on indigenous fauna and avifauna habitat associated with Endangered – Swellendam Silcrete Fynbos as part of a mapped Protected Area

Discussion:

The habitat was assessed to have a high sensitivity due to the presence of endangered vegetation type and it is located in the Bontebok National Park. The Bontebok National Park Management Plan (2013 – 2023) refers to a day visitor facility and picnic area in the concept development plan for development within the timeframes of the plan and is included in the associated map (SANParks 2013). The location is within the low intensity leisure zone. The development proposal can therefore be considered to be aligned to the management plan at a broad scale.

Bontebok *Damaliscus pygargus pygargus* was assessed having a high sensitivity rating. There are recent records of bontebok within the Die Stroom picnic site. Based on the available information, the proposed footprint is within confirmed habitat for an SCC and the sensitivity therefore be rated as high in accordance with the protocols. Since the bontebok is known to be at the stroom area, it is proof that they area adapted and that the human activities do not impact on them. Furthermore, the park is responsible for the management of this species and the current management actions are sufficient and appropriate which is evidence of them being in the area. The swimming pool and parking area will take up a small area of their habitat and they will not be affected.

African Marsh Harrier *Circus ranivorus* and Black Harrier *Circus ranivorus* was assessed having a medium sensitivity rating. These species was not recorded on site and only likely to roam the area. *Rhabdomys pumilio* (although not recorded its presence is know from historic visits) is expected to occur in the project area suggesting that it could use the project area for foraging. Primary nesting habitat is not present on the impacted areas. They will simply move into the bigger surrounding area during construction. The current picnic site and activities already impacted on them.

The other species mapped in the screen tool report or known to be in the area was assessed to have a low sensitivity.

The development of the site would have a **Low Negative** impact on animal species. The proposed development will have relatively little animal species impacts provided that appropriate management measures included in the EMPr and adhered to.

Cumulative impacts:

During construction a total area of ±0.44ha will be impacted upon/cleared however only ±0.2ha of indigenous vegetation will be permanently cleared.

Mitigation:

- Clearance of indigenous vegetation must be kept to a minimum clearly demarcating the proposed development area before construction commencement, maintaining the demarcation throughout the construction phase and only clearing the area required for the development.

- All unused construction materials must be removed from site immediately after construction completion.
- No waste pollution may occur due to the construction activities and all waste must be contained and disposed of at the municipal landfill site on a daily basis.
- All landscaping of undeveloped and areas disturbed during construction must be done with indigenous vegetation.
- Construction activities must be completed as quickly as possible to limit disturbance caused to animal and bird life as far as possible

Criteria	Layout Alternative 1 Without Mitigation	With Mitigation			No-Go Alternative Without Mitigation	With Mitigation
Extent	1	1			Not Applicable (No construction activities to take place during the No-Go Alternative)	
Duration	5	5				
Magnitude	4	1				
Probability	5	4				
Significance	50 - Medium	28 – Low				
Status	Medium Negative Significance without Mitigation	Low Negative Significance with Mitigation				
Reversibility	100% Reversible					
Irreplaceable loss of resources	2 – Partly, some loss of indigenous vegetation will occur but will be limited.					
Can impacts be mitigated?	2 – Partly, some loss of indigenous vegetation will occur but will be limited.					

Nature of potential impact:
Impacts of construction activities on indigenous fauna and avifauna Species of Conservation Concern

Discussion:
No fauna or avifauna species of conservation concern was recorded within the proposed development site during the time of the surveys however fauna and avifauna species of conservation concern are present within the national park i.e. Bontebok. Evidence of mole heaps, termites, mice and weasels were also observed throughout the site. The proposed development areas are however also located on and adjacent to the existing Die Stroom picnic site and the ongoing human activities within this area makes it highly unlikely that the particular proposed development site is being used as preferred breeding or nesting areas for the indigenous fauna and avifauna species and these areas will most likely only be occasionally visited by fauna and avifauna species when looking for food. It is therefore also highly unlikely that any fauna or avifauna species of conservation concern or their associated preferred habitat and breeding areas will be significantly impacted by the proposed development.

There is also a probability that at least some animal and/or bird SCCs known to occur within the general area may frequent the site and surrounds. Apart from the Bontebok antelope these SCC are also likely to include Denham's Bustard (*Neotis denhami*) and Black Harrier (*Circus maurus*), however the construction and operational phase of the proposed developments are not expected to impact on the presence and habits of these species any more than the current picnic site activities are impacting upon them.

Bontebok *Damaliscus pygargus pygargus* was assessed having a high sensitivity rating. There are recent records of bontebok within the Die Stroom picnic site. Based on the available information, the proposed footprint is within confirmed habitat for an SCC and the sensitivity therefore be rated as high in accordance with the protocols. Since the bontebok is known to be at the stroom area, it is proof that they area adapted and that the human activities do not impact on them. Furthermore, the park is responsible for the management of this species and the current management actions are sufficient and appropriate which is evidence of them being in the area. The swimming pool and parking area will take up a small area of their habitat and they will not be affected.

African Marsh Harrier *Circus ranivorus* and Black Harrier *Circus ranivorus* was assessed having a medium sensitivity rating. These species was not recorded on site and only likely to roam the area. *Rhabdomys pumilio* (although not recorded its presence is know from historic visits) is expected to occur in the project area suggesting that it could use the project area for foraging. Primary nesting habitat is not present on the impacted areas. They will simply move into the bigger surrounding area during construction. The current picnic site and activities already impacted on them.

The other species mapped in the screen tool report or known to be in the area was assessed to have a low sensitivity.

The development of the site would have a **Low Negative** impact on animal species. The proposed development will have relatively little animal species impacts provided that appropriate management measures included in the EMPr and adhered to.

Cumulative impacts:
Potential cumulative impacts of the construction activities may be loss or disturbance to fauna and avifauna species of conservation concern

Mitigation:

- Clearance of indigenous vegetation must be kept to a minimum clearly demarcating the proposed development area before construction commencement, maintaining the demarcation throughout the construction phase and only clearing the area required for the development.
- All unused construction materials must be removed from site immediately after construction completion.
- No waste pollution may occur due to the construction activities and all waste must be contained and disposed of at the municipal landfill site on a daily basis.
- All landscaping of undeveloped and areas disturbed during construction must be done with indigenous vegetation. .
- Construction activities must be completed as quickly as possible to limit disturbance caused to animal and bird life as far as possible
- No trapping, hunting or any injury to animal or birdlife may occur during construction activities.
- Search and rescue operations must be conducted before site clearance activities commences and should any local animal or birdlife be found within the construction area they must be carefully moved to the adjacent natural areas by park management not to be impacted upon.

