DEPARTMENT OF WATER AND SANITATION

Determination of Water Resource Classes, Reserve and the Resource Quality Objectives in the Keiskamma and Fish to Tsitsikamma Catchment

WP11354

Rivers Eco-Categorisation Report VOLUME 2

SVE

Northern Cape

Western Cape

REPORT NO.: WEM/WMA7/00/CON/RDM/1823 December 2023



water & sanitation

Limpopo

Gaute

Lesotho

North West

Study Area

Free State

Eastern Cape

Mpumalanga

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1. INTRODUCTION

The Eco-categorisation phase of the study forms part of Step 3 of the integrated steps for the determination of the Reserve.

Please note that this Report must be read in conjunction with Report number *WEM/WMA7/00/CON/RDM/1623: Eco-categorisation Report – Volume 1.* This Volume 2 includes all summaries of models and results/data for all EWR sites for the various components as follows:

- Appendix A: Diatom summary results
- Appendix B: Fish inventory and FRAI Models
- Appendix C: SASS5 data and MIRAI Models
- Appendix D: Riparian vegetation inventory and VEGRAI Models
- Appendix E: Summary of IHI Models
- Appendix F: EcoStatus Models
- Appendix G: Summary of HAI Models
- Appendix H: GAI Models
- Appendix I: Summary of EI-ES Models

Please note, that all completed electronic models (MIRAI, FRAI, VEGRAI, GAI and HAI) have been packaged and submitted to DWS for their records within a folder.

2. Appendix A: Diatom summary results

Site	EWR site	Coun	t No. spe	c.SPI	Category	Water Quality	%incl. in SPI	BDI •	%incl. in BD	%PTV	Evidence of organic pollution	% Deformed cells (>2)	Dominant species	Preference
INTERMEDIATE SITES (SEPT	EMBER 2022)													
Mthatha River (Lower)	MTHA01_I	404	30	15.5	В	Good	97	17.7	83	6.9	Site free from organic pollution	4	Achnanthidium spp.	Moderate to good quality waters
Mbhashe River (Middle)	MBAS01_I	400	25	15.8	В	Good	100	20	80	2.3	Site free from organic pollution	0	Achnanthes thienemannii Hustedt	Limited research on this diatom species however the specialists feel that it may be indicative of low nutrient/low EC (previously identified in high mountainous streams in SA and Lesotho)
													Achnanthidium spp.	Moderate to good quality waters
Black Kei	BKEI01_I	405	38	13.3	В	Good	100	12.1	89	29.1	Some evidence of organic pollution	1.25	Eolimna subminuscula (Manguin) Moser, Lange- Bertalot & Metzeltin	A cosmopolitan species common in electrolyte-rich, strongly polluted rivers and flowing waters.
													Nitzschia dissipata (Kützing) Grunow	A cosmopolitan species found in waters of moderate to high electrolyte content, not present in waters of low electrolyte content.
Great Kei	GKEI01_I	400	31	14.5	В	Good	100	16.2	90	7.5	Site free from organic pollution	0	Cocconeis placentula var. euglypta (Ehrenberg) Grunow	Nutrient and salinity increases (eutrophication)
Tsomo	TSOM01_I	406	30	15.4	В	Good	100	18	84	3.2	Site free from organic pollution	1.5	Achnanthes thienemannii Hustedt	Limited research on this diatom species however the specialists feel that it may be indicative of low nutrient/low EC (previously identified in high mountainous streams in SA and Lesotho)
													Achnanthidium spp.	Moderate to good quality waters
Middle Buffalo	BUFF01_I	410	35	10.9	с	Moderate	100	12	83	10.2	Site free from organic pollution	2.5	Cocconeis placentula var. euglypta (Ehrenberg) Grunow	Nutrient and salinity increases (eutrophication)
Keiskamma (Upper)	KEIS01_I	203	18	13.2	В	Good	100	14.9	89	23.6	Some evidence of organic pollution	1.5	Cocconeis placentula var. euglypta (Ehrenberg) Grunow	Nutrient and salinity increases (eutrophication)
Upper Kat	KAT01_I	203	29	14.4	В	Good	100	13.5	72	4.9	Site free from organic pollution	1.5	Achnanthidium spp.	Moderate to good quality waters
													Cocconeis placentula var. euglypta (Ehrenberg) Grunow	Nutrient and salinity increases (eutrophication)
Lower Great Fish	FISH03_I	401	34	11.4	с	Moderate	97	9.7	88	13.7	Site free from organic pollution	0.25	Cyclostephanos invisitatus (Hohn & Hellerman) Theriot, Stoermer & H å kansson	Cosmopolitan, common in summer plankton nutrient-rich streams. These species when in abundance is a good indicator of eutrophication.
Swartkops	SWAR01_I	404	32	15.8	В	Good	97	19.4	75	11.6	Site free from organic pollution	1	Psammothidium oblongellum (Oestrup) Van de Vijver	Tolerant of mild pollution only and also pollution sensitive. This was the only site with endemic species: Achanthes subaffinis Cholnok. Its preference is slow flowing water and oligotropic streams
Upper Gamtoos	GAMT01_I	405	15	17.6	А	High	100	18.9	67	0	Site free from organic pollution	1.25	Achnanthidium minutissimum (Kützing) Czarnecki	Found in well-oxygenated, clean, fresh waters. Usually attached to a substratum by a short mucilage stalk.

Site	EWR site	Count	No. spe	c. SPI	Category	Water Quality	%incl. in SPI	BDI	%incl.	%PTV	Evidence of organic	% Deformed cells (>2)	Dominant species	Preference
INTERMEDIATE SITES (MA	Y 2023)													
Black Kei	BKEI01_I	404	13	7.3	D	Poor	100	5.1	92	87.9	Site is heavily contaminated with organic pollution	1	Nitzschia frustulum (Kützing) Grunow	A cosmopolitan species found in electrolyte-rich and brackish waters. Tolerant of high conductivity, fluctuations in osmotic pressure and of critical levels of pollution.
Great Fish (Lower)	FISH03_I	406	18	6.7	D	Poor	100	5.1	89	86.2	Site is heavily contaminated with organic pollution	'1.5	Eolimna subminuscula (Manguin) Moser. Lange- Bertalot & Metzeltin	A cosmopolitan species common in electrolyte-rich, strongly polluted rivers and flowing waters.
													Nitzschia frustulum (Kützing) Grunow	A cosmopolitan species found in electrolyte-rich and brackish waters. Tolerant of high conductivity, fluctuations in osmotic pressure and of critical levels of pollution.
Keiskamma (Upper)		403	18	16.3	В	Good	89	18.2	72	7.2	Site free from organic pollution	0.75	Achnanthidium sp.	Moderate to good water quality conditions
													Gomphonema pumilum (Grunow) Reichardt & Lange-Bertalot	Tolerates critically to strongly polluted waters
Kat (Upper)	KAT01_I	403	19	16.8	В	Good	95	-14.1	68	3.2	Site free from organic pollution	0.75	Achnanthidium sp.	Moderate to good water quality conditions
Middle Buffalo	BUFF01_I	409	40	8.7	D	Poor	100	9.3	88	8.6	Site free from organic pollution	2.25	Cocconeis placentula var. euglypta (Ehrenberg) Grunow	Nutrient and salinity increases (eutrophication)
Middle Mbashe	MBAS01_I	404	21	14.7	В	Good	100	16.5	81	1.2	Site free from organic pollution	1	Achnanthes thienemannii Hustedt	Limited research on this diatom species however the specialists feel that it may be indicative of low nutrient/low EC (previously identified in high mountainous streams in SA and Lesotho)
Great Kei	GKEI01_I	408	27	12.9	В	Good	96	13.5	78	18.9	Site free from organic pollution	2	Achnanthidium sp.	Moderate to good water quality conditions
													Cocconeis placentula var. euglypta (Ehrenberg) Grunow	Nutrient and salinity increases (eutrophication)
													Encyonopsis minuta Krammer & Reichardt	Moderately motile, common in circumneutral water (low nutrient concentration)
Swartkops	SWAR01_I	412	26	16.1	В	Good	100	·19.3	73	20.9	Site free from organic pollution	3	Psammothidium oblongellum (Oestrup) Van de Vijver	Tolerant of mild pollution only and also pollution sensitive. This was the only site with endemic species: Achanthes subaffinis Cholnok. Its preference is slow flowing water and oligotropic streams
Gamtoos	GAMT01_I	400	34	9.1	с	Moderate	97	10.1	74	9.5	Site free from organic pollution	0	Navicula recens (Lange-Bertalot) Lange-Bertalot	Cosmopolitan species, found in large eutrophic rivers with elevated electrolyte content, also found in brackish waters. Tolerant to critical levels of pollution.
													Nitzschia forfica Cholnoky	Not much known about his species but assumed to be associated with high EC (per comms Dr Jonathan Taylor)
Tsomo	TSOM01_I	400	13	16.8	В	Good	100	20.0	77	3.0	Site free from organic pollution	0	Achnanthidium sp.	Moderate to good water quality conditions

