APPENDIX J – IMPACT TABLES

Preferred Alternative:

Citrusdal Housing Development on remainder of Erf 3677 and RE 3617, Citrusdal. The development will consist of:

Phase B: Erf 3677 with a total development footprint of ±3.3282ha

13 Residential zone zone 2 erven with an average erf size: ±120m²
2 General Residential Zone 2 erven
3 Business Zone 2 erven
3 Open Space Zone I erf
1 Transport Zone I erven
1 Transport Zone II erven

Phase C: Erf 3617 with a total development footprint of ±9.4478 ha

163 Residential Zone 2 erven Average erf size: ±120m²
223 Residential Zone 2 erven Average erf size: ±120m² - 2 families per erf
9 Open Space Zone 1 erven
1 Community Zone 2 (church) erf
1 Community Zone 1 (crèche) erf
1 Community Zone 1 (community center) erf
1 Local Business Zone 2 erven
Transport Zone 2 erven

Erf 3617 with a total development footprint of ±10.1596 ha

117 Residential Zone 2 erven Average erf size: ±120m²
317 Residential Zone 2 erven Average erf size: ±120m² - 2 families per erf
5 Open Space Zone 1 erven
Transport Zone 2 erven

with a development footprint of ±22.9367ha.

Expanding reservoir by constructing a 3 ML reservoir next to existing on a portion of the remainder of Farm number 555, portion 4, Citrusdal

Services
Water:
Network upgrade:

- CCiW1.1 – 97m x 355mm new supply pipe
- CCiW1.2 – 198m x 315mm new supply pipe
- CCiW1.3 – 388m x 250mm new supply pipe
- CCiW2.2a – 526m x 200mm new supply pipe
- CCiW2.2b – 907m x 200mm new supply pipe
- CCiW2.3 – 430m x 200mm new supply pipe Reservoir
- CCiW.B1 – 3 000m3 additional storage capacity at Citrusdal HL reservoir site Bulk infrastructure upgrades
- CCiW.B2 – Upgrade capacity of Low to High Pressure PS to 75 L/s

The internal water reticulation network of the proposed development to comply with the minimum specifications as indicated in the "Red Book - Guidelines for Human Settlement Planning and Design" and the municipal standards from Cederberg Municipality.

Sewerage:
The Citrusdal Water Treatment Plant has sufficient capacity to accommodate the proposed development. The following upgrades are required to accommodate the development:

- CCiS4.1 – New 10 l/s Citrusdal North Pump Station
- CCiS4.2 – 1 340m x 110mm new Citrusdal North PS rising main
- CCiS4.3 – 700m x 160mm gravity outfall sewer

Following an investigation at the Riverview Pump Station and the diameter of the existing rising main, the following updates may be required:

- CCiS2.1 – Upgrade existing Riverview PS capacity to 13 l/s (following investigation)
- CCiS2.2 – 376m x 160mm new Riverview PS rising main (following investigation)

Stormwater Management:
An underground piped stormwater system will be provided to accommodate for the minor storm events (up to RI 1: 5 years). The major storm events will be accommodated within the street reserves. Stormwater run-off will be channeled to the existing Olifants River flowing to the west of the proposed development. The stormwater on the northern side will be released in stormwater culverts to the north and existing non-perennial river and its associated wetlands.
Roads
Access to the proposed development will be provided from Voortrekker Street, via three existing lower order access roads within unknown names. All new internal roads will consist of surfaced streets. A road reserve of 10 m (typical for Class 5B local residential streets) is proposed for the residential areas, while 13 m (typical for Class 5B local commercial streets with on-street parking) is proposed for the road reserves around the transport hub.

Solid waste
Refuse removal will occur on refuse collection days as per the schedule of Cederberg Municipality. Accommodation for their vehicles will be ensured and be in line with the municipality's relevant requirements.

Alternative

Citrusdal Housing Development on remainder of Erf 3677, 3680 and RE 3617, Citrusdal. The development will consist of:
Erf 3677 with a total development footprint of ±3.3282ha
8 Residential zone zone 2 erven with an average erf size: ±120m²
2 General Residential Zone 2 erven
2 Business Zone 2 erven
2 Transport Zone 2 erven
Erf 3677 and 3680 with a total development footprint of ±4.2792ha
152 Residential zone zone 2 erven with an average erf size: ±120m²
6 Open space Zone 1 erven
Transport Zone 2 erven
Erf 3617 with a total development footprint of ±19.6085ha
903 Residential zone zone 2 erven with an average erf size: ±120m²
11 Open Space Zone 1 erven
1 Community Zone 2 (church) erf
1 Community Zone 1 (crèche) erf
1 Community Zone 1 (community center) erf
1 Business Zone 2 erven
Transport Zone 2 erven

with a development footprint of ±27.2159ha.

