

Application for Environmental Authorization for
Proposed Tuna Park Open Space Project, City of Ekurhuleni Municipality, Nigel,
Gauteng

APPENDIX F IMPACT ASSESSMENT TABLES

Compiled by:



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1. ASSESSMENT CRITERIA

The impacts anticipated to occur as a result of the proposed development are assessed/ evaluated to determine their significance. The following assessment criteria are used:

Extent (how far the impact extends):

- (1) **Very low:** within the site only
- (2) **Low:** within the local neighbourhoods
- (3) **Medium:** within the region
- (4) **High:** Nationally
- (5) **Very high:** Internationally

Duration (the timeframe over which the effects of the impact will be felt):

- (1) **Very short:** 0-2 years
- (2) **Short:** 3-5 years
- (3) **Medium:** 5-15 years
- (4) **Long:** >15 years
- (5) **Permanent**

Magnitude (the severity or size of the impact):

- (0) **None**
- (2) **Minor**
- (4) **Low**
- (6) **Moderate**
- (8) **High**
- (10) **Very High**

Probability (the likelihood of the impact actually occurring):

- (1) **Very improbable:** Less than 20% sure of the likelihood of an impact occurring
- (2) **Improbable:** 20-40% sure of the likelihood of an impact occurring
- (3) **Probable:** 40-60% sure of the likelihood of an impact occurring
- (4) **Highly probable:** 60-80% sure of the likelihood of that impact occurring
- (5) **Definite:** More than 80% sure of the likelihood of that impact occurring

The **significance** of the potential visual impact is determined by the sum of the individual scores for extent, duration and magnitude multiplied by the **probability** of the impact occurring i.e. **significance = (extent + duration + magnitude) x probability**.

The significance rating scale is interpreted as follows:

- **(2-12) Negligible:** Impact would be of a very low order. In the case of negative impacts, almost no mitigation and or remedial activity would be needed, and any minor steps, which might be needed, would be easy, cheap, and simple. In the case of positive impacts, alternative means would almost all likely be better, in one or a number of ways, than this means of achieving the benefit.
- **(13-30) Low:** Impact would be of a low order and with little real effect. In the case of negative impacts, mitigation and / or remedial activity would be either easily achieved or little would be required, or both. In case of positive impacts alternative means for achieving this benefit would likely be easier, cheaper, more effective, less time-consuming, or some combination of these.
- **(31-56) Moderate:** Impact would be real but not substantial. In the case of negative impacts, mitigation and / or remedial activity would be both feasible and fairly easily possible. In the case of positive impacts, other means of achieving these benefits would be about equal in time, cost, and effort.

- **(57-90) High:** Impacts of a substantial order. In the case of negative impacts, mitigation and / or remedial activity would be feasible but difficult, expensive, time-consuming or some combination of these. In the case of positive impacts, other means of achieving this benefit would be feasible, but these would be more difficult, expensive, time-consuming or some combination of these.
- **(91-100) Very High:** Of the highest order possible. In the case of negative impacts, there would be no possible mitigation and / or remedial activity and in the case of positive impacts, there is no real alternative to achieving the benefit.
- **Positive Impacts**

2. ENVIRONMENTAL IMPACT ASSESSMENT

The tables that follow detail the assessment of the significance of anticipated environmental impact during the entire project life cycle according to the impact assessment criteria. The findings of the various specialists appointed as part of the BAR process have informed the impact assessment below. These impacts have been supplemented with additional impacts as deemed appropriate by the EAP.

2.1 Impacts that may result from the Planning and Design Phase

Planning and design phase impacts refer to those impacts that may be mitigated through planning decisions. In this respect, the potential impacts are articulated as 'risks' rather than 'impacts', because in reality, no impact occurs on the ground at all during the planning phase. The rationale behind this approach is to demonstrate the mitigating effect of environmentally responsible and appropriate planning and design during this phase.