Site	EWR site	Coun	t No. spec	. SPI	Category	Water Quality	%incl. in SPI	BDI •	%incl.	%PTV	Evidence of organic	% Deformed cells (>2)	Dominant species	Preference
RAPID 3 SITES (SEPTEMBER	2022)													
Mngazi	MNGA01_R	414	21	14.1	В	Good	100	13.3	76	1	Site free from organic pollution	3.5	Achnanthes thienemannii Hustedt	Limited research on this diatom species however the specialists feel that it may be indicative of low nutrient/low EC (previously identified in high mountainous streams in SA and Lesotho)
Nqabara	NQAB01_R	101	23	10.4	с	Moderate	100	9.6	83	29.7	Some evidence of organic pollution	1	Achnanthidium spp.	Moderate to good quality waters
													Cocconeis placentula var. euglypta (Ehrenberg) Grunow	Nutrient and salinity increases (eutrophication)
Mtentu	MTEN01_R	402	22	14	В	Good	91	14.2	64	0.7	Site free from organic pollution	0.5	Cocconeis placentula var. euglypta (Ehrenberg) Grunow	Nutrient and salinity increases (eutrophication)
Upper Mbashe	MBHA02_R	400	15	15.7	В	Good	87	15.8	83	0.8	Site free from organic pollution	0	Achnanthes thienemannii Hustedt	Limited research on this diatom species however the specialists feel that it may be indicative of low nutrient/low EC (previously identified in high mountainous streams in SA and Lesotho)
Gcuwa	GCUW01_R	403	27	7.3	D	Poor	96	8.6	85	45.2	Organic pollution likely to contribute significantly to eutrophication	0.75	Fragilaria ulna var.acus (Kützing) Lange-Bertalot	tolerates slightly saline water, alkalibontic (only in water pH>7), tolerates moderate orgainic pollution. Found in standing and flowing water.
													Gomphonema parvulum (Kützing) Kützing	A cosmopolitan species which is very widespread in a range of waters, from small pools to lakes and rivers and generally considered to be tolerant of extremely polluted conditions
													Navicula veneta Kützing	Cosmopolitan, common in heavily eutrophied, electrolyte- rich to brackish water. Very pollution tolerant, often the dominant species in industrially impacted waters.
Indwe	INDW01_R	400	16	16.6	В	Good	100	18.4	81	6.3	Site free from organic pollution	0	Achnanthes thienemannii Hustedt	Limited research on this diatom species however the specialists feel that it may be indicative of low nutrient/low EC (previously identified in high mountainous streams in SA and Lesotho)
													Achnanthidium spp.	Moderate to good quality waters
White Kei	WKEI01_R	302	28	14.3	В	Good	100	17.6	89	11.6	Site free from organic pollution	0.7	Achnanthidium eutrophilum (Lange-Bertalot) Lange-Bertalot	Found in well-oxygenated eutophic fresh water. Tolerant only to slight or moderate pollution
													Achnanthidium spp.	Moderate to good quality waters
													Encyonopsis minuta Krammer & Reichardt	Moderately motile, common in circumneutral water (low nutrient concentration)
Middle Kubusi	KUBU01_R	301	28	6.3	D	Poor	100	9.2	86	50.2	Organic pollution likely to contribute significantly to eutrophication	0.3	Eolimna minima(Grunow) Lange-Bertalot	Cosmopolitan, found in a wide range of waters including heavily polluted biotopes. May possibly be associated with organic detritus
													Nitzschia sp.	Generally, sitaltion and moderate pollution
Lower Buffalo	BUFF02_R	400	30	8.2	D	Poor	97	8.5	87	43	Organic pollution likely to contribute significantly to eutrophication	0	Eolimna subminuscula (Manguin) Moser, Lange- Bertalot & Metzeltin	A cosmopolitan species common in electrolyte-rich, strongly polluted rivers and flowing waters.
													Nitzschia frustulum (Kützing) Grunow	A cosmopolitan species found in electrolyte-rich and brackish waters. Tolerant of fluctuations in osmotic pressure and of critical levels of pollution.
													Planothidium engelbrechtii (Cholnoky) Round & Bukhtiyarova	Found abundantly in saline inland waters with very high electrolyte content. Capable of tolerating critical to very heavy organic pollution.

Site	EWR site	Coun	t No. spec	SPI	Category	v Water ▼ Quality	%incl. in SPI	BDI	%incl. in BD	%PTV	Evidence of organic pollution	% Deformed cells (>2)	Dominant species	Preference
RAPID 3 SITES (SEPTEMB	3ER 2022)													
Keiskamma (Lower)	KEIS02_R	200	33	8.3	D	Poor	100	11.3	82	16	Site free from organic pollut	ti O	Cocconeis placentula var. euglypta (Ehrenberg) Grunow	Nutrient and salinity increases, so meso- or eutrophic conditions and is often related to standing water.
Tyume	TYUM01_R	208	32	11.4	с	Moderate	100	12.5	81	14.4	Site free from organic pollution	4	Cocconeis placentula var. euglypta (Ehrenberg) Grunow	Nutrient and salinity increases (eutrophication)
Koonap	KOON01_R	107	19	8.4	D	Poor	100	11.3	89	8.4	Site free from organic pollution	7	Cocconeis placentula var. euglypta (Ehrenberg) Grunow	Nutrient and salinity increases (eutrophication)
Lower Kat	KAT02_R	100	15	15.8	В	Good	100	15.9	87	1	Site free from organic pollution	0	Achnanthidium minutissimum (Kützing) Czarnecki	Found in well-oxygenated, clean, fresh waters. Usually attached to a substratum by a short mucilage stalk.
													Achnanthidium spp.	Moderate to good quality waters
Middle Great Fish	FISH02_I	400	34	13.4	в	Good	100	11.8	91	7	Site free from organic pollution	0	Cyclostephanos invisitatus (Hohn & Hellerman) Theriot, Stoermer & H å kansson	Cosmopolitan, common in summer plankton nutrient-rich streams. These species when in abundance is a good indicator of eutrophication.
													Nitzschia dissipata (Kützing) Grunow	A cosmopolitan species found in waters of moderate to high electrolyte content, not present in waters of low electrolyte content.
Great Fish Upper	FISH03_R	411	32	11.2	с	Moderate	97	11.3	78	20.2	Some evidence of organic pollution	2.75	Amphora pediculus (Kützing) Grunow	A cosmopolitan species found in waters with moderate electrolyte content (Increased salts and cultivated areas) and tolerating critical levels of pollution. pH>7
													Planothidium frequentissimum (Lange-Bertalot) Lange-Bertalot	A common species in standing and flowing, circumneutral to alkaline waters with a moderate to high electrolyte content. Capable of tolerating critically polluted conditions.
Tarka	TARK01_R	404	23	7.1	D	Poor	100	6.3	74	25.5	Some evidence of organic pollution	1	Craticula buderi (Hustedt) Lange-Bertalot	Nutrient and salinity increases (eutrophication)
													Planothidium sp.	First time our Diatom specialists have identified Planothidium and thus its preference is to be researched.
Lower Sunday	SUND02_R	414	36	8.2	D	Poor	100	9.6	86	19.8	Site free from organic pollution	3.5	Cocconeis placentula var. euglypta (Ehrenberg) Grunow	Nutrient and salinity increases (eutrophication)
													Cyclotella atomus Hustedt	Euplanktonic. Found in alkaline waters. Saline and nutrient tolerant. a-mesosaprobic (moderately oxygenated environment in which considerable organic material). These species when in abundance is a good indicator of eutrophication.
Kouga	KOUG01_R	408	35	15.9	В	Good	100	16.2	83	6.6	Site free from organic pollution	2	Achnanthidium minutissimum (Kützing) Czarnecki	Found in well-oxygenated, clean, fresh waters. Usually attached to a substratum by a short mucilage stalk.
													Achnanthidium spp.	Moderate to good quality waters
													Cocconeis placentula Ehrenberg	Occurring in mesotrophic to eutrophic flowing and standing waters. Found in abundance on plants, wood and stone.

Site	EWR site	Cour •	nt No. spe	c. SPI	Categor	y Water Vuality	%incl. in SPI	BDI V	%incl. in BD	%PTV	Evidence of organic pollution	% Deformed cells (>2)	Dominant species	Preference
RAPID 3 SITES (MAY 2023)														
Lower Kubusi	KUBU03_R	400	31	15.2	В	Good	94	16.8	77	4.8	Site free from organic pollution	0	Achnanthidium sp.	Moderate to good water quality conditions
Kromme	KROM01_R	409	28	15.7	В	Good	89	18.4	57	4.2	Site free from organic pollution	"2.25	Achnanthidium sp.	Moderate to good water quality conditions
													Psammothidium oblongellum (Oestrup) Van de Vijver	Tolerant of mild pollution only and also pollution sensitive. This was the only site with endemic species: Achanthes subaffinis Cholnok. Its preference is slow flowing water and oligotropic streams
Gcuwa	GCUW01_R	400	15	16.6	В	Good	87	19.9	67	0.3	Site free from organic pollution	0	Achnanthidium sp.	Moderate to good water quality conditions
													Fragilaria capucina Desmazieres	cosmopolitan taxon is found in circumneutral, oligo- to mesotrophic waters with moderate electrolyte content, may have some resistance to heavy metals

Site	EWR site	Cou ▼	nt No.	spec. Si	PI C	Category	Water Quality	%incl. in SPI	BDI •	%incl. in BD	%PTV	Evidence of organic pollution	% Deformed cells (>2)	Dominant species	Preference
FIELD VERIFICATION SITES (SEPTEBMER 2	2022)													
Mtakatye	MTAK01_FV	404	21	1	5.5	В	Good	95	16.1	71	1.5	Site free from organic pollution	1	Achnanthes thienemannii Hustedt	Limited research on this diatom species however the specialists feel that it may be indicative of low nutrient/low EC (previously identified in high mountainous streams in SA
															and Lesotho)
														Achnanthidium spp.	Moderate to good quality waters
Klipplaat	KLIP01_FV	402	46	1	2.8	С	Moderate	98	13.3	80	3.2	Site free from organic pollution	0.5	Cocconeis placentula var. euglypta (Ehrenberg) Grunow	Nutrient and salinity increases (eutrophication)
Klaas Smits	KSMI01_R	401	18	1	.7	Е	Critical	100	3.7	94	50.9	Organic pollution likely to contribute significantly to eutrophication	0.25	Navicula veneta Kützing	Cosmopolitan, common in heavily eutrophied, electrolyte- rich to brackish water. Very pollution tolerant, often the dominant species in industrially impacted waters.
														Nitzschia palea (Kützing) W.Smith	A cosmopolitan and very commonly occurring species found in eutrophic and very heavily polluted to extremely polluted waters with moderate to high electrolyte content
Upper Buffalo	BUFF03_VF	302	31	1	1.4	с	Moderate	97	13.5	74	10.6	Site free from organic pollution	0.7	Cocconeis placentula var. euglypta (Ehrenberg) Grunow	Nutrient and salinity increases (eutrophication)
Upper Kubusi	KUBU02_FV	414	35	1	2.1	С	Moderate	100	13.2	85	14.3	Site free from organic pollution	3.5	Achnanthidium crassum (Hustedt) Potapova & Ponader	Alkaline and slow flowing water
														Achnanthidium spp.	Moderate to good quality waters
														Nitzschia sp.	Generally, sitaltion and moderate pollution
Upper Great Fish (Craddock) GFIS04_FV	400	32	1	1.1	с	Moderate	100	11	84	7	Site free from organic pollution	0	Cyclostephanos dubius (Fricke) Round	A euplanktonic species found in inland waters with elevated chloride concentration (high conductivity) as well as calcareous, alkaline waters. Sensitive to siltation (i.e. will dissapear).
														Cyclostephanos invisitatus (Hohn & Hellerman) Theriot, Stoermer & H å kansson	Cosmopolitan, common in summer plankton nutrient-rich streams. These species when in abundance is a good indicator of eutrophication.
														Gomphonema pumilum var. rigidum Reichardt & Lange-Bertalot	A cosmopolitan species found in mesotrophic to eutrophic waters with moderate electrolyte content. Not tolerant of more than critical levels of pollution.
Groot Brak	GBRA01_FV	400	30	1	1.9		Moderate	100	13.5	87	3	Site free from organic	0	Cyclostephanos invisitatus (Hohn & Hellerman)	Cosmopolitan, common in summer plankton nutrient-rich
						С						pollution		Theriot, Stoermer & H å kansson	streams. These species when in abundance is a good indicator of eutrophication.
														Gomphonema pumilum (Grunow) Reichardt & Lange-Bertalot	Tolerates critically to strongly polluted waters
Little Fish Upper	LFIS01_R	402	37	1	1.6	с	Moderate	95	97	70	9.2	Site free from organic pollution	0.5	Gomphonema pumilum (Grunow) Reichardt & Lange-Bertalot	Tolerates critically to strongly polluted waters
Little Fish Lower	LFIS02_R	403	38	1	0.6	С	Moderate	97	10.4	84	17.1	Site free from organic pollution	0.75	Cocconeis placentula var. euglypta (Ehrenberg) Grunow	Nutrient and salinity increases (eutrophication)
														Cyclostephanos dubius (Fricke) Round	A euplanktonic species found in inland waters with elevated chloride concentration (high conductivity) as well as calcareous, alkaline waters. Sensitive to siltation (i.e. will dissapear).
														Cyclostephanos invisitatus (Hohn & Hellerman) Theriot, Stoermer & H å kansson	Cosmopolitan, common in summer plankton nutrient-rich streams. These species when in abundance is a good indicator of eutrophication.

