1 Construction Phase

1.1 Terrestrial Biodiversity

Potential impact and risk:	**Loss of vegetation cover**	
Nature of impact:	**Direct Negative Impact** During construction, vegetation clearing for development will be required. The vegetation type is Kogelberg Sandstone Fynbos. An estimated 0.7 ha of degraded fynbos is located inside the site. Nearly all of this has been included in the proposed Open Space. Approximately <100m^2 of degraded fynbos will be cleared	
	Without mitigation	**With mitigation**
Intensity	Low	Low
Extent and duration of impact:	Site-specific, permanent	Site-specific, permanent
Probability of occurrence:	Definite	Definite
Significance	Low -	Low -
Degree to which the impact can be reversed:	Low	
Degree to which impact may cause irreplaceable loss of resources	Medium-low	
Degree to which impact can be mitigated	High	
Proposed mitigation:	- Fence off the construction area where it borders on fynbos. - Blanket clearing of vegetation must be limited to the development footprint, and the area to be cleared must be demarcated before any clearing commences. - Clearing should only take place within the required footprint of the site. - Any indigenous vegetation and associated topsoil which needs to be cleared from the site should be used to rehabilitate degraded portions damaged during construction. - Search and rescue must be carried out and any species of special concern that are removed from the site prior to vegetation clearing must be transplanted into the portions of the site where rehabilitation is required. - The retained and rehabilitated vegetation must be cleared of invasive alien species and kept clear of these by conducting regular follow-up clearing operations. - Topsoil must be stripped and stockpiled separately during site preparation and replaced over the degraded areas. - Any site camps and laydown areas requiring clearing must be located within already disturbed areas. - All temporary works areas (laydowns and camps) can only be placed in previously disturbed areas within the site, and this includes any temporary access roads or storage areas. - Alien vegetation management must be initiated at the beginning of the construction period and must extend into any remaining areas into the operation phase - The revegetation of any temporary sites as well as any previously degraded areas must begin from the onset of the project, with the involvement of a suitably qualified botanist to assist with the revegetation specifications. - Regeneration of alien vegetation must be monitored once all areas have been cleared, forming part of a long-term alien vegetation management plan	

Cumulative impact post mitigation:	Continued erosion/degradation of Kogelberg Sandstone, the biodiversity network, as well as the loss of plant species. The slight loss of biodiversity and resultant cumulative impact will be acceptable, due to the transformed or degraded state of the site. In the case of the site not being developed, it will remain in a degraded state with little potential for reverting to the original vegetation in the long term.	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	Low -	Low -

Potential impact and risk:	**The potential spread of alien vegetation**	
Nature of impact:	**Indirect Negative Impact** Several Alien Invasive Species were found present on and around the site, including long-leaved wattle, black wattle, Spanish broom, cluster pine, kikuyu, buffalo grass, sowthistle, milk thistle, castor-oil plant, olieboom, inkberry and flax-leaf fleabane. Earthworks during the construction phase will provide ideal conditions for the establishment of invasive alien species. The site already has a high presence of aliens (such as pines and acacia species) will exacerbate this impact.	
	Without mitigation	**With mitigation**
Intensity	Low	Low
Extent and duration of impact:	Regional, long-term	Site-specific, long term
Probability of occurrence:	Probable	Possible
Significance	Medium -	Low -
Degree to which the impact can be reversed:	Low	
Degree to which impact may cause irreplaceable loss of resources	Medium-low	
Degree to which impact can be mitigated	High	
Proposed mitigation:	- Implement alien control in the Open Space - All temporary works areas (laydowns and camps) can only be placed in previously disturbed areas within the site, and this includes any temporary access roads or storage areas. - Alien vegetation management must be initiated at the beginning of the construction period and must extend into any remaining areas into the operation phase - The revegetation of any temporary sites as well as any previously degraded areas must begin from the onset of the project, with the involvement of a botanist to assist with the revegetation specifications. - Regeneration of alien vegetation must be monitored once all areas have been cleared, forming part of a long-term alien vegetation management plan	
Cumulative impact post mitigation:	Continued erosion/degradation of Kogelberg Sandstone, the biodiversity network, as well as the loss of plant species. The slight loss of biodiversity and resultant cumulative impact will be acceptable, due to the transformed or degraded state of the site. In the case of the site not being developed, it will remain in a degraded state with little potential for reverting to the original vegetation in the long term.	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	Low -	Low -

Potential impact and risk:	Loss of indigenous flora and potential species of conservation concern (SCC)	
Nature of impact:	**Direct Negative Impact** The fynbos species recorded are widespread and common in the region. No SCC were recorded, and none are expected to occur on site. The probability that any SCC listed in the Screening Report will be impacted is unlikely due to the degraded or transformed state of the site.	
	Without mitigation	**With mitigation**
Intensity	Low	Low
Extent and duration of impact:	Site-specific, long-term	Site-specific, long-term
Probability of occurrence:	Highly unlikely	Highly unlikely
Significance	Low -	Low -
Degree to which the impact can be reversed:	Low	
Degree to which impact may cause irreplaceable loss of resources	Low	
Degree to which impact can be mitigated	High	
Proposed mitigation:	- All temporary works areas (laydowns and camps) can only be placed in previously disturbed areas within the site, and this includes any temporary access roads or storage areas. - Alien vegetation management must be initiated at the beginning of the construction period and must extend into any remaining areas into the operation phase - It is recommended as best practice to conduct a search and rescue programme for any listed or protected plants species, although this consideration was not used to reduce the potential impact ratings as no species of special concern were identified by the botanical specialist. Any plants removed could easily be relocated into areas that will need rehabilitation post construction. - The revegetation of any temporary sites as well as any previously degraded areas must begin from the onset of the project, with the involvement of a botanist to assist with the revegetation specifications.	
Cumulative impact post mitigation:	Continued erosion/degradation of Kogelberg Sandstone, the biodiversity network, as well as the loss of plant species. The slight loss of biodiversity and resultant cumulative impact will be acceptable, due to the transformed or degraded state of the site. In the case of the site not being developed, it will remain in a degraded state with little potential for reverting to the original vegetation in the long term.	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	Low -	Low -

Potential impact and risk:	Disruption to ecological processes
Nature of impact:	**Indirect Negative Impact** Construction activities may result in disturbances to ecological processes. Ecological processes typically only function well where natural vegetation remains, and in particular where the remaining vegetation is well-connected with other nearby patches of natural vegetation. Loss and fragmentation of natural habitat severely threatens the integrity of ecological processes. Where basic processes are intact, ecosystems are likely to recover more easily from disturbances or inappropriate actions; if the actions themselves are not permanent.