Criteria	Layout Alternative 1 Without Mitigation	With Mitigation			No-Go Alternative Without Mitigation	With Mitigation
Extent	2	2			Not Applicable (No construction activities to take place during the No-Go Alternative)	
Duration	1	1				
Magnitude	6	6				
Probability	3	3				
Significance	27 – Low	27 – Low				
Status	Low Negative Significance without Mitigation	Low Negative Significance with Mitigation				
Reversibility	100% Reversible					
Irreplaceable loss of resources	2 – Partly, some disturbance will occur but will be limited.					
Can impacts be mitigated?	2 – Partly, some disturbance will occur but will be limited.					

Nature of impact:
Introduction of alien and weed plant species

Discussion:
Declared weeds or alien trees may be transported onto the site and spread to surrounding areas during construction. This may have management and cost impacts on such properties. Introduction of alien plant species via vehicular traffic is an important aspect that needs to be considered. Alien grass

seeds for example may become attached to vehicles and be transported to site or be brought on to site in building materials such as sand. Without monitoring and control this could become problematic.

Cumulative impacts:
Loss of potential biodiversity, ecosystems and natural habitat due to the spread of invader plants.

Mitigation:
The mitigation measures mentioned below will help reduce the risk of introductions and will ensure that should introductions occur they are controlled timeously:

- Undertake construction activities only in identified and specifically demarcated areas.
- Do not import and use infill material on site containing alien or weed vegetation seeds/plants.
- An important aspect of on-going maintenance is the monitoring of the rehabilitated sites and access road verges for alien plant species.
- Wherever possible rehabilitation of disturbed area should be done with seeds collected from indigenous vegetation in the area during rehabilitation.
- Implement an ongoing alien eradication program for the areas to be rehabilitated.

Criteria	Layout Alternatives 1 Without Mitigation	With Mitigation			No-Go Alternative Without Mitigation	With Mitigation
Extent	3	2			Not Applicable (No construction activities to take place during the No-Go Alternative)	
Duration	5	1				
Magnitude	6	4				
Probability	4	3				
Significance	56- Medium	21 - Low				
Status	Medium negative significance if not mitigated	Low negative significance if mitigated				
Reversibility	100%					
Irreplaceable loss of resources	1-Will not be lost					
Can impacts be mitigated?	1-Yes, by implementing an alien eradication plan and continuing monitoring of alien regrowth					

POTENTIAL IMPACTS ON SOCIO-ECONOMIC ASPECTS

Nature of impact:
Increased temporary construction jobs

Discussion:
Temporary construction jobs will be created.

Cumulative impacts:
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Mitigation:

- Local contractors, employing or seeking to employ local (historically disadvantaged individuals (HDIs) from the region who are suitably qualified, should get preference.

Criteria	Layout Alternatives 1 Without Mitigation	With Mitigation	No-Go Alternative Without Mitigation	With Mitigation
Status	-	Due to the job creation only being of an temporary nature this impact is rated as a low positive significance	Low Negative Impact, no construction to take place so no temporary jobs to be created.	

Nature of impact:
Increased traffic due to the construction activities requiring various vehicles to come onto and leave the site.

Discussion:
The construction machinery will only have a traffic impact on delivery to, and collection from the site and are therefore regarded as negligible

Cumulative impacts:

The minor increase in traffic volumes at certain times of day will add to the existing traffic volumes. As the existing traffic volumes are relatively low, this cumulative impact is not expected to be significant.

Mitigation:

- Adhere to speed limit and road rules.
- Work during normal working hours and only use demarcated access and internal roads
- Only allow drivers with valid driver's licenses to drive and/or operate construction vehicles

Criteria	Layout Alternative 1 Without Mitigation	Layout Alternative 1 With Mitigation			No-Go Alternative Without Mitigation	No-Go Alternative With Mitigation
Extent	2	1			Not Applicable (No construction activities to take place during the No-Go Alternative)	
Duration	2	1				
Magnitude	4	4				
Probability	4	3				
Significance	32 - Medium	18 - Low				
Status	Medium negative significance if not mitigated	Low negative significance if not mitigated				
Reversibility	100%					
Irreplaceable loss of resources	1 – No loss					
Can impacts be mitigated?	2 - Partly					

Nature of impact:
Impact of litter or waste from the construction site on the surrounding communities.

Discussion:
Construction workers and activities on site may cause polluting of surrounding areas with litter and waste from the construction site.

Cumulative impacts:
Litter and waste polluting the surrounding areas.

Mitigation:

- Appropriate refuse disposable facilities shall be provided at the proposed construction site
- Daily clearance of construction litter on the site and surrounds shall be undertaken.
- Waste to be disposed of via closed containers/vehicles at the municipal landfill site.

Criteria	Layout Alternative 1 Without Mitigation	Layout Alternative 1 With Mitigation			No-Go Alternative Without Mitigation	No-Go Alternative With Mitigation
Extent	3	1			Not Applicable (No construction activities to take place during the No-Go Alternative)	
Duration	5	1				
Magnitude	6	0				
Probability	4	2				
Significance	56- Medium	4-Low				
Status	Medium negative significance if not mitigated	Low negative significance if mitigated				
Reversibility	100%					
Irreplaceable loss of resources	1-Will not be lost					
Can impacts be mitigated?	1-Yes, by implementing a penalty system and restricting workers movements to remain onsite during working hours.					

Nature of impact:
Dust and emissions pollution arising from ground clearing and other construction activities

Discussion:
It is anticipated that construction will occur during the dry season as far as possible in order to prevent construction delays due to the rains. As such, dust will be present on the site and the access roads.

Should the construction machinery not be properly maintained, emissions pollution may occur.

Either one or a combination of the above may affect the surrounding land users/ owners if not

managed.
Cumulative impacts: Dust and emissions impacts on surrounding environment and community.
Mitigation: • Undertake dust suppression if necessary. If dust suppression and/or surface hardening is undertaken by using water only non-potable water resources must be used. • Only clear the areas to be developed upon, no additional areas outside of the proposed development footprint area may be cleared. • Plant additional vegetation where needed after construction during site rehabilitation if required. • Service and maintain construction vehicles on a frequent basis.

