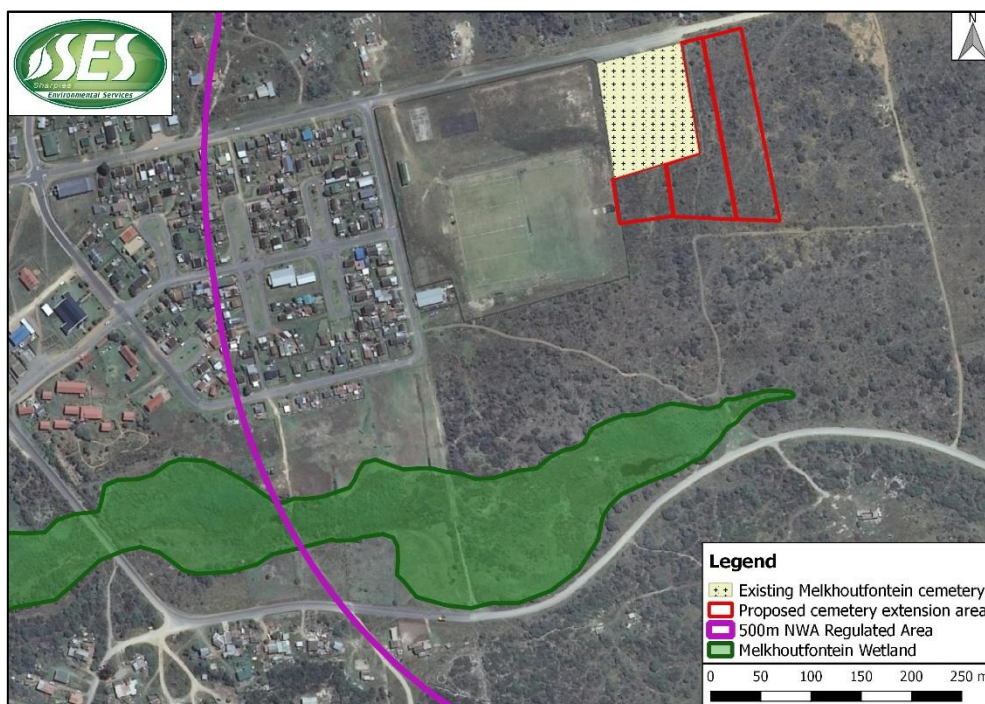


## AQUATIC RISK ASSESSMENT:

### PROPOSED EXPANSION OF THE MELKHOUTFONTEIN CEMETERY WITHIN THE REGULATED AREA OF A WETLAND

The risk assessment was undertaken using the DWS Risk Matrix which is specified in the Government Notice R509 of 2016 for section 21 (c) and (i) water uses (impeding or diverting flow or changing the bed, banks or characteristics of a watercourse) as defined under the NWA (1998). These water uses are required to be registered as the proposed expansion area is located within 200m of a wetland (Figure 1). Determining if a water use licence is required is associated with the risk of impacting on the watercourse. A low risk of impact could be authorised in terms of a General Authorisations (GA) and a “No risk” result may not require an application for registration at all.

The result of the risk assessment assumes that all of the recommended mitigation measures will be stringently implemented and monitored appropriately. The ratings presented are for a realistic ‘best-case scenario’ assessed as ‘after mitigation). This includes the adoption of the recommended 32 m aquatic buffer zone from wetland habitat. Please see detailed mitigation measures within the freshwater habitat impact report.



**Figure 1: The proposed cemetery expansion site in relation to the wetland, 200m downslope**

The Risk Matrix assessment determined that the activities associated with the proposed Melkhoutfontein cemetery expansion have a Low/Negligible risk rating and pose no threat to the wetland, which is located approx. 200m away. (See risk Matrix in Table 1 below). After the adoption of the recommended mitigation measures the project will not cause any further deterioration to the wetland. Minimal impacts are possible but can be completely avoided. It is recommended that the proposed project be authorised under a General Authorisation (GA) or permitted to go ahead without requiring an application under the NWA.