GEOGRAPHICAL AND PHYSICAL

SOIL EROSION AND DUST

Preferred Alternative:	**Geographical and Physical Impacts**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Soil erosion and dust**
Nature of impact:	**Soil erosion can occur due to wind (wind erosion cause dust pollution); and due to overland storm water flow should rains fall during construction. Due to the sloping nature of the terrain, it is unlikely that a shallow perched water table will develop on site.**

Extent and duration of impact:	**Extent 1 & Duration 5 (permanent)**
Consequence of impact or risk:	**Clearing and excavation activities can result in erosion and dust.**
Magnitude	**2**
Probability of occurrence:	**2 (Improbable: some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**2-Resource may be partly destroyed (PR)**
Degree to which the impact can be reversed:	**Completely reversible (R)**
Indirect impacts:	**Disturbance to surface area can result in erosion and dust generation**
Cumulative impact prior to mitigation:	**Exposing soil may lead to erosion and dust generation if not mitigated.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**16 - Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**1-Completely mitigatable (CM)**
Proposed mitigation:	• **Access to roads and other areas must be controlled to avoid disturbance of areas outside the development footprint. Personnel should be restricted to the immediate construction areas only.** • **Monitor construction areas frequently for signs of erosion and if signs of erosion are detected implement repair and preventative measures immediately.** • **Undertake dust suppression as needed.** • **Rehabilitate or stabilise eroded areas immediately to prevent increase in erosion.** • **Undertake storm water management measures as required.**
Residual impacts:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Cumulative impact post mitigation:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
OPERATIONAL PHASE	
Potential impact and risk:	**Not applicable to operational phase.**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Similar to impacts associated with construction phase.**

Alternative:	**Geographical and Physical Impacts**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Soil erosion and dust**

Nature of impact:	**Soil erosion can occur due to wind (wind erosion cause dust pollution); and due to overland storm water flow should rains fall during construction. Due to the sloping nature of the terrain, it is unlikely that a shallow perched water table will develop on site.**
Extent and duration of impact:	**Extent 1 & Duration 5 (permanent)**
Consequence of impact or risk:	**Clearing and excavation activities can result in erosion and dust.**
Magnitude	**2**
Probability of occurrence:	**2 (Improbable: some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**2-Resource may be partly destroyed (PR)**
Degree to which the impact can be reversed:	**Completely reversible (R)**
Indirect impacts:	**Disturbance to surface area can result in erosion and dust generation**
Cumulative impact prior to mitigation:	**Exposing soil may lead to erosion and dust generation if not mitigated.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**16 - Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**1-Completely mitigatable (CM)**
Proposed mitigation:	• **Access to roads and other areas must be controlled to avoid disturbance of areas outside the development footprint. Personnel should be restricted to the immediate construction areas only.** • **Monitor construction areas frequently for signs of erosion and if signs of erosion are detected implement repair and preventative measures immediately.** • **Undertake dust suppression as needed.** • **Rehabilitate or stabilise eroded areas immediately to prevent increase in erosion.** • **Undertake storm water management measures as required.**
Residual impacts:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Cumulative impact post mitigation:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
OPERATIONAL PHASE	
Potential impact and risk:	**Not applicable to operational phase.**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Similar to impacts associated with construction phase.**

WATER POLLUTION

Preferred Alternative:	**Geographical and Physical Impacts**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Impact of construction activities on surface and underground water pollution.**
Nature of impact:	**Construction could result in the pollution of surface water and eventually result in ground water pollution. Storm water contamination will result in surface water pollution. Construction activities such as excavation and clearing of vegetation and or diesel and oil spills could impact surface and ground water quality.**
Extent and duration of impact:	**Extent 3 (Within a 20 km radius of the centre of the site) & Duration 2 (2-5 years)**
Consequence of impact or risk:	**Possible pollution of surface and ground water.**
Magnitude	**6**
Probability of occurrence:	**4 (most likely)**
Degree to which the impact may cause irreplaceable loss of resources:	**Partly destroyed 2 (PR)**
Degree to which the impact can be reversed:	**Partly reversible 6-89% (PR)**
Indirect impacts:	**Pollution of water resources.**
Cumulative impact prior to mitigation:	**Diesel and oil spills affecting ground and surface water quality.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**44 - Medium**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**2-Partly mitigatable (PM)**
Proposed mitigation:	**Mitigation measures included in EMP, attached as Appendix H, shall be adhered to.**
Residual impacts:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Cumulative impact post mitigation:	**Diesel and oil spills affecting ground and surface water quality.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**27 – Low**
OPERATIONAL PHASE	
Potential impact and risk:	**Impact of operational activities on surface and underground water pollution.**
Potential impact and risk:	**Impact of operational activities on surface and underground water pollution.**