Determination of Water Resource Classes, Reserve and RQOs in the Keiskamma and Fish to Tsitsikamma catchment: Wetland Eco-2023 categorisation Report

3. Appendix B: Fish inventory and FRAI Models

Intermediate Sites

	Site	MTHA01_ River(I: Mthatha Lower)	MBAS01_I River (I	: Mbhashe Middle)	BKEI01_I: Riv	Black Kei ver	GKEI01_I: Riv	Great Kei ver	TSOM01_I: 1	somo River	BUFF01_I: E (Mic	Buffalo River ddle)	KEIS01_I: I River (Keiskamma Upper)
	Survey	September 2022	May 2023	September 2022	May 2023	September 2022	May 2023	September 2022	May 2023	September 2022	May 2023	September 2022	May 2023	September 2022	May 2023
Species	Abbreviation														
Indigenous															
Anguilla marmorate	AMAR	14													
Anguilla mossambica	AMOS	4		3								4	3		1
Enteromius anoplus sl.	BANO						1			1					
Enteromius mandelai	BANO														
Enteromius pallidus	BPAL														
Enteromius viviparus	BVIV														
Gilchristella aestuaria	GAES	4													
Glossogobius callidus	GCAL	15										3	100	1	7
Labeo umbratus	LUMB														
Monodactylus falciformis	MFAL	14													
Oreochromis mossambicus	OMOS												6		
Pseudomyxus capensis	MCAP	2													
Sandelia bainsii	SBAI														
Sandelia capensis	SCAP														
Non-native															
Clarias gariepinus	CGAR	5						5	3	5		7	5		
Cyprinus carpio	CCAR						1			1			1		
Gambusia affinis	GAFF														
Labeo capensis	LCAP														
Labeo umbratus	LUMB												3		
Labeobarbus aeneus	BAEN					1	6	4	13	50	33				
Lepomis macrochirus	LMAC														
Micropterus dolomieu	MDOL														
Micropterus salmoides	MSAL														
Oreochromis mossambicus	OMOS														
Pseudocrenilabrus philander	PPHI														
Tilapia sparrmanii	TSPA											14	38		
No of Fish		58	0	3	0	1	8	9	16	57	33	28	156	1	8
No. of Species		7	0	1	0	1	3	2	2	4	1	4	7	1	2

	Site	KAT01_I: (Up	Kat River per)	FISH03_I: River (Great Fish Lower)	SWAR01_I: Swartko	KwaZungu / ps River	GAMT01_I Riv	: Gamtoos /er
	Survey	September 2022	July 2022	September 2022	May 2023	September 2022	May 2023	September 2022	May 2023
Species	Abbreviation								
Indigenous									
Anguilla marmorate	AMAR								
Anguilla mossambica	AMOS	1						1	
Enteromius anoplus sl.	BANO								
Enteromius mandelai	BANO	27	45						
Enteromius pallidus	BPAL					15	51	23	23
Enteromius viviparus	BVIV								
Gilchristella aestuaria	GAES								1
Glossogobius callidus	GCAL	6	15			5	5	1	5
Labeo umbratus	LUMB								
Monodactylus falciformis	MFAL								
Oreochromis mossambicus	OMOS								
Pseudomyxus capensis	MCAP								
Sandelia bainsii	SBAI	5	5						
Sandelia capensis	SCAP					2	2		
Non-native									
Clarias gariepinus	CGAR				1		1		
Cyprinus carpio	CCAR								
Gambusia affinis	GAFF								
Labeo capensis	LCAP								
Labeo umbratus	LUMB								
Labeobarbus aeneus	BAEN			8	20				
Lepomis macrochirus	LMAC								
Micropterus dolomieu	MDOL								
Micropterus salmoides	MSAL								
Oreochromis mossambicus	OMOS						2		105
Pseudocrenilabrus philander	PPHI							23	137
Tilapia sparrmanii	TSPA						2		2
No of Fish		39	65	8	21	22	63	48	273
No. of Species		4	3	1	2	3	6	4	6

Determination of Water Resource Classes, Reserve and RQOs in the Keiskamma and Fish to Tsitsikamma catchment: Wetland Eco-2023 categorisation Report

Rapid Sites

	Site	MNGA01_R: Mngazi River	NQAB01_R: Nqabarha River	MTEN01_R: Mtentu River	MBHA02_R: Mbhashe River (Upper)	GCUW01_R: Gcuwa River	INDW01_R: Indwe River	WKEI01_R: White Kei River	KUBU03_R: Kubusi River (Lower)	KEISO2_R: Keiskamma River (Lower)
	Survey	September 2022	September 2022	September 2022	September 2022	May 2023	September 2022	September 2022	May 2023	May 2023
Species	Abbreviatio n									
Indigenous										
Anguilla mossambica	AMOS			5	1					1
Enteromius anoplus sl.	BANO					2				
Enteromius pallidus	BPAL									
Enteromius viviparus	BVIV			10						
Glossogobius callidus	GCAL	24							1	
Labeo umbratus	LUMB									
Oreochromis mossambicus	OMOS	35		26						2
Pseudomyxus capensis	MCAP	10								2
Non-native										
Clarias gariepinus	CGAR						1	1	3	
Cyprinus carpio	CCAR					4				
Gambusia affinis	GAFF									
Labeo capensis	LCAP									
Labeo umbratus	LUMB									7
Labeobarbus aeneus	BAEN				13		31	23	8	
Lepomis macrochirus	LMAC									
Micropterus dolomieu	MDOL									
Micropterus salmoides	MSAL		2	5					3	
Tilapia sparrmanii	TSPA	1								
No of Fish		70	2	46	14	6	32	24	15	12
No. of Species		4	1	4	2	2	2	2	4	4

	Site	TYUM01_R: Tyume River	KOON01_R: Koonap River	KAT02_R: Kat River (Lower)	SUND02_R: Sundays River (lower)	KOUG01_R: Kouga River	KROM01_R: Kromme River
	Survey	September 2022	September 2022	September 2022	September 2022	September 2022	May 2023
Species	Abbreviation						
Indigenous							
Anguilla mossambica	AMOS	2					
Enteromius anoplus sl.	BANO						
Enteromius pallidus	BPAL				8		
Enteromius viviparus	BVIV						
Glossogobius callidus	GCAL	3			14		
Labeo umbratus	LUMB		3	7			
Oreochromis mossambicus	OMOS				8		
Pseudomyxus capensis	MCAP						
Non-native							
Clarias gariepinus	CGAR	2	4	2		1	
Cyprinus carpio	CCAR						
Gambusia affinis	GAFF				1		
Labeo capensis	LCAP		4				
Labeo umbratus	LUMB						
Labeobarbus aeneus	BAEN		28	7			
Lepomis macrochirus	LMAC						74
Micropterus dolomieu	MDOL					3	
Micropterus salmoides	MSAL						41
Tilapia sparrmanii	TSPA	4			1		
No of Fish		11	39	16	32	4	115
No. of Species		4	4	3	5	2	2

