

APPENDIX G7- IMPACT TABLE AND ASSESSMENT

Table 1: Pre and Post Impact Significance Assessment for all phases of the project for the preferred alternative

PLANNING AND DESIGN PHASE												
ASPECT	IMPACT	NATURE OF IMPACT	TYPE OF IMPACT	EXTENT	DURATION	INTENSITY OR SEVERITY	CONSEQUENCE	PROBABILITY	STATUS OF IMPACT	SIGNIFICANCE PRE-MITIGATION	MITIGATION MEASURES	SIGNIFICANCE POST-MITIGATION
Legislation and Policy	Non-compliance	During the Planning and Design Phase, failure to comply with existing policies and legal obligations could lead to the project conflicting with local, provincial and national policies, legislation etc. This could result in legal non-compliance, fines, overall project failure or undue disturbance to the natural environment	Direct and Indirect. Cumulative.	Regional	Short term	Medium	Medium	Possible	Negative (-ve)	Low (-ve)	All relevant legislation and policy must be consulted, and the proponent must ensure that the project is compliant with such legislation and policy. These should include (but are not restricted to): NEMA, NWA, Local and District Spatial Development Frameworks, Eastern Cape Biodiversity Conservation Plan (ECBCP), Local Municipal bylaws.	Very Low (-ve)
	SCORE			2	1	2	5					

CONSTRUCTION PHASE												
ASPECT	IMPACT	NATURE OF IMPACT	TYPE OF IMPACT	EXTENT	DURATION	INTENSITY OR SEVERITY	CONSEQUENCE	PROBABILITY	STATUS OF IMPACT	SIGNIFICANCE PRE-MITIGATION	MITIGATION MEASURES	SIGNIFICANCE POST-MITIGATION
Legislation and Policy	Non-compliance	During the Construction Phase, failure to comply with existing policies and legal obligations could lead to the project conflicting with local, provincial and national policies, legislation etc. This could result in legal non-compliance, fines, overall project failure or undue disturbance to the natural environment	Direct and Indirect. Cumulative.	Regional	Short term	Medium	Medium	Possible	Negative (-ve)	Low (-ve)	All relevant legislation and policy must be consulted, and the proponent must ensure that the project is compliant with such legislation and policy. These should include (but are not restricted to): NEMA, NWA, Local and District Spatial Development Frameworks, Eastern Cape Biodiversity Conservation Plan (ECBCP), Local Municipal bylaws.	Very Low (-ve)
	SCORE			2	1	2	5					
Terrestrial Biodiversity	Loss of natural vegetation and plants of SCC	Clearing will result in the temporary loss natural vegetation. Clearing may result in the loss of non-identified plant SCC and other protected plant species.	Direct	Local	Short term	Medium	Low	Probable	Negative (-ve)	Low (-ve)	<p>The pipeline is largely considered to have a LOW Sensitivity due to the disturbed nature of the habitat and the temporary nature of the activity.</p> <p>No clearing outside of footprint to take place.</p> <p>Surrounding intact vegetation not to be cleared unnecessarily during the construction process</p> <p>Permits must be obtained to remove any plant SCC identified (if required).</p> <p>Relocate or replant as many plants SCC as possible into the surrounding areas.</p>	Very Low (-ve)
	SCORE			1	1	2	4					
Terrestrial Biodiversity	Loss of Faunal Habitat & Species of Conservation Concern:	Activity will result in the loss of habitat for faunal species as well as potential direct loss of faunal species.	Direct	Local	Short term	Medium	Low	Probable	Negative (-ve)	Low (-ve)	<p>The ECO must ensure that a responsible person in trained to handle relevant animals expected to be on site. The ECO must be contacted immediately when a dangerous animal is removed and relocated.</p> <p>No intentional killing of animals is acceptable.</p>	Very Low (-ve)