	Without mitigation	With mitigation
Intensity	Medium	Medium
Extent and duration of impact:	Regional, long-term	Local, medium-term
Probability of occurrence:	Likely	Possible
Significance	Low -	Very Low -
Degree to which the impact can be reversed:	Medium	
Degree to which impact may cause irreplaceable loss of resources	Low	
Degree to which impact can be mitigated	High	
Proposed mitigation:	- Implement an alien management plan. - Ensure a proper restoration of the areas identified to function as open spaces and assist in keeping an ecological corridor intact. - Ensure the upkeep of the open space and the regular inspection and removal of alien vegetation from the sites. - Any neighbouring minor watercourses are unlikely to be affected as a result of the development of the site, with respect to terrestrial biodiversity processes. - The proposed development will cross ephermal drainage lines, although these drainage lines are not regarded as watercourses. - Ensure that stormwater management follows proper protocols with specific referral to the Stormwater Management Report.	
Cumulative impact post mitigation:	None	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	N/A	N/A

1.2 Soil

Potential impact and risk:	**Susceptibility to soil erosion**	
Nature of impact:	**Indirect Negative Impact** Removal of vegetation will leave soil susceptible to soil erosion should high rainfall or wind occur.	
	Without mitigation	**With mitigation**
Intensity	Medium	Low
Extent and duration of impact:	Local, long-term	Site-specific, medium-term
Probability of occurrence:	Likely	Possible
Significance	High -	Very low -
Degree to which the impact can be reversed:	High	
Degree to which impact may cause irreplaceable loss of resources	Medium	
Degree to which impact can be mitigated	High	

Proposed mitigation:	- Soil should not be stockpiled for long periods of time. - Suitable measures must be implemented in areas that are susceptible to erosion, including but not limited to gabions and runoff diversion berms (if necessary). - Bare soil areas must be vegetated and a suitable cover crop planted once construction is completed. - If establishment of development does not occur soon after preparation of the site, a suitable cover crop to be established as a temporary measure. - Stockpiled material should be covered when stockpiling will be for extended periods during the construction phase. - Barriers should be erected along the site boundaries such as a board fence or sediment fence, or similar barrier which can control air currents and windblown soil to avoid disturbance to motorists on adjacent roads.	
Cumulative impact post mitigation:	Potential effects on soil fertility	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	Medium -	Low -

1.3 Geology

Potential impact and risk:	**Geological impacts**	
Nature of impact:	**Indirect Negative Impact** The site is characterised by shallow bedrock and rock outcrops. Controlled blasting and pneumatic tools may be required for rock removal. Blasting operations can generate seismic waves, potentially causing vibrations that may affect the structural integrity of nearby buildings and infrastructure. Blasting can result in the uncontrolled ejection of rock fragments, which can pose safety risks to workers and nearby residents. It also generates significant amounts of dust, which can affect air quality and pose respiratory health risks to workers and nearby residents. The noise from blasting operations can be disruptive to local communities and wildlife.	
	Without mitigation	**With mitigation**
Intensity	Medium	Medium
Extent and duration of impact:	Local, short-term	Local, short-term
Probability of occurrence:	Possible	Possible
Significance	Low -	Very low -
Degree to which the impact can be reversed:	Low	
Degree to which impact may cause irreplaceable loss of resources	Medium	
Degree to which impact can be mitigated	High	
Proposed mitigation:	- Use controlled blasting techniques, such as smaller, more frequent blasts, to minimise seismic vibrations. - Install seismographs to monitor vibrations in real time and ensure they remain within safe limits. - Use blast mats to contain fly rock and prevent uncontrolled ejection of rock fragments. - Establish exclusion zones around the blast area to ensure the safety of workers and nearby residents.	

	- Implement dust suppression measures, such as water sprays and dust collectors, during blasting operations. - Schedule blasting operations during times when they are least likely to disturb local communities and wildlife. - Inform the local community about the blasting schedule and provide regular updates to minimise disruption and anxiety.	
Cumulative impact post mitigation:	None	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	N/A	N/A

1.4 Aquatic Biodiversity

Potential impact and risk:	**Proliferation and spread of alien and invasive vegetation in watercourses**	
Nature of impact:	**Indirect Negative Impact** Vegetation clearing during site preparation can lead to the colonisation of watercourses by invasive species. Laydown areas often become hotspots for alien vegetation, which may spread into nearby aquatic ecosystems. Stockpiled soils and infill material can act as seedbanks for alien species, while increased sedimentation in watercourses creates suitable substrates for their establishment. Additionally, soil compaction favours the growth of invasive pioneer species. Trench backfilling, road infill, and the use of imported materials further contribute to the spread of invasives. Inadequate rehabilitation or failure to fully remove invasive species often results in their resurgence.	
	Without mitigation	**With mitigation**
Intensity	Medium	Low
Extent and duration of impact:	Site-specific, permanent	Site-specific, long-term
Probability of occurrence:	Possible	Highly unlikely
Significance	Low -	Very low -
Degree to which the impact can be reversed:	Low	
Degree to which impact may cause irreplaceable loss of resources	Medium-low	
Degree to which impact can be mitigated	High	
Proposed mitigation:	- An alien invasive plant (AIP) management plan must be compiled and implemented - Vegetation must be cleared in a phased approach and only where essential, under an Alien Invasive Plant (AIP) Management Plan. - All stockpiled vegetation must be stored outside watercourse buffers and disposed of at licensed facilities (no mulching or burning on site). - Stockpiles must be protected using hessian sheeting or similar and surrounded by bunds - Imported material must be free of alien seeds and monitored for encroachment. - All bare soil must be immediately restocked with indigenous vegetation or protected using hessian sheeting. - Continuous removal of invasive species during construction must be enforced. - A post-construction AIP management plan must be implemented to prevent resurgence. - Quarterly vegetation rehabilitation surveys must be conducted.	