Nature of impact:	**Hazardous material spills could result in the pollution of surface water and eventually result in ground water pollution. Storm water contamination will result in surface water pollution.**
Extent and duration of impact:	**Extent 3 (Within a 20 km radius of the centre of the site) & Duration 2 (2-5 years)**
Consequence of impact or risk:	**Possible pollution of surface and ground water.**
Magnitude	**6**
Probability of occurrence:	**4 (most likely)**
Degree to which the impact may cause irreplaceable loss of resources:	**Partly destroyed 2 (PR)**
Degree to which the impact can be reversed:	**Partly reversible 6-89% (PR)**
Indirect impacts:	**Pollution of water resources.**
Cumulative impact prior to mitigation:	**Diesel and oil spills affecting ground and surface water quality.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**44 - Medium**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**2-Partly mitigatable (PM)**
Proposed mitigation:	**Mitigation measures included in EMP, attached as Appendix H, shall be adhered to.**
Residual impacts:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Cumulative impact post mitigation:	**Diesel and oil spills affecting ground and surface water quality.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**27 – Low**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Similar to impacts associated with construction phase.**

Alternative:	**Geographical and Physical Impacts**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Impact of construction activities on surface and underground water pollution.**
Nature of impact:	**Construction could result in the pollution of surface water and eventually result in ground water pollution. Storm water contamination will result in surface water pollution. Construction activities such as excavation and clearing of vegetation and or diesel and oil spills could impact surface and ground water quality.**
Extent and duration of impact:	**Extent 3 (Within a 20 km radius of the centre of the site) & Duration 2 (2-5 years)**
Consequence of impact or risk:	**Possible pollution of surface and ground water.**
Magnitude	**6**

Probability of occurrence:	**4 (most likely)**
Degree to which the impact may cause irreplaceable loss of resources:	**Partly destroyed 2 (PR)**
Degree to which the impact can be reversed:	**Partly reversible 6-89% (PR)**
Indirect impacts:	**Pollution of water resources.**
Cumulative impact prior to mitigation:	**Diesel and oil spills affecting ground and surface water quality.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**44 - Medium**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**2-Partly mitigatable (PM)**
Proposed mitigation:	**Mitigation measures included in EMP, attached as Appendix H, shall be adhered to.**
Residual impacts:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Cumulative impact post mitigation:	**Diesel and oil spills affecting ground and surface water quality.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**27 – Low**
OPERATIONAL PHASE	
Potential impact and risk:	**Impact of operational activities on surface and underground water pollution.**
Potential impact and risk:	**Impact of operational activities on surface and underground water pollution.**
Nature of impact:	**Hazardous material spills could result in the pollution of surface water and eventually result in ground water pollution. Storm water contamination will result in surface water pollution.**
Extent and duration of impact:	**Extent 3 (Within a 20 km radius of the centre of the site) & Duration 2 (2-5 years)**
Consequence of impact or risk:	**Possible pollution of surface and ground water.**
Magnitude	**6**
Probability of occurrence:	**4 (most likely)**
Degree to which the impact may cause irreplaceable loss of resources:	**Partly destroyed 2 (PR)**
Degree to which the impact can be reversed:	**Partly reversible 6-89% (PR)**
Indirect impacts:	**Pollution of water resources.**
Cumulative impact prior to mitigation:	**Diesel and oil spills affecting ground and surface water quality.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**44 - Medium**
Degree to which the impact can be avoided:	**High**

Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**2-Partly mitigatable (PM)**
Proposed mitigation:	**Mitigation measures included in EMP, attached as Appendix H, shall be adhered to.**
Residual impacts:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Cumulative impact post mitigation:	**Diesel and oil spills affecting ground and surface water quality.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**27 – Low**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Similar to impacts associated with construction phase.**