Potential impacts:	Extent (1-5)	Duration (1-5)	Magnitude (0-10)	Probability (1-5)	Significance	Proposed mitigation:	Extent (1-5)	Duration (1-5)	Magnitude (0-10)	Probability (1-5)	Significance
ONLY ALTERNATIVE – TUNA PARK MASTER PLAN											
Direct Impacts											
Ground water											
Loss of groundwater recharge due to the introduction of impermeable hard surfaces.	1	4	2	3	21 L	<ul style="list-style-type: none"> • Planning and compliance, including protected species, heritage, storm water management and waste management as per the EMPr (section 7.2). • Development footprint planning as per the EMPr (section 7.2). 	1	4	2	2	14 L
Hydrology (surface water)											
Loss of ecological and hydrological function of the Tuna Park wetland due to the incorrect and excessive placement of structures and infrastructures within the habitat (pedestrian boardwalks and pathways etc.).	2	4	6	3	36 M	<ul style="list-style-type: none"> • Planning and compliance, including ground water, surface water and storm water management as per the EMPr (section 7.1). • Development footprint planning as per the EMPr (section 7.2). 	2	4	4	2	20 L

Soil											
Erosion risk to soils due to increased hard surface, associated increase in storm water runoff, as well as inappropriate channel and bank design.	2	4	6	3	36 M	<ul style="list-style-type: none"> Planning and compliance, including ground water, surface water, storm water management and waste management as per the EMPr (section 7.1). Development footprint planning as per the EMPr (section 7.2). 	2	4	4	2	20 L
Air											
None.						•					
Biodiversity (Flora)											
Risk to Soweto Highveld Grassland classified as Threatened and associated loss of species richness due to the placement of structures and infrastructure (<i>patches on the study site are severely transformed by anthropogenic activities and no longer represent an untransformed (Primary) grassland composition</i>).	2	4	4	3	30 L	<ul style="list-style-type: none"> Planning and compliance, including protected species, storm water management and waste management as per the EMPr (section 7.1). Development footprint planning as per the EMPr (section 7.2). 	2	4	2	3	24 L
Risk to sensitive habitats, specifically wetland habitat due to the placement of structures and infrastructure.	2	4	4	3	30 L		2	4	2	1	8 N
Risk to plant species of conservation importance: <i>Kniphofia typhoides Codd</i> , <i>Pachycarpus suaveolens (Schltr.) Nicholas & Goyder</i> , <i>Gladiolus robertsoniae F.Bolus</i> and <i>Habenaria bicolor Conrath & Kraenzl</i> due to the placement of structures and infrastructure within the habitat. (All have a low probability of occurrence on the study site).	2	4	2	2	16 L		2	4	2	1	8 N
Biodiversity (Fauna)											
Risk to grassland and wetland faunal habitat, which has a high to moderate significance for fauna species conservation and habitat fragmentation due to removal and alteration of the existing habitat and the development of structures and infrastructure.	1	4	4	3	36 M	<ul style="list-style-type: none"> Planning and compliance, including protected species, storm water management and waste management as per the EMPr (section 7.1). Development footprint planning as per the EMPr (section 7.2). 	1	4	2	2	14 L
Land Use & Agricultural Potential											
Loss of potentially arable land due to site clearing and placement of infrastructure.	1	4	2	2	14 L	<ul style="list-style-type: none"> Development footprint planning as per the EMPr section 7.2). 	1	4	2	1	7 N

Heritage											
None.							•				
Visual											
Risk of visual impact on sensitive visual receptors (i.e. users of roads, residents of homesteads and settlements) in close proximity to the development and within the region. <i>(Positive Impact)</i>	3	4	4	2	20 M	<ul style="list-style-type: none"> Development footprint planning as per the EMPr (section 7.2). Visual environment planning as per the EMPr (section 7.3). 	3	4	10	5	85 H
Socio-economics											
Risk to projects integrity due to lack of community involvement and buy in to ensure maximum benefit.	3	4	8	3	45 M	<ul style="list-style-type: none"> Socio-economic planning as per the EMPr (section 7.4). 	3	4	6	3	39 M
Municipal services & traffic											
Risk to project integrity due to renewed / ongoing dumping and sewage spills.	2	4	8	5	70 H	<ul style="list-style-type: none"> Planning and compliance, including protected species, heritage, storm water management and waste management as per the EMPr (section 7.1). Socio-economic planning as per the EMPr (section 7.4). 	3	4	6	4	40 M
Indirect Impacts											
None											
Cumulative Impacts											
Surface Water											
Cumulative loss of ecological and hydrological function of the wetland due to the incorrect and excessive placement of structures and infrastructure within the habitat (Pedestrian boardwalks and pathways, stormwater control measures etc.).	3	4	6	4	52 H	<ul style="list-style-type: none"> Planning and compliance, including protected species, heritage, storm water management and waste management as per the EMPr (section 7.1). Development footprint planning as per the EMPr (section 7.2). 	3	4	4	2	22 L
NO-PROJECT ALTERNATIVE											
Direct Impacts											
None.						•					
Indirect Impacts											
None.						•					
Cumulative Impacts											
None.						•					

2.2 Impacts that may result from the Construction Phase

Construction phase impacts refer to those impacts that may be mitigated through sound construction management.

