

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	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 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	Regional	Long term	High	Very High	Possible	Negative (-ve)	High (-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, NEMWA, NWA, Local and District Spatial Development Frameworks, Eastern Cape Biodiversity Conservation Plan (ECBCP), Local Municipal bylaws.	Low (-ve)
SCORE			2	3	3	8					

CONSTRUCTION PHASE											
ASPECT	NATURE OF IMPACT	TYPE OF IMPACT	EXTENT	DURATION	INTENSITY OR SEVERITY	CONSEQUENCE	PROBABILITY	STATUS OF IMPACT	SIGNIFICANCE PRE-MITIGATION	MITIGATION MEASURES	SIGNIFICANCE POST-MITIGATION
Water contamination	Water contamination from the operation and washing of machinery in the catchments of the watercourses.	Direct Indirect	Local	Medium Term	Medium	Medium	Possible	Negative (-ve)	Low (-ve)	<ul style="list-style-type: none"> No mixed concrete should be directly deposited on the ground without a mixing tray and any concrete spilled out of the demarcated area should be removed immediately to avoid impacting on the freshwater ecosystems,. No concrete mixing machinery can be washed onsite. The concrete wash water contains high levels of chromium, which has the potential to contaminate ground and surface water. All vehicles, plant and equipment shall be maintained on a regular basis, to ensure they are all 	Very Low (-ve)

CONSTRUCTION PHASE											
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										in good working order; and <ul style="list-style-type: none"> ○ All of the equipment (including vehicles and plant) may only be operated by competent persons; ○ Designated entry and exit points should be demarcated and used by all construction vehicles to gain access to the site; ○ Vehicles should only utilize demarcated roads and turning areas within the construction site to limit the area of impact; 	

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										<ul style="list-style-type: none"> ○ All fuels, oils, and lubricants shall be stored appropriately. All containers shall be inspected on a regular basis for leaks. Should a spill/leak occur, the source will be isolated, and the spill contained. All contaminated soil will be disposed of at the hazardous waste vessel for appropriate disposal at a registered land fill site. • No hazardous chemicals used and/or spilled during the construction process must enter 	

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										<p>the riparian zones, wetlands or groundwater. If such a spill occurs during and/or on completion of the construction, a hazardous spill protocol must be implemented and the affected area cleaned up immediately.</p> <ul style="list-style-type: none"> Absorbent material shall be placed over the spill site, to ensure the complete removal of the spill. 	
SCORE			1	2	2	5					
Siltation in watercourses	Siltation in the watercourses due to vegetation clearing and earthworks that will be undertaken in the catchments of the watercourses.	Direct Indirect	Local	Medium Term	High	Medium	Probable	Negative (-ve)	Medium (-ve)	<ul style="list-style-type: none"> 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 	Low (-ve)

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										sediments from bare areas include: <ul style="list-style-type: none"> ○ Soil stabilisation practices such as sediment blankets and mulching introduced onsite. ○ Earth dikes and diversions to direct all storm flows from disturbed areas into silt traps. • Vegetation should remain intact where possible during the construction phase to limit high surface flows and mobilisation of sediment. • Ensure minimal or no disturbance outside of the development footprint area during construction, and 	

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										all material arising from the development must be prohibited from entering the freshwater habitats and associated buffer zones.	
SCORE			1	2	2	5					
Spread of invasive alien plants	Spread of invasive alien plants in terrestrial and aquatic environments due to construction related disturbances	Direct	Regional	Long Term	High	Medium	Probable	Negative (-ve)	High (-ve)	<ul style="list-style-type: none"> Develop and implement an alien plant control programme to manage problematic plant species and prevent further spread and establishment of problem species into all aquatic ecosystems and natural open spaces. Areas heavily infested with IAPs will need to be revegetated with indigenous plant species that are suited to the type and composition of 	Medium (-ve)

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										the surrounding vegetation (e.g. thicket, forest or grassland).	
SCORE			2	2	3	7					
Soil Erosion	Susceptibility of areas to erosion due to construction related disturbances. Removal of vegetation cover and soil disturbance may result in areas being susceptible to soil erosion after completion of the activity.	Direct	Local	Medium Term	Medium	Medium	Probable	Negative (-ve)	Medium (-ve)	<ul style="list-style-type: none"> 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. If natural vegetation re-establishment does not occur, a suitable grass must be applied. Installation of retaining walls and 	Low (-ve)

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										<p>other slope stabilising techniques such as reno mattress where slopes are steeper than 1 in 2 must occur.</p> <ul style="list-style-type: none"> • Inclusion of energy dissipation structures at the discharge point of stormwater channels to prevent scouring. • Pipe installation should be concluded in the shortest amount of time. It is suggested that short sections are installed at a time and rehabilitated as soon as possible, with indigenous grass species. • Rehabilitate/re-vegetate construction areas with indigenous plant species as soon as possible. 	