DISTURBANCE TO SUBSURFACE GEOLOGICAL LAYERS

Preferred Alternative:	**Geographical and Physical Impacts**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Construction activities can affect the underlying geological layers on site to some extent.**
Nature of impact:	**Disturbance to subsurface geological layers.**
Extent and duration of impact:	**Extent 1 & Duration 2 (2-5 years)**
Consequence of impact or risk:	**Excavation activities can disturb subsurface geological layers.**
Magnitude	**2**
Probability of occurrence:	**2 (Improbable: some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**2-Resource may be partly destroyed (PR)**
Degree to which the impact can be reversed:	**0% (IR)**
Indirect impacts:	**Disturbance to surface area can result in erosion and dust generation**
Cumulative impact prior to mitigation:	**It is not anticipated that the impact will be high as the affected substrata is very shallow and the integrity of the underlying ground structures will thus not be sacrificed.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**10 – Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**2**
Proposed 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 soil**

	is kept to a minimum – removal of soil should only be in areas where infrastructure will be established.
Residual impacts:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Cumulative impact post mitigation:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**10 - Low**
OPERATIONAL PHASE	
Potential impact and risk:	**Not applicable to operational phase.**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Similar to impacts associated with construction phase.**

Alternative:	**Geographical and Physical Impacts**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Construction activities can affect the underlying geological layers on site to some extent.**
Nature of impact:	**Disturbance to subsurface geological layers.**
Extent and duration of impact:	**Extent 1 & Duration 2 (2-5 years)**
Consequence of impact or risk:	**Excavation activities can disturb subsurface geological layers.**
Magnitude	**2**
Probability of occurrence:	**2 (Improbable: some possibility, but low likelihood)**
Degree to which the impact may cause irreplaceable loss of resources:	**2-Resource may be partly destroyed (PR)**
Degree to which the impact can be reversed:	**0% (IR)**
Indirect impacts:	**Disturbance to surface area can result in erosion and dust generation**
Cumulative impact prior to mitigation:	**It is not anticipated that the impact will be high as the affected substrata is very shallow and the integrity of the underlying ground structures will thus not be sacrificed.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**10 – Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**2**
Proposed 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 soil is kept to a minimum – removal of soil should only be in areas where infrastructure will be established.**
Residual impacts:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**

Cumulative impact post mitigation:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**10 - Low**
OPERATIONAL PHASE	
Potential impact and risk:	**Not applicable to operational phase.**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Similar to impacts associated with construction phase.**

WASTE IMPACTS

Preferred Alternative:	
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Waste Impacts**
Nature of impact:	**General construction waste will be generated during the construction phase. Poor waste management practices on site may lead to dumping and windblown litter creating a negative visual impact and nuisance for adjacent landowners / users as well as impacting the natural environment.**
Extent and duration of impact:	**Extent 2 (On site or within 100 m of the site) & Duration 2**
Consequence of impact or risk:	**Pollution and nuisance.**
Magnitude:	**4**
Probability of occurrence:	**3**
Degree to which the impact may cause irreplaceable loss of resources:	**1-Resource will not be lost (R)**
Degree to which the impact can be reversed:	**Reversible**
Indirect impacts:	**Impacts on ecological functioning of river. Impacts on fauna.**
Cumulative impact prior to mitigation:	**• Dumping;** **• Windblown litter causing nuisance;** **• Pollution / degradation of the natural environment.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**24 -Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**1**
Proposed mitigation:	**All waste generated on site shall be collected and disposed of at a registered landfill facility;** **All safe disposal certificates and waste manifests from service providers to be kept and maintained;** **All staff to receive training on correct waste management practices.**

Residual impacts:	**None**
Cumulative impact post mitigation:	**None**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**18 – Low**
OPERATIONAL PHASE	
Potential impact and risk:	**Waste Impacts**
Nature of impact:	**Improved waste collection and service provision.**
Extent and duration of impact:	**Extent 2 (On site or within 100 m of the site) & Duration 2**
Consequence of impact or risk:	**Pollution and nuisance.**
Probability of occurrence:	**4**
Degree to which the impact may cause irreplaceable loss of resources:	**3**
Degree to which the impact can be reversed:	**1-Resource will not be lost (R)**
Indirect impacts:	**Reversible**
Cumulative impact prior to mitigation:	**Impacts on ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**• Dumping;** **• Windblown litter causing nuisance;** **• Pollution / degradation of the natural environment.**
Degree to which the impact can be avoided:	**24 -Low**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**All waste generated on site shall be collected and disposed of at a registered landfill facility;** **All safe disposal certificates and waste manifests from service providers to be kept and maintained;** **All staff to receive training on correct waste management practices.**
Residual impacts:	**None**
Cumulative impact post mitigation:	**None**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**18 – Low**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Similar to impacts associated with construction phase.**