Potential impacts:	Extent (1-5)	Duration (1-5)	Magnitude (0-10)	Probability (1-5)	Significance	Proposed mitigation:	Extent (1-5)	Duration (1-5)	Magnitude (0-10)	Probability (1-5)	Significance
ONLY ALTERNATIVE – TUNA PARK MASTER PLAN											
Direct Impacts											
Ground water											
Pollution and contamination of ground water due to: <ul style="list-style-type: none"> • Surface runoff • Unmanaged sewage discharge, leaks and spills • Solvent, paints and chemical spills • Hydrocarbon and fuel leaks and spills 	2	2	4	3	24 L	<ul style="list-style-type: none"> • Pre-construction planning, including planning and preparation as per the EMPr (section 8.1) • Site establishment, including site demarcation, accommodation, pollution control and access roads as per the EMPr (section 8.2) • Materials management, including solid, liquid and hazardous waste, concrete and cement work, fuel and hazardous material as per the EMPr (section 8.3). • Vehicles and equipment management as per the EMPr (section 8.7). 	2	2	2	2	12 N
Hydrology (surface water)											
Disturbance and loss of ecological function of the habitat (physical structure) of the wetland due to: <ul style="list-style-type: none"> • Clearing and destruction of wetland vegetation • Loss of fringing vegetation and erosion of denuded areas • Removal of stabilizing vegetation • Invasion by alien invasive trees and plants • Sedimentation and siltation from erosion 	1	2	8	4	44 M	<ul style="list-style-type: none"> • Pre-construction planning, including planning and preparation as per the EMPr (section 8.1) • Site establishment, including site demarcation, accommodation, pollution control, access roads and protection of the riparian system as per the EMPr (section 8.2) • Materials management, including solid, liquid and hazardous waste, concrete and cement work, fuel and hazardous material as per the EMPr (section 8.3). 	1	2	6	3	27 L

<p><i>If this impact is not effectively managed it could exacerbate the current problem.</i></p> <p><i>Owing to the high level of degradation and transformation of the proposed site, this impact is expected to be lower than would normally be the case.</i></p>						<ul style="list-style-type: none"> • Stockpiles, storage and handling as per the EMPr (section 8.4). • Erosion control, including water management, storm water management, excavation, backfilling and trenching as per the EMPr (section 8.5). • Alien plant control as per the EMPr (section 8.6). • Vehicles and equipment management as per the EMPr (section 8.7). • Socio-economic management, including staff, visual as per the EMPr (section 8.8). • Fire management as per the EMPr (section 8.9). • Rehabilitation as per the EMPr (section 8.10). 					
<p>Pollution and contamination of surface water due to:</p> <ul style="list-style-type: none"> • Unmanaged runoff of grey water, cement slurry and wash water. • Unmanaged sewage discharge, leaks and spills • Solvent, paints and chemical spills • Litter and other inert construction waste. • Hydrocarbon and fuel leaks and spills <p><i>If this impact is not effectively, it could exacerbate the current problem.</i></p>	2	2	6	4	40 M	<ul style="list-style-type: none"> • Stockpiles, storage and handling as per the EMPr (section 8.4). • Erosion control, including water management, storm water management, excavation, backfilling and trenching as per the EMPr (section 8.5). • Alien plant control as per the EMPr (section 8.6). • Vehicles and equipment management as per the EMPr (section 8.7). • Socio-economic management, including staff, visual as per the EMPr (section 8.8). • Fire management as per the EMPr (section 8.9). • Rehabilitation as per the EMPr (section 8.10). 	2	2	4	3	24 L
Soil											
<p>Soil contamination and pollution due to:</p> <ul style="list-style-type: none"> • Unmanaged surface runoff (grey water, cement slurry and wash water) • Unmanaged sewage discharge, leaks and spills • Solvent, paints and chemical spills • Litter and other inert construction waste. • Hydrocarbon and fuel leaks and spills 	2	2	6	4	40 M	<ul style="list-style-type: none"> • Pre-construction planning, including planning and preparation as per the EMPr (section 8.1) • Site establishment, including site demarcation, accommodation, pollution control and access roads as per the EMPr (section 8.2) • Materials management, including solid, liquid and hazardous waste, concrete and cement work, fuel and hazardous material as per the EMPr (section 8.3). • Stockpiles, storage and handling as per the EMPr (section 8.4). • Erosion control, including water management, storm water management, excavation, backfilling and trenching as per the EMPr (section 8.5). • Vehicles and equipment management as per the EMPr (section 8.7). • Rehabilitation as per the EMPr (section 8.10). 	2	2	4	3	24 L
<p>Soil erosion by wind and rain due to:</p> <ul style="list-style-type: none"> • The removal of stabilising vegetation • Soil compaction by movement of construction vehicles, equipment and activities • Decrease in water infiltration and an increase of water runoff in construction areas • Disturbance of sensitive soils 	2	2	6	4	40 M	<ul style="list-style-type: none"> • Stockpiles, storage and handling as per the EMPr (section 8.4). • Erosion control, including water management, storm water management, excavation, backfilling and trenching as per the EMPr (section 8.5). • Vehicles and equipment management as per the EMPr (section 8.7). • Rehabilitation as per the EMPr (section 8.10). 	2	2	4	2	16 L