	- Manual labour must be used where possible instead of machinery within sensitive areas. - Contractors must undergo environmental induction to ensure awareness of alien species risks. - Construction material and waste must not be stored on site post-construction and must be managed responsibly.	
Cumulative impact post mitigation:	Low -	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	Medium	Low

Potential impact and risk:	**Increased sedimentation and erosion**	
Nature of impact:	**Direct Negative Impact** Bare soils exposed during site preparation can generate sediment-laden runoff, while earthworks, trenching, and material stockpiling contribute to increased sedimentation. Stockpiles and infill materials may elevate sediment delivery downstream, and surface sealing or hardening can intensify runoff flashiness and erosion risks. Temporary dewatering from trenching activities alters natural sediment dynamics, and road construction along with vegetation clearing further increases the potential for erosion.	
	Without mitigation	**With mitigation**
Intensity	Low	Very low
Extent and duration of impact:	Site-specific, short-term	Site-specific, short-term
Probability of occurrence:	Possible	Highly unlikely
Significance	Low -	Very low -
Degree to which the impact can be reversed:	Medium	
Degree to which impact may cause irreplaceable loss of resources	Medium	
Degree to which impact can be mitigated	High	
Proposed mitigation:	- Erosion and sediment control measures must be implemented (e.g., silt fences, sandbags, interceptor ditches, riprap, erosion blankets). - Limit the footprint and exposure duration of cleared areas. - Stockpiles must be stored on flat ground, not exceed 2 m in height, and be protected with bunds or sheeting. - Topsoil must be appropriately stripped, stored, and reused. - Soil profiles must be documented and backfilled in the same horizon order. - All excess soil must be disposed of at a registered waste facility. - All areas must be revegetated as soon as possible. - Riverbanks should be reprofiled to a 1:3 ratio or tied into the natural landscape. - Schedule construction during the dry season (Dec–Mar). - ECO must visually monitor runoff and sedimentation risks, especially during rainfall events.	
Cumulative impact post mitigation:	NA	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	NA	NA

Potential impact and risk:	Water quality degradation (from organic and chemical contaminants)	
Nature of impact:	**Direct Negative Impact** Vehicular and machinery operations during construction may result in hydrocarbon spills, posing a contamination risk. Concrete, with its high pH, is highly toxic to aquatic life, while excessive use of herbicides can contaminate watercourses and harm indigenous vegetation and aquatic organisms. Additionally, road sealants and asphalt are hazardous to aquatic life if they enter nearby water bodies.	
	Without mitigation	**With mitigation**
Intensity	Medium	Low
Extent and duration of impact:	Local, short-term	Local, short-term
Probability of occurrence:	Possible	Highly unlikely
Significance	Low -	Very low -
Degree to which the impact can be reversed:	Medium	
Degree to which impact may cause irreplaceable loss of resources	Medium	
Degree to which impact can be mitigated	High	
Proposed mitigation:	- All chemicals, fuels, and concrete materials must be stored in bunded areas. - Concrete should be pre-mixed off-site where possible. If mixing onsite, use bunded trays at least 30 m from watercourses. - A washout area must be designated outside watercourse buffers; wash water must be treated or taken to landfill with chain of custody documentation. - Excess/spilled concrete and cement bags must be disposed of appropriately. - No washing of vehicles or machinery is permitted within watercourse buffers. - All machinery must be regularly inspected and serviced off-site; vehicles must be equipped with drip trays. - Spill kits must be available, and all personnel must be trained in spill response. - Adequate ablutions must be provided to prevent environmental contamination. - Sandbags or sediment fences must be placed downslope of works near watercourses.	
Cumulative impact post mitigation:	N/A	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	N/A	N/A

Potential impact and risk:	Flow disruption and hydrological impacts	
Nature of impact:	**Direct Negative Impact** Trenching activities can impede downstream flows and cause temporary dewatering, while site clearing increases surface runoff, leading to greater hydrological flashiness and disruption of the receiving ecosystem's flow regime. Laydown areas and infill may further obstruct or divert surface water from its natural downstream path, and road or trench structures reduce infiltration, concentrating surface flows and altering natural drainage patterns.	
	Without mitigation	**With mitigation**
Intensity	Medium	Medium

Extent and duration of impact:	Local, long-term	Local, medium-term
Probability of occurrence:	Highly likely	Possible
Significance	Low	Very low -
Degree to which the impact can be reversed:	Medium	
Degree to which impact may cause irreplaceable loss of resources	Medium	
Degree to which impact can be mitigated	High	
Proposed mitigation:	- Laydown areas and stockpiles must be kept out of watercourse buffers to avoid impeding surface flow. - Trenching must not interrupt or redirect natural drainage unnecessarily. - Existing access routes must be prioritized; new access through watercourses must be minimized and carefully planned. - Machinery may not enter watercourses without prior ECO approval and must only do so during the dry season. - Use low ground pressure machinery or swamp mats where possible. - Operators must be trained and sensitive areas must be clearly demarcated. - Any disturbed flow paths must be rehabilitated as part of post-construction restoration.	
Cumulative impact post mitigation:	Additional loss of sensitive habitats related to other projects, most of which have or could result in disturbance of aquatic systems, but this project has attempted to create no-go areas where sensitive aquatic systems have been identified.	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	High -	Low -