Alternative:	
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Waste Impacts**
Nature of impact:	**General construction waste will be generated during the construction phase. Poor waste management practices on site may lead to dumping and windblown litter creating a negative visual impact and nuisance for adjacent landowners / users as well as impacting the natural environment.**

Extent and duration of impact:	**Extent 2 (On site or within 100 m of the site) & Duration 2**
Consequence of impact or risk:	**Pollution and nuisance.**
Magnitude:	**4**
Probability of occurrence:	**3**
Degree to which the impact may cause irreplaceable loss of resources:	**1-Resource will not be lost (R)**
Degree to which the impact can be reversed:	**Reversible**
Indirect impacts:	**Impacts on ecological functioning of river. Impacts on fauna.**
Cumulative impact prior to mitigation:	**• Dumping;** **• Windblown litter causing nuisance;** **• Pollution / degradation of the natural environment.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**24 -Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**1**
Proposed mitigation:	**All waste generated on site shall be collected and disposed of at a registered landfill facility;** **All safe disposal certificates and waste manifests from service providers to be kept and maintained;** **All staff to receive training on correct waste management practices.**
Residual impacts:	**None**
Cumulative impact post mitigation:	**None**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**18 – Low**
OPERATIONAL PHASE	
Potential impact and risk:	**Waste Impacts**
Nature of impact:	**Improved waste collection and service provision.**
Extent and duration of impact:	**Extent 2 (On site or within 100 m of the site) & Duration 2**
Consequence of impact or risk:	**Pollution and nuisance.**
Probability of occurrence:	**4**
Degree to which the impact may cause irreplaceable loss of resources:	**3**
Degree to which the impact can be reversed:	**1-Resource will not be lost (R)**
Indirect impacts:	**Reversible**
Cumulative impact prior to mitigation:	**Impacts on ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**• Dumping;** **• Windblown litter causing nuisance;** **• Pollution / degradation of the natural environment.**

Degree to which the impact can be avoided:	**24 -Low**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**High**
Proposed mitigation:	**All waste generated on site shall be collected and disposed of at a registered landfill facility;** **All safe disposal certificates and waste manifests from service providers to be kept and maintained;** **All staff to receive training on correct waste management practices.**
Residual impacts:	**None**
Cumulative impact post mitigation:	**None**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**18 – Low**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Similar to impacts associated with construction phase.**

NOISE

Preferred alternative	**Socio-Economic Impacts**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Impact of noise on surrounding environment, especially the surrounding residential area.**
Nature of impact:	**Environmental noise pollution. Nuisance impacts could relate to the increase noise and disturbance associated with the proposed development, e.g. noise, traffic etc.** **Construction activities and construction personnel on the sites, and construction vehicles moving to and from the sites would cause an increase in noise in the area, which may impact negatively upon the adjoining landowners.**
Extent and duration of impact:	**Extent 2 (On site or within 100 m of the site) & Duration 1 (0 – 1 years)**
Magnitude	**2**
Consequence of impact or risk:	**Nuisance**
Probability of occurrence:	**3 (distinct possibly)**
Degree to which the impact may cause irreplaceable loss of resources:	**1-Resource will not be lost (R)**
Degree to which the impact can be reversed:	**Completely reversible (R) - This will not be a long-term impact nor will it have an impact on the natural processes. It is thus 100% reversible.**
Indirect impacts:	**Nuisance**
Cumulative impact prior to mitigation:	**Nuisance**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**15 – Low**

Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**1- Completely mitigatable (CM)**
Proposed mitigation:	• **Working hours will be restricted to normal working hours.** • **All noise and sounds generated by plant or machinery must adhere to SABS 0103 specifications for the maximum permissible noise levels.** • **All plant and machinery are to be fitted with adequate silencers.** • **No sound amplification equipment such as sirens, loud hailers or hooters may be used on site, after normal working hours, except in emergencies.** • **If work is to be undertaken outside of normal work hours, permission must be obtained from the Local Authority**
Residual impacts:	**Nuisance**
Cumulative impact post mitigation:	**Nuisance**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**15 - Low**
OPERATIONAL PHASE	
Potential impact and risk:	**Not applicable to operational phase.**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Similar to impacts associated with construction phase.**