4. Appendix C: SASS5 data and MIRAI Models

RAPID 3 SITES

Mngazi River

	Time :					SASS Version 5 Score She	eet							Version	date:	Sep 20	05
Date (dd-mm-vr)	07-Sep-	-22								(dd.ddd	dd)	Biotopes Sampled (tick & rate)	Rating (1	-5)		T	'ime (min)
Site Code:	Mnga01	R				Grid reference (dd mm ss.s). I at:	s	-31 608	958	(,		5	.,	1		
Collector/Sampler:	Kylio Es	arroll					Ē	29 4051	32			Stenso Out Of Current (SOOC)	5				
collector/sampler.	Magori	arren				Long		23.4031	52			Stones Out Of Current (SOOC)	0				
River:	wingazi					Datum (WGS84/Cape):		-	1	-		Bedrock	0		-		
Level 1 Ecoregion:	31: EAS	STERN C	OASTAL	. BELT		Altitude (m):						Aquatic Veg	0		0 V	EALTH F	Re
Quaternary Catchment:	T70B					Zonation:	_					MargVeg In Current	1	Į	SEN	1.00	-OGR
	Temp (°	°C):				Routine or Project? (circle one)	Flow					MargVeg Out Of Current	1		4		272
Site Description: 52	pH:					Project Name:	Clarity	(cm):				Gravel	4		11	25	
Refer to Report Number:	 DO (ma	<i>/</i> 1.).				WD44254	Turbid	lity.				Sand	3		TET OF	NATES AFEAIN AF	CORPACTOR
WEM/WMA7/00/CON/RDM/0722 and for all	Conduc	tivity.				VVF11334	Colour					Mud	2	l	WATER DEPE DE ENVIR	OWNER AND	STON IS & EXTRIBUT
other site information, including in situ	Discolar	- D'					ooloui					Hand nicking (/ious) shoemustion		ł	-		
water quality	Ripariai	n Disturb	bance:										×				
	Instream	n Disturi	bance:	-			-	_				Biotope Score (%)	47				
Taxon	QV	S	Veg	GSM	TOT	Taxon	QV	S	Veg	GSM	тот	Taxon	QV	S	Veg	GSM	TOT
PORIFERA (Sponge)	5					HEMIPTERA (Bugs)						DIPTERA (Flies)					
COELENTERATA (Cnidaria)	1					Belostomatidae* (Giant water bugs)	3		A		Α	Athericidae (Snipe flies)	10	Α	1		Α
TURBELLARIA (Flatworms)	3					Corixidae* (Water boatmen)	3		A		Α	Blepharoceridae (Mountain midges)	15				
ANNELIDA						Gerridae* (Pond skaters/Water striders)	5					Ceratopogonidae (Biting midges)	5	1			1
Oligochaeta (Earthworms)	1	Α	Α		Α	Hydrometridae* (Water measurers)	6		1		1	Chironomidae (Midges)	2	Α		1	Α
Hirudinea (Leeches)	3					Naucoridae* (Creeping water bugs)	7					Culicidae* (Mosquitoes)	1				
CRUSTACEA						Nepidae* (Water scorpions)	3		1		1	Dixidae* (Dixid midge)	10				
Amphipoda (Scuds)	13					Notonectidae* (Backswimmers)	3				Α	Empididae (Dance flies)	6				
Potamonautidae* (Crabs)	3	<u>A</u>	Α		В	Pleidae* (Pygmy backswimmers)	4		1		1	Ephydridae (Shore flies)	3				
Atyidae (Freshwater Shrimps)	8		Α		Α	Veliidae/Mveliidae* (Ripple bugs)	5					Muscidae (House flies, Stable flies)	1				
Palaemonidae (Freshwater Prawns)	10				Α	MEGALOPTERA (Fishflies, Dobsonflies &	Alderfli	ies)				Psychodidae (Moth flies)	1				
HYDRACARINA (Mites)	8					Corydalidae (Fishflies & Dobsonflies)	8					Simuliidae (Blackflies)	5	1		1	Α
PLECOPTERA (Stoneflies)						Sialidae (Alderflies)	6					Syrphidae* (Rat tailed maggots)	1				
Notonemouridae	14					TRICHOPTERA (Caddisflies)						Tabanidae (Horse flies)	5	1		1	Α
Perlidae	12	В	1	1	В	Dipseudopsidae	10					Tipulidae (Crane flies)	5	1			1
EPHEMEROPTERA (Mayflies)						Ecnomidae	8					GASTROPODA (Snails)					
Baetidae 1sp	4					Hydropsychidae 1 sp	4	Α			Α	Ancylidae (Limpets)	6		1	1	1
Baetidae 2 sp	6					Hydropsychidae 2 sp	6					Bulininae*	3				
Baetidae > 2 sp	12	В	В	Α	В	Hydropsychidae > 2 sp	12					Hydrobiidae*	3		1		
Caenidae (Squaregills/Cainfles)	6	В		Α	В	Philopotamidae	10					Lymnaeidae* (Pond snails)	3		1		
Ephemeridae	15					Polycentropodidae	12					Physidae* (Pouch snails)	3				
Heptageniidae (Flatheaded mayflies)	13	В			В	Psychomyiidae/Xiphocentronidae	8					Planorbinae* (Orb snails)	3		1	1	
Leptophlebiidae (Prongills)	9	В		Α	В	Cased caddis:						Thiaridae* (=Melanidae)	3		1	1	
Oligoneuridae (Brushlegged mayflies)	15					Barbarochthonidae SWC	13					Viviparidae* ST	5		1	1	
Polymitarcyidae (Pale Burrowers)	10					Calamoceratidae ST	11					PELECYPODA (Bivalvles)					
Prosopistomatidae (Water specs)	15					Glossosomatidae SWC	11					Corbiculidae (Clams)	5		1		
Teloganodidae SWC (Spiny Crawlers)	12					Hydroptilidae	6					Sphaeriidae (Pill clams)	3				
Tricorythidae (Stout Crawlers)	9	A		1	Α	Hydrosalpingidae SWC	15					Unionidae (Perly mussels)	6				
ODONATA (Dragonflies & Damselflies)						Lepidostomatidae	10					SASS Score					190
Calopterygidae ST,T (Demoiselles)	10					Leptoceridae	6		Α		Α	No. of Taxa					32
Chlorocyphidae (Jewels)	10					Petrothrincidae SWC	11					ASPT					5.9
Synlestidae (Chlorolestidae)(Sylphs)	8					Pisuliidae	10					Other biota:					
Coenagrionidae (Sprites and blues)	4		Α		Α	Sericostomatidae SWC	13										
Lestidae (Emerald Damselflies/Spreadwings) 8					COLEOPTERA (Beetles)											
Platycnemidae (Stream Damselflies)	10					Dytiscidae/Noteridae* (Diving beetles)	5		Α		Α						
Protoneuridae (Threadwings)	8					Elmidae/Dryopidae* (Riffle beetles)	8	1			1						
Aeshnidae (Hawkers & Emperors)	8					Gyrinidae* (Whirligig beetles)	5	Α			Α	Comments/Observations:					
Corduliidae (Cruisers)	8	1	1		1	Haliplidae* (Crawling water beetles)	5		1	1							
Gomphidae (Clubtails)	6	1	1	Α	Α	Helodidae (Marsh beetles)	12		1	1		1					
Libellulidae (Darters/Skimmers)	4	В	1		В	Hydraenidae* (Minute moss beetles)	8	1	1								
LEPIDOPTERA (Aquatic Caterpillars/Moths))					Hydrophilidae* (Water scavenger beetles)	5		1	1	1	1					
Crambidae (Pyralidae)	12	1				Limnichidae (Marsh-Loving Beetles)	10		1	1	1	1					
	4					Psephenidae (Water Pennies)	10			1	1	1					

Ngabarha River

Date (dd-mm-yr):	09-Sep	-22								(dd.ddd	dd)	Biotopes Sampled (tick & rate)	Rating (1	-5)		т	ime (min)
Site Code:	Nqab01	_R				Grid reference (dd mm ss.s) Lat:	S	-32.091	927				1		1		
Collector/Sampler:	Kylie Fa	arrell				Long	: E	28.4002	234			Stones Out Of Current (SOOC)	3				
River:	Ngabar	а				Datum (WGS84/Cape)						Bedrock	5		1		
Level 1 Ecoregion:	16: SOL	JTH EAS	TERN U	PLANDS		Altitude (m)				1		Aquatic Veg	3			CALTH .	5
Quaternary Catchment:	T90A					Zonation						MargVeg In Current	4		ERI	Parid b	ROO
	Tomp (°C)•				Routine or Project? (circle one)	Elow					MargVeg Out Of Current	4		40	101	2Py
Site Description: 52	Temp (C).				Project Name:	Clasify	().	-			Gravel	3		4		
Befer to Report Number:	_рн:					Project Name.	Clarity	(cm):				Gravei	3				m
WEM/WMA7/00/CON/RDM/0722 and for all	DO (mg	/L):				WP11354	lurbid	ity:	<u> </u>			Sand	3	ł	DET. OF BATES	NTES AFEARS & F	ORESTRY ISSION
other site information, including in situ	Conduc	ctivity:					Colour	•				Mud	3	ļ	DEPE OF ENVI	DANINGAL AITA:	IS & TOURSM
water quality	Riparia	n Disturb	bance:									Hand picking/Visual observation	X				
and the A	Instream	n Disturl	bance:									Biotope Score (%)	64				
Taxon	QV	S	Veg	GSM	TOT	Taxon	QV	S	Veg	GSM	тот	Taxon	QV	S	Veg	GSM	TOT
PORIFERA (Sponge)	5					HEMIPTERA (Bugs)						DIPTERA (Flies)					
COELENTERATA (Cnidaria)	1					Belostomatidae* (Giant water bugs)	3					Athericidae (Snipe flies)	10				
TURBELLARIA (Flatworms)	3	Α			Α	Corixidae* (Water boatmen)	3		В		В	Blepharoceridae (Mountain midges)	15				
ANNELIDA						Gerridae* (Pond skaters/Water striders)	5				Α	Ceratopogonidae (Biting midges)	5			1	1
Oligochaeta (Earthworms)	1			1	1	Hydrometridae* (Water measurers)	6					Chironomidae (Midges)	2	В	1	В	В
Hirudinea (Leeches)	3					Naucoridae* (Creeping water bugs)	7					Culicidae* (Mosquitoes)	1	1	Α	Α	Α
CRUSTACEA						Nepidae* (Water scorpions)	3					Dixidae* (Dixid midge)	10				
Amphipoda (Scuds)	13					Notonectidae* (Backswimmers)	3					Empididae (Dance flies)	6				
Potamonautidae* (Crabs)	3	<u>A</u>			Α	Pleidae* (Pygmy backswimmers)	4					Ephydridae (Shore flies)	3				
Atyidae (Freshwater Shrimps)	8					Veliidae/Mveliidae* (Ripple bugs)	5					Muscidae (House flies, Stable flies)	1				
Palaemonidae (Freshwater Prawns)	10					MEGALOPTERA (Fishflies, Dobsonflies &	Alderfli	es)				Psychodidae (Moth flies)	1				
HYDRACARINA (Mites)	8	1			1	Corydalidae (Fishflies & Dobsonflies)	8					Simuliidae (Blackflies)	5	B		В	В
PLECOPTERA (Stoneflies)						Sialidae (Alderflies)	6					Syrphidae* (Rat tailed maggots)	1				
Notonemouridae	14					TRICHOPTERA (Caddisflies)						Tabanidae (Horse flies)	5				
Perlidae	12					Dipseudopsidae	10					Tipulidae (Crane flies)	5				
EPHEMEROPTERA (Mayflies)						Ecnomidae	8					GASTROPODA (Snails)					
Baetidae 1sp	4					Hydropsychidae 1 sp	4					Ancylidae (Limpets)	6		1	1	Α
Baetidae 2 sp	6					Hydropsychidae 2 sp	6		В		В	Bulininae*	3				
Baetidae > 2 sp	12		В	В	В	Hydropsychidae > 2 sp	12					Hydrobiidae*	3				
Caenidae (Squaregills/Cainfles)	6	Α	1		Α	Philopotamidae	10					Lymnaeidae* (Pond snails)	3				
Ephemeridae	15					Polycentropodidae	12					Physidae* (Pouch snails)	3				
Heptageniidae (Flatheaded mayflies)	13					Psychomyiidae/Xiphocentronidae	8					Planorbinae* (Orb snails)	3				
Leptophlebiidae (Prongills)	9	1	1	Α	Α	Cased caddis:						Thiaridae* (=Melanidae)	3				
Oligoneuridae (Brushlegged mayflies)	15					Barbarochthonidae SWC	13					Viviparidae* ST	5				
Polymitarcyidae (Pale Burrowers)	10					Calamoceratidae ST	11					PELECYPODA (Bivalvles)					
Prosopistomatidae (Water specs)	15					Glossosomatidae SWC	11					Corbiculidae (Clams)	5				
Teloganodidae SWC (Spiny Crawlers)	12					Hydroptilidae	6					Sphaeriidae (Pill clams)	3				
Tricorythidae (Stout Crawlers)	9					Hydrosalpingidae SWC	15					Unionidae (Perly mussels)	6				
ODONATA (Dragonflies & Damselflies)						Lepidostomatidae	10					SASS Score					89
Calopterygidae ST,T (Demoiselles)	10					Leptoceridae	6					No. of Taxa					18
Chlorocyphidae (Jewels)	10					Petrothrincidae SWC	11					ASPT					4.9
Synlestidae (Chlorolestidae)(Sylphs)	8					Pisuliidae	10					Other biota:					
Coenagrionidae (Sprites and blues)	4		В		В	Sericostomatidae SWC	13										
Lestidae (Emerald Damselflies/Spreadwings	s) 8					COLEOPTERA (Beetles)											
Platycnemidae (Stream Damselflies)	10					Dytiscidae/Noteridae* (Diving beetles)	5										
Protoneuridae (Threadwings)	8					Elmidae/Dryopidae* (Riffle beetles)	8										
Aeshnidae (Hawkers & Emperors)	8					Gyrinidae* (Whirligig beetles)	5	<u>A</u>			В	Comments/Observations:					
Corduliidae (Cruisers)	8					Haliplidae* (Crawling water beetles)	5								_		
Gomphidae (Clubtails)	6					Helodidae (Marsh beetles)	12										
Libellulidae (Darters/Skimmers)	4					Hydraenidae* (Minute moss beetles)	8										
LEPIDOPTERA (Aquatic Caterpillars/Moths	i)					Hydrophilidae* (Water scavenger beetles)	5		1	Α	Α						
Crambidae (Pyralidae)	12					Limnichidae (Marsh-Loving Beetles)	10										
						Psephenidae (Water Pennies)	10					1					