CONSTRUCTION PHASE												
ASPECT	IMPACT	NATURE OF IMPACT	TYPE OF IMPACT	EXTENT	DURATION	INTENSITY OR SEVERITY	CONSEQUENCE	PROBABILITY	STATUS OF IMPACT	SIGNIFICANCE PRE-MITIGATION	MITIGATION MEASURES	SIGNIFICANCE POST-MITIGATION
											The site must be checked daily throughout construction for an animal caught in excavation pits or hiding in machines and building infrastructure. Permits (if required) must be obtained to relocate any protected animals identified. Animals must only be relocated into the surrounding habitats. No poaching by construction staff will be allowed.	
	SCORE			1	1	2	4					
Terrestrial Biodiversity	Ecological Processes	Clearing vegetation will result in the fragmenting of the high value ecological habitats along the stream. Studies have shown that habitat fragmentation reduces biodiversity by 13 to 75 % and impairs key ecosystem functions by decreasing biomass and altering nutrient cycles.	Direct	Local	Short term	Medium	Low	Probable	Negative (-ve)	Low (-ve)	Where areas not targeted for development are inadvertently impacted and damaged, clear any material dumped and rehabilitate the site as soon as possible. Area must be regularly monitored and rehabilitated as needed and ecological connectivity always maintained.	Very Low (-ve)
	SCORE			1	1	2	4					
Terrestrial Biodiversity	Spread of alien invasive species	Construction and vegetation clearing will increase the risk of alien plant species invasion in an area that already has a high cover of alien species. Susceptibility of post construction disturbed areas to invasion by exotic and alien invasive species and removal of exotic and alien invasive species during construction. 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.	Direct	Local	Medium Term	High	Medium	Probable	Negative (-ve)	Medium (-ve)	Clearing of vegetation should be kept to a minimum, keeping to the width and length of the earth works to a minimum and only as required considering the duration of the construction period. Re-vegetation as part of a rehabilitation plan is always advocated, however due the nature of the vegetation, this may not be practical. It is suggested that the shallow topsoil layer be stockpiled separately from the subsoil layers, should the excavation exceed 0.5 m. When the construction has been completed, then the topsoil layers, which contain seed and vegetative material, should be reinstated last thus allowing	Low (-ve)

CONSTRUCTION PHASE												
ASPECT	IMPACT	NATURE OF IMPACT	TYPE OF IMPACT	EXTENT	DURATION	INTENSITY OR SEVERITY	CONSEQUENCE	PROBABILITY	STATUS OF IMPACT	SIGNIFICANCE PRE-MITIGATION	MITIGATION MEASURES	SIGNIFICANCE POST-MITIGATION
											plants to rapidly re-colonise the bare soil areas. An alien invasive management plan to be implemented during construction and operation phases. The plan must include mitigation measures to reduce the invasion of alien species and ensure that the continuous monitoring and removal of alien species is undertaken. Rehabilitated areas must be monitored for a period of 6 months after landscaping for alien regrowth.	
	SCORE			1	2	3	6					
Aquatic Ecology	Contamination of watercourses	Water contamination from the operation and washing of machinery in the catchments of the watercourses.	Direct	Regional	Short Term	Medium	Medium	Possible	Negative (-ve)	Low (-ve)	Chemicals used for construction must be stored safely on site and surrounded by bunds. Chemical storage containers must be regularly inspected so that any leaks are detected early. Littering and contamination of water sources during construction must be prevented by effective construction camp management. Emergency plans must be in place in case of spillages onto road surfaces and water courses. No stockpiling should take place within a water course. All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds. Stockpiles must be located away from river channels. Erosion and sedimentation into channels must be minimised through the effective stabilisation (gabions and Reno mattresses) and the re-vegetation of any disturbed riverbanks.	Very Low (-ve)