1.5 Traffic Impacts

Potential impact and risk:	**Increased traffic**	
Nature of impact:	**Indirect Negative Impact** During the construction phase of the proposed development, construction vehicles will be utilising the existing road network. This may result in local traffic disruptions and impeding of traffic.	
	Without mitigation	**With mitigation**
Intensity	Medium	Very low
Extent and duration of impact:	Local, long-term	Local, long-term
Probability of occurrence:	Probable	Possible
Significance	Medium -	Very low -
Degree to which the impact can be reversed:	Medium	
Degree to which impact may cause irreplaceable loss of resources	Medium	
Degree to which impact can be mitigated	High	

Proposed mitigation:	- Large construction vehicles should be managed to avoid using the roads during peak traffic hours. - Clear road signage and traffic control personnel if required. - Careful planning by the Contractor of the delivery of material to site, to minimise the number of vehicles accessing the site. - Barriers should be erected along the site boundaries such as a board fence, wind fence, sediment fence, or similar barrier which can control air currents and windblown soil to avoid disturbance to motorists on adjacent roads.	
Cumulative impact post mitigation:	None	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	N/A	N/A

1.6 Waste

Potential impact and risk:	**Accumulation of construction waste on site**	
Nature of impact:	**Indirect Negative Impact** Waste generated during the construction phase of the project could cause pollution to surrounding areas if proper waste management is not implemented.	
	Without mitigation	**With mitigation**
Intensity	Medium	Very low
Extent and duration of impact:	Local, long-term	Local, short-term
Probability of occurrence:	Probable	Possible
Significance	Medium -	Very low -
Degree to which the impact can be reversed:	High	
Degree to which impact may cause irreplaceable loss of resources	Low	
Degree to which impact can be mitigated	High	
Proposed mitigation:	- Certain construction material can be re-used on site where required or disposed of at an appropriately licensed waste disposal facility. - Cleared vegetation can be chipped and incorporated into the topsoil rather than burned or disposed of. - Any waste that may be produced during the site preparation phase must be disposed of at an appropriately licensed waste disposal facility. - A register to be maintained of waste disposed of at waste facilities. - No waste is to be stockpiled on site. - Adequate capped litter bins should be provided at the site for waste generated by labourers; these should be emptied on a regular basis and waste disposed of at an appropriately licensed waste disposal facility. - Recycling of domestic waste is encouraged. - Suitable portable sanitation facilities should be provided and maintained for the labourers during the development. - All hazardous substances must be stored on impervious surfaces in a designated bunded area, able to contain 110% of the total volume of materials stored. - The bunded areas should be inspected on a regular basis in order to be maintained correctly. - Storage areas should only be accessible by authorised persons.	

Cumulative impact post mitigation:	None	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	N/A	N/A

1.7 Visual

Potential impact and risk:	**Visual intrusion**	
Nature of impact:	**Indirect Negative Impact** The proposed development will implement vegetation clearing of large areas on the site which will cause changes to the character of the area. A construction site is generally not visually attractive. The accumulation of waste on site also contributes to the visual impact. Although the current status of the site is severely degraded and polluted.	
	Without mitigation	**With mitigation**
Intensity	Medium	Low
Extent and duration of impact:	Local, long-term	Local, short-term
Probability of occurrence:	Probable	Possible
Significance	Medium -	Very low -
Degree to which the impact can be reversed:	High	
Degree to which impact may cause irreplaceable loss of resources	Low	
Degree to which impact can be mitigated	High	
Proposed mitigation:	- Site camp should be strategically placed. It is suggested that the site camp be located on the alternative site which was part of the Makro facility site camp, should it be feasible. - Any lighting used on site should be downlights and only for security purposes. - Site camp should be kept neat and clean as much as possible. - Stockpiles should be kept neat and all waste should be cleared on a daily basis. - Building guidelines should be followed correctly and the site should be closed off from the public eye. - All areas not to be disturbed should be clearly marked off as no-go zones.	
Cumulative impact post mitigation:	None	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	N/A	N/A

1.8 Noise

Potential impact and risk:	**Noise disturbance**
Nature of impact:	**Indirect Negative Impact** During the construction phase of the project, noise generated from various activities such as excavation, machinery operation, demolition, blasting and construction activities can

	have significant impacts on the surrounding environment and nearby residents. These noise impacts can lead to annoyance, disturbance, and potential health effects if not adequately managed.	
	Without mitigation	**With mitigation**
Intensity	Medium	Low
Extent and duration of impact:	Local, short-term	Local, short-term
Probability of occurrence:	Probable	Possible
Significance	Medium -	Very low-
Degree to which the impact can be reversed:	High	
Degree to which impact may cause irreplaceable loss of resources	Low	
Degree to which impact can be mitigated	High	
Proposed mitigation:	- Select construction machinery and equipment with lower noise emissions and utilize noise-reducing technologies, such as mufflers, sound enclosures, and vibration dampeners, to mitigate noise at the source. - Schedule noisy construction activities during periods of lower sensitivity, such as weekdays during daytime hours, and avoid or minimize noisy activities during evenings, weekends, and holidays to reduce disturbance to nearby residents. - Schedule blasting operations during times when they are least likely to disturb local communities and inform nearby residents of the blasting schedule. - Erect temporary noise barriers and enclosures around noisy equipment and construction areas to contain and attenuate noise propagation. Use sound-absorbing materials such as acoustic panels or barriers to reduce noise transmission.	
Cumulative impact post mitigation:	None	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	N/A	N/A

1.9 Air quality

Potential impact and risk:	**Dust generation**	
Nature of impact:	**Direct Negative Impact** Construction vehicles will be travelling within the site areas transporting materials that may lead to dust generation. Unconsolidated bare soil will be present during site preparation and levelling. Soil will be prone to wind erosion with associated generation of dust and windblown sand during high wind velocities. Dust generation on construction sites are not entirely avoidable and are one of the expected negatives during the construction phase of a project, however, it is imminent to indicate that mitigation measures should be implemented as thoroughly as possible in order to avoid extensive disturbances to neighbouring residents	
	Without mitigation	**With mitigation**
Intensity	Medium	Low
Extent and duration of impact:	Local, medium-term	Local, short-term
Probability of occurrence:	Probable	Possible