Mtentu River

Date (dd-mm-yr):	06-Sep-	-22								(dd.ddd	dd)	Biotopes Sampled (tick & rate)	Rating (1	-5)		Ti	me (min
Site Code:	Mten01	R				Grid reference (dd mm ss.s) Lat:	s	-31.1304	483°				5		1		
Collector/Sampler:	Kylie Fa	arrell				Long	F	29.757	179°			Stones Out Of Current (SOOC)	2				
Pivor:	Mtentu					Datum (WGS94/Cano):	_		-			Bedrock	0		-		
	17: NO	TH FAS	TERNO		BELT	Datum (WG364/Cape).			-	-		Aquatia Vag	0			CALTH .	L
Level 1 Ecoregion:	TEOC			OADTAL	DEET	Alutude (III):							2		SR H	carra pl	RO
Quaternary Catchinent.	1000					Zonation:	1	I				margveg in current	2		20	-101-	P-1
	Temp (° C) :				Routine or Project? (circle one)	Flow					MargVeg Out Of Current	2		4	33	N.
Site Description: 52	pH:					Project Name:	Clarity	(cm):				Gravel	3			100	ΑE
Refer to Report Number:	DO (mg	ı/L):				WP11354	Turbidi	ty:				Sand	1		CEPT. OF V	ATES AFEAIRS & FO	URPSTRY
WEM/WMA7/00/CON/RDM/0722 and for all	Conduc	ctivity:					Colour:					Mud	1		DEPE OF EXHR	INVEN AL AITA IS	S & TOURSM
other site information, including in situ	Riparia	n Disturk	ance:			•						Hand picking/Visual observation	5		-		
water quality	Instream	n Distur	bance:									Biotope Score (%)	36				
Taxon	QV	S	Veg	GSM	тот	Taxon	οv	s	Veg	GSM	тот	Taxon	QV	s	Vea	GSM	тот
PORIFERA (Sponge)	5					HEMIPTERA (Bugs)		-				DIPTERA (Flies)		-	3		
COELENTERATA (Cnidaria)	1					Belostomatidae* (Giant water bugs)	3					Athericidae (Snipe flies)	10	А		1	А
TURBELLARIA (Flatworms)	3					Corixidae* (Water boatmen)	3			1	1	Blepharoceridae (Mountain midges)	15				
ANNELIDA						Gerridae* (Pond skaters/Water striders)	5					Ceratopogonidae (Biting midges)	5			1	1
Oligochaeta (Earthworms)	1			А	А	Hydrometridae* (Water measurers)	6					Chironomidae (Midges)	2	Α			А
Hirudinea (Leeches)	3					Naucoridae* (Creeping water bugs)	7					Culicidae* (Mosquitoes)	1				
CRUSTACEA	-					Nepidae* (Water scorpions)	3					Dixidae* (Dixid midge)	10				
Amphipoda (Scuds)	13					Notonectidae* (Backswimmers)	3					Empididae (Dance flies)	6				
Potamonautidae* (Crabs)	3		1	Δ	Δ	Pleidae* (Pygmy backswimmers)	4		1		1	Ephydridae (Shore flies)	3				
Atvidae (Ereshwater Shrimps)	8		-			Veliidae/M veliidae* (Ripple bugs)	5		Δ	Δ	B	Muscidae (House flies, Stable flies)	1				
Palaemonidae (Freshwater Prawns)	10					MEGAL OPTERA (Eishflies Dobsonflies &	Alderflie	25)		~		Psychodidae (Moth flies)	1				
HYDRACARINA (Mites)	8					Corvdalidae (Fishflies & Dobsonflies)	8					Simuliidae (Blackflies)	5	C			C
PLECOPTERA (Stoneflies)	0					Sialidae (Alderflies)	6					Syrobidae* (Bat tailed maggots)	1	×			Ŭ
Notonemouridae	14					TRICHOPTERA (Caddisflies)	Ű					Tabanidae (Horse flies)	5				
Perlidae	12	Δ		Δ	в	Dipseudopsidae	10					Tipulidae (Crane flies)	5			───╯	
EPHEMEROPTERA (Mayflies)	12	~		~		Ecnomidae	8					GASTROPODA (Snails)					
Baetidae 1sp	4					Hydropsychidae 1 sp	4					Ancylidae (Limpets)	6	1			1
Baetidae 2 sp	6			в		Hydropsychidae 2 sp	6				в	Bulininae*	3	-		───╯	
Baetidae > 2 sp	12	Δ	в	-	в	Hydropsychidae > 2 sp	12				-	Hydrobiidae*	3			───┦	
Caepidae (Squaregills/Caipfles)	6	B	1	Δ	B	Philopotamidae	10	1			1	Lympaeidae* (Pond spails)	3			───╯	
Enhemeridae	15	5		~	0	Polycentropodidae	10					Physidae* (Pouch snails)	3			───╯	
Hentageniidae (Flatheaded mayflies)	13	В		Δ	в	Psychomyiidae/Xinbocentronidae	8					Planorbinae* (Orb snails)	3		Δ	───╯	Δ
Leptophlebiidae (Prongille)	0	B	٨	B	B	Cased caddis:	0					Thiaridae* (-Melanidae)	3		~	───┦	~
Oligoneuridae (Brushlegged mayflies)	15	5	~	5	5	Barbarochthonidae SWC	13					Viviparidae* ST	5			—	
Polymitarcyidae (Pale Burrowers)	10					Calamoceratidae ST	11					PELECYPODA (Bivalvles)					
Prosonistomatidae (Water specs)	15					Glossosomatidae SWC	11					Corbiculidae (Clams)	5				
Teloganodidae SWC (Spiny Crawlers)	12					Hydroptilidae	6					Sphaeriidae (Pill clams)	3			───╯	
Tricorythidae (Stout Crawlers)	9			1	1	Hydrosalpingidae SWC	15					Unionidae (Perly mussels)	6			───╯	
ODONATA (Dragonflies & Damselflies)	Ű				· ·	Lepidostomatidae	10					SASS Score					176
Calopten/gidae ST T (Demoiselles)	10						6					No. of Taxa	+				27
Chlorocyphidae (Jewels)	10		Δ		Δ	Petrothrincidae SWC	11					ASPT					6.5
Synlestidae (Chlorolestidae)(Sylphs)	8		~		~	Pisuliidae	10					Other biota:			1		0.0
Coenagrionidae (Sprites and blues)	4		۵		۵	Sericostomatidae SWC	13										
Lestidae (Emerald Damselflies/Spreadwings	- 8		~		~	COLEOPTERA (Beetles)	10										
Platycnemidae (Stream Damselflies)	10					Dytiscidae/Noteridae* (Diving beetles)	5		1	1	Δ						
Protoneuridae (Threadwings)	8			+	<u> </u>	Elmidae/Drvopidae* (Riffle beetles)	8	1			1	1					
Aeshnidae (Hawkers & Emperors)	8			+		Gyrinidae* (Whirlinin beetles)	5	-	в	+	B	Comments/Observations:					
Corduliidae (Cruisers)	8			+	<u> </u>	Haliplidae* (Crawling water beetles)	5		0	+							
Comphidae (Clubtails)	6				٨	Helodidae (Marsh beetles)	12	-		-	<u> </u>	4			-	<u> </u>	
Libellulidae (Darters/Skimmers)	4	Δ		А	Δ	Hydraenidae* (Minute moss beetles)	8	+	1	+		4					L
I EPIDOPTERA (Aquatic Caternillare/Mothe	1				-	Hydrophilidae* (Water scavenger bestles)	5	+		+		4					
Crambidae (Puralidae)	12	1				Limpichidae (Marsh-Loving Bootles)	10	-		-	<u> </u>	4					
Grambiude (Fyrallude)	12	<u> </u>	<u> </u>			Psenhenidae (Water Pennies)	10	1	1		Δ	1					
1											• •						

