

# WATER USE AUTHORIZATION APPLICATION RISK MATRIX

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This Risk Matrix was requested by Breede Gouritz Catchment Management Agency (BGCMA) for the Water Use Authorization Application. This Risk Matrix assists BGCMA to determine where the proposed development triggers a Water Use License Authorization (WULA) or Water Use General Authorisation (WUGA). The risk assessment is based on the Department of Water and Sanitation 2015 publication: Section 21c and I water use Risk Assessment Protocol in Government Gazette no. 40229 dated 26 August 2016.

The site is located within the G40D quaternary catchment. The primary aquatic features on the site are the drainage lines and associated wetland land areas and man-made dams, which eventually feeds into the Ribbok/Krom River System. These drainage lines originate from the Houwhoek mountain range surrounding the property along the northern and eastern borders. It flows southwest, across the site and through the farms where it eventually connects to the Ribbok/Krom River tributary which feeds into the Palmiet River system. The Ribbok/Krom River itself is severely transformed due to agricultural developments which depend largely on irrigation derived from dams built within this river system and surrounding drainage lines.

The fynbos vegetation at sites A & B consists of a very similar flora. Both sites were heavily disturbed previously. Site A was ploughed previously and the upper reaches were excavated for gravel, but have not been tilled for a number of years now (about 3 years). A number of species re-established here from seed, e.g. several species of *Serotinous proteaceae*, that blew in from the adjacent nature reserve after the recent fire. Most of site B was heavily disturbed several years ago, but several species has also been re-established on the site. During the botanical impact assessment, as was conducted by Mr Jan Vlok during December 2017 a total of 119 different plant species were recorded on sites A & B, most of these species occurred in small undisturbed patches within these two sites which remain primarily along and within the drainage lines and associated wetland areas. This probably represents about 70-80% of the total number of species that occur in the affected areas. Only two of the species recorded are threatened species, *Diastella thymelaeiodes* ssp. *thymelaeiodes* (status = Near Threatened and *Otholobium thomii* (status = Endangered) which was recorded immediately adjacent to the drainage line areas. It is unlikely that any other threatened plant species occur at these two sites. There is a clear dominance of pioneer species such as *Athanasia trifurcate* at site A, and graminoids (Cyperaceae, Poaceae and Restionaceae) at site B.

Sites A and B have the most significant wetland characteristics associated with the natural and man-made drainage lines and dam located mainly along the northwestern and southern borders of the proposed development sites. These wetlands, drainage lines and dam have also been mapped as Ecological Support Areas (Res) in the latest Western Cape Biodiversity Spatial Plan (2017) as well as artificial and natural Wetland Freshwater Priority Areas (NFEPAs).



The wetland indicator species within sites A and B as recorded on site are species such as *Capeochloa cincta*, *Carpha glomerata*, *Drosera capensis*, *Platycaulis callistachyus* and *Erica perspicua* which is locally abundant. These wetland and drainage line areas have also been invaded by *Acacia longifolia*, but not in dense stands.

The instream and riverbank habitat integrity of the drainage line which separates sites A and B (northwestern border of site B) is still in a mostly natural and stable condition except for the two man-made river crossings which were historically constructed to gain access to site B. This drainage has an average width of approximately 15m. The lower lying crossing just above the dam at site B was constructed by infilling the drainage line with a gravel crossing of about 30m long and 10m wide. This crossing was therefore constructed at one of the widest points in the drainage line and has since washed away at the eastern end of the crossing and can no longer be used. Another infilled stream crossing was created at the top of the drainage line which is about 8m long and 5m wide, this crossing was created at a narrowest point in the drainage line and is therefore the preferred crossing in terms of minimizing potential impacts and maintenance requirements.



**Risk Matrix without mitigation**

No	Phases	Activity	Aspect	Impact	Severity				Severity
					Flow Regime	Physico & Chemical (Water Quality)	Habitat (Geomorph + Vegetation)	Biota	
1	Construction of bridge	Upgrade of the existing river crossing	Upgrade of river crossing.	Impeding the flow of the river	The site is located within the G40D quaternary catchment. The primary aquatic features on the site are the drainage lines and associated wetland land areas and man-made dams, which eventually feeds into the Ribbok/Krom River System. These	The drainage lines originate from the Houwhoek mountain range surrounding the property along the northern and eastern borders. The water quality is good in the upper reaches up to the dam. From the dam it flows southwest, across the site and through the farms where it eventually connects to the Ribbok/Krom River tributary which feeds into the Palmiet River system. The	Site A was ploughed previously and the upper reaches were excavated for gravel, but have not been tilled for a number of years now (about 3 years). A number of species re-established here from seed, e.g. several species of <i>Serotinous proteaceae</i> , that blew in from the adjacent nature reserve after the recent fire. Most of site B was heavily disturbed several years ago, but several species has	The Ecological and Sensitivity Importance (EIS) Assessment considers a number of biotic and habitat determinants surmised to indicate either importance or sensitivity. The EIS for the upper reaches between the proposed upgraded of the existing crossing and dam is assessed to be in moderate condition.	1