CONSTRUCTION PHASE												
ASPECT	IMPACT	NATURE OF IMPACT	TYPE OF IMPACT	EXTENT	DURATION	INTENSITY OR SEVERITY	CONSEQUENCE	PROBABILITY	STATUS OF IMPACT	SIGNIFICANCE PRE-MITIGATION	MITIGATION MEASURES	SIGNIFICANCE POST-MITIGATION
											The construction camp and necessary ablution facilities meant for construction workers must be beyond a 32m buffer. All rubble must be removed from the watercourse when the existing structure is destroyed.	
	SCORE			2	1	2	5					
Aquatic Ecology	Siltation and sedimentation	Siltation in the watercourses due to vegetation clearing and earthworks that will be undertaken in the catchments of the watercourses.	Direct	Regional	Medium Term	Medium	Medium	Probable	Negative (-ve)	Medium (-ve)	<p>The alignment of the pipeline infrastructure, together with the adjacent working area, should be clearly demarcated prior to the commencement of the excavations. The width of the working area within freshwater ecosystems should be kept to a minimum (12m) to ensure that impacts on these systems</p> <p>Critically, all pipeline alignments that cross a watercourse must be constructed perpendicular to the direction of flow. This is vital to reduce the risk of erosion and scour within the watercourses.</p> <p>All material excavated must be done in phases and separated accordingly and replaced shortly after the laying of the pipe is completed.</p> <p>Vehicle and construction workers must be limited as much as possible within watercourse areas to limit compaction and disturbance of soils.</p>	Low (-ve)
	SCORE			2	2	2	6					
Aquatic Ecology	Invasive alien plants	Spread of invasive alien plants into the watercourses as a result of the disturbance during construction.	Direct	Regional	Medium Term	Medium	Medium	Probable	Negative (-ve)	Medium (-ve)	Develop and implement an alien plant control programme to manage problematic plant species and prevent further spread and establishment of problem species into all	Low (-ve)

CONSTRUCTION PHASE												
ASPECT	IMPACT	NATURE OF IMPACT	TYPE OF IMPACT	EXTENT	DURATION	INTENSITY OR SEVERITY	CONSEQUENCE	PROBABILITY	STATUS OF IMPACT	SIGNIFICANCE PRE-MITIGATION	MITIGATION MEASURES	SIGNIFICANCE POST-MITIGATION
											<p>freshwater ecosystems and natural open spaces.</p> <p>Areas heavily infested with IAPs will need to be cleared and then immediately revegetated with indigenous plant species that are suited to the type and composition of the surrounding vegetation (e.g. thicket, forest or grassland).</p> <p>It is critical that vegetation is established immediately after all major earthworks. An approved local indigenous grass seed mixture should be applied to the exposed areas.</p> <p>The grass seed should be watered on a regular basis (i.e. every three days unless there is rain) until the vegetation has established and adequate cover is achieved (i.e. >75%).</p>	
	SCORE			2	2	2	6					
Aquatic Ecology	Habitat loss	Direct loss of watercourse habitat due to excavation and installation of water pipelines.	Direct	Regional	Medium Term	Medium	Medium	Definite	Negative (-ve)	Medium (-ve)	<p>The construction zone should be demarcated and the activities that should be implemented to minimise the area of soil disturbance and the potential for mobilisation of sediments from bare areas include:</p> <p>Soil stabilisation practices such as sediment blankets and mulching, introduced onsite.</p> <p>Earth dikes and diversions to direct all storm flows from disturbed areas into silt traps.</p> <p>Vehicles should only utilize demarcated roads and turning areas within the construction site to limit the area of impact</p> <p>Ensure minimal or no disturbance outside of the</p>	Low (-ve)

CONSTRUCTION PHASE												
ASPECT	IMPACT	NATURE OF IMPACT	TYPE OF IMPACT	EXTENT	DURATION	INTENSITY OR SEVERITY	CONSEQUENCE	PROBABILITY	STATUS OF IMPACT	SIGNIFICANCE PRE-MITIGATION	MITIGATION MEASURES	SIGNIFICANCE POST-MITIGATION
											<p>development footprint area during construction, and all material arising from the development must be prohibited from entering the freshwater habitats and associated buffer zones.</p> <p>The alignment of the pipeline infrastructure, together with the adjacent working area, should be clearly demarcated prior to the commencement of the excavations. The width of the working area within freshwater ecosystems should be kept to a minimum (12m) to ensure that impacts on these systems are minimised. All activities must be restricted to within the demarcated working area.</p> <p>Vegetation should remain intact where possible during the construction phase to limit high surface flows and mobilisation of sediment.</p>	
	SCORE			2	2	2	6					
Heritage, Archaeology, Cultural Heritage and Palaeontology	Archaeological and Cultural Heritage:	Impacts on Sites NQM-01, NQM-02, NQM-04, NQM-05 and NQM-06 as identified by the Archaeologist	Direct	Local	Short Term	High	Medium	Possible	Positive (+ve)	Low(+ve)	Temporary fencing and signage or temporary signage only	N/A
	SCORE			1	1	3	5					
Heritage, Archaeology, Cultural Heritage and Palaeontology	Archaeological and Cultural Heritage:	Impacts on Sites NQM-03, NQM-07 and NQM-08	Direct	Local	Short Term	Low	Very Low	Unlikely	Positive (+ve)	Low(+ve)	Temporary fencing and signage (Site NQM-03)	N/A
	SCORE			1	1	1	3					
Heritage, Archaeology, Cultural Heritage and Palaeontology	Palaeontology	Potentially fossiliferous strata are expected to be impacted (destroyed/damaged) by this project, and, as such there may be a negative impact anticipated upon the palaeontological heritage of South Africa.	Direct	Local	Long Term	High	High	Possible	Negative (-ve)	Medium(-ve)	<p>The volume of bedrock that will be disturbed by the construction of This water reticulation system will be large, when the entire extent of the project's surface area is considered.</p> <p>Although the cross section of each excavation will be small</p>	Low(-ve)