Significance	Medium -	Very low -
Degree to which the impact can be reversed:	High	
Degree to which impact may cause irreplaceable loss of resources	Low	
Degree to which impact can be mitigated	High	
Proposed mitigation:	- Develop a comprehensive dust control plan tailored to the specific conditions of the construction site. This plan should outline strategies and measures to mitigate dust emissions effectively. - Regularly water unpaved surfaces, construction access roads, and storage areas to minimize dust generation. The application of water helps to suppress airborne particles by increasing moisture content. - Use environmentally friendly soil stabilizers to control dust by binding soil particles together. This helps to prevent soil erosion and reduce the potential for airborne dust. - Establish temporary vegetative cover, such as mulch or straw, on exposed soil areas to prevent soil erosion and reduce dust emissions. This cover can be applied in phases as construction progresses. - Install temporary windbreaks, such as silt fences or construction fabric, to reduce the impact of wind on dust dispersion. These barriers can be strategically placed to shield sensitive areas from airborne dust. - Implement and enforce speed limits for construction vehicles within the site to minimize the disturbance and dust generated by fast-moving vehicles. - Consider enclosing construction activities within temporary structures or barriers to minimize the dispersion of dust beyond the immediate construction site. - Pave construction access roads to reduce the generation of dust. This can also enhance the overall durability of the roads.	
Cumulative impact post mitigation:	None	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	N/A	N/A

Potential impact and risk:	**Impacts on air quality (pollution)**	
Nature of impact:	**Indirect Negative Impact** Air emissions are generated during construction activities from the operation of machinery through exhaust emissions and the use of generators, as well as the generation of dust during these construction activities. The emissions include CO2, NOx, and fine particulate matter.	
	Without mitigation	**With mitigation**
Intensity	Medium	Low
Extent and duration of impact:	Local, medium-term	Local, medium-term
Probability of occurrence:	Probable	Possible
Significance	Low -	Very low -
Degree to which the impact can be reversed:	Medium	

Degree to which impact may cause irreplaceable loss of resources	Low	
Degree to which impact can be mitigated	Medium	
Proposed mitigation:	- Develop a comprehensive dust control plan tailored to the specific conditions of the construction site. This plan should outline strategies and measures to mitigate dust emissions effectively. - Regularly water unpaved surfaces, construction access roads, and storage areas to minimize dust generation. The application of water helps to suppress airborne particles by increasing moisture content. - Use environmentally friendly soil stabilizers to control dust by binding soil particles together. This helps to prevent soil erosion and reduce the potential for airborne dust. - Establish temporary vegetative cover, such as mulch or straw, on exposed soil areas to prevent soil erosion and reduce dust emissions. This cover can be applied in phases as construction progresses. - Install temporary windbreaks, such as silt fences or construction fabric, to reduce the impact of wind on dust dispersion. These barriers can be strategically placed to shield sensitive areas from airborne dust. - Implement and enforce speed limits for construction vehicles within the site to minimise the disturbance and dust generated by fast-moving vehicles. - Consider enclosing construction activities within temporary structures or barriers to minimise the dispersion of dust beyond the immediate construction site. - Pave construction access roads to reduce the generation of dust. This can also enhance the overall durability of the roads. - Schedule high-dust activities during periods of low wind and reduced site activity. This can help minimise the impact on nearby receptors, including residences and businesses. - Take precautions to limit the amount of dust that makes its way to surrounding roads and footways to a “reasonable level”. - Topsoil and soil stockpiles should be covered, wetted or otherwise stabilised to prevent wind erosion and dust generation. - Cover construction material, skips and stockpiled soils if they are a source of dust. - A water cart or sufficient watering equipment should be available to wet soils during windy days if wind-blown sand and dust become a problem. - Heavy machinery and vehicles must not exceed a speed limit of 20 km/hr along the route of construction. - Construction vehicles should be aware of neighbouring properties and reduce dust emissions as much as possible, specifically during days of increased wind speeds.	
Cumulative impact post mitigation:	None	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	N/A	N/A

1.10 Socio-economic & Cultural

Potential impact and risk:	**Employment creation**
Nature of impact:	**Direct Positive Impact** A number of temporary employment and skills development opportunities will be created during the construction phase for local communities which may temporarily relieve unemployment. Multiple direct employment opportunities are associated with this project. A

	number of indirect and induced employment opportunities are likely to follow the direct opportunities. Jobs will be created due to the provision of services and purchasing of goods from suppliers and distributors. Induced jobs lastly result from the spending and consumption by direct and indirect workers.	
	Without mitigation	**With mitigation**
Intensity	High	N/A
Extent and duration of impact:	Local/regional, short-term	N/A
Probability of occurrence:	Certain	N/A
Significance	Medium +	N/A
Degree to which the impact can be reversed:	N/A	
Degree to which impact may cause irreplaceable loss of resources	N/A	
Degree to which impact can be mitigated	N/A	
Proposed mitigation:	- Source diverse local labour. - Small, Medium and Micro-sized Enterprises (SMMEs) could be utilized during the development project.	
Cumulative impact post mitigation:	N/A	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	N/A	N/A

Potential impact and risk:	**Skills development and transfer**	
Nature of impact:	**Indirect Positive Impact** The commitment by the municipality to recruit local labour, as far as possible, in order to benefit local communities in general and the unemployed in particular, is almost standard practice in South Africa when construction projects are proposed. The proposed Development is no different and a number of direct employment opportunities stand to be created within the semiskilled category. This is likely to have a considerable socio-economic impact in the form of poverty alleviation and favourable socio-economic implications (improved access to and consumption of goods and services, greater freedom of choice, better quality of life and so on) for the affected individuals and their dependents	
	Without mitigation	**With mitigation**
Intensity	High	N/A
Extent and duration of impact:	Short-term, local	N/A
Probability of occurrence:	Certain	N/A
Significance	Medium +	N/A
Degree to which the impact can be reversed:	N/A	
Degree to which impact may cause irreplaceable loss of resources	N/A	
Degree to which impact can be mitigated	N/A	