Criteria	Layout Alternative 1 Without Mitigation	With Mitigation			No-Go Alternative Without Mitigation	With Mitigation
Extent	2	1			Not Applicable (No construction activities to take place during the No-Go Alternative)	
Duration	2	1				
Magnitude	4	4				
Probability	4	3				
Significance	32 - Medium	18 - Low				
Status	Medium negative significance if not mitigated	Low negative significance if not mitigated				
Reversibility	100%					
Irreplaceable loss of resources	1 – No loss					
Can impacts be mitigated?	2 - Partly					

POTENTIAL IMPACTS ON CULTURAL-HISTORICAL ASPECTS

Nature of impact: The potential impact of the proposed development on archaeological, paleontological and heritage remains
Discussion: Notice of Intent to Develop submitted to Heritage Western Cape and confirmation is awaited on whether or not heritage impact assessment will be required, however in accordance with the HWC NID it is not expected that the proposed development will have any significant negative impacts on any sensitive heritage resources of the site or surrounds as the development will be in keeping with the existing picnic site.
Cumulative impacts: Destruction of cultural- historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.
Mitigation: • Should any burials, fossils or other historical material be encountered during construction, work must cease immediately and HWC must be notified. • Implement Chance Fossil Find Procedure as/if required as included in EMPr requirements.

Criteria	Layout Alternative 1 Without Mitigation	With Mitigation			No-Go Alternative Without Mitigation	With Mitigation
Extent	2	1			Not Applicable (No construction activities to take place during the No-Go Alternative)	
Duration	5	1				
Magnitude	6	0				
Probability	5	1				
Significance	65 - High	2-Low				
Status	High negative significance if not mitigated	Low negative significance if mitigated				
Reversibility	0% reversibility – once the historical features are destroyed, it cannot be recovered.					
Irreplaceable loss of resources	3- Yes, completely irreplaceable					
Can impacts be mitigated?	1-Yes					

Nature of impact:
The potential impact of the proposed development on the Outstanding Universal Value of a World Heritage Site

Discussion:
The Bontebok National Park is part of the Cape Floristic Region, which is a World Heritage Site.

World Heritage Sites are inscribed on the World Heritage List because they are recognized as being of Outstanding Universal Value to humanity, in accordance with strict criteria, conditions of integrity, and requirements for protection and management.

The three components of OUV for natural World Heritage Sites are briefly summarized below:
1. Values: There are four natural criteria which embody the values of the natural World Heritage Sites. These relate to superlative natural phenomenon and beauty (criterion vii), earth processes (criterion viii), ecosystems (criterion xi), and threatened species and their habitats (criterion x).
2. Integrity: Integrity is a measure of 'wholeness' and requires assessment of the extent to which the site; i) includes all elements necessary to express its OUV; ii) is of adequate size to ensure the complete representation of features and processes which convey its significance; and iii) suffers from negative effects of developments and/or neglect.
3. Protection and management: Protection and management is intended to ensure that the site's Outstanding Universal Value and the conditions of integrity at the time of inscription are maintained and enhanced in the future. The key elements of protection and management are; i) long-term legislative, regulatory, institutional and/or traditional protection; ii) delineated and appropriate boundaries; iii) buffer zones and/or wider protection of the site from threats outside its boundaries and iv) effective management systems.

Cumulative impacts of the proposed development on the OUV of the World Heritage Site:

1. **Values** – It is not expected that the developments/upgrades proposed at Die Stroom Picnic site in the Bontebok National Park will have any significant or unacceptable impacts on the value of the WHS as the aim of the proposed swimming pool and picnic area upgrade next to the Breede River known as "Die Stroom" is to enhance the experience of the local community and visitors use to visiting the site and providing more safe conditions for swimming etc. It is also proposed to provide much needed additional public ablution facilities, additional parking areas and formal picnic areas to prevent the public from impacting on the surrounding natural vegetation areas by parking within natural areas etc. because there are currently not enough formal facilities provided at the popular picnic spot. Hence the overall impacts on the heritage resources (Bontebok National Park and its natural features as a Grade II Heritage Site) is expected to have a positive impact with no unacceptable significant negative heritage impacts expected as it will also promote more tourism to the park bringing in more funds to ensure the ongoing successful management of the park
2. **Integrity** - The proposed development footprint is to be kept on already disturbed areas as far as possible so as to keep impacts on natural vegetation etc. as small as possible and to be managed in accordance with the Environmental Management Plan to prevent (and where presentation is not possible) and to mitigated significance of the potential impacts on the natural environment as far as possible. Seeing that the proposed development is therefore overall to enhance the existing Die Stroom picnic site at the Bontebok National Park under strict management guidelines the integrity of the OUV of the Bontebok National Park will not be negatively impacted upon.
3. **Protection and management** – The management of the Die Stroom picnic site and the associated upgrades proposed will be part of the existing park management plan implemented by park management staff, and will be in line with the operational management measures as proposed to ensure ongoing and effective impact prevention, management and monitoring.

Mitigation:

- All mitigation measures as proposed as part of the impact assessment report to be included in the EMP and implemented.

Criteria	Layout Alternative 1 Without Mitigation	With Mitigation			No-Go Alternative Without Mitigation	With Mitigation
Extent	3	1			Not Applicable (No construction activities to take place during the No-Go Alternative)	
Duration	1	1				
Magnitude	6	0				
Probability	4	1				
Significance	40 – Medium	2-Low				
Status	Medium negative significance if not mitigated	Low negative significance if mitigated				
Reversibility	100% reversible.					

Irreplaceable loss of resources	1- No resources will be lost.		
Can impacts be mitigated?	1-Yes		

POTENTIAL IMPACTS OF NOISE

Nature of impact:
Noise due to construction machinery

Discussion:
Construction machinery may cause noise disturbance to the directly adjacent land users. It is not anticipated that the noise will be considerable and will only be temporary.

Cumulative impacts:
Noise due to construction activities may cause a nuisance to adjacent users.

Mitigation:

- Construction activities should be restricted to weekday working hours.
- Machinery and vehicles should be regularly maintained to prevent excessive noise.
- All machinery and work activities must adhere to the requirements of the noise regulations.
- Construction not to take place during peak holiday season middle Dec – middle January.