Air											
Air pollution due emissions from construction vehicles and equipment.	2	2	6	4	40 M	<ul style="list-style-type: none"> • Site establishment, including site demarcation, accommodation, pollution control and access roads as per the EMPr (section 8.2) • Stockpiles, storage and handling as per the EMPr (section 8.4). • Erosion control, including water management, storm water management, excavation, backfilling and trenching as per the EMPr (section 8.5). • Vehicles and equipment management as per the EMPr (section 8.7). • Socio-economic management, including visual as per the EMPr (section 8.8). • Fire management as per the EMPr (section 8.9). • Rehabilitation as per the EMPr (section 8.10). 	2	2	4	3	24 L
Air pollution from dust liberated by general construction activities and movement of construction vehicles.	2	2	6	4	40 M		2	2	4	3	24 L
Smoke from open fires used by site staff for heating and cooking.	2	2	4	2	16 L		2	2	2	2	12 N
Biodiversity (Flora)											
<i>Removal of exotic and declared invader species found throughout the site. (Positive Impact)</i>	1	2	6	3	27 L	<ul style="list-style-type: none"> • Pre-construction planning, including planning and preparation as per the EMPr (section 8.1) • Site establishment, including site demarcation, accommodation, pollution control, access roads, protection of flora, and protection of the riparian system as per the EMPr (section 8.2) • Materials management, including solid, liquid and hazardous waste, concrete and cement work, fuel and hazardous material as per the EMPr (section 8.3). • Stockpiles, storage and handling as per the EMPr (section 8.4). • Erosion control, including water management, storm water management, excavation, backfilling and trenching as per the EMPr (section 8.5). • Alien plant control as per the EMPr (section 8.6). • Vehicles and equipment management as per the EMPr (section 8.7). 	1	2	6	5	45 M
Loss of the Soweto Highveld Grassland vegetation classified as threatened and associated loss of species richness due to: <ul style="list-style-type: none"> • Site clearing ahead of construction • General construction activities and movement of construction vehicles • Unmanaged sewage discharge, leaks and spills • Solvent, paints and chemical spills • Hydrocarbon and fuel leaks and spills • Litter and other inert construction waste <p><i>Majority of the site is already highly disturbed with alien plant infestations. Additionally, due to the rehabilitation nature of the project, this impact is expected to be slightly lower than would otherwise</i></p>	1	5	6	4	48 M		1	5	4	3	30 L

<i>be expected.</i>						<ul style="list-style-type: none"> • Fire management as per the EMPr (section 8.9). • Rehabilitation as per the EMPr (section 8.10). 					
Disturbance of sensitive habitats, specifically wetland vegetation habitat due to: <ul style="list-style-type: none"> • Site clearing ahead of construction • General construction activities and movement of construction vehicles • Unmanaged sewage discharge, leaks and spills • Solvent, paints and chemical spills • Litter and other inert construction waste. • Hydrocarbon and fuel leaks and spills <p><i>It should be noted that informal livestock grazing activities are currently taking place within wetland areas. As such this impact is already present. However, should construction activities not be effectively managed, the problem could be intensified.</i></p>	1	2	6	4	36 M		1	2	4	3	21 L
Increase in exotic vegetation/alien species into disturbed soils and areas due to: <ul style="list-style-type: none"> • Unmanaged cleared and disturbed areas, as well as, stockpiles • Unrehabilitated areas cleared and disturbed during construction • Construction vehicles and equipment operating on other sites and carrying material and seed onto site 	1	2	6	3	27 M		1	2	4	2	14 L
Biodiversity (Fauna)											