Proposed mitigation:	- Source diverse local labour. - Small, Medium and Micro-sized Enterprises (SMMEs) could be utilized during the development project.	
Cumulative impact post mitigation:	N/A	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	N/A	N/A

Potential impact and risk:	**Contribution to local GDP**	
Nature of impact:	**Indirect Positive Impact** Because large construction projects are capital intensive, their contribution to GDP can be particularly noteworthy. Although the actual contribution of the proposed development to the local GDP may appear relatively small in real terms (albeit positive), it will nevertheless happen at a time when the local economy is struggling to grow post-Covid amidst the energy insecurity crisis in the country and obviously in the Western Cape as well. These realities alone justify the special reference of the above impact.	
	Without mitigation	**With mitigation**
Intensity	Medium	N/A
Extent and duration of impact:	Local, short-term	N/A
Probability of occurrence:	Certain	N/A
Significance	Low +	N/A
Degree to which the impact can be reversed:	N/A	
Degree to which impact may cause irreplaceable loss of resources	N/A	
Degree to which impact can be mitigated	N/A	
Proposed mitigation:	N/A	
Cumulative impact post mitigation:	N/A	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	N/A	N/A

Potential impact and risk:	**Enhancement of local economy**	
Nature of impact:	**Indirect Positive Impact** Higher levels of local economic activity normally follow the demand for goods and services (and the supply thereof) and this in turn is likely to culminate into various socio-economic benefits, such as employment creation and poverty reduction. The extent of this impact is of course a factor of the size and health of the local economy in question and the subsequent ability of local service providers to meet such	
	Without mitigation	**With mitigation**

Intensity	Medium	N/A
Extent and duration of impact:	Local, short-term	N/A
Probability of occurrence:	Certain	N/A
Significance	Low +	N/A
Degree to which the impact can be reversed:	N/A	
Degree to which impact may cause irreplaceable loss of resources	N/A	
Degree to which impact can be mitigated	N/A	
Proposed mitigation:	N/A	
Cumulative impact post mitigation:	N/A	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	N/A	N/A

Potential impact and risk:	**Health and safety risks**	
Nature of impact:	**Indirect Negative Impact** Activities related to the construction phase of the project could pose potential health and safety risks. Security during construction should also be considered to ensure no unwarranted access to the site is allowed. The neighbouring informal areas will inevitably have some curious youngsters who will try to access the site, this should be well handled to avoid any unnecessary injury as a result of open pits or hazardous areas. Increase in crime on neighbouring landowners should also be considered.	
	Without mitigation	**With mitigation**
Intensity	Medium	Low
Extent and duration of impact:	Local, short-term	Local, short-term
Probability of occurrence:	Possible	Possible
Significance	Medium -	Low -
Degree to which the impact can be reversed:	High	
Degree to which impact may cause irreplaceable loss of resources	Low	
Degree to which impact can be mitigated	Medium	
Proposed mitigation:	- Conduct comprehensive safety training programs for all construction workers to ensure awareness of potential hazards, safe work practices, and emergency procedures. - Mandate the use of appropriate personal protective equipment, including helmets, gloves, safety glasses, and high-visibility clothing, to reduce the risk of accidents and injuries. - Clearly label and communicate potential hazards on the construction site, providing information in multiple languages if necessary. Use signage and other communication methods to ensure workers understand risks.	

	- Develop and regularly review emergency response plans, including procedures for evacuations, medical emergencies, and coordination with local emergency services. - Implement proper traffic management plans to minimize the risk of accidents involving construction vehicles. Clearly mark pedestrian walkways and vehicle routes to enhance safety. - Implement the dust control measures mentioned earlier to protect both workers and nearby residents from potential respiratory health issues. - Conduct regular safety inspections of the construction site to identify and rectify potential hazards promptly. - Establish first aid stations on-site with trained personnel and adequate supplies to provide immediate medical assistance when needed. - Design workstations and tasks to be ergonomically sound, reducing the risk of musculoskeletal disorders among workers. - Hire professional security personnel to monitor the construction site and prevent unauthorized access. Implement surveillance systems and well-lit areas to deter criminal activities. - Collaborate with local law enforcement agencies to enhance security and coordinate responses to potential criminal activities. Establish clear communication channels. - Engage with local residents through community meetings, providing information on security measures and addressing concerns. Foster positive relationships between the construction team and the community. - Install adequate lighting in and around the construction site to enhance visibility, discourage criminal activities, and improve overall safety. - Apply CPTED (Crime Prevention Through Environmental Design) principles in the site design to create an environment that discourages criminal behaviour, focusing on factors such as natural surveillance, access control, and territorial reinforcement. - Conduct regular security patrols in and around the construction site to deter criminal activities and ensure a safe environment.	
Cumulative impact post mitigation:	None	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	N/A	N/A

1.11 Archaeological & Palaeontological

Potential impact and risk:	**Archaeological & palaeontological impacts**
Nature of impact:	The site has been assessed, and no Archaeological & Paleontological Impacts have been identified. However, during construction, should any materials of paleontological and archaeological significance be exposed, the works must be stopped and a qualified archaeologist must be contacted for an assessment of the findings.