Criteria	**Layout Alternative 1** **Without Mitigation**	**With Mitigation**			**No-Go Alternative** **Without Mitigation**	**With Mitigation**
Extent	3	2			Not Applicable (No construction activities to take place during the No-Go Alternative)	
Duration	1	1				
Magnitude	6	2				
Probability	4	2				
Significance	40-Medium	10-Low				
Status	Medium negative significance if not mitigated	Low negative significance if mitigated				
Reversibility	This will not be a long term impact nor will it have an impact on the natural processes. It is thus 100% reversible.					
Irreplaceable loss of resources	1- No resources will be lost.					
Can impacts be mitigated?	2 Partly – Construction noise will occur but it is not expected to be significant					

POTENTIAL VISUAL IMPACTS

Nature of impact:
Visual impact of construction of proposed development.

Discussion:
The surrounding land users will be exposed to the presence of the construction machinery. It is not anticipated that the visual impact of the construction activities will be very significant as it will only be temporary until development is complete.

Cumulative impacts:
Unsightly construction camp/s and activities on construction site

Mitigation:

- Proposed construction activities must be limited to development footprint site.
- Construction camp must be neatly fenced and construction site must be neat and tidy.
- Stockpile construction materials in one specific area.

Criteria	**Layout Alternative 1** **Without Mitigation**	**With Mitigation**			**No-Go Alternative** **Without Mitigation**	**With Mitigation**
Extent	3	1			Not Applicable (No construction activities to take place during the No-Go Alternative)	
Duration	1	1				
Magnitude	6	2				
Probability	4	3				
Significance	40-Medium	12-Low				
Status	Medium negative	Low negative				

	significance if not mitigated	significance if mitigated			
Reversibility	100%				
Irreplaceable loss of resources	2- Partial loss due to unavoidable visual impact				
Can impacts be mitigated?	2 Partly – Construction camp and activities will have a visual impact but significance can be mitigated				

(b) Impacts that may result from the operational/maintenance 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 GEOGRAPHICAL AND PHYSICAL ASPECTS

Nature of impact: Increase in storm water runoff due to removal of vegetation and hardening of surfaces which may lead to erosion of surrounding areas
Discussion: Due to the removal of vegetation and hardening of surfaces the stormwater discharge may lead to erosion of surrounding environments if not mitigated.
Cumulative impacts: Erosion may lead to loss in topsoil and impact on surrounding undeveloped natural areas.
Mitigation: • Stormwater discharge flow must be managed and restricted in such a manner that it does not cause erosion. • Rehabilitate or stabilise eroded areas immediately to prevent increase/spread of erosion. • Stormwater infrastructure must not cause erosion of the surrounding remaining undeveloped areas, but still allow current hydrological processes to continue as is. • Park management must maintain all stormwater infrastructure on a regular basis to ensure that it is working effectively and is not blocked with waste and is not causing erosion.

Criteria	**Layout Alternatives 1** **Without Mitigation**	**With Mitigation**			**No-Go Alternative** **Without Mitigation**	**With Mitigation**
Extent	3	1			Neutral (Site remains as is)	
Duration	5	1				
Magnitude	6	2				
Probability	4	2				
Significance	56 - Medium	8 - Low				
Status	Medium negative significance if not mitigated	Low negative significance if mitigated				
Reversibility	100%					
Irreplaceable loss of resources	2 Partly – While increase in storm water runoff is inevitable erosion can still be prevented and mitigated if required.					
Can impacts be mitigated?	2 Partly – While increase in storm water runoff is inevitable erosion can still be prevented and mitigated if required.					

POTENTIAL IMPACTS ON BIOLOGICAL ASPECTS

Nature of potential impact: Impacts of operational activities on the hydrological functioning of the site and surrounds
Discussion: Operational activities may impact hydrological processes i.e. stormwater runoff within the non-perennial drainage line.
Cumulative impacts: Due to removal of indigenous vegetation stormwater runoff on the exposed areas may lead to erosion

of the site and surrounds and stormwater runoff may follow "new" flow paths altering the current hydrological processes of the site and surrounds

Mitigation:

- The discharge of stormwater must not lead to waste pollution of the surrounding environments.
- Discharge of stormwater must be controlled and must be done in such a manner that it does not cause erosion of the site or surrounds, should any erosion be detected this must be rectified immediately and prevention measures must be put in place.
- All stormwater infrastructure must be maintained in a good condition not leading to any environmental degradation.

Criteria	Layout Alternative 1 Without Mitigation	With Mitigation			No-Go Alternative Without Mitigation	With Mitigation
Extent	2	1			Not Applicable (No construction activities to take place during the No-Go Alternative)	
Duration	5	1				
Magnitude	6	2				
Probability	5	2				
Significance	65 - High	8 – Low				
Status	High Negative Significance without Mitigation	Low Negative Significance with Mitigation				
Reversibility	100% Reversible					
Irreplaceable loss of resources	2 – Partly, some loss of indigenous vegetation will occur but will be limited.					
Can impacts be mitigated?	2 – Partly, some loss of indigenous vegetation will occur but will be limited.					

Nature of potential impact:

Impacts of operational activities of the picnic site, swimming pool, ablution facilities and associated soakaway on surface and groundwater resources.

Discussion:

As far as possible the proposed development has been placed on already cleared and impacted areas and along existing roads and pipeline routes to minimise impacts on the natural watercourses. The proposed development is also to be located behind the existing picnic area, outside of the 1:100 year floodline area of the Breerivier and the soakaway is proposed adjacent to the existing soakaway away from the Breerivier tributary and non-perennial drainage line crossing the site.

The proposed development is not expected to impact on the quality of the surface or groundwater water if property managed. The depth of the groundwater on site is 31.15 meters below ground level (mbgl). The Aquifer is classified as a minor aquafer with ground water quality of EC (mS/m) 370 – 520. The soils are shallow (< 450 mm) on hard or weathering rock, with or without intermittent diverse soils. Lime generally present in part or most of the landscape. The clay content of these soils is < 15%. The soakaway will be located next to the existing soakaway. It will be above the groundwater level, which is approximately 31 mbgl with a significant buffer area and protected by impermeable hard weathered rock. The seep of the overflow of the soakaway will flow above the impermeable hard weathered rock with a subservice hydrological flow in the in the subsurface shallow (< 450 mm) Glenrosa and/or Mispah soil layer.

