

1 JBS17 (EWR 14: PROKLAMEERSDRIFT (VALS RIVER))

The information is summarised from DWA (2009a, b; 2010b).

1.1 SITE DESCRIPTION

The site is situated in the Vals River downstream of the town of Kroonstad within MRU Vals B which includes the Vals River downstream of the Kroonvaal weir to the confluence with the Vaal River. Water quality is impacted by Kroonstad and Bothaville, and from agricultural runoff. The overall modification to bed, channel and flow in the Vals River is moderate to large due to the presence of several weirs, roads through the river and road bridges over the river, as well as Serfontein Dam. Some sand mining occurs in the river and these lead to bank erosion and siltation of the river.

The site consists of a relatively narrow area of flow with moderately sloping banks. Fish habitat is well represented at site as well as flow-depth categories and cover. Macroinvertebrate survey habitat availability is adequate and is not a limiting factor of macroinvertebrate diversity. Riparian vegetation at the site is representative of the area.

Location	EWR 14 Proklameersdrift	Altitude	1285 m
Longitude	26.81320	Latitude	-27.48685
EcoRegion	Highveld 11.07	Quaternary catchment	C60J/C60G
Water Management Area	Middle Vaal River	Geomorphological zone	Lower Foothills
			
EWR 14, narrow main channel with cobble dominated riffle.			

1.2 PRESENT ECOLOGICAL STATE (PES)

Geom	Reduced baseflows and decline in small floods have reduced sediment transport; so flushing of fines and scour is reduced. There are no large dams to remove sediment or trap large floods. Thus, the continued provision of small and moderate floods will maintain the PES at this site.
WQ	Data from monitoring site C6H001 was used for the PES. This data showed moderate salts with low sulphates and high nutrients. The higher nutrients could be due to the discharge from the WWTW at Kroonstad.

Fish	The EC of D can be ascribed to the absence of <i>A. sclateri</i> and <i>L. umbratus</i> from the observed fish assemblage combined with the lower than reference FROC of <i>T. sparrmanii</i> .		
Inverts	Sep 07	SASS5 score: 87	No of Taxa: 18 ASPT: 4.8
	Apr 08	SASS5 score: 57	No of Taxa: 16 ASPT: 3.6
Rip veg	The EC of C/D can be ascribed to season water flows (less winter flows) as well as variable water quality (turbidity smothering habitats and high nutrient levels).		
Rip veg	The area is currently degraded due to the introduction of a number of exotic species. Although not as degraded as the sites along the Vaal River, the Vals River has been impacted upon by surrounding agricultural practices and burning regimes.		
Diatoms	Diatom results are based on a sample taken during 2007. The Ecological Category (EC) was a D and the community indicated very high levels of organic pollution.		

1.3 MAIN IMPACTS AT THE SITE

	PES	Causes	Sources	F/NF
WQ	C/D	Discharges from WWTWs and irrigation return flows	Increased nutrients	F
Geom	B/C	Reduced baseflows and decline in small floods have reduced sediment transport; so flushing of fines and scour is reduced.	Abstraction	NF
Rip veg	D	Terrestrial exotic invasive species.	Anthropogenic.	NF
		Aquatic exotic invasive species.	Anthropogenic.	
Fish	D	Water quality impairment, nutrient enrichment especially high ammonia concentrations.	Agricultural activities in the catchment. WWTW and abattoirs near Kroonstad.	NF
Inverts	C/D	Absence of taxa with a preference for very fast flowing water. Loss of taxa that prefers loose cobbles.	Moderate flows absent.	F
		Loss of taxa with a high requirement for water quality.	Effluent coming from Kroonstad and surrounding areas.	NF

1.4 RESULTS: PRESENT ECOLOGICAL STATE

Driver Components	PES	Trend
GEOMORPHOLOGY	B/C	Stable
WATER QUALITY	C/D	Stable
DIATOMS	D	
Response Components	PES	Trend
FISH	D	Negative
MACRO INVERTEBRATES	C/D	Stable
INSTREAM	C/D	
RIPARIAN VEGETATION	D	Negative
ECOSTATUS	C/D	

The main reasons for the PES are reduced flows due to abstraction and deteriorated water quality. Riparian vegetation is impacted by exotic species while biota are in a deteriorated condition mainly due to impaired water quality.

1.5 SUITABILITY AS FUTURE BIOMONITORING SITE

EWR 14 is at the same location as OSAEH 11.5 and therefore this site was not assessed during this study. As this is the only site that has been identified in the Vals River, the data collated during the Reserve study is important and adequate and this site should be included in future monitoring programmes.