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										<ul style="list-style-type: none"> Installing small sections at a time will decrease the time that soil is exposed and allow for revegetation as trenches are closed. 	
SCORE			1	2	2	5					
Loss of Watercourse Habitat	Direct loss of watercourse habitat due to excavation and installation of water pipelines.	Direct	Local	Medium Term	Medium	Medium	Probable	Negative (-ve)	Medium (-ve)	<ul style="list-style-type: none"> 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 (12m²) to ensure that impacts on these systems are minimised. All activities must be restricted to within the demarcated working area. 	Low (-ve)

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										<ul style="list-style-type: none"> • 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. • It is assumed that the pipelines will be a buried and therefore the following measures should be implemented when excavating through all watercourses: <ul style="list-style-type: none"> ○ The topsoil should be removed and stockpiled separately from the underlying sub-soil on either side of the trench. ○ The vegetation should be carefully removed, and suitably stored for replanting upon 	

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										<p>the completion of the backfilling process (if possible).</p> <ul style="list-style-type: none"> ○ The excavation should be carried out immediately prior to the laying of the pipeline feature foundations in order to minimise the time during which the trench remains open. ○ The excavated material should be protected from erosion if it is anticipated that it will remain exposed for any length of time. Stockpiles of this material should be positioned on either side of the trenches, keeping the topsoil and the subsoil separate. The following 	

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										<p>mitigation measures should be put in place for the largescale earthworks associated with the gabion discharge structure:</p> <ul style="list-style-type: none"> ○ Ensure that the correct sediment control measures are put in place such as earth dikes and diversions to direct all storm flows from disturbed areas into silt traps and soil stabilisation practices, such as sediment blankets and mulching, introduced onsite. ○ The subsoil that is replaced over the pipelines must be suitably compacted to 	

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										<p>reduce risks of erosion.</p> <ul style="list-style-type: none"> 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. The grass seed must 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%). 	
SCORE			1	2	2	5					
Archaeological and Cultural Heritage	In the unlikely event that archaeological and cultural remains occur during the	Direct	Local	Short Term	Low	Very Low	Improbable	Negative (-ve)	Very Low(-ve)	The heritage and palaeontological studies noted that there was a low chance, if any, of heritage material	Very Low(-ve)

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	construction phase, they are likely to be damaged during excavation and their heritage value lost in the process.									occurring within the study area footprint. The recommendations suggest a Chance Find Protocol be initiated; however, no further mitigation is required.	
SCORE			1	1	1	3					
Palaeontology	In the unlikely event that fossils and other palaeontological remains occur during the construction phase, they are likely to be damaged during excavation and their heritage value lost in the process.	Direct	Local	Short Term	Low	Very Low	Improbable	Negative (-ve)	Very Low(-ve)	The heritage and palaeontological studies noted that there was a low chance, if any, of heritage material occurring within the study area footprint. The recommendations suggest a Chance Find Protocol be initiated; however, no further mitigation is required.	Very Low(-ve)
SCORE			1	1	1	3					
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 Ngqondo or Engcobo	N/A

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										should be used for construction of the various development components.	
SCORE			1	1	2	4					
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)	<ul style="list-style-type: none"> During the construction period, significant manual labour will be utilised instead of large machinery. Generators and similar will be used, however. All construction vehicles and equipment must be regularly maintained and serviced to ensure efficient use of fuels during the construction phase of the project. The number of trips that construction vehicles take must be limited to the absolute minimum to reduce vehicle emissions. 	Low (-ve)