<p>Loss of faunal habitat for conservation-important fauna species due to:</p> <ul style="list-style-type: none"> • Site clearing ahead of construction • General construction activities and movement of construction vehicles • Construction dust • Construction material, litter and other inert construction waste <p><i>It should be noted that minimal fauna was documented, or considered to be likely on site.</i></p>	2	2	2	3	15 L	<ul style="list-style-type: none"> • Pre-construction planning, including planning and preparation as per the EMPr (section 8.1) • Site establishment, including site demarcation, accommodation, pollution control, access roads, protection of flora, protection of the riparian system and protection of fauna as per the EMPr (section 8.2) • Materials management, including solid, liquid and hazardous waste, concrete and cement work, fuel and hazardous material as per the EMPr (section 8.3). • Erosion control, including excavation, backfilling and trenching as per the EMPr (section 8.5). • Alien plant control as per the EMPr (section 8.6). 	2	2	2	2	12 N
<p>Faunal disturbances and temporary changes in the distribution and abundance of faunal species due to:</p> <ul style="list-style-type: none"> • Site clearing ahead of construction • General construction activities and movement of construction activities • Noise due to construction activities <p><i>It should be noted that minimal fauna was documented, or considered to be likely on site.</i></p>	2	2	4	3	24 L	<ul style="list-style-type: none"> • Vehicles and equipment management as per the EMPr (section 8.7). • Socio-economic management, including staff as per the EMPr (section 8.8). • Fire management as per the EMPr (section 8.9). • Rehabilitation as per the EMPr (section 8.10). 	2	2	2	3	18 L
<p>Mortality of fauna due to:</p> <ul style="list-style-type: none"> • Dangerous trenches and excavations • Persecution and extermination • Solvent, paints and chemical spills (poisoning) • Construction material, litter and other inert construction waste (suffocation) • Collisions with construction vehicles 	2	2	4	3	24 L		2	2	2	3	18 L
Land Use & Agricultural Potential											
None.						•					
Heritage & Cultural											
None.						•					
Visual											
The potential visual impact of construction, lighting	2	2	8	4	48	• Pre-construction planning, including planning and	2	2	6	3	30

and dust on sensitive visual receptors in close proximity to the site. <i>It should, however, be noted that construction is only is only expected to take place during daylight hours.</i>					M	<ul style="list-style-type: none"> preparation as per the EMPr (section 8.1) • Site establishment, including site demarcation, accommodation, pollution control and access roads as per the EMPr (section 8.2) • Materials management, including solid, liquid and hazardous waste, concrete and cement work, fuel and hazardous material as per the EMPr (section 8.3). • Stockpiles, storage and handling as per the EMPr (section 8.4). • Erosion control, including water management, storm water management, excavation, backfilling and trenching as per the EMPr (section 8.5). • Vehicles and equipment management as per the EMPr (section 8.7). • Socio-economic management, including staff, visual as per the EMPr (section 8.8). • Fire management as per the EMPr (section 8.9). • Rehabilitation as per the EMPr (section 8.10). 					L
Socio-economics											
<i>Stimulation of the local economy, especially the local service delivery industry (i.e. accommodation, nursery, transport and security, etc.). (Positive Impact)</i>	2	2	2	3	18 L	<ul style="list-style-type: none"> • Socio-economic planning as per the EMPr (section 7.4). • Pre-construction planning, including planning and preparation as per the EMPr (section 8.1) • Site establishment, including accommodation and access roads as per the EMPr (section 8.2) • Vehicles and equipment management as per the EMPr (section 8.7). • Socio-economic management, including staff as per the EMPr (section 8.8). • Fire management as per the EMPr (section 8.9). 	2	2	4	4	32 M
<i>Creation of short-term employment and business opportunities and the opportunity for skills development and on-site training. (Positive impact)</i>	2	2	6	3	30 L		2	2	6	4	40 M
Noise, dust and safety impacts and disturbance to local residents due to general construction activities and movement of construction vehicles	2	2	8	4	48 M		2	2	6	3	30 L
An increase in construction workers and associated increase in social problems for the community, including: <ul style="list-style-type: none"> • An increase in alcohol and drug use; 	2	2	4	3	24 L		2	2	4	2	16 L

