A.	Impact Rating: Pre-Construction	Proposed Hut Dam Portion 3 & 5 of Van Der Wattskraal No. 394 and rehabilitation of a weir, Remaining Extent of farm 234													
			WITHOUT MITIGATION						WITH MITIGATION						
No.	ASPECT	IMPACT	Probability	Extent	Duration	Magnitude	Receiving Environment	Without Mitigation Score (Baseline)	Probability	Extent	Duration	Magnitude	Receiving Environment	With Mitigation Score (Impact assessment)	Short Description of Mitigation Measures
1	Botanical	Potential loss of Greyton Shale Fynbos at the proposed dam and pipeline site	-4	-1	-1	-2	-1	-1,6	-1	-1	-1	-1	-1	-1	No loss of Greyton shale fynbos is expected as the area is largely transformed by cultivation and degradated by alien invasive plant species. Remnant Greyton shale fynbos is found to the south-west of the proposed dam and pipeline site, not to be impacted by the proposed development. To mitigate potential loss of remnant vegetation, physically demarcate the footprint of the proposed dam and pipeline route and strictly prohibit any vehicles or construction related activities outside of the demarcated footprint area. This can be done with danger tape, which should be removed once the construction activities have been completed. Ensure signs are put up reminding workers to stay on the existing roads.
		Loss of North Sonderend Sandstone Fynbos where the weir will be rehabilitated	-16	-1	-16	-8	-8	-9,8	-8	-1	-4	-8	-8	-5,8	Loss of North sondered sandstone fynbos is expect. This type of vegetation is is classified as least threatened int NEMBA and not protected. Mitigation measures include physically demarcate the footprint and strictly prohibit any vehicles or construction related activities outside of the demarcated footprint area. This can be done with danger tape, which should be removed once the construction activities have been completed. Ensure signs are put up reminding workers to stay on the existing roads.
		Loss of Ecological Processes	-8	-1	-8	-8	-2	-5,4	-4	-1	-4	-4	-2	-3	Ecological process are already highly compromised in the area. Physically demarcate the footprint of the proposed dam, pipeline and weir rehabilitation site and strictly prohibit any vehicles or construction related activities outside of the demarcated footprint area.

		Soil contamination	-2	-1	-2	-1	-2	-1,6	-1	-1	-1	-1	-2	-1,2	The contractor should ensure drip trays are placed under stationary vehicles. Spill kits must be available. Workers should be trained how to use spill kits to rectify a spill immediately. Records must be kept of any spills. Inspect all vehicles daily for the early detection of deterioration or leaks. Portable toilets must be located at least 32m from the boundary of the valley bottom wetland and must be serviced regularly in order to prevent leakage/spillage. No cement mixing on site.
2	Heritage	Loss of archaeological/ palaeological resources	-1	-1	-1	-1	-2	-1,2	-1	-1	-1	-1	-2	-1,2	Liason with HWC should any heritage resources, including graves and human burials, archaeological material and paleontological material be discovered. All work should be stopped if such resources are found. HWC suggested that the proposed dam development will not impact on heritage resources.
3	Water	Loss of wetland habitat	-16	-1	-16	-4	-2	-7,8	-8	-1	-8	-2	-2	-4,2	The habitats are already considered to be disturbed. To mitigate further disturbance, physically demarcate the footprint of the proposed dam and strictly prohibit any vehicle or construction related activities outside of the demarcated footprint area. As a precautionary measure, importance must be given to emergency preparedness with regards to any spillages or leakage of hydrocarbons on site.
4	Dust	Potential dust from ground clearing and topsoil removal	-2	-1	-1	-1	-2	-1,4	-1	-1	-1	-1	-2	-1,2	Dust will be monitored. If dust becomes a problem, dust will be controlled by means of water spray vehicles. No over watering of the site area or roads surfaces should occur. Speed limits must be enforced in all areas to limit the levels of dust pollution. Max speed of 40km/h must be maintained. Protect stockpiled topsoil using tarp or erosion blankets. Stockpile topsoil within an area where no stormwater runoff is expected