Alternative	**Socio-Economic Impacts**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Impact of noise on surrounding environment, especially the surrounding residential area.**
Nature of impact:	**Environmental noise pollution. Nuisance impacts could relate to the increase noise and disturbance associated with the proposed development, e.g. noise, traffic etc.** **Construction activities and construction personnel on the sites, and construction vehicles moving to and from the sites would cause an increase in noise in the area, which may impact negatively upon the adjoining landowners.**
Extent and duration of impact:	**Extent 2 (On site or within 100 m of the site) & Duration 1 (0 – 1 years)**
Magnitude	**2**
Consequence of impact or risk:	**Nuisance**
Probability of occurrence:	**3 (distinct possibly)**
Degree to which the impact may cause irreplaceable loss of resources:	**1-Resource will not be lost (R)**

Degree to which the impact can be reversed:	**Completely reversible (R) - This will not be a long-term impact nor will it have an impact on the natural processes. It is thus 100% reversible.**
Indirect impacts:	**Nuisance**
Cumulative impact prior to mitigation:	**Nuisance**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**15 – Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**1- Completely mitigatable (CM)**
Proposed mitigation:	• **Working hours will be restricted to normal working hours.** • **All noise and sounds generated by plant or machinery must adhere to SABS 0103 specifications for the maximum permissible noise levels.** • **All plant and machinery are to be fitted with adequate silencers.** • **No sound amplification equipment such as sirens, loud hailers or hooters may be used on site, after normal working hours, except in emergencies.** • **If work is to be undertaken outside of normal work hours, permission must be obtained from the Local Authority**
Residual impacts:	**Nuisance**
Cumulative impact post mitigation:	**Nuisance**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**15 - Low**
OPERATIONAL PHASE	
Potential impact and risk:	**Not applicable to operational phase.**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Similar to impacts associated with construction phase.**

HEALTH AND NUISANCE IMPACT

Preferred Alternative:	**Socio-Economic Impacts**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**The surrounding land users/ owners will be exposed to the presence of the construction machinery**
Nature of impact:	**Nuisance and air quality impacts as a result of dust and exhaust fumes**
Extent and duration of impact:	**Extent 3 & Duration 2 (2-5 years)**

Consequence of impact or risk:	**The surrounding land users/ owners will be exposed to nuisance and air quality impacts as a result of dust and exhaust fumes**
Magnitude	**2**
Probability of occurrence:	**4 (most likely)**
Degree to which the impact may cause irreplaceable loss of resources:	**2 (PR)**
Degree to which the impact can be reversed:	**2 (PM)**
Indirect impacts:	
Cumulative impact prior to mitigation:	**Nuisance and air quality impacts as a result of dust and exhaust fumes**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**28 - Low**
Degree to which the impact can be avoided:	**Low**
Degree to which the impact can be managed:	**Low**
Degree to which the impact can be mitigated:	**Low**
Proposed mitigation:	• **Proposed construction activities must be limited to development footprint site.** • **Dust must be managed and control on site.** • **All construction vehicles must be serviced to prevent access exhaust emissions and noise.**
Residual impacts:	**Health impacts**
Cumulative impact post mitigation:	**The surrounding environment will not be affected by construction activities**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**24 – Low**
OPERATIONAL PHASE	
Potential impact and risk:	**Development will provide much needed housing opportunities**
Nature of impact:	**Health impacts as a result of the housing and better living conditions.**
Extent and duration of impact:	**Permanent**
Consequence of impact or risk:	**Health impacts as a result of the housing and better living conditions.**
Magnitude	**2**
Probability of occurrence:	**4 (most likely)**
Degree to which the impact may cause irreplaceable loss of resources:	**2 (PR)**
Degree to which the impact can be reversed:	**2 (PM)**
Indirect impacts:	
Cumulative impact prior to mitigation:	**None**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Positive**

Degree to which the impact can be avoided:	
Degree to which the impact can be managed:	
Degree to which the impact can be mitigated:	
Proposed mitigation:	**None**
Residual impacts:	**None**
Cumulative impact post mitigation:	**None**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Positive impacts**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Similar to construction phase.**