					<p>drainage lines originate from the Houwhoek mountain range surrounding the property along the northern and eastern borders. It flows southwest, across the site and through the farms where it eventually connects to the Ribbok/Krom River tributary which feeds into the Palmiet River system. The Ribbok/Krom River</p>	<p>Ribbok/Krom River itself is severely transformed due to agricultural developments which had an impact on water quality.</p>	<p>also been re-established on the site.</p>		
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					<p>itself is severely transformed due to agricultural developments which depend largely on irrigation derived from dams built within this river system and surrounding drainage lines.</p>				
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No	Phases	Activity	Aspect	Impact	Severity				Severity
					Flow Regime	Physico & Chemical (Water Quality)	Habitat (Geomorph + Vegetation)	Biota	
2	Clearing of vegetation.	Vegetation removal.	Vegetation clearing to establish agricultural lands.	Impeding the flow of the river	The site is located within the G40D quaternary catchment. The primary aquatic features on the site are the drainage lines and associated wetland land areas and man-made dams, which eventually feeds into the Ribbok/Krom River System. These drainage lines	The drainage lines originate from the Houwhoek mountain range surrounding the property along the northern and eastern borders. The water quality is good in the upper reaches up to the dam. From the dam it flows southwest, across the site and through the farms where it eventually connects to the Ribbok/Krom River tributary which feeds into the Palmiet River system. The Ribbok/Krom River itself is	Site A was ploughed previously and the upper reaches were excavated for gravel, but have not been tilled for a number of years now (about 3 years). A number of species re-established here from seed, e.g. several species of <i>Serotinous proteaceae</i> , that blew in from the adjacent nature reserve after the recent fire. Most of site B was heavily disturbed several years ago, but several species has also been re-established on the	The Ecological and Sensitivity Importance (EIS) Assessment considers a number of biotic and habitat determinants surmised to indicate either importance or sensitivity. The EIS for the upper reaches between the proposed upgraded of the existing crossing and dam is assessed to be in moderate condition.	1



				originate from the Houwhoek mountain range surrounding the property along the northern and eastern borders. It flows southwest, across the site and through the farms where it eventually connects to the Ribbok/Krom River tributary which feeds into the Palmiet River system. The Ribbok/Krom River itself is severely	severely transformed due to agricultural developments which had an impact on water quality.	site.		
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					transformed due to agricultural developments which depend largely on irrigation derived from dams built within this river system and surrounding drainage lines.				
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No	Phases	Activity	Aspect	Impact	Severity				Severity
					Flow Regime	Physico & Chemical (Water Quality)	Habitat (Geomorph + Vegetation)	Biota	
3	Operation Phase	Vehicle use of the river crossing.	Vehicles uses the crossing during agricultural operations.	Impeding the flow of the river	The river at the impacted site are non-perennial. The flow of the river at the impacted area is already impeded by an existing river crossing that needed to be upgrade to improve impacts on the water course. .	The drainage lines originate from the Houwhoek mountain range surrounding the property along the northern and eastern borders. The water quality is good in the upper reaches up to the dam. From the dam it flows southwest, across the site and through the farms where it eventually connects to the Ribbok/Krom River tributary which feeds into the Palmiet River system. The Ribbok/Krom River itself is	Site A was ploughed previously and the upper reaches were excavated for gravel, but have not been tilled for a number of years now (about 3 years). A number of species re-established here from seed, e.g. several species of <i>Serotinous proteaceae</i> , that blew in from the adjacent nature reserve after the recent fire. Most of site B was heavily disturbed several years ago, but several species has also been re-established on the	The Ecological and Sensitivity Importance (EIS) Assessment considers a number of biotic and habitat determinants surmised to indicate either importance or sensitivity. The EIS for the upper reaches between the proposed upgraded of the existing crossing and dam is assessed to be in moderate condition.	1



							severely transformed due to agricultural developments which had an impact on water quality.		site.			
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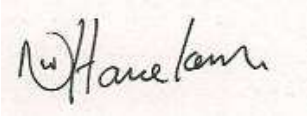
No.	Severity	Spatial scale	Duration	Consequence	Frequency of activity	Frequency of impact	Legal issues	Detection	Likelihood	Significance	Risk Rating
1	1	1	1	3	1	1	5	1	8	24	Low
2	1	1	1	3	1	1	5	1	8	24	Low
2	1	1	5	7	5	5	5	1	16	112	Moderate

### Risk Matrix with mitigation

No.	Risk Rating	Confidence level	Control measures	Borderline LDW Moderate Rating Classes	PES and EIS of Watercourses
2	Moderate but with mitigation in can be lowered to low	90%	Independent monitoring will be conducted via a competent specialist. The specialist will be responsible for monitoring, reviewing, reporting and verifying compliance with the Water Use Authorization, EMP, Environmental Authorisation (EA), Water Use Authorisation/license and all other specialist recommendations by all contractors and site management.	After considering both the construction and operational phases of the activity, the risk of the activity to the resource quality post mitigation measures and the sensitivity (EIS) an and status (PES) of the watercourses receptor of risks posed and after considering the positive impacts/Risks reduction measures, we recommend that the risk rating be	The overall freshwater ecological condition of the wetlands, drainage lines, dams and general remaining riparian habitats are deemed to be moderately to largely modified and the ecological importance and sensitivity low. However the functioning of the drainage lines and associated wetlands areas as assessed on sites A, B and D are important in maintaining current hydrological functioning and freshwater ecosystems on the sites and surrounds. These areas together with adequate buffer areas have therefore been delineated as no-



				reduced to a low risk rating for this activity.	go areas and are recommended to be demarcated by a land surveyor as no-development areas before site clearance commences and remain demarcated throughout the operational phase of the proposed activities to ensure ongoing protection of these areas.
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09 February 2018