B.	Impact Rating: Construction Phase	Proposed Hut Dam Portion 3 & 5 of Van Der Wattskraal No. 394 and rehabilitation of a weir, Remaining Extent of farm 234													
			WITHOUT MITIGATION						WITH MITIGATION						
No.	ASPECT	IMPACT	Probability	Extent	Duration	Magnitude	Receiving Environment	Without Mitigation Score (Baseline)	Probability	Extent	Duration	Magnitude	Receiving Environment	With Mitigation Score (Impact assessment)	Short Description of Mitigation Measures
1	Botanical	Potential disturbance of Greyton Shale Fynbos to the south-west of the construction footrpint due to constrution vehicles accessing the sites	-4	-1	-16	-2	0	-4,6	-2	-1	-1	-1	0	-1	Ensure construction activities are restricted to the demarcated footprint of the proposed dam. strictly prohibit any vehicles or construction related activities outside of the demarcated footprint area. Access roads to the dam should be limited to a single circular route in and out. Ensure construction vehicles stay on exisitng roads en errect signs to remind workers not to deviate from the roads.
		Loss of North Sonderend Sandstone Fynbos resulting from rehabilitation of the weir	-16	-1	-2	-1	-1	-4,2	-16	-1	-2	-1	-1	-4,2	North Sonderend Sandstone Fynbos is not protected. Ensure construction activities are restricted to the demarcated footprint. Strictly prohibit any vehicles or construction activities outside of the demarcated footprint area. Access roads to the weir should be limited to a single road through alien vegetation to an area located as close as possible to the watercourse. Ensure construction vehicles stay on existing roads and errect signes to remind workers not to deviate from the roads, No vehicles permitted to drive through the watercourse.
		Loss ecological processes	-16	-1	-4	-2	-1	-4,8	-8	-1	-4	-1	-1	-3	Ecological processes are already considered compromised. Ensure construction activities are restricted to the demarcated footprint and strictly prohibit any vehicles or construction related activities outside of the demarcated footprint area.

		Soil contamination from vehicles/ concrete/ portable toilets	-2	-1	-2	-2	-1	-1.6	-1	-1	-1	-1	-1	-1	Ensure construction activities are restricted to the demarcated footprint and strictly prohibit any vehicles or construction related activities outside of the demarcated footprint area. A working area will be demarcated for construction vehicles to park as close a possible to the weir. No vehiles permitted to drive through the watercourses. Ready mix concrete will be imported from a local supplier, no concrete will be mixed on site and surplus must be disposed of in the correct manner. Concrete will be transported with wheelbarrows to the weir from the work area. The contractor should ensure drip trays are placed under stationary vehicles. Spill kits must be available. Workers should be trained how to use spill kits to rectify a spill immediately. Records must be kept of any spills. Inspect all vehicles daily for the early detection of deterioration or leaks. Portable toilets must be placed no less tahn 32m form any watercourse and serviced regularly in order to prevent leakage/spillage. No portable toilets to be placed in watercourse 1 where the weir it to be rehabiltated.
2	Heritage	Loss of archaeological/ pataeological resources	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	Liaison with HWC should any heritage resources, including graves and human burials, archaeological material and paleontological material be discovered. All work should be stopped if such resources are found. HWC suggested that the proposed dam development will not impact on heritage resources.
		Loss of acquatic habitat of wetland 1, 2 and wetland seep	-16	-1	-16	-8	-1	-8.4	-8	-1	-16	-8	-1	-6.8	Althought the aquatic habitats are already considered disturbed, ensure construction activities and vehicles are restricted to the demarcated areas to prevent further degradation. Access roads to the dam should be limited to a singular route in and out. Access roads to the weir should be limired to a single road through alien vegetationto an area located as close as possible to the watercourse. Vehicles will not be permitted to drive throught the watercourse. Cement will be taken from the work area to the weir via wheelbarrow.

3	Water	Disturbance of aquatic habitat due to edge effect	-4	-1	-8	-4	-1	-3.6	-4	-1	-4	-2	-1	-2.4	**Mitigation measures are discussed in detail in section 10 of the EIR, section 6 of the EMP and in the MMP.** Ensure construction activities and vehicles are restricted to the demarcated areas. Access roads to the dam should be limited to a singular route in and out. Access roads to the weir should be limited to a single road through alien vegetationto an area located as close as possible to the watercourse. Vehicles will not be permitted to drive throught the watercourse. Cement will be taken from the work area to the weir via wheelbarrow. Immediately rip compacted soil to a depth of 300mm and reprofile the area according to natural terrain units where any accidental disturbance to portions of the acquatic wetland falling outside of the demarcated construction footprint area has taken place. If the disturbed area will be prone to erosion straw bales (not Lucerne or hay) are used to intercept the bulk of the runoff. The bales should be placed strategically along contour lines and pegged. Disturbance and removal of vegetation within the immediate vicinity of the area where the bales are placed should be kept to a minimum. Sediment should be cleared manually as needed. No stockpiling/ dumping of any material within the wetland area is allowed. Remove alien invasive plant species from the construction footprint and accidentally disturbed areas.
		Alternation of hydrology	-16	-1	-4	-4	-1	-5.2	-16	-1	-2	-2	-1	-4.4	**Mitigation measures are discussed in detail in section 10 of the EIR, section 6 of the EMP and in the MMP.** Physically demarcate the cut-off and bypass channels, the small coffer dam as well as areas where temporary pumps will be placed if needed prior to the commencement of any activity and strictly prohibit any vehicles or construction related activities outside of the demarcated footprint area. Vegetation removal should be limited as far as practically possible in order to ensure soil remains stable. Any surface water conveyed by watercourses must be collected upstream of the construction site and rerouted to areas downstream of the construction site. Rerouted surface flow must be returned at a similar rate as the rate that it enters the diversion. Remove and stockpile topsoil and subsoil separately. Stockpile topsoil within an area where no stormwater runoff is expected. Replace soil in the correct order e.g. subsoil below and topsoil above, as soon as possible after construction activities has been completed. Limit sedimentation at the outflow side (downstream of the works) by way of ponding or cascading with stone formed berms and filters made up of hay bales. Implement additional erosion control measures where required within the disturbance footprint. Should any accidental disturbance to portions of wetlands falling outside of the demarcated construction footprint area take place, immediately rip compacted soil to a depth of 300mm and reprofile the area according to natural terrain units.If the disturbed area is prone to erosion, implement erosion control measures (placing hay bales