Cumulative impacts:

Cumulative impacts of the operational activities of the picnic site and associated infrastructure are related to polluted discharge from the new facilities which may cause pollution of the groundwater and surface water resources within the area.

Mitigation:

- Clearance of indigenous vegetation and physical disturbance on site must be kept to a minimum clearly demarcating the proposed development area before construction commencement, maintaining the demarcation throughout the construction phase and only clearing the area required for the development.

- All unused construction materials must be removed from site immediately after construction completion.
- No waste pollution may occur due to the construction activities and all waste must be contained and disposed of at the municipal landfill site on a daily basis.
- All landscaping of undeveloped and areas disturbed during construction must be done with indigenous vegetation.
- Grass for landscaping must be limited to Cynodon dactylon (kweekgras) or Panicum maximum (buffelsgras), no kikuyu grass (Pennisetum clandestinum) may be used or planted for landscaping of disturbed areas.
- Planted grass such as for the proposed picnic area must be prevented from encroaching further into the remaining and rehabilitating indigenous vegetation landscaped and undeveloped areas.
- The discharge of stormwater must not lead to waste pollution or erosion of surrounding undeveloped areas.
- Ongoing monitoring of erosion within and around the development site and should any signs of erosion be detected immediate rectification and further prevention measures must be put in place under the guidance of a qualified ecological specialist so as to prevent any additional cumulative impacts on the environment.
- The impacted site must be monitored for alien vegetation encroachment and should alien vegetation encroach on the impacted site it must be removed and monitored in accordance with parks alien vegetation management plan.
- All infrastructure and developments must be maintained in a good working condition not leading to any environmental degradation.
- Swimming pool water and sewage may not be discharged into the environment and must be managed in a closed system which must be maintained and monitored for leakages.
- No high intensity lights may be left on during the night that shines outwards as this will lead to light pollution impacting on especially nocturnal aquatic animal and bird species.
- Use only existing access roads and do not create any new access roads to proposed development sites especially through the drainage line.
- No pollution of surface water or ground water resources may occur due to activities on the property and soakaway discharge must monitored and if any signs of pollution is detected rectification measures must be implemented.

Criteria	**Layout Alternative 1**				**No-Go Alternative**	
	Without Mitigation	**With Mitigation**			**Without Mitigation**	**With Mitigation**
Extent	2	1			Not Applicable (No construction activities to take place during the No-Go Alternative)	
Duration	5	5				
Magnitude	4	2				
Probability	5	2				
Significance	55 – Medium	16 – Low				
Status	Medium Negative Significance without Mitigation	Low Negative Significance with Mitigation				
Reversibility	100% Reversible					
Irreplaceable loss of resources	2 – Partly, some disturbance will occur but will be limited.					
Can impacts be mitigated?	2 – Partly, some disturbance will occur but will be limited.					

Nature of potential impact:

Impacts of operational activities on remaining and surrounding indigenous vegetation as part of Endangered – Swellendam Silcrete Fynbos

Discussion:

Ongoing human activities on the site and surrounds due to it being used as a picnic site may lead indigenous vegetation degradation if not properly managed. However, the site has already been managed by park management for a number of years and will continue to be managed as such once additional developments have been completed.

Cumulative impacts:

Cumulative impacts of the operational activities on indigenous vegetation are related to ongoing human impacts during the use of the new facilities which may cause pollution or loss of indigenous vegetation species if not managed.

Mitigation:

- The discharge of stormwater must not lead to waste pollution or erosion of surrounding indigenous vegetation areas.
- Ongoing monitoring of erosion within and around the development site and should any signs of erosion be detected immediate rectification and further prevention measures must be put in place under the guidance of a qualified ecological specialist so as to prevent any additional cumulative impacts on the environment.
- The impacted site must be monitored for alien vegetation encroachment and should alien vegetation encroach on the impacted site it must be removed and monitored in accordance with parks alien vegetation management plan.
- All infrastructure and developments must be maintained in a good working condition not leading to any environmental degradation.
- Swimming pool water and sewage may not be discharged into the environment and must be managed in a closed system which must be maintained and monitored for leakages.
- Good waste management practices must be implemented not allowing any waste to accumulate or be disposed of in surrounding natural areas or landscaped indigenous vegetation areas.
- Undeveloped and landscaped indigenous vegetation areas on the property must be maintained in such a manner that the use of the facilities at Die Stroom picnic site does not lead to destruction of any additional indigenous vegetation. To achieve this the park must maintain the swimming pool fencing, remove any alien vegetation on the which may encroach on natural areas, make sure that planted indigenous grass does not encroach on adjacent undeveloped and landscaped indigenous vegetation areas and place sign boards conspicuously along the edge of the undeveloped areas indicating that indigenous vegetation may not be picked/destroyed and is to be conserved at all times.

Criteria	Layout Alternative 1 Without Mitigation	With Mitigation			No-Go Alternative Without Mitigation	With Mitigation
Extent	2	1			Not Applicable (No construction activities to take place during the No-Go Alternative)	
Duration	5	5				
Magnitude	4	2				
Probability	3	2				
Significance	33 – Medium	16 – Low				
Status	Medium Negative Significance without Mitigation	Low Negative Significance with Mitigation				
Reversibility	100% Reversible					
Irreplaceable loss of resources	2 – Partly, some disturbance will occur but will be limited.					
Can impacts be mitigated?	2 – Partly, some disturbance will occur but will be limited.					

Nature of potential impact:

Impacts of operational activities on the indigenous animal and bird life including species of conservation concern.

Discussion:

Ongoing human activities on the site and surrounds due to it being used as a picnic site may lead disturbances to animal and birdlife if not properly managed. However, the site has already been managed by park management for a number of years and will continue to be managed as such once additional developments have been completed.

There is also a probability that at least some animal and/or bird SCCs known to occur within the general area may frequent the site and surrounds. Apart from the Bontebok antelope these SCC are also likely

to include Denham's Bustard (*Neotis denhami*) and Black Harrier (*Circus maurus*), however the construction and operational phase of the proposed developments are not expected to impact on the presence and habits of these species any more than the current picnic site activities are impacting upon them.