**Table 1: Summary of the Risk Matrix assessment for the proposed cemetery expansion**

RISK MATRIX SUMMARY (Based on DWS 2015 publication: Section 21 c and I water use Risk Assessment Protocol)														SACNASP reviewer no. 400056/13	
Assessment assumes the adoption of mitigation measures (e.g. Risk after mitigation)															
No.	Phases	Activity	Aspect	Impact	Flow Regime	Physio & Chemical (Water Quality)	Habitat (Geomorph + Veg)	Biota	Severity	Consequence	Likelihood	Significance	Risk Rating	Control Measures	
1	CONSTRUCTION PHASE	Clearance of vegetation for surface levelling and installation of a boundary wall in the regulated area	Exposure of bare soils upslope of the wetland will decrease the soil binding capacity and cohesion of the soils and thus increase the risk of sedimentation downslope. This activity may cause the burying of aquatic habitat.	Potential disturbance of aquatic habitat that could lead to degradation caused by vegetation clearing, indirect disturbance of aquatic habitat, and potentially further encroachment by invasive alien plants.	0	0	1	0	0,25	2,25	6	13,5	LOW/ NEGLIGIBLE	Many of the potential impacts associated with this project can be completely avoided. If there is no intrusion into the valley then the potential impacts will be easily managed or avoided. The furthest distance between activities and the wetland must be maintained, and at the least, a buffer zone of 32m should be applied. The most important mitigation measure to be adhered to is the implementation of the Buffer/ No-Go areas recommended. No activities are to be permitted beyond the site and working area. The wetland and valley bottom must be considered a No Go Area. See aquatic report and No Go maps.	PES (C): EIS: High
2		Soil movement and the creation of dust near the wetland during the construction	Increased sediment deposition caused by earthworks upslope as well as the artificial creation of preferential flow paths	Possible deterioration of aquatic ecosystem integrity and a reduction/loss of habitat for aquatic dependent flora & fauna. Potentially the burying of aquatic habitat causing aquatic faunal fatalities.	0	1	0	1	0,5	2,5	8	20	LOW		
3		Hydrocarbons including petrol/diesel and oils/grease/lubricants associated with construction activities (machinery, maintenance, storage, handling) may potentially enter the soils upslope of the wetland or potentially the groundwater	As this wetland receives the majority of its water inputs from the groundwater it may be impacted if the groundwater is contaminated	Changes in the physical, chemical and biological characteristics of water resources resulting in deterioration in aquatic ecosystem integrity	0	1	0	0	0,25	2,25	7	15,75	LOW/ NEGLIGIBLE		
1	OPERATIONAL PHASE	Poor construction and long-term site management resulting in alien tree infestation persisting into the operational phase	Further infestation of disturbance tolerant biota within the catchment (such as alien plants)	Potential increase in catchment habitat disturbance spreading and leading indirectly to a decrease in freshwater habitat biodiversity	0	0	1	0	0,25	2,25	6	13,5	LOW/ NEGLIGIBLE	The is potential for the activities associated with the expansion of the cemetery to cause a Low level of impact upon aquatic habitat. Mitigation can easily reduce it to acceptably low levels and completely avoid most impacts. Therefore, with mitigation, stormwater management, and the application of the buffer area, it was determined that the project will have a Very Low to No impact.	
2		Poor construction and long-term site management resulting in Erosion and sedimentation persisting into the operational phase	The creation of preferential flow paths, if not mitigated against, will result in erosion in the catchment and the river systems. As graves are dug, there may be sedimentation downslope, due to soil disturbance.	Possible alterations to the geomorphology of the freshwater habitats as an indirect result of erosion and sedimentation	0	0	1	0	0,25	2,25	7	15,75	LOW/ NEGLIGIBLE		
3		Groundwater pollution from the burial of coffins/items	An environmental risk since the metals that are used in coffin-making may corrode or degrade into harmful toxins. These may leach into the surrounding soils and groundwater.	Potential deterioration in aquatic ecosystem integrity as this wetland receives the majority of its water inputs from the groundwater. If groundwater is contaminated by items buried in the cemetery there is potential for a loss in biota.	0	1	0	1	0,5	2,5	7	17,5	LOW		
SACNASP REVIEWER NO.			400056/13												