<ul style="list-style-type: none"> An increase in crime levels; An increase in teenage and unwanted pregnancies; An increase in prostitution; An increase in sexually transmitted diseases (STDs). An increase in vandalism. 													
Increased risk of fires due to the presence of construction workers on site.	2	2	6	3	30 L			2	2	4	2	16 L	
Municipal services & traffic													
Increase in the number and frequency of construction vehicles accessing the site and the resultant noise, dust, and safety impacts on other road users and of the residents of the local community.	2	2	6	4	40 M	<ul style="list-style-type: none"> Pre-construction planning, including planning and preparation as per the EMPr (section 8.1) Site establishment, including access roads as per the EMPr (section 8.2) Vehicles and equipment management as per the EMPr (section 8.7). Socio-economic management, including visual as per the EMPr (section 8.8). 		2	2	4	3	24 L	
Indirect Impacts													
Biodiversity (Flora)													
None.						•							
Socio-economics													
None.						•							
Traffic and services													
Degradation of local roads due to the increase in the numbers of heavy vehicles.	2	2	6	4	40 M	• As above		2	2	4	3	24 L	
Cumulative Impacts													
Biodiversity (Flora)													
Cumulative loss of the Soweto Highveld Grassland vegetation classified as threatened and associated loss of species richness.	3	5	4	3	36 M	<ul style="list-style-type: none"> Pre-construction planning, including planning and preparation as per the EMPr (section 8.1) Site establishment, including site demarcation, accommodation, pollution control, access roads, 		3	5	2	2	20 L	
<i>Majority of the site is already highly disturbed with</i>													

<i>alien plant infestations. Additionally, due to the rehabilitation nature of the project, this impact is expected to be slightly lower than anticipated.</i>						protection of flora, and protection of the riparian system as per the EMPr (section 8.2)					
Cumulative loss of ecological function of sensitive habitats, specifically wetland areas.	3	5	4	3	36 M	<ul style="list-style-type: none"> Materials management, including solid, liquid and hazardous waste, concrete and cement work, fuel and hazardous material as per the EMPr (section 8.3). Stockpiles, storage and handling as per the EMPr (section 8.4). Erosion control, including water management, storm water management, excavation, backfilling and trenching as per the EMPr (section 8.5). Alien plant control as per the EMPr (section 8.6). Vehicles and equipment management as per the EMPr (section 8.7). Fire management as per the EMPr (section 8.9). Rehabilitation as per the EMPr (section 8.10). 	3	5	2	2	20 L
Socio-economics											
<i>Community upliftment and the opportunity to up-grade and improve skills levels in the area. (Positive Impact)</i>	3	2	2	2	14 L	<ul style="list-style-type: none"> Socio-economic planning as per the EMPr (section 7.4). Pre-construction planning, including planning and preparation as per the EMPr (section 8.1) Site establishment, including accommodation and access roads as per the EMPr (section 8.2) Vehicles and equipment management as per the EMPr (section 8.7). Socio-economic management, including staff as per the EMPr (section 8.8). Fire management as per the EMPr (section 8.9). 	3	2	2	3	21 L
Services & traffic											
Cumulative increase in the number and frequency of vehicles (construction vehicles) and the resultant noise, dust, and safety impacts for other road users and the residents of the local communities.	2	2	6	3	30 L	<ul style="list-style-type: none"> Pre-construction planning, including planning and preparation as per the EMPr (section 8.1) Site establishment, including access roads as per the EMPr (section 8.2) Vehicles and equipment management as per the EMPr (section 8.7). 	2	2	4	3	24 L

						<ul style="list-style-type: none"> • Socio-economic management, including visual as per the EMPr (section 8.8). 					
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NO-PROJECT ALTERNATIVE											
Direct Impacts											
None						•					
Indirect Impacts											
None.						•					
Cumulative Impacts											
None.						•					

2.3 Impacts that may result from the Operational Phase

Operational phase impacts refer to those impacts that may be mitigated through effective and efficient operating procedures.