Bontebok *Damaliscus pygargus pygargus* was assessed having a high sensitivity rating. There are recent records of bontebok within the Die Stroom picnic site. Based on the available information, the proposed footprint is within confirmed habitat for an SCC and the sensitivity therefore be rated as high in accordance with the protocols. Since the bontebok is known to be at the stroom area, it is proof that they area adapted and that the human activities do not impact on them. Furthermore, the park is responsible for the management of this species and the current management actions are sufficient and appropriate which is evidence of them being in the area. The swimming pool and parking area will take up a small area of their habitat and they will not be affected.

African Marsh Harrier *Circus ranivorus* and Black Harrier *Circus ranivorus* was assessed having a medium sensitivity rating. These species was not recorded on site and only likely to roam the area. *Rhabdomys pumilio* (although not recorded its presence is know from historic visits) is expected to occur in the project area suggesting that it could use the project area for foraging. Primary nesting habitat is not present on the impacted areas. They will simply move into the bigger surrounding area during construction. The current picnic site and activities already impacted on them.

Cumulative impacts:

Cumulative impacts of the operational activities on animal and bird life will be disturbances caused to local animal and bird life due to ongoing human activities such as recreational use of the swimming pool and facilities provided.

Mitigation:

- No trapping, hunting or any injury to animal or birdlife may occur during operational activities. Should any local animal or birdlife be found within the fenced swimming pool area during operational activities they must either be left undisturbed or carefully be moved to the adjacent natural areas by park management not to be impacted upon.
- The discharge of stormwater and management of effluent must not lead to waste pollution or erosion of surrounding indigenous vegetation areas.
- Ongoing monitoring of erosion within and around the development site and should any signs of erosion be detected immediate rectification and further prevention measures must be put in place under the guidance of a qualified ecological specialist so as to prevent any additional cumulative impacts on the environment.
- The impacted site must be monitored for alien vegetation encroachment and should alien vegetation encroach on the impacted site it must be removed and monitored in accordance with the parks alien vegetation management plan.
- All infrastructure and developments must be maintained in a good working condition not leading to any environmental degradation.
- Good waste management practices must be implemented not allowing any waste to accumulate or be disposed of in surrounding natural areas or landscaped indigenous vegetation areas.
- No high intensity lights may be left on during the night that shines outwards unto the adjacent indigenous vegetation areas as this will lead to light pollution impacting on especially nocturnal animal and bird species.
- Undeveloped and landscaped indigenous vegetation areas on the property must be maintained in such a manner that the use of the facilities at Die Stroom picnic site does not lead to destruction of any additional indigenous vegetation. To achieve this the park must maintain the swimming pool fencing, remove any alien vegetation on the which may encroach on natural areas, make sure that planted indigenous grass does not encroach on adjacent undeveloped and landscaped indigenous vegetation areas and place sign boards conspicuously along the edge of the undeveloped areas indicating that indigenous vegetation may not be picked/destroyed and is to be conserved at all times.

Criteria	Layout Alternative 1 Without Mitigation	With Mitigation			No-Go Alternative Without Mitigation	With Mitigation
Extent	2	1			Not Applicable (No construction activities to take place during the No-Go Alternative)	
Duration	5	5				
Magnitude	6	2				
Probability	3	2				
Significance	39 – Medium	16 – Low				
Status	Medium	Low Negative				

	Negative Significance without Mitigation	Significance with Mitigation			
Reversibility	100% Reversible				
Irreplaceable loss of resources	2 – Partly, some loss of indigenous vegetation will occur but will be limited.				
Can impacts be mitigated?	2 – Partly, some loss of indigenous vegetation will occur but will be limited.				

Nature of impact:
Introduction of alien and weed plant species

Discussion:
Declared weeds or alien trees may be transported onto the site and spread to surrounding areas during construction which may lead to alien plants growing on disturbed area during after construction and during operation. This may have management and cost impacts on such properties

Cumulative impacts:
Loss of potential biodiversity, ecosystems and natural habitat due to the spread of invader plants.

Mitigation:
- An important aspect of on-going maintenance is the monitoring of the rehabilitated sites and access road verges for alien plant species.
- Rehabilitation and landscaping of disturbed areas should be done with seeds collected from indigenous vegetation in the area during rehabilitation.
- Implement an ongoing alien eradication program for the disturbed and rehabilitated areas as per EMP requirements.

Criteria	Layout Alternatives 1		Layout Alternative 2		No-Go Alternative	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Extent	3	2			Not Applicable (No construction activities to take place during the No-Go Alternative)	
Duration	5	1				
Magnitude	6	4				
Probability	4	3				
Significance	56- Medium	21 - Low				
Status	Medium negative significance if not mitigated	Low negative significance if mitigated				
Reversibility	100%					
Irreplaceable loss of resources	1-Will not be lost					
Can impacts be mitigated?	1-Yes, by implementing an alien eradication plan and continuing monitoring of alien regrowth					

POTENTIAL IMPACTS ON SOCIO-ECONOMIC ASPECTS

Nature of impact:
Expanding and upgrading of recreational facilities available at Die Stroom picnic site in the Bontebok National Park

Discussion:
Communal land from Swellendam Municipality and privately owned farms, including "Die Stroom", was acquired thus formally proclaiming Bontebok National Park in 1961. The mission of the Park is not only to conserve rare and threatened species found in the Park but also to provide tourism and recreational opportunities, and facilitate socio-economic benefits to surrounding communities. Local communities frequent Die Stroom Picnic Site for recreational purposes, including to swim in the perennial Breede River which borders the site. As per the agreement between the Municipality and SANParks, the local community would still have access to Die Stroom for recreational purposes. Subsequent to the proclamation of the Consumer Protection Act (CPA), SANParks Risk Management deemed the Breede River to be unsafe for various reasons, including water quality, clarity, depth and hazardous rubble

found on the river bed, the lack of lifeguards on duty and possible attacks by Zambezi (bull) sharks, which have been documented as dwellers of the Breede River. SANParks has therefore cited "swim at own risk" for the afore-mentioned reasons at the relevant picnic site. As the Breede River is traditionally utilised by the local communities for swimming, SANParks would like to provide visitors with a safe swimming environment. The proposed development with offer day visitors an enclosed swimming pool with dedicated ablutions including male and female shower facilities and toilets. The proposed development will also ensure privacy to Die Stroom Function Venue charted to visitors at an extra cost to visitors

Cumulative impacts:

If the proposed Die Stroom picnic site swimming pool, recreational facilities and infrastructure upgrades are not to proceed it is not expected that any significant detrimental impacts will occur in terms of the terrestrial features of the site and surrounds and processes will continue as is. However, the aim of the proposed swimming pool and picnic area upgrade next to the Breerivier is to enhance the experience of the local community and visitors use to visiting the site and provide safer conditions for swimming etc. It is also proposed to provide much needed additional public ablution facilities, additional parking areas and formal picnic areas to prevent the public from impacting on the surrounding natural vegetation areas like parking within natural areas because there are currently not enough formal facilities provided at the popular picnic spot, hence potentially decreasing terrestrial biodiversity impacts due to uncontrolled human activities in the long term.