		Increased stormwater runoff and erosion	-8	-1	-8	-4	-1	-4,4	-4	-1	-2	-2	-1	-2	**Mitigation measures are discussed in detail in section 10 of the EIR, section 6 of the EMP and in the MMP.** Construction of the dam should take place during dry summer months. Any surface water conveyed by watercourses must be collected upstream of the construction site and rerouted to areas downstream of the construction site. Rerouted surface flow must be returned at a similar rate as the rate that it enters the diversion. Surface water removed from the construction area during the dewatering process must be passed into sediment ponds or other sediment trapping devices prior to it being released into downstream areas of the watercourses. Implement erosion control measures (e.g. strategically placed straw bales diverting stormwater away from areas susceptible to erosion) to prevent erosion and sedimentation of downstream wetland areas. Divert runoff from areas where earthmoving activities in direction of pegged straw bales to intercept sediment-laden runoff. Seed the dam wall after construction with indigenous vegetation that has good soil binding capacity. Ito the pipeline, keep the width of the distrubance foorprint area to a mimimum, no more than 3m. **Guidelines with regards topsoil removal and replacement as well as erosion control measures, should be followed as set out in section 10 of the EIR, the EMP and the MMP.**
		Water quality impairment	-16	-1	-8	-8	-1	-6,8	-8	-1	-2	-4	-1	-3,2	**Mitigation measures are discussed in detail in section 10 of the EIR, section 6 of the EMP and in the MMP.** Construct temporary bunds around areas where cement is to be cast in-situ. Prohibit the use of infill material or construction material with pollution / leaching potential. Clean up any spillages (e.g. concrete, oil, fuel), immediately. Remove contaminated soil and dispose of it appropriately. Fuel, chemicals and other hazardous substances should preferably be stored offsite, or at least 32m away from the edge of all delineated watercourses in suitable secure weather-proof containers with impermeable and bunded floors to limit pilferage, spillage into the environment, flooding or storm damage. Dispose of concrete and cement-related mortars in an environmental sensitive manner (can be toxic to aquatic life). Washout should not be discharged into watercourses. No vehilces permitted in the watercourses.

4	Freshwater Fish	Impact of construction activities on indigenous fish (Cape within watercourse 1 (weir site)	-16	-2	-16	-4	-2	-8	-8	-2	-16	-2	-2	-6	**Mitigation measures as recommended by the specialists are discussed in detail in section 10 of the EIR, section 6 of the EMP and in the MMP.** Mitigation measures recommened to mitigate water quality impairment, incresed runoff, erosion and sedimentation and mitigating the alterations of the hydrological regime as suggested above, apply.
5	Dust	Potential dust from construction activities	-2	-1	-1	-1	-1	-1.2	-1	-1	-1	-1	-1	-1	Dust will be monitored. If dust becomes a problem, dust will be controlled by means of water spray vehicles. No over watering of the site area surfaces should occur.