Potential impacts:						Proposed mitigation:					
	Extent (1-5)	Duration (1-5)	Magnitude (0-10)	Probability (1-5)	Significance		Extent (1-5)	Duration (1-5)	Magnitude (0-10)	Probability (1-5)	Significance
ALTERNATIVE A1 (PREFERRED ALTERNATIVE)											
Direct Impacts											
Ground water											
<p><i>Improved ground water quality owing to:</i></p> <ul style="list-style-type: none"> <i>The removal of litter and waste</i> <i>Repair and stabilise storm water inlets</i> <i>Re-vegetation of wetland and surrounding area</i> <p>(Positive Impact)</p>	2	4	4	3	30 <i>L</i>	<ul style="list-style-type: none"> Biodiversity management, including access roads and resource management as per the EMPr (section 9.1) Materials management, including solid liquid and hazardous waste, fuel and hazardous material as per the EMPr (section 9.2) Erosion control as per the EMPr (section 9.3) Socio economic management, including staff management as per the EMPr (section 9.5) Vehicles and equipment management as per the EMPr (section 9.4) 	2	4	8	4	56 <i>M</i>
Hydrology (surface water)											
<p><i>Improved flow/ hydrological and ecological function of the wetlands due to:</i></p> <ul style="list-style-type: none"> <i>Removal of litter and waste</i> <i>Repair and stabilization of storm water inlets</i> <i>Revegetation of wetland and surrounding area</i> <i>Removal of alien invasives</i> <p>(Positive Impact)</p>	1	4	4	2	20 <i>L</i>	<ul style="list-style-type: none"> Biodiversity management, including access roads, resource management, protection of flora and alien plant control as per the EMPr (section 9.1) Materials management, including solid, liquid and hazardous waste, fuel and hazardous material as per the EMPr (section 9.2) Erosion control as per the EMPr (section 9.3) Vehicles and equipment management as per the EMPr (section 9.4) 	1	4	8	3	39 <i>M</i>

Improved water quality within the wetland owing to: <ul style="list-style-type: none"> The removal of litter and waste Repair and stabilise storm water inlets Re-vegetation of wetland and banks (Positive impact)	2	4	4	2	20 L	<ul style="list-style-type: none"> Socio economic management, including staff management as per the EMPr (section 9.5) Fire management as per the EMPr (section 9.6) 	2	4	8	4	56 M
Soil											
Stabilisation of area and decrease the risk of erosion by: <ul style="list-style-type: none"> Revegetation of the wetland Decreasing the flow and velocity of storm water Formalizing and maintaining public open spaces (Positive impact)	1	4	4	3	36 M	<ul style="list-style-type: none"> Biodiversity management, including access roads, resource management, protection of flora and alien plant control as per the EMPr (section 9.1) Materials management, including solid liquid and hazardous waste, fuel and hazardous material as per the EMPr (section 9.2) Erosion control as per the EMPr (section 9.3) Vehicles and equipment management as per the EMPr (section 9.4) 	1	4	8	4	52 M
Soil erosion due to: <ul style="list-style-type: none"> Soil compaction by uncontrolled movement of users of the open space. Runoff over exposed or cleared areas that have failed to rehabilitate. 	1	4	4	3	36 M	<ul style="list-style-type: none"> Socio economic management, including staff management as per the EMPr (section 9.5) 	1	4	2	2	14 L
Air											
None.						•					
Biodiversity (Flora)											
Protection of Soweto Highveld Grassland vegetation and associated increased in floral species richness and genetic diversity of a vegetation type classified as Threatened due to: <ul style="list-style-type: none"> Revegetation and rehabilitation of areas Removal of alien invasive species Removal of litter and waste (Positive impact)	1	4	4	3	27 L	<ul style="list-style-type: none"> Biodiversity management, including access roads, resource management, protection of flora and alien plant control as per the EMPr (section 9.1) Materials management, including solid liquid and hazardous waste, fuel and hazardous material as per the EMPr (section 9.2) Erosion control as per the EMPr (section 9.3) Vehicles and equipment management as per the EMPr (section 9.4) 	1	4	8	4	52 M
Protection of sensitive environments, specifically wetland vegetation owing to more formalised use of the open space, including:	1	4	4	3	27 L	<ul style="list-style-type: none"> Socio economic management, including staff 	1	4	8	4	52 M

<ul style="list-style-type: none"> Ongoing removal of alien invasive species Ongoing removal of litter and waste Use of identified park and recreation hubs Use of pedestrian boardwalks and walkways (Positive impact)						<ul style="list-style-type: none"> management as per the EMPr (section 9.5) Fire management as per the EMPr (section 9.6) 							
Colonisation and re-emergence of exotic vegetation / alien species and bush encroachment into disturbed soils and poorly rehabilitated areas. Alien invasive species tend to out-compete indigenous, slower growing species and could also result in unsuccessful rehabilitation.	1	4	8	4	52 M			1	4	6	2	22 L	
Biodiversity (Fauna)													
<i>Creation and improvement of faunal habitat due to:</i> <ul style="list-style-type: none"> Revegetation and rehabilitation of wetlands and denuded areas Removal of alien invasives Removal of litter and waste <i>By improving the general integrity of the site, faunal habitat will be created and faunal species will return to the area.</i> (Positive impact)	1	4	4	2	18 L	<ul style="list-style-type: none"> Biodiversity management, including access roads, resource management, protection of flora, alien plant control and protection of fauna as per the EMPr (section 9.1) Materials management, including solid liquid and hazardous waste, fuel and hazardous material as per the EMPr (section 9.2) Erosion control as per the EMPr (section 9.3) Vehicles and equipment management as per the EMPr (section 9.4) 			1	4	8	4	52 M
Faunal disturbances, displacement of taxa and changes in distribution and abundance due to: <ul style="list-style-type: none"> Uncontrolled vegetation clearing and access by staff and users of the open space General operations (activities) of the facility Noise 	1	4	6	4	44 M	<ul style="list-style-type: none"> Socio economic management, including staff management and visual impact management as per the EMPr (section 9.5) Fire management as per the EMPr (section 9.6) 			1	4	4	2	18 L
Mortality of fauna due to: <ul style="list-style-type: none"> Persecution and extermination Solvents, paints, chemicals and cleaning products (poisoning) 	2	4	2	3	24 L			2	4	2	2	16 L	