Mitigation:

- Ongoing maintenance and management of the recreational facilities by park management in accordance with the Bontebok National Park Management Plan.

Criteria	Layout Alternative 1 Without Mitigation	With Mitigation			No-Go Alternative Without Mitigation	With Mitigation
Status	-	High positive significance			High Negative Impact, no additional and upgrades recreational facilities provided.	

Nature of impact:

Additional load on services infrastructure such as electricity, water, sewage and waste handling.

Discussion:

The addition of the proposed recreational facilities upgrades and expansions will lead to increased pressure on services resources and supply infrastructure in terms of electricity and water provision, sewage and waste handling facilities.

Sewage will however be handled on site and the additional water, electricity and waste disposal resources required can be provided and will link in with the available services provided by the municipality to the park.

Cumulative impacts:

Increased pressure on municipal services infrastructure i.e. water, electricity and waste disposal services.

Mitigation:

- The municipality and park management to ensure that adequate services infrastructure and resources exists to service the proposed recreational developments and to maintain existing and all new services infrastructure as proposed.
- Upgrade and maintain services infrastructure as and when required.

Criteria	Layout Alternative 1 Without Mitigation	With Mitigation			No-Go Alternative Without Mitigation	With Mitigation
Extent	3	1			Neutral (Site remains as is)	
Duration	5	5				
Magnitude	8	4				
Probability	5	5				
Significance	80 - High	50 - Medium				
Status	High negative significance if not mitigated	Medium negative significance if mitigated				
Reversibility	100%					
Irreplaceable loss of resources	1 – Resource will not be lost					
Can impacts be mitigated?	2 Partly – Park management together with the municipality can ensure maintenance and upgrades of services and infrastructure as and if required.					

POTENTIAL IMPACTS ON CULTURAL-HISTORICAL ASPECTS

It is not anticipated that any further impact on the cultural-historical aspects of the site will occur during this phase, however should any burials, fossils or other historical material be encountered during maintenance activities of the operational phase, work must cease immediately and HWC must be contacted.

Nature of impact:
The potential impact of the proposed development on the Outstanding Universal Value of a World Heritage Site

Discussion:
The Bontebok National Park is part of the Cape Floristic Region, which is a World Heritage Site.

World Heritage Sites are inscribed on the World Heritage List because they are recognized as being of Outstanding Universal Value to humanity, in accordance with strict criteria, conditions of integrity, and requirements for protection and management.

The three components of OUV for natural World Heritage Sites are briefly summarized below:
1. Values: There are four natural criteria which embody the values of the natural World Heritage Sites. These relate to superlative natural phenomenon and beauty (criterion vii), earth processes (criterion viii), ecosystems (criterion xi), and threatened species and their habitats (criterion x).
2. Integrity: Integrity is a measure of 'wholeness' and requires assessment of the extent to which the site; i) includes all elements necessary to express its OUV; ii) is of adequate size to ensure the complete representation of features and processes which convey its significance; and iii) suffers from negative effects of developments and/or neglect.
3. Protection and management: Protection and management is intended to ensure that the site's Outstanding Universal Value and the conditions of integrity at the time of inscription are maintained and enhanced in the future. The key elements of protection and management are; i) long-term legislative, regulatory, institutional and/or traditional protection; ii) delineated and appropriate boundaries; iii) buffer zones and/or wider protection of the site from threats outside its boundaries and iv) effective management systems.

Cumulative impacts of the proposed development on the OUV of the World Heritage Site:

4. **Values** – It is not expected that the developments/upgrades proposed at Die Stroom Picnic site in the Bontebok National Park will have any significant or unacceptable impacts on the value of the WHS as the aim of the proposed swimming pool and picnic area upgrade next to the Breede River known as "Die Stroom" is to enhance the experience of the local community and visitors use to visiting the site and providing more safe conditions for swimming etc. It is also proposed to provide much needed additional public ablution facilities, additional parking areas and formal picnic areas to prevent the public from impacting on the surrounding natural vegetation areas by parking within natural areas etc. because there are currently not enough formal facilities provided at the popular picnic spot. Hence the overall impacts on the heritage resources (Bontebok National Park and its natural features as a Grade II Heritage Site) is expected to have a positive impact with no unacceptable significant negative heritage impacts expected as it will also promote more tourism to the park bringing in more funds to ensure the ongoing successful management of the park
5. **Integrity** - The proposed development footprint is to be kept on already disturbed areas as far as possible so as to keep impacts on natural vegetation etc. as small as possible and to be managed in accordance with the Environmental Management Plan to prevent (and where presentation is not possible) and to mitigated significance of the potential impacts on the natural environment as far as possible. Seeing that the proposed development is therefore overall to enhance the existing Die Stroom picnic site at the Bontebok National Park under strict management guidelines the integrity of the OUV of the Bontebok National Park will not be negatively impacted upon.
6. **Protection and management** – The management of the Die Stroom picnic site and the associated upgrades proposed will be part of the existing park management plan implemented by park management staff, and will be in line with the operational management measures as proposed to ensure ongoing and effective impact prevention, management and monitoring.

Mitigation:

- All mitigation measures as proposed as part of the impact assessment report to be included in the EMP and implemented.