C.	Impact Rating: Operational Phase	Proposed Hut Dam Portion 3 & 5 of Van Der Wattskraal No. 394 and rehabilitation of a weir, Remaining Extent of farm 234														
			WITHOUT MITIGATION						WITH MITIGATION							
No.	ASPECT	IMPACT	Probability	Extent	Duration	Magnitude	Receiving Environment	Without Mitigation Score (Baseline)	Probability	Extent	Duration	Magnitude	Receiving Environment	With Mitigation Score (Impact assessment)	Short Description of Mitigation Measures	
1	Water	Alternation of hydrological regime of the wetland habitat	-8	-1	-16	-8	-1	-6.8	-8	-1	-16	-8	-1	-6.8	**Mitigation measures as recommended by the specialists are discussed in detail in section 10 of the EIR, section 6 of the EMP and in the MMP.** Adequate water must be released from the dam and weir to allow for the maintenance of the PES of watercourse reaches immediately downstream of the dam and weir. The method for achieving this must be illustrated in the detailed design of the dam and weir. The weir should be designed in such a way that subsurface flow is not impeded. Outlet structures and spillways should be monitored regularly in order to ensure that any blockages are detected. Any blockages which are detected must be removed immediately. As far as possible, the dam should be allowed to spill in winter, when the watercourse would naturally have carried surface water. The height of the weir should allow for higher flood flows to spill over the wall during winter.	
		Erosion and sedimentation	-8	-1	-16	-8	-1	-6.8	-8	-1	-8	-4	-1	-4.4	**Mitigation measures as recommended by the specialists are discussed in detail in section 10 of the EIR, section XX of the EMP and in the MMP.** Promote diffuse flow at the dam and weir outlets. This can be done with the use of perforated pipes at outlets or with the use of spreaders or rip-rap mattresses at discharge points. If vegetation does not establish after construction, revegetate banks of the dam and weir reservoir with wetland species indigenous to the area. The roots of vegetation will aid in binding and stabilising the soil and will prevent erosion of the banks and sedimentation of the wetlands. onitor areas below the dam and weir for erosion and incision on a quarterly basis (for two growing seasons or until 90% vegetation cover has established) and after heavy rainfall events. Should erosion and incision be noted, immediate corrective measures must be undertaken. Rehabilitation measures may include the filling of erosion gullies and rills, and the stabilization of gullies with silt fences.	
2	Freshwater Fish	Alternation of hydrological regime will impact fish populations in watercourse 1 (weir site)	-8	-1	-16	-16	-2	-8.6	-8	-1	-16	-8	-2	-7	**Mitigation measures as recommended by the specialists are discussed in detail in section 10 of the EIR, section 6 of the EMP and in the MMP.** Mitigation measures recommend by the freshwater specialist apply here, as well as additional mitigation measures as recommended by the Ichthyological specialist: • An accurate estimate of the natural MAR (nMAR) for Watercourse 1 must be calculated and Ecological Reserve allocations be based on this value. Abstraction and downstream release volumes from the weir must be monitored and these figures must be made available for review by the relevant authorities (DWS/BGCMA) upon request Operating rules should be determined on the natural hydrology of the catchment i.e. months of peak flow, outside of which no abstraction is to take place. These should be balanced against irrigation needs and available for review.	

D.	Impact Rating: Rehabilitation Phase	Proposed Hut Dam Portion 3 & 5 of Van Der Wattskraal No. 394 and rehabilitation of a weir, Remaining Extent of farm 234													
			WITHOUT MITIGATION						WITH MITIGATION						
No.	ASPECT	IMPACT	Probability	Extent	Duration	Magnitude	Receiving Environment	Without Mitigation Score (Baseline)	Probability	Extent	Duration	Magnitude	Receiving Environment	With Mitigation Score (Impact assessment)	Short Description of Mitigation Measures
1	Dust	Dust emissions from placing topsoil at pipeline	-2	-1	-1	-1	-1	-1,2	-1	-1	-1	-1	-1	-1	Topsoil will be removed from all areas where physical disturbance of the surface will occur, prior to the disturbance occurring. Dust will be monitored If dust becomes a problem, dust will be controlled by means of water spray vehicles or other practical means. No over-watering of the mining area or roads surfaces should occur. Under extreme windy conditions work will be stopped. **Please refer to the EMP for topsoil managment guidelines.**
2	Botanical	Soil contamination from vehicles on site	-2	-1	-1	-1	-1	-1,2	-1	-1	-1	-1	-1	-1	The contractor should ensure drip trays are placed under stationary vehicles/ trucks. Spill kits must be available. Workers should be trained how to use spill kits to rectify a spill immediately. Records must be kept of any spills. Vehicles should be inspected to reduce risk of potential soil contamination from hydrocarbon spills.
		Bad topsoil management	-2	-1	-1	-1	-1	-1,2	-1	-1	-1	-1	-1	-1	Topsoil will be removed from all areas where physical disturbance of the surface will occur, prior to the disturbance occurring. Topsoil will be stockpiled separately and protected for site rehabilitation after the project is completed. A topsoil management plan must be agreed upon site start up meeting. **Please refer to the EMP for guidelines on topsoil management.**