Mbashe River (Upper)

Date (dd-mm-vr):	09-Sep-	-22								(dd.ddd	dd)	Biotopes Sampled (tick & rate)	Rating (1	-5)		Ti	me (min)
Site Code:	Mbas02	2 R				Grid reference (dd mm ss.s) Lat:	s	-31.8078	857	1			2		٦		
Collector/Sampler:	Kylie E	arrell					F	28 3469	94			Stones Out Of Current (SOOC)	2		-		
Diver	Uppor	Mbacho				Deture (MOCO 4/Orace)		2010 100				Bodrook	- 5		-		
River:	opper i		TEDNU			Datum (WGS84/Cape):				-		Bedrock					i
Level 1 Ecoregion:	16: 500	JIHEAS	TERNU	PLANDS		Altitude (m):						Aquatic Veg			RH	EALTH PA	Ro
Quaternary Catchment:	1118					Zonation:	-					MargVeg In Current			141	18(-	GP.
	Temp (°C):				Routine or Project? (circle one)	Flow					MargVeg Out Of Current	1		4		12
Site Description: 52	pH:					Project Name:	Clarity	(cm):				Gravel	1		H .	200	ME
Refer to Report Number:	DO (mg	ı∕L):				WP11354	Turbidi	t y :				Sand	2		DEPT. OF 1	ATTEN AFERING & FO	RESTRY
WEM/WMA7/00/CON/RDM/0722 and for all	Conduc	ctivity:					Colour:					Mud	3		WATER DEPE OF ENVIR	INVENTIAL ATTACKS	ADN A& TOURSM
other site information, including in situ	Riparia	n Disturk	ance:									Hand picking/Visual observation	х		-		
water quality	Instream	n Distur	bance:									Biotope Score (%)	40				
Taxon	01	6	Voq	GSM	TOT	Taxon	OV	c	Vog	GSM	TOT	Taxon	01	c	Voq	GSM	TOT
PORIFERA (Sponge)	5	3	veg	0.0141	101	HEMIPTERA (Bugs)	۹v	3	veg	0.5141	101			3	veg	GOW	101
COELENTERATA (Chidaria)	1					Belostomatidae* (Giant water bugs)	3		1	1	Δ	Athericidae (Snine flies)	10		1		1
TURBELLARIA (Elatworms)	3				Δ	Corividae* (Water boatmen)	3			Δ	Δ	Blepharoceridae (Mountain middes)	15				
	5				_	Conxidae (Water boatmen)	5		-	~	~	Ceratopogopidae (Riting midges)	5			┝───┦	
Oligochaeta (Earthworms)	1			^	A	Hydrometridae* (Mater measurers)	5		-	-		Chiropomidae (Midges)	2	1		┝───┦	1
Highdings (Leasthan)	2			A	A	Neucoridae* (Crooping water hugo)	7		-	-		Culicidae* (Magguitage)	- 2			P	P
	3					Nauconidae (Creeping water bugs)	2		-	-		Dividae* (Divid midge)	10			D	D
Amphipada (Sauda)	12					Nepidae (Water scorpions)	3		-			Empididae (Dance flice)	- 10		-	<u> </u>	
Ampripoda (Scuus)	13				-	Notonectidae (Backswinniners)	3		-			Emploidae (Dance files)	2		-	<u> </u>	
At idea (Freehunter Chairmen)	3					Validae (A validae* (Displa byze)	4					Ephydridae (Shore files)	3		-	\vdash	l
Atyldae (Freshwater Shimps)	6					Velildae/MVelildae (Ripple bugs)	C	-				Developedides (Math flice)		-	-	\vdash	I
Palaemonidae (Freshwater Prawns)	10					MEGALOPTERA (FIShfiles, Dobsonnies &	Alderfile	s)				Psychodidae (Moth files)	<u> </u>	~			D
REPORTED & (Mites)	0	A			A	Corydalidae (Fishilies & Dobsonnies)	8					Simulidae (Blacknies)	<u> </u>	<u>L</u>			U
PLECOPTERA (Stonefiles)	- 11			-		Sialidae (Alderfiles)	6					Syrphidae" (Rat tailed maggots)	1			<u> </u>	1
Notonemouridae	14					TRICHOPTERA (Caddisfiles)						Tabanidae (Horse files)	5				l
Perlidae	12					Dipseudopsidae	10					Tipulidae (Crane flies)	5				L
EPHEMEROPTERA (Mayflies)						Ecnomidae	8					GASTROPODA (Snails)					
Baetidae 1sp	4					Hydropsychidae 1 sp	4					Ancylidae (Limpets)	6				1
Baetidae 2 sp	6			A		Hydropsychidae 2 sp	6	B			В	Bulininae*	3				
Baetidae > 2 sp	12	В	В		В	Hydropsychidae > 2 sp	12					Hydrobiidae*	3				
Caenidae (Squaregills/Cainfles)	6		Α		A	Philopotamidae	10					Lymnaeidae* (Pond snails)	3				
Ephemeridae	15					Polycentropodidae	12					Physidae* (Pouch snails)	3				
Heptageniidae (Flatheaded mayflies)	13	A			A	Psychomyiidae/Xiphocentronidae	8					Planorbinae* (Orb snails)	3				
Leptophlebiidae (Prongills)	9	A			A	Cased caddis:						Thiaridae* (=Melanidae)	3				
Oligoneuridae (Brushlegged mayflies)	15					Barbarochthonidae SWC	13					Viviparidae* ST	5				1
Polymitarcyidae (Pale Burrowers)	10					Calamoceratidae ST	11					PELECYPODA (Bivalvles)					
Prosopistomatidae (Water specs)	15	Α			Α	Glossosomatidae SWC	11					Corbiculidae (Clams)	5				
Teloganodidae SWC (Spiny Crawlers)	12					Hydroptilidae	6					Sphaeriidae (Pill clams)	3				
Tricorythidae (Stout Crawlers)	9					Hydrosalpingidae SWC	15					Unionidae (Perly mussels)	6				1
ODONATA (Dragonflies & Damselflies)						Lepidostomatidae	10					SASS Score					145
Calopterygidae ST,T (Demoiselles)	10					Leptoceridae	6					No. of Taxa					23
Chlorocyphidae (Jewels)	10		Α		Α	Petrothrincidae SWC	11					ASPT					6.3
Synlestidae (Chlorolestidae)(Sylphs)	8					Pisuliidae	10					Other biota:					
Coenagrionidae (Sprites and blues)	4		Α		Α	Sericostomatidae SWC	13										
Lestidae (Emerald Damselflies/Spreadwings) 8					COLEOPTERA (Beetles)											
Platycnemidae (Stream Damselflies)	10					Dytiscidae/Noteridae* (Diving beetles)	5			Α	Α						
Protoneuridae (Threadwings)	8					Elmidae/Dryopidae* (Riffle beetles)	8		Α		Α						
Aeshnidae (Hawkers & Emperors)	8					Gyrinidae* (Whirligig beetles)	5	<u>A</u>			В	Comments/Observations:					
Corduliidae (Cruisers)	8					Haliplidae* (Crawling water beetles)	5										
Gomphidae (Clubtails)	6			1	1	Helodidae (Marsh beetles)	12										
Libellulidae (Darters/Skimmers)	4	Α			Α	Hydraenidae* (Minute moss beetles)	8										
LEPIDOPTERA (Aquatic Caterpillars/Moths)					Hydrophilidae* (Water scavenger beetles)	5										
Crambidae (Pyralidae)	12				1	Limnichidae (Marsh-Loving Beetles)	10		1	1		1					
		1	1	1	1	Psephenidae (Water Pennies)	10	I	1	1		1					