CONSTRUCTION PHASE												
ASPECT	IMPACT	NATURE OF IMPACT	TYPE OF IMPACT	EXTENT	DURATION	INTENSITY OR SEVERITY	CONSEQUENCE	PROBABILITY	STATUS OF IMPACT	SIGNIFICANCE PRE-MITIGATION	MITIGATION MEASURES	SIGNIFICANCE POST-MITIGATION
											<p>(e.g. wide enough to bury pipes to a maximum of 2 m deep), the cumulative volume of rock to be excavated means that it is probable that fossil materials will be negatively impacted. Added to this scenario is that the palaeontology of the Eastern Cape is poorly understood compared to other parts of South Africa. As such, any fossils located would potentially add significantly to the understanding of the faunas in this biozone.</p> <p>Damage mitigation and fossil-find protocols need to be put in place to safeguard the palaeontological heritage of the region.</p>	
Socio-Economic	Employment Opportunities	The proposed project will create temporary employment during the construction phase.	Direct	Local	Short Term	Medium	Medium	Definite	Positive (+ve)	Medium (+ve)	Unskilled construction labourers should be sourced from the neighbouring community. When possible, skilled individuals or contractors from Butterworth should be used for construction of the various development components.	N/A
	SCORE			1	1	2	4					
Climate Change	Climate Change: Contribution to Greenhouse Gasses	During the construction phase, the increase in construction vehicle traffic and the use of diesel/petrol operated construction equipment will increase the GHG emissions generated as a result of construction activities (e.g. carbon dioxide, carbon monoxide, etc.). These GHGs will cumulatively contribute to the global GHG emission sources.	Direct	International	Long term	Low	High	Improbable	Negative (-ve)	Medium (-ve)	<p>All construction vehicles and equipment must be regularly maintained and serviced to ensure efficient use of fuels during the construction phase of the project.</p> <p>The number of trips that construction vehicles take must be limited to the absolute minimum to reduce vehicle emissions.</p>	Low (-ve)
	SCORE			3	3	1	7					
Waste Management	Solid waste generation	Solid waste generation during construction activities i.e. builders rubble, cement, etc. and general plastic waste may proliferate into the environment and watercourses on site	Direct	Local	Short Term	Medium	Low	Probable	Negative (-ve)	Low (-ve)	During construction there must be a designated area for solid waste disposal, the most desired locality would be in the site camp.	Very Low (-ve)

CONSTRUCTION PHASE												
ASPECT	IMPACT	NATURE OF IMPACT	TYPE OF IMPACT	EXTENT	DURATION	INTENSITY OR SEVERITY	CONSEQUENCE	PROBABILITY	STATUS OF IMPACT	SIGNIFICANCE PRE-MITIGATION	MITIGATION MEASURES	SIGNIFICANCE POST-MITIGATION
											<p>This area must be protected from wind and scavengers that may be within the area. Solid waste must be removed on a weekly basis.</p> <p>If spills of general waste occur, they are to be cleaned up immediately in order to prevent proliferation into the surrounding environment</p> <p>Under no circumstances is any littering allowed.</p>	
	SCORE			1	1	2	4					