2 Operational phase

2.1 Terrestrial Biodiversity

Potential impact and risk:	**Increased alien invasion**	
Nature of impact:	**Indirect Negative Impact** Susceptibility of post construction disturbed areas to invasion by exotic and alien species. Post construction disturbed areas having no vegetation cover are often susceptible to invasion by weedy and alien species, which can not only become invasive but also prevent natural flora from becoming established. The site is already covered with some alien vegetation and with the proposed development occurring, the area left for alien vegetation to establish itself will be limited to the open space areas. The developer will have the responsibility to ensure alien vegetation is routinely removed from the retained open space.	
	Without mitigation	**With mitigation**
Intensity	Low	Low
Extent and duration of impact:	Site-specific, long-term	Site-specific, short term
Probability of occurrence:	Possible	Possible
Significance	Low -	Low -
Degree to which the impact can be reversed:	High	
Degree to which impact may cause irreplaceable loss of resources	Medium-low	
Degree to which impact can be mitigated	High	
Proposed mitigation:	- Keep the Open Space area clear of invasive aliens, focusing on species such as cluster pine, long-leaved wattle, black wattle, Spansih broom, castor-oil plant and olieboom. These species are category 1b and 2 invaders that require compulsory control as part of an invasive species control programme - Note that it is a legal requirement for landowners to clear alien vegetation on their land - Alien trees and grass species must be removed from the site as per NEMBA requirements. - A suitable weed management strategy to be implemented in construction and operation phases. - After clearing is completed, an appropriate cover crop should be planted where any weeds or exotic species are removed from disturbed areas, should construction not commence immediately.	
Cumulative impact post mitigation:	NA	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	NA	NA

Potential impact and risk:	Displacement of indigenous flora due to alien invasion	
Nature of impact:	**Indirect Negative Impact** The displacement of indigenous flora due to alien invasion results in a significant loss of local biodiversity, as invasive plant species outcompete native vegetation for resources such as light, water, and nutrients. This alters the natural plant community structure, reduces habitat quality for native fauna, and can lead to long-term ecosystem degradation and reduced ecological resilience.	
	Without mitigation	**With mitigation**
Intensity	Low	Low
Extent and duration of impact:	Site-specific, long-term	Site-specific, long-term
Probability of occurrence:	Possible	Unlikely
Significance	Low -	Low -
Degree to which the impact can be reversed:	High	
Degree to which impact may cause irreplaceable loss of resources	Low	
Degree to which impact can be mitigated	High	
Proposed mitigation:	- Keep the Open Space area clear of invasive aliens, focusing on species such as cluster pine, long-leaved wattle, black wattle, Spansih broom, castor-oil plant and olieboom. These species are category 1b and 2 invaders that require compulsory control as part of an invasive species control programme - Note that it is a legal requirement for landowners to clear alien vegetation on their land	
Cumulative impact post mitigation:	NA	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	NA	NA

2.2 Aquatic Biodiversity

Potential impact and risk:	Long-term alien vegetation encroachment in watercourses	
Nature of impact:	**Indirect Negative Impact** - Disturbed or poorly rehabilitated areas may result in alien resurgence. - Increased surface runoff from the development may increase erosion and sedimentation of watercourses and increase alien spread - Operational disturbance might allow long-term invasive spread.	
	Without mitigation	**With mitigation**
Intensity	Medium	Low
Extent and duration of impact:	Local, permanent	Local, medium-term
Probability of occurrence:	Likely	Possible
Significance	Low -	Very low -
Degree to which the impact can be reversed:	Medium	

Degree to which impact may cause irreplaceable loss of resources	Medium	
Degree to which impact can be mitigated	High	
Proposed mitigation:	- A post-construction alien vegetation management plan must be implemented and enforced. - Cleared and disturbed areas must be revegetated with indigenous species. - Quarterly vegetation monitoring must continue during operation. - Any regrowth of alien species must be controlled immediately.	
Cumulative impact post mitigation:	NA	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	NA	NA

Potential impact and risk:	**Stormwater runoff impacts**	
Nature of impact:	**Indirect Negative Impact** Post Development runoff could exceed the pre-development runoff rate, with catchment yields draining rapidly as opposed to in a sustained manner through the freshwater ecosystems. Potential erosion to the freshwater ecosystems if the attenuation facility outlet does not sufficiently attenuate stormwater. Potential degradation to the water quality of the freshwater ecosystem through discharge of stormwater containing hydrocarbons, sediments and litter. This may disrupt episodic systems like the EDL.	
	Without mitigation	**With mitigation**
Intensity	Medium	Low
Extent and duration of impact:	Local, permanent	Local, permanent
Probability of occurrence:	Possible	Unlikely
Significance	Low -	Very low -
Degree to which the impact can be reversed:	High	
Degree to which impact may cause irreplaceable loss of resources	Low	
Degree to which impact can be mitigated	High	
Proposed mitigation:	- Hardened surfaces must not induce erosion, sedimentation, flooding, or degrade water quality. - Stormwater systems must be designed to attenuate flow and reduce velocity. - Erosion control features must remain functional during operation. - ECO must monitor runoff patterns and watercourse quality during and after construction. - Visual monitoring of stormwater discharge points must be ongoing, especially after heavy rain.	
Cumulative impact post mitigation:	N/A	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**

	N/A	N/A

Potential impact and risk:	**Sewerage infrastructure leaks and failure**	
Nature of impact:	**Indirect Negative Impact** Sewerage bursts could lead to potential eutrophication of the freshwater ecosystem due to nitrate and phosphate loading, leading to excessive benthic algal and macrophyte proliferation. Potential organic pollution of the freshwater ecosystem through introduction of faecal coliforms which could pose a human health risk.	
	Without mitigation	**With mitigation**
Intensity	High	Low
Extent and duration of impact:	Local, long-term	Site specific, short-term
Probability of occurrence:	Possible	Possible
Significance	Low	Very low -
Degree to which the impact can be reversed:	High	
Degree to which impact may cause irreplaceable loss of resources	Low	
Degree to which impact can be mitigated	High	
Proposed mitigation:	- Design must ensure structural integrity and prevent pipe failure. - Monitoring and rapid response plans must be developed to handle any leaks or bursts. - It is imperative that the sewer pipeline is sleeved for the portion that traverses freshwater ecosystems or is adjacent to them, in the unlikely event that the sewer pipeline fails; - An emergency repair plan must be in place in case of a sewer pipeline leak; - The sewer pipelines must be inspected every 5 years to ensure that no infrastructure failures occur. - Systems must prevent nutrient enrichment and faecal contamination that could lead to algal blooms or invasive plant growth.	
Cumulative impact post mitigation:	N/A	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	N/A	N/A