Alternative:	**Socio-Economic Impacts**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**The surrounding land users/ owners will be exposed to the presence of the construction machinery**
Nature of impact:	**Nuisance and air quality impacts as a result of dust and exhaust fumes**
Extent and duration of impact:	**Extent 3 & Duration 2 (2-5 years)**
Consequence of impact or risk:	**The surrounding land users/ owners will be exposed to nuisance and air quality impacts as a result of dust and exhaust fumes**
Magnitude	**2**
Probability of occurrence:	**4 (most likely)**
Degree to which the impact may cause irreplaceable loss of resources:	**2 (PR)**
Degree to which the impact can be reversed:	**2 (PM)**
Indirect impacts:	
Cumulative impact prior to mitigation:	**Nuisance and air quality impacts as a result of dust and exhaust fumes**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**28 - Low**
Degree to which the impact can be avoided:	**Low**
Degree to which the impact can be managed:	**Low**
Degree to which the impact can be mitigated:	**Low**
Proposed mitigation:	• **Proposed construction activities must be limited to development footprint site.** • **Dust must be managed and control on site.** • **All construction vehicles must be serviced to prevent access exhaust emissions and noise.**
Residual impacts:	**Health impacts**

Cumulative impact post mitigation:	**The surrounding environment will not be affected by construction activities**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**24 – Low**
OPERATIONAL PHASE	
Potential impact and risk:	**Development will provide much needed housing opportunities**
Nature of impact:	**Health impacts as a result of the housing and better living conditions.**
Extent and duration of impact:	**Permanent**
Consequence of impact or risk:	**Health impacts as a result of the housing and better living conditions.**
Magnitude	**2**
Probability of occurrence:	**4 (most likely)**
Degree to which the impact may cause irreplaceable loss of resources:	**2 (PR)**
Degree to which the impact can be reversed:	**2 (PM)**
Indirect impacts:	
Cumulative impact prior to mitigation:	**None**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Positive**
Degree to which the impact can be avoided:	
Degree to which the impact can be managed:	
Degree to which the impact can be mitigated:	
Proposed mitigation:	**None**
Residual impacts:	**None**
Cumulative impact post mitigation:	**None**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Positive impacts**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Similar to construction phase.**

TERRESTRIAL BIODIVERSITY IMPACTS

Preferred Alternative and Alternative

Development Construction	**TERRESTRIAL BIODIVERSITY IMPACTS**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Terrestrial Biodiversity Impacts**
Nature of impact:	**Discussion:**

	The vegetation type is classified as critically endangered and endangered but transformed. The terrestrial CBA's or ESA's that were mapped on the development area will not be impacted or affected. No protected area or priority areas for protected area expansion are inside the study area. No indigenous forests are inside or close to the study area.
Extent and duration of impact:	**Extent 1 (footprint) & Duration 1**
Magnitude:	**2**
Consequence of impact or risk:	**Loss or impacts on indigenous vegetation**
Probability of occurrence:	**2 (I)**
Degree to which the impact may cause irreplaceable loss of resources:	**2 (PR)**
Degree to which the impact can be reversed:	**PR**
Indirect impacts:	**Disturbance to surface area can result in impacts on indigenous vegetation**
Cumulative impact prior to mitigation:	**Habitat fragmentation, loss of ecological connectivity and erosion**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**1 (CM)**
Proposed 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.** • **Site clearance along the border of the no-go areas must be done under the supervision of an ECO.**
Residual impacts:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Cumulative impact post mitigation:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Significance rating of impact after mitigation (e.g. Low, Medium,	**Low**

Medium-High, High, or Very-High)	
OPERATIONAL PHASE	
Potential impact and risk:	**Impact on terrestrial biodiversity**
Nature of impact:	**None. Area will be developed**
Extent and duration of impact:	**None. Area will be developed**
Magnitude:	**None. Area will be developed**
Consequence of impact or risk:	**None. Area will be developed**
Probability of occurrence:	**None. Area will be developed**
Degree to which the impact may cause irreplaceable loss of resources:	**None. Area will be developed**
Degree to which the impact can be reversed:	**None. Area will be developed**
Indirect impacts:	**None. Area will be developed**
Cumulative impact prior to mitigation:	**None. Area will be developed**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**None. Area will be developed**
Degree to which the impact can be avoided:	**None. Area will be developed**
Degree to which the impact can be managed:	**None. Area will be developed**
Degree to which the impact can be mitigated:	**None. Area will be developed**
Proposed mitigation:	**None. Area will be developed**
Residual impacts:	**None. Area will be developed**
Cumulative impact post mitigation:	**None. Area will be developed**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**None. Area will be developed**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Impact on indigenous vegetation**
Nature of impact:	**Similar to that in the development phase.**