Gcuwa River

Date (dd-mm-yr):	11-May	-23								(dd.ddd	dd)	Biotopes Sampled (tick & rate)	Rating (1	-5)		T	ime (min)
Site Code:	GCUW	01_R				Grid reference (dd mm ss.s) Lat:	S	-32.319	9770°				3				
Collector/Sampler:	Kylie Fa	arrell				Long	: Е	28.1360	94°			Stones Out Of Current (SOOC)	3				
River:	Gcuwa					Datum (WGS84/Cane)						Bedrock	4				
Level 1 Ecoregion:	16. SOL	JTH EAS	TERN U	PLANDS		Altitude (m)						Aquatic Veg	0		2	CALTH .	
Quaternary Catchment:	S70D					Zonation						MargVeg In Current	0		ERY	Little p	ROO
quaternary eaterment.	Tamm (°C).				Routine or Project2 (circle one)]					MargVog Out Of Current	1		20	101-	Py
Site Decorintion, 52	remp (·C):				Project: (circle one)	FIOW					margveg out of current	2		4		S Z
Site Description: 52	_рн:		<u> </u>			Project Name:	Clarity	(cm):				Gravel	3		F		Ē
Keter to Report Number:	DO (mg	g/L):				WP11354	Turbidi	ty:				Sand	3		DEFT. OF WATER	ATES AFEARS & FO	SHESTRY SHOW
other site information including in situ	Conduc	ctivity:					Colour:					Mud	3		DEPE OF ENVIR	DOCIN AL ALLALT	S& TOORSH
water quality	Riparia	n Disturk	oance:									Hand picking/Visual observation	х				
	Instream	m Disturl	bance:									Biotope Score (%)	44				
Taxon	QV	S	Veg	GSM	TOT	Taxon	QV	S	Veg	GSM	TOT	Taxon	QV	S	Veg	GSM	TOT
PORIFERA (Sponge)	5					HEMIPTERA (Bugs)	1			1		DIPTERA (Flies)					
COELENTERATA (Cnidaria)	1					Belostomatidae* (Giant water bugs)	3					Athericidae (Snipe flies)	10				
TURBELLARIA (Flatworms)	3	1			1	Corixidae* (Water boatmen)	3		В	В	В	Blepharoceridae (Mountain midges)	15				
ANNELIDA						Gerridae* (Pond skaters/Water striders)	5					Ceratopogonidae (Biting midges)	5			1	1
Oligochaeta (Earthworms)	1			1	1	Hydrometridae* (Water measurers)	6				1	Chironomidae (Midges)	2				1
Hirudinea (Leeches)	3					Naucoridae* (Creeping water bugs)	7					Culicidae* (Mosquitoes)	1				1
CRUSTACEA						Nepidae* (Water scorpions)	3					Dixidae* (Dixid midge)	10				
Amphipoda (Scuds)	13		1			Notonectidae* (Backswimmers)	3			Α	Α	Empididae (Dance flies)	6				
Potamonautidae* (Crabs)	3	Α	1		А	Pleidae* (Pvgmv backswimmers)	4					Ephydridae (Shore flies)	3				-
Atvidae (Freshwater Shrimps)	8					Veliidae/Mveliidae* (Ripple bugs)	5		Α	-	Α	Muscidae (House flies, Stable flies)	1				
Palaemonidae (Freshwater Prawns)	10					MEGALOPTERA (Fishflies, Dobsonflies &	Alderflie	es)				Psychodidae (Moth flies)	1				-
HYDRACARINA (Mites)	8					Corvdalidae (Eishflies & Dobsonflies)	8	,				Simuliidae (Blackflies)	5			Δ	Δ
PLECOPTERA (Stoneflies)	0			-		Sialidae (Alderflies)	6			-		Sympliciae* (Bat tailed magnets)	1		-		~
Notonemouridae	14					TRICHOPTERA (Caddisflies)	Ů					Tabanidae (Horse flies)	5			'	
Perlidae	17			-	Δ	Disseudopsidae	10					Tipulidae (Crane flies)	5			'	
ERHEMERORTERA (Maufilias)	12			_	~	Esperidas	0					CASTROBODA (Speile)					
Poetideo 1ap	4					Echonidae Hydropowebidee 1 ep	0			-		Apaulidaa (Limpata)					
Baelidae Isp	4	4		-	٨	Hydropsychidae 1 sp	4					Ancylidae (Limpers)	0				
Baelidae 2 Sp	6	A			A	Hydropsychidae 2 sp	6	B			P	Buinnae	3				-
Baelidae > 2 sp	12					Hydropsychidae > 2 sp	12	ь			Ь	Hydrobildae	3				-
Caenidae (Squaregilis/Cainfies)	6					Philopotamidae	10					Lymnaeidae" (Pond snalls)	3				-
Ephemeridae	15					Polycentropodidae	12					Physidae" (Pouch shalls)	3				-
Heptagenlidae (Flatheaded mayfiles)	13					Psychomylidae/Xiphocentronidae	8					Planorbinae" (Orb shalls)	3				-
Leptophieblidae (Prorigilis)	9					Cased caddis:	10					Miandae (=Melanidae)	3			'	
Oligoneuridae (Brusniegged mayfiles)	15					Barbarochthonidae SWC	13					Viviparidae" S I	5				L
Polymitarcyidae (Pale Burrowers)	10			_		Calamoceratidae ST	11					PELECYPODA (Bivalvies)	<u> </u>				
Prosopistomatidae (Water specs)	15					Glossosomatidae SWC	11					Corbiculidae (Clams)	5				
Teloganodidae SWC (Spiny Crawlers)	12					Hydroptilidae	6					Sphaeriidae (Pill clams)	3				
Tricorythidae (Stout Crawlers)	9					Hydrosalpingidae SWC	15					Unionidae (Perly mussels)	6				
ODONATA (Dragonflies & Damselflies)	-					Lepidostomatidae	10					SASS Score					81
Calopterygidae ST,T (Demoiselles)	10					Leptoceridae	6					No. of Taxa					15
Chlorocyphidae (Jewels)	10					Petrothrincidae SWC	11					ASPT					5.4
Synlestidae (Chlorolestidae)(Sylphs)	8					Pisuliidae	10					Other biota:					
Coenagrionidae (Sprites and blues)	4		Α	1	Α	Sericostomatidae SWC	13										
Lestidae (Emerald Damselflies/Spreadwings	s) 8					COLEOPTERA (Beetles)											
Platycnemidae (Stream Damselflies)	10					Dytiscidae/Noteridae* (Diving beetles)	5										
Protoneuridae (Threadwings)	8					Elmidae/Dryopidae* (Riffle beetles)	8	<u>1</u>			1						
Aeshnidae (Hawkers & Emperors)	8					Gyrinidae* (Whirligig beetles)	5				В	Comments/Observations:					
Corduliidae (Cruisers)	8	T	T			Haliplidae* (Crawling water beetles)	5			1							
Gomphidae (Clubtails)	6					Helodidae (Marsh beetles)	12										
Libellulidae (Darters/Skimmers)	4	1	1			Hydraenidae* (Minute moss beetles)	8			1		1					
LEPIDOPTERA (Aquatic Caterpillars/Moths)					Hydrophilidae* (Water scavenger beetles)	5			1		1					
Crambidae (Pyralidae)	12	1				Limnichidae (Marsh-Loving Beetles)	10		1	1		1					
		1	1	1	1	Psephenidae (Water Pennies)	10	1	1	1		i					

Indwe River

Date (dd-mm-yr):	07-Sep	-22								(dd.ddd	ldd)	Biotopes Sampled (tick & rate)	Rating (1	-5)		Tř	ime (min)
Site Code:	Indw01	R				Grid reference (dd mm ss.s) Lat:	s	-31.8970	077				3		1		
Collector/Sampler:	Kylie Fa	arrell					· F	27.4098	25			Stones Out Of Current (SOOC)	4		1		
Pivor:	Indwe					Datum (MGS94/Cano)	. –		-			Bedrock	5		i i		
Lovel 1 Ecorogion	18: DR(OLIGHT	CORRIDO	OR		Datum (WG364/Cape).				-		Aquatic Veg	0			- A1711	·
Cever 1 Ecoregion:	\$20D	JUGITI V	CONNID	OR		Antitude (m)			-			Aqualic Veg	1		CR H	EALIHP	RO
Quaternary Catchment:	3200					Zonation:	: 1	I				margveg in current			No.)=(P.
	Temp (°C):				Routine or Project? (circle one)	Flow					MargVeg Out Of Current	1		14	36	1
Site Description: 52	_pH:					Project Name:	Clarity	(cm):				Gravel	4			700	A E
Refer to Report Number:	DO (mg	g/L):				WP11354	Turbidi	ty:				Sand	4		DEFT. OF	CATES AFEAIRS & FO	ORESTRY
WEM/WMA7/00/CON/RDM/0722 and for all	Conduc	ctivity:					Colour	:				Mud	5		DEPE OF ENVIR	ONNIN AL AUTO-D	S& TOURSM
other site information, including in situ	Riparia	n Disturk	bance:									Hand picking/Visual observation	x				
water quanty	Instream	m Distur	bance:									Biotope Score (%)	60				
Taxon	QV	S	Veq	GSM	тот	Taxon	QV	S	Vea	GSM	тот	Taxon	QV	s	Vea	GSM	тот
PORIFERA (Sponge)	5					HEMIPTERA (Bugs)		-				DIPTERA (Flies)					
COELENTERATA (Cnidaria)	1					Belostomatidae* (Giant water bugs)	3					Athericidae (Snipe flies)	10		1		
TURBELLARIA (Flatworms)	3	1			1	Corixidae* (Water boatmen)	3					Blepharoceridae (Mountain midges)	15			1	
ANNELIDA						Gerridae* (Pond skaters/Water striders)	5					Ceratopogonidae (Biting midges)	5			1	1
Oligochaeta (Earthworms)	1			1	1	Hydrometridae* (Water measurers)	6					Chironomidae (Midges)	2		-	A	A
Hirudinea (Leeches)	3			-	-	Naucoridae* (Creeping water bugs)	7					Culicidae* (Mosquitoes)	1				
CRUSTACEA	-					Nepidae* (Water scorpions)	3					Dixidae* (Dixid midge)	10			<u> </u>	-
Amphipoda (Scuds)	13					Notonectidae* (Backswimmers)	3					Empididae (Dance flies)	6		-	<u> </u>	-
Potamonautidae* (Crabs)	3					Pleidae* (Pygmy backswimmers)	4					Enbydridae (Shore flies)	3		+		
Atvidae (Freshwater Shrimps)	8					Veliidae/M_veliidae* (Rinnle bugs)	5					Muscidae (House flies, Stable flies)	1	1	+	1	۵
Palaemonidae (Freshwater Prawns)	10			-		MEGAL OPTERA (Fishflins, Dobsonflins &	Alderflig	(20				Psychodidae (Moth flies)			+	<u> </u>	~
HYDRACAPINA (Mitos)	8					Convdalidae (Fishflies & Dobsonflies)		.3)				Simuliidae (Blackflies)	5	C	P	٨	D
	0			_		Siglidae (Alderfliee)	6					Surphidae* (Bet toiled maggets)	1	2	<u> </u>	~	D
Netenemouridae	14					TRICHORTERA (Caddiaflian)	0					Sylphidae (Ratitalied maggots)			<u> </u>		
Redidee	14	-			-	Dipagudopaidoa	10					Tipulidae (Crope flipe)	5		<u> </u>		
Perildae	12			_		Dipseudopsidae	10					CASTROPODA (Sacila)	5		<u> </u>		
EPHEMEROPTERA (Mayfiles)	4					Echomidae	8		4		4	GASTROPODA (Snails)					
Baelidae Isp	4		D			Hydropsychidae 1 sp	4		1		1	Ancylidae (Limpets)	0				-
Baelidae 2 Sp	6		D	A	D	Hydropsychidae 2 sp	0					Builninae	3				-
Baelidae > 2 sp	12	A			В	Hydropsychidae > 2 sp	12					Hydrobildae	3		<u> </u>		
Caenidae (Squaregilis/Cainfies)	6			A	A	Philopotamidae	10					Lymnaeidae" (Pond snalls)	3		<u> </u>		
Epnemeridae	15					Polycentropodidae	12					Physidae" (Pouch shalls)	3		<u> </u>		
Heptageniidae (Flatheaded mayfiles)	13					Psychomylidae/Xiphocentronidae	8					Planorbinae" (Orb snalls)	3		<u> </u>		
Leptophieblidae (Prongilis)	9					Cased caddis:	10					I hiaridae" (=Melanidae)	3		<u> </u>		
Oligoneuridae (Brusniegged mayfiles)	15					Barbarochthonidae SWC	13						5		<u> </u>		
Polymitarcyldae (Pale Burrowers)	10					Calamoceratidae ST	11					PELECTPODA (Bivaivies)	<u> </u>		<u> </u>		
Prosopistomatidae (water specs)	15					Glossosomatidae SVVC	11					Corbiculidae (Clams)	5				
Teloganodidae SWC (Spiny Crawlers)	12					Hydroptilidae	6					Sphaeriidae (Pill clams)	3			<u> </u>	
Tricorythidae (Stout Crawlers)	9	A			A	Hydrosalpingidae SWC	15					Unionidae (Periy mussels)	ь				
ODONATA (Dragontlies & Damselflies)	1 10					Lepidostomatidae	10					SASS Score				\square	64
Calopterygidae ST,T (Demoiselles)	10					Leptoceridae	6					No. of Taxa					12
Chlorocyphidae (Jewels)	10					Petrothrincidae SWC	11					ASPI					5.3
Synlestidae (Chlorolestidae)(Sylphs)	8					Pisuliidae	10					Other biota:					
Coenagrionidae (Sprites and blues)	4					Sericostomatidae SWC	13										
Lestidae (Emerald Damselflies/Spreadwings	5) 8					COLEOPTERA (Beetles)											
Platycnemidae (Stream Damselflies)	10					Dytiscidae/Noteridae* (Diving beetles)	5										
Protoneuridae (Threadwings)	8					Elmidae/Dryopidae* (Riffle beetles)	8										
Aeshnidae (Hawkers & Emperors)	8					Gyrinidae* (Whirligig beetles)	5		1	1	1	Comments/Observations:					
Corduliidae (Cruisers)	8			1		Haliplidae* (Crawling water beetles)	5	Α	Α		В	_					
Gomphidae (Clubtails)	6		Α	Α	Α	Helodidae (Marsh beetles)	12					<u> </u>					
Libellulidae (Darters/Skimmers)	4					Hydraenidae* (Minute moss beetles)	8					<u> </u>					
LEPIDOPTERA (Aquatic Caterpillars/Moths	5)					Hydrophilidae* (Water scavenger beetles)	5					<u> </u>					
Crambidae (Pyralidae)	12					Limnichidae (Marsh-Loving Beetles)	10					<u> </u>					
		1			1	Psephenidae (Water Pennies)	10			1							