Potential impact and risk:	**Rehabilitation success and ecosystem recovery**	
Nature of impact:	**Indirect Positive Impact** Rehabilitation, if well implemented, could result in improved PES of the watercourse and associated increases in ecosystem service provisioning of the Episodic Drainage Line.	
	Without mitigation	**With mitigation**
Intensity	Medium	N/A
Extent and duration of impact:	Local, medium-term	N/A
Probability of occurrence:	Highly likely	N/A

Significance	Medium +	N/A
Degree to which the impact can be reversed:	N/A	
Degree to which impact may cause irreplaceable loss of resources	N/A	
Degree to which impact can be mitigated	N/A	
Proposed mitigation:	- Rehabilitation must be completed immediately post-construction and timed for before the wet winter season. - The rehabilitation plan must be developed with input from a SACNASP-registered ecological specialist. - Project budget and lifecycle must explicitly include rehabilitation. - Revegetation and landscape design must reflect ecological function and integrate with existing natural areas. - Soil must be backfilled correctly to support healthy root establishment and water retention.	
Cumulative impact post mitigation:	N/A	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	N/A	N/A

2.3 Stormwater & Flooding

Potential impact and risk:	**Increased impervious area**	
Nature of impact:	**Indirect Negative Impact** The development will increase the impervious area which will increase stormwater runoff from the property. Proper stormwater management must be implemented. The Engineering Services report does thoroughly cover stormwater management options, which can be considered as the mitigation measures for this impact.	
	Without mitigation	**With mitigation**
Intensity	High	Low
Extent and duration of impact:	Local, short-term	Site-specific, short term
Probability of occurrence:	Possible	Possible
Significance	Medium-	Low -
Degree to which the impact can be reversed:	High	
Degree to which impact may cause irreplaceable loss of resources	Low	
Degree to which impact can be mitigated	High	
Proposed mitigation:	- Correct planning and maintenance for stormwater drainage and engineering of development to keep water accumulation to a minimum. - A stormwater management plan should be compiled by a professional engineer. - Stormwater management plan implemented must follow the correct stormwater infrastructure be installed and continually monitored.	

Cumulative impact post mitigation:	N/A	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	N/A	N/A

2.4 Waste

Potential impact and risk:	**Pollution caused by waste generation**	
Nature of impact:	**Indirect Negative Impact** Waste generated during the operational phase of the project could cause pollution to surrounding areas if proper waste management is not implemented.	
	Without mitigation	**With mitigation**
Intensity	High	Low
Extent and duration of impact:	Local, short-term	Site-specific, short-term
Probability of occurrence:	Possible	Possible
Significance	Medium -	Low -
Degree to which the impact can be reversed:	High	
Degree to which impact may cause irreplaceable loss of resources	Low	
Degree to which impact can be mitigated	High	
Proposed mitigation:	- Proper operational waste management systems should be in place for the operational phase of the project. - Waste should be collected weekly. - Waste must be stored in secure waste bins which must be impermeable and animal safe. - Waste recycling and sorting of recyclable materials should be encouraged.	
Cumulative impact post mitigation:	None	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	N/A	N/A

2.5 Traffic

Potential impact and risk:	**Increased traffic and effects on road conditions**	
Nature of impact:	**Indirect Negative Impact** Traffic numbers do not usually increase exponentially with this specific type of development as most people make use of public transport, however, traffic increase is still considered to ensure a comprehensive impact assessment.	
	Without mitigation	**With mitigation**
Intensity	Medium	Low

Extent and duration of impact:	Local, permanent	Local, permanent
Probability of occurrence:	Possible	Possible
Significance	Medium -	Low -
Degree to which the impact can be reversed:	High	
Degree to which impact may cause irreplaceable loss of resources	Low	
Degree to which impact can be mitigated	High	
Proposed mitigation:	- Traffic Signal Optimization: Regularly review and optimize traffic signal timings at key intersections to improve traffic flow and reduce congestion. - Roundabouts and Traffic Circles: Implement roundabouts at appropriate intersections to enhance traffic movement and reduce waiting times. - Regular Inspections: Conduct regular road inspections to identify and repair potholes, cracks, and other surface damages promptly. - Pavement Reinforcement: Strengthen road pavements in areas expected to experience high traffic volumes to prevent rapid deterioration. - Drainage Improvements: Ensure effective drainage systems are in place to prevent water accumulation on roads, which can lead to damage and safety hazards. - Designated Parking Areas: Develop ample parking facilities within the development to prevent spillover onto surrounding streets. - Loading Zones: Designate specific loading and unloading zones for commercial and service vehicles to avoid obstructing traffic lanes. - Parking Enforcement: Implement and enforce parking regulations to prevent illegal parking and ensure efficient use of parking spaces. - Bus Stops and Shelters: Construct convenient and safe bus stops with shelters and seating within and around the development to encourage public transport use.	
Cumulative impact post mitigation:	None	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	N/A	N/A

2.6 Socio-economic & Cultural

Potential impact and risk:	**Improved housing and living conditions**	
Nature of impact:	**Indirect Positive Impact** The development will offer a range of housing units. This will address the housing needs of various income groups and contribute to reducing the housing backlog in the Grabouw area. The modern and well-planned housing units will provide improved living conditions for residents, contributing to better health and quality of life.	
	Without mitigation	**With mitigation**
Intensity	Moderate	N/A
Extent and duration of impact:	Local, long-term	N/A
Probability of occurrence:	Certain	N/A
Significance	Medium +	N/A

Degree to which the impact can be reversed:	N/A	
Degree to which impact may cause irreplaceable loss of resources	N/A	
Degree to which impact can be mitigated	N/A	
Proposed mitigation:	N/A	
Cumulative impact post mitigation:	N/A	
Rating of cumulative impacts	**Without Mitigation**	**With Mitigation**
	N/A	N/A