OPERATIONAL PHASE												
ASPECT	IMPACT	NATURE OF IMPACT	TYPE OF IMPACT	EXTENT	DURATION	INTENSITY OR SEVERITY	CONSEQUENCE	PROBABILITY	STATUS OF IMPACT	SIGNIFICANCE PRE-MITIGATION	MITIGATION MEASURES	SIGNIFICANCE POST-MITIGATION
Terrestrial Biodiversity	Alien Invasive Species	Susceptibility of post construction disturbed areas to invasion by exotic and alien invasive species and removal of exotic and alien invasive species during construction. 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.	Direct	Local	Medium Term	Medium	Medium	Probable	Negative (-ve)	Medium (-ve)	Alien vegetation must be removed from the site as per CARA/NEMBA requirements. A suitable weed management strategy to be implemented in construction and operation phases. After clearing and construction is completed, an appropriate cover may be required, should natural re-establishment of grasses not take place in a timely manner in open space areas and road sides/verges. This will also minimise dust. Some further procedures are outlined within the EMPr.	Low (-ve)
	SCORE			1	2	2	5					
Terrestrial Biodiversity	Erosion of soil	The susceptibility of some areas to erosion because of construction related disturbances. Removal of vegetation cover and soil disturbance may result in some areas being susceptible to soil erosion after completion of the activity.	Direct	Local	Medium Term	Low	Low	Probable	Negative (-ve)	Low (-ve)	Suitable measures must be implemented in areas that are susceptible to erosion. Areas must be rehabilitated, and a suitable cover crop planted once construction is completed. Topsoil must be stripped and stockpiled separately and replaced on completion of excavated graves. If natural vegetation re-establishment does not occur, a suitable grass must be applied.	Very Low (-ve)
	SCORE			1	2	1	4					
Aquatic Ecology	Flow modification	Increased flood peaks, runoff velocity and water quantity due to the increase in hardened surfaces in the catchments, thereby causing increased water inputs (flow modification).	Direct	Regional	Short Term	Low	Medium	Possible	Negative (-ve)	Low (-ve)	A leak detection system should be incorporated into the design of the pipelines such that any leaks are detected and dealt with expediently. Correct and continuous maintenance of infrastructure is essential for their continued functionality. While the current mitigation measures are considered sufficient for the proposed development footprint, any future expansion of infrastructure or increase in pipelines should trigger a	Very Low (-ve)

OPERATIONAL PHASE												
ASPECT	IMPACT	NATURE OF IMPACT	TYPE OF IMPACT	EXTENT	DURATION	INTENSITY OR SEVERITY	CONSEQUENCE	PROBABILITY	STATUS OF IMPACT	SIGNIFICANCE PRE-MITIGATION	MITIGATION MEASURES	SIGNIFICANCE POST-MITIGATION
											reassessment of cumulative impacts, particularly on hydrology and geomorphology in the downstream freshwater ecosystems.	
	SCORE			2	3	1	6					
Socio-Economic	Provision of Basic Services	The proposed project will provide a sustainable source of water for the livelihood of the affected wards.	Direct	Regional	Long Term	High	Very High	Definite	Positive (+ve)	Very High (+ve)	Sustainable water supply to the area will enhance the livelihoods of the communities and their safety net.	N/A
	SCORE			2	3	3	8					

Table 2: Pre and post-mitigation impacts for the No-go Alternative for the proposed project.

NO-GO ALTERNATIVE												
ASPECT	IMPACT	NATURE OF IMPACT	TYPE OF IMPACT	EXTENT	DURATION	INTENSITY OR SEVERITY	CONSEQUENCE	PROBABILITY	STATUS OF IMPACT	SIGNIFICANCE PRE-MITIGATION	MITIGATION MEASURES	SIGNIFICANCE POST-MITIGATION
	SCORE			2	3	1	6					
Socio-Economic	Non-Provision of Basic Services	The Constitution of South Africa requires all citizens to have access to basic services. Should the project not progress, communities will not be able to access clean water in order to sustain their livelihoods.	Direct	Regional	Long Term	High	Very High	Definite	Negative (-ve)	Very High (-ve)	N/A	N/A
	SCORE			2	3	3	8					