infrastructure					M	management and visual impact management as per the EMPr (section 9.5)					M
Indirect Impacts											
Visual											
<i>Potential visual impact on the visual character of the landscape and sense of place of the neighbourhood. (Positive impact)</i>	2	4	6	4	48 M	• Socio economic management, including staff management and visual impact management as per the EMPr (section 9.5)	2	4	8	5	70 H
<i>Considering the status quo of the site in its present condition, the rehabilitation nature of the project (removal of waste, formalization of open spaces) will increase the visual quality of the site.</i>											
Cumulative Impacts											
Hydrology (Surface water)											
<i>Improved water quality throughout the catchment (Positive impact)</i>	3	4	4	2	22 L	<ul style="list-style-type: none"> • Resource management, including access roads and resource management as per the EMPr (section 9.1) • Materials management, including solid liquid and hazardous waste, fuel and hazardous material as per the EMPr (section 9.2) • Erosion control as per the EMPr (section 9.3) • Vehicles and equipment management as per the EMPr (section 9.4) • Socio economic management, including staff management as per the EMPr (section 9.5) • Waste management plan as per the EMPr (section 10.3) 	3	4	8	4	60 H
<i>This is dependent on the improved maintenance of municipal infrastructure i.e. sewage and establishment of municipal services i.e waste collection.</i>											
Visual											
<i>The accumulation of formalized parkland and high quality open space within the local area. (Positive impact)</i>	3	4	4	2	22 L	<ul style="list-style-type: none"> • Socio economic management, including staff management and visual impact management as per the EMPr (section 9.5) • Waste management plan as per the EMPr (section 10.3) 	3	4	6	4	52 H
Socio-economics											
<i>Social and community upliftment owing to access to</i>	3	4	6	3	39	• Socio economic management, including staff	3	4	8	4	60

<i>open space (Positive impact)</i>					<i>M</i>	management and visual impact management as per the EMP (section 9.5)					<i>M</i>
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NO-PROJECT ALTERNATIVE											
Direct Impacts											
Ground Water											
No improvement of ground water quality						• None.					
Surface Water											
No improvement of surface water quality						• None					
Soil											
No improvement in erosion or stabilisation and increased risk of continued degradation						• None					
Air											
None						• None					
Biodiversity (Flora)											
No rehabilitation or protection of Soweto Highveld Grassland vegetation.						• None					
No rehabilitation or protection of sensitive environments.						• None					
No loss of Soweto Highveld Grassland						• None					
Biodiversity (Fauna)											
No creation and improvement of faunal habitats						• None					
Land Use and Agricultural Potential											
No improvement of productive land use and utilisation						• None					
Heritage & Cultural											
No improvement of areas for cultural and spiritual activities						• None					
Visual											
No positive potential visual impact due to improved open space, structures and infrastructure						• None					
No potential visual impact due to increased pedestrian and vehicular traffic						• None					
No potential visual impact due to increased lighting						• None					

at night													
Socio-economics													
No provision of public amenities through open space and parkland							• None						
No social and community upliftment through local employment							• None						
No potential noise impact due to increased activity at regional and community parks							• None						
Municipal services and traffic													
No improvement in municipal infrastructure i.e. sewage and establishment of services i.e. waste collection							• None						
Indirect Impacts													
None.							• None						
Cumulative Impacts													
No opportunity to up-grade and improve social development of the area							• None.						

2.4 Decommissioning Phase

The decommissioning of the facility is not anticipated at this stage and, therefore, no impacts are assessed.