White Kei River

Dete (dd www.sw)	07.000	22								ماما مامام	(- -)	Piotonoc Sampled (tick & rate)	Deting (5)		Ŧ	
Date (dd-mm-yr):	07-Sep	-22					_			(aa.aaa	iaa)	Biotopes Sampled (tick & rate)	Rating (1	-5)	7	1	ime (min)
Site Code:	Wkei01	_R				Grid reference (dd mm ss.s) Lat	: S	-32.003	057			-	4		-		
Collector/Sampler:	Kylie F	arrell				Long): Е	27.3510	052			Stones Out Of Current (SOOC)	4				
River:	White P	(ei				Datum (WGS84/Cape)):					Bedrock	5				
Level 1 Ecoregion:	18: DR	OUGHT (CORRID	OR		Altitude (m)):					Aquatic Veg	0			SALTH ,	
Quaternary Catchment:	S10J					Zonation	:					MargVeg In Current	0		ERT	Providence	ROC
,	Tomn (°C)•				Routine or Project? (circle one)	Flow	1				MargVeg Out Of Current	0	ĺ	40	101	Py.
Site Description: 52	Temp (C).	<u> </u>			Project Name:	FIOW	()				margveg out of current	5		4		S N
Site Description. 52	_рн:		<u> </u>			Froject Name.	Clarity	(cm):				Gravei			F		E
Refer to Report Number:	DO (mg	g/L):	-			WP11354	Turbidi	ty:				Sand	5		DETL OF 1 WATER	ATES AFEARS & FO RESEARCH CONVER	ORESTRY SSION
wew/www.A7/00/CON/RDW/0722 and for all	Condu	ctivity:					Colour	:				Mud	5		DEPT OF ENVE	ONN'INTAL AITA I	S & TOURSH
water quality	Riparia	n Disturl	bance:									Hand picking/Visual observation	x				
water quality	Instrea	m Distur	bance:									Biotope Score (%)	62				
Taxon	QV	S	Vea	GSM	тот	Taxon	QV	S	Vea	GSM	тот	Taxon	QV	s	Veq	GSM	тот
PORIFERA (Sponge)	5	-	109			HEMIPTERA (Bugs)		-				DIPTERA (Elies)			rog		
COELENTERATA (Cnidaria)	1					Belostomatidae* (Giant water bugs)	3			1	1	Athericidae (Snipe flies)	10				
TURBELLARIA (Flatworms)	3				۵	Corividae* (Water boatmen)	3					Blenharoceridae (Mountain middes)	15				
ANNEL IDA					~	Gerridae* (Pond skaters/Water striders)	5					Ceratopogonidae (Biting midges)	5	Δ		Δ	۵
Oligochaeta (Earthworms)	1					Hydrometridae* (Water measurers)	6					Chironomidae (Midges)	2	B		~	B
Hirudinea (Leeches)	3	1			1	Naucoridae* (Creeping water bugs)	7					Culicidae* (Mosquitoes)	1	5			5
	5	1			1	Nepidae* (Mater scorpions)	3					Dividae* (Divid midge)	10				
Amphipodo (Saudo)	12					Netenastidae* (Packauimmere)	3	-	-			Empididae (Danas flice)	- 10				-
Amphipuda (Scuds)	13					Notoriectidae (Backswirniners)	3	-				Emploidae (Dance files)	2			<u> </u>	
Atvidee (Freebyeter Shrimpe)	0	-				Veliidee/M_veliidee* (Pipple buge)	4	-	-			Ephydridae (Shore files)					-
Atyldae (Freshwater Shirinps)	0	-				Venidae/WiVenidae (Ripple bugs)	- Alalaufilia					Muscidae (House files, Stable files)	1				-
Palaemonidae (Freshwater Prawns)	10					MEGALOPTERA (Fishiles, Dobsonnies &	Alderfild	es)				Psychodidae (Moth files)				<u> </u>	
RECORTERA (Mittes)	0					Corydalidae (Fishines & Dobsonnies)	0					Simulidae (Blacknes)	<u>></u>	Ð		<u> </u>	U
PLECOPTERA (Stonemes)						Stalidae (Aldernies)	0					Sylphidae (Rai talled maggots)				<u> </u>	
Notonemouridae	14					TRICHOPTERA (Caddistiles)	40					Tabanidae (Horse flies)	5			<u> </u>	
Perlidae	12	-				Dipseudopsidae	10					Tipulidae (Crane flies)	5				
EPHEMEROPTERA (Mayflies)						Ecnomidae	8					GASTROPODA (Snails)					1
Baetidae 1sp	4					Hydropsychidae 1 sp	4			1		Ancylidae (Limpets)	6				
Baetidae 2 sp	6			Α		Hydropsychidae 2 sp	6	B			В	Bulininae*	3				
Baetidae > 2 sp	12	В			В	Hydropsychidae > 2 sp	12					Hydrobiidae*	3				
Caenidae (Squaregills/Cainfles)	6			Α	A	Philopotamidae	10					Lymnaeidae* (Pond snails)	3				
Ephemeridae	15					Polycentropodidae	12					Physidae* (Pouch snails)	3				
Heptageniidae (Flatheaded mayflies)	13	В		1	В	Psychomyiidae/Xiphocentronidae	8					Planorbinae* (Orb snails)	3				
Leptophlebiidae (Prongills)	9	В		Α	В	Cased caddis:						Thiaridae* (=Melanidae)	3				
Oligoneuridae (Brushlegged mayflies)	15					Barbarochthonidae SWC	13					Viviparidae* ST	5				
Polymitarcyidae (Pale Burrowers)	10					Calamoceratidae ST	11					PELECYPODA (Bivalvles)					
Prosopistomatidae (Water specs)	15					Glossosomatidae SWC	11					Corbiculidae (Clams)	5				
Teloganodidae SWC (Spiny Crawlers)	12					Hydroptilidae	6			A	A	Sphaeriidae (Pill clams)	3				
Tricorythidae (Stout Crawlers)	9	<u>B</u>			В	Hydrosalpingidae SWC	15					Unionidae (Perly mussels)	6				
ODONATA (Dragonflies & Damselflies)						Lepidostomatidae	10					SASS Score					114
Calopterygidae ST,T (Demoiselles)	10					Leptoceridae	6					No. of Taxa					18
Chlorocyphidae (Jewels)	10					Petrothrincidae SWC	11					ASPT					6.3
Synlestidae (Chlorolestidae) (Sylphs)	8					Pisuliidae	10					Other biota:					
Coenagrionidae (Sprites and blues)	4					Sericostomatidae SWC	13										
Lestidae (Emerald Damselflies/Spreadwings	s) 8					COLEOPTERA (Beetles)											
Platycnemidae (Stream Damselflies)	10					Dytiscidae/Noteridae* (Diving beetles)	5										
Protoneuridae (Threadwings)	8					Elmidae/Dryopidae* (Riffle beetles)	8	1			Α						
Aeshnidae (Hawkers & Emperors)	8					Gyrinidae* (Whirligig beetles)	5				В	Comments/Observations:					
Corduliidae (Cruisers)	8				1	Haliplidae* (Crawling water beetles)	5										
Gomphidae (Clubtails)	6			Α	Α	Helodidae (Marsh beetles)	12										
Libellulidae (Darters/Skimmers)	4	Α			Α	Hydraenidae* (Minute moss beetles)	8										
LEPIDOPTERA (Aquatic Caterpillars/Moths)					Hydrophilidae* (Water scavenger beetles)	5					1					
Crambidae (Pyralidae)	12					Limnichidae (Marsh-Loving Beetles)	10				1						
						Psephenidae (Water Pennies)	10					1					

Kubusi River

Date (dd-mm-yr):	10-May	-23								(dd.ddd	dd)	Biotopes Sampled (tick & rate)