AQUATIC BIODIVERSITY IMPACTS

Preferred Alternative and Alternative

Development Construction	**Geographical and Physical Impacts**
PLANNING, DESIGN AND DEVELOPMENT PHASE	

Potential impact and risk:	**Soil erosion and dust**
Nature of impact:	**Disturbance to soil which is caused during the construction may lead to erosion of the site and surrounds.**
Extent and duration of impact:	**Extent 1 (footprint) & Duration 1**
Magnitude:	**2**
Consequence of impact or risk:	**Clearing and excavation activities can result in erosion and dust.**
Probability of occurrence:	**2 (I)**
Degree to which the impact may cause irreplaceable loss of resources:	**2 (PR)**
Degree to which the impact can be reversed:	**PR**
Indirect impacts:	**Disturbance to surface area can result in erosion and dust generation**
Cumulative impact prior to mitigation:	**Exposing soil may lead to erosion and dust generation if not mitigated.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**8 - Low**
Degree to which the impact can be avoided:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**1 (CM)**
Proposed mitigation:	• **Access to roads and other areas must be controlled to avoid disturbance of areas outside the development footprint. Personnel should be restricted to the immediate clearing areas only.** • **Monitor construction areas frequently for signs of erosion and if signs of erosion are detected implement repair and preventative measures immediately.** • **Strict compliance with the EMPr.**
Residual impacts:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Cumulative impact post mitigation:	**It is not anticipated that the impact will be high if the mitigation measures are adhered to.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**
OPERATIONAL PHASE	

Potential impact and risk:	**Soil erosion and dust**
Nature of impact:	**None. Area will be developed**
Extent and duration of impact:	**None. Area will be developed**
Magnitude:	**None. Area will be developed**
Consequence of impact or risk:	**None. Area will be developed**
Probability of occurrence:	**None. Area will be developed**
Degree to which the impact may cause irreplaceable loss of resources:	**None. Area will be developed**
Degree to which the impact can be reversed:	**None. Area will be developed**
Indirect impacts:	**None. Area will be developed**
Cumulative impact prior to mitigation:	**None. Area will be developed**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**None. Area will be developed**
Degree to which the impact can be avoided:	**None. Area will be developed**
Degree to which the impact can be managed:	**None. Area will be developed**
Degree to which the impact can be mitigated:	**None. Area will be developed**
Proposed mitigation:	**None. Area will be developed**
Residual impacts:	**None. Area will be developed**
Cumulative impact post mitigation:	**None. Area will be developed**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**None. Area will be developed**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Soil erosion and dust**
Nature of impact:	**Similar to that in the development phase.**

IMPACT TABLES-NO-GO

GEOGRAPHICAL AND PHYSICAL

IMPACT ON FRESHWATER ECOLOGY

No Go or No Development Option	**Geographical and Physical Impacts**
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	**Not applicable**
OPERATIONAL PHASE	

Potential impact and risk:	**Waste and effluent impacts on freshwater ecology. Non provision of housing and connecting to services to prevent pollution and impacts on ecology.**
Nature of impact:	**Waste and effluent impacts on freshwater ecology.**
Extent and duration of impact:	**Extent 2 & Duration 3 (5 – 15 years)**
Consequence of impact or risk:	**Possible pollution of surface and ground water.**
Magnitude	**4 (will cause a slight impact on processes)**
Probability of occurrence:	**4 (most likely)**
Degree to which the impact may cause irreplaceable loss of resources:	**2-Resource may be partly destroyed (PR)**
Degree to which the impact can be reversed:	**Partly reversible (PR)**
Indirect impacts:	**Pollution of water resources.**
Cumulative impact prior to mitigation:	**Waste and effluent impacts on freshwater ecology.**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Very High**
Degree to which the impact can be avoided:	**High. Move people away from freshwater ecological features and connect them to services.**
Degree to which the impact can be managed:	**High. Move people away from freshwater ecological features and connect them to services.**
Degree to which the impact can be mitigated:	**High. Move people away from freshwater ecological features and connect them to services.**
Proposed mitigation:	**NA**
Residual impacts:	**Waste and effluent impacts on freshwater ecology.**
Cumulative impact post mitigation:	**Waste and effluent impacts on freshwater ecology.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Very High**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	**Not applicable**