Criteria	Layout Alternative 1 Without Mitigation	With Mitigation			No-Go Alternative Without Mitigation	With Mitigation
Extent	3	1			Not Applicable (No construction activities to take place during the No-Go Alternative)	
Duration	1	1				
Magnitude	6	0				
Probability	4	1				

Significance	40 – Medium	2-Low			
Status	Medium negative significance if not mitigated	Low negative significance if mitigated			
Reversibility	100% reversible.				
Irreplaceable loss of resources	1- No resources will be lost.				
Can impacts be mitigated?	1-Yes				

POTENTIAL IMPACTS OF NOISE

Nature of impact: Noise due to operations of proposed expansions and upgrades to Die Stroom picnic site.					
Discussion: Once the proposed additional recreational facilities have been developed at the picnic site the use thereof will lead to additional "human noise" created within the park area.					
Cumulative impacts: Noise created during the use of proposed recreational facilities may cause a nuisance to other park users and local animal and bird life. It is however not expected that this will be significant as it is not expected to exceed standard noise limits already created at the picnic site if managed in accordance with existing park rules.					
Mitigation: Park management to enforce park rules concerning preventing excessive noise to maintain low noise levels.					
Criteria	**Layout Alternatives1 Without Mitigation**	**With Mitigation**			**No-Go Alternative Without Mitigation** **With Mitigation**
Extent	3	2			Not Applicable (No construction activities to take place during the No-Go Alternative)
Duration	1	1			
Magnitude	6	2			
Probability	4	2			
Significance	40 – Medium	10-Low			
Status	Medium negative significance if not mitigated	Low negative significance if mitigated			
Reversibility	100%				
Irreplaceable loss of resources	1- No resources will be lost.				
Can impacts be mitigated?	2 Partly – Noise will occur but it is not expected to be significant				

POTENTIAL VISUAL IMPACTS

Nature of impact: Visual impact of proposed additional recreational facilities such as the swimming pool and ablution facilities and upgrades to existing picnic facilities at Die Stroom picnic site in the Bontebok National Park					
Discussion: The proposed development will be in keeping with the existing Die Stroom picnic sites and have been placed to "blend" in with the surrounding facilities and environment as far as possible.					
Cumulative impacts: No significant visual impacts expected.					
Mitigation: • All areas disturbed during construction and not to be developed to be rehabilitated and maintained with natural indigenous vegetation. • Only natural colours such as browns, greens and grey may be used for the buildings and infrastructure designs and aesthetics.					
Criteria	**Layout Alternative 1 Without Mitigation**	**With Mitigation**			**No-Go Alternative Without Mitigation** **With Mitigation**
Extent	3	1			Not Applicable (No construction activities to take
Duration	1	1			

Magnitude	6	2			place during the No-Go Alternative)
Probability	4	3			
Significance	40-Medium	12-Low			
Status	Medium negative significance if not mitigated	Low negative significance if mitigated			
Reversibility	100%				
Irreplaceable loss of resources	2- Partial loss due to unavoidable visual impact				
Can impacts be mitigated?	2 Partly – Top structures to blend in with existing residential areas.				

(c) Impacts that may result from the decommissioning and closure 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 decommissioning and closure phase

POTENTIAL IMPACTS ON GEOGRAPHICAL AND PHYSICAL ASPECTS

It is not anticipated that decommissioning will occur in the near future. Should decommissioning occur, the expected impacts are similar to those listed in the construction phase above with the additional positive impact of rehabilitating the decommissioned area to a near natural/indigenous state and significant negative impact of destroying recreational facilities within the park much needed by the local communities and to attract visitors to the park. Impacts must be mitigated and managed according to the best practise techniques/management measures available for that time.

POTENTIAL IMPACTS ON BIOLOGICAL ASPECTS

The decommissioning of proposed developments is not anticipated in the near future. Impacts during this phase will however be similar to that of the construction phase. Mitigation and management measures will be related to the technology of the day and needs to be discussed at such time as decommissioning will occur. All structures must be removed, and the area rehabilitated to a near natural state (dependent upon the end land use agreement). Waste, where possible must be recycled. All concrete introduced must be removed off site to a licensed facility

POTENTIAL IMPACTS ON SOCIO-ECONOMIC ASPECTS

Communal land from Swellendam Municipality and privately owned farms, including "Die Stroom", was acquired thus formally proclaiming Bontebok National Park in 1961. The mission of the Park is not only to conserve rare and threatened species found in the Park but also to provide tourism and recreational opportunities, and facilitate socio-economic benefits to surrounding communities. Local communities frequent Die Stroom Picnic Site for recreational purposes, including to swim in the perennial Breede River which borders the site. As per the agreement between the Municipality and SANParks, the local community would still have access to Die Stroom for recreational purposes. Subsequent to the proclamation of the Consumer Protection Act (CPA), SANParks Risk Management deemed the Breede River to be unsafe for various reasons, including water quality, clarity, depth and hazardous rubble found on the river bed, the lack of lifeguards on duty and possible attacks by Zambezi (bull) sharks, which have been documented as dwellers of the Breede River. SANParks has therefore cited "swim at own risk" for the afore-mentioned reasons at the relevant picnic site. As the Breede River is traditionally utilised by the local communities for swimming, SANParks would like to provide visitors with a safe swimming environment. If the proposed development is decommissioned the park cannot offer day visitors an enclosed swimming pool with dedicated ablutions including male and female shower facilities and toilets, nor with adequate parking and picnic space available at Die Stroom picnic site especially during peak holiday periods which will also lead to a decrease in park visits from the public.

POTENTIAL IMPACTS ON CULTURAL-HISTORICAL ASPECTS

It is not anticipated that any further impact on the cultural-historical aspects of the site will occur during this phase as no further disturbance outside of the already impacted areas will take place during decommissioning.

POTENTIAL IMPACTS OF NOISE

The impacts and their significance anticipated to occur during this phase will be the same as that of the construction phase. Mitigation measures during this phase will remain the same as for the construction phase.

POTENTIAL VISUAL IMPACTS

The impacts and their significance anticipated to occur during this phase will be the same as that of the construction phase. Mitigation measures during this phase will remain the same as for the construction phase, with the added potential positive impact of the site to be rehabilitated to a more "natural" state.

(d) The No-Development Option- *If the proposed Die Stroom picnic site swimming pool, recreational facilities and infrastructure upgrades are not to proceed it is not expected that any significant detrimental impacts will occur in terms of the terrestrial features of the site and surrounds and processes will continue as is. However, the aim of the proposed swimming pool and picnic area upgrade next to the Breerivier is to enhance the experience of the local community and visitors use to visiting the site and provide safer conditions for swimming etc. It is also proposed to provide much needed additional public ablution facilities, additional parking areas and formal picnic areas to attract the public to the park and to prevent the public from impacting on the surrounding natural vegetation areas like parking within natural areas because there are currently not enough formal facilities provided at the popular picnic spot, hence potentially decreasing terrestrial biodiversity impacts due to uncontrolled human activities in the long term.*