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SCORE			3	3	1	7					
Solid Waste Generation	Solid waste generation during construction activities i.e. builders rubble, cement, etc. and general plastic waste may proliferate into the terrestrial and aquatic environments near the project site.	Direct	Local	Short Term	Medium	Low	Probable	Negative (-ve)	Low (-ve)	<ul style="list-style-type: none"> During construction there must be a designated area for solid waste disposal, the most desired locality would be in the site camp. This area must be protected from wind and scavengers that may be within the area. Solid waste must be removed on a weekly basis. If spills of general waste occur, they are to be cleaned up immediately in order to prevent proliferation into the surrounding environment. Under no circumstances is any littering allowed. 	Very Low (-ve)
SCORE			1	1	2	4					
Loss of Flora Species of Conservation Concern	Loss of Flora Species of Conservation Concern during	Direct	Local	Short Term	Medium	Low	Possible	Negative (-ve)	Low (-ve)	<ul style="list-style-type: none"> Conduct a search and rescue prior to clearing activities for flora species of 	Very Low (-ve)

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	construction site clearing activities.									conservation of concern.	
SCORE			1	1	2	4					

OPERATIONAL PHASE											
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Spread of invasive alien plants	The disturbance caused during the construction phase creates opportunities for alien and invasive plant species to establish and spread, causing loss of biodiversity and ecosystem services.	Direct	Local	Long Term	Medium	Medium	Probable	Negative (-)	Medium (-ve)	Alien and invasive plant species must be monitored and eradicated during construction and must be ongoing for at least 6 months post-construction.	Low (-ve)
SCORE			1	3	2	6					
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 Indirect	Local	Medium Term	Low	Low	Probable	Negative (-)	Low (-ve)	<ul style="list-style-type: none"> 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 	Very Low (-ve)

OPERATIONAL PHASE											
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										considered sufficient for the proposed development footprint, any future expansion of infrastructure or increase in pipelines should trigger a reassessment of cumulative impacts, particularly on hydrology and geomorphology in the downstream aquatic ecosystems.	
SCORE			1	2	1	4					
Erosion and Sedimentation of Watercourses	An increase in stormwater runoff volumes and velocities from the bare / hardened surfaces associated with the proposed development or from areas left bare as a	Direct Indirect	Local	Long Term	Medium	Medium	Probable	Negative (-ve)	Medium (-ve)	<ul style="list-style-type: none"> Implement rehabilitation / revegetation and monitoring measures as indicated in the construction phase. 	Low (-ve)

OPERATIONAL PHASE											
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	result of construction related activities may result in the erosion and sedimentation of downslope watercourses.									<ul style="list-style-type: none"> Design a stormwater management plan in order to control stormwater runoff. Energy dissipaters / erosion protection measures (such as lining with stones, grass, reno-mattresses, or gabions) must be constructed. Sediment traps should be incorporated into stormwater drains / swales upstream of discharge points. Monitor the proposed development and adjacent watercourses for erosion and sedimentation after heavy rainfall events. 	

OPERATIONAL PHASE											
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										<ul style="list-style-type: none"> Ongoing maintenance of stormwater systems must occur. Any damage to stormwater systems must be rectified immediately. 	
SCORE			1	3	2	6					
Community Access to Potable Water	The operation of the WSS will allow for the Ngqondo community to have access to potable water.	Direct	Local	Long Term	Medium	Medium	Definite	Positive (+ve)	Medium (+ve)	No mitigation measures required.	N/A
SCORE			1	3	2	6					

NO-GO ALTERNATIVE											
ASPECT	NATURE OF IMPACT	TYPE OF IMPACT	EXTENT	DURATION	INTENSITY OR SEVERITY	CONSEQUENCE	PROBABILITY	STATUS OF IMPACT	SIGNIFICANCE PRE-MITIGATION	MITIGATION MEASURES	SIGNIFICANCE POST-MITIGATION
Loss of Employment Opportunities	The no-go alternative would result in no job creation and skill development for the community members.	Direct Indirect	Local	Long term	High	High	Definite	Negative (-ve)	High (-ve)	No mitigation measures would be implemented if the no-go alternative is selected.	High (-ve)
SCORE			1	3	3	7					
Lack of Access to Potable Water	Community members from the Ngqondo village would not be able to obtain potable water from the WSS.	Direct	Local	Long Tern	High	High	Definite	Negative (-ve)	High (-ve)	No mitigation measures would be implemented if the no-go alternative is selected.	Medium (-ve)
SCORE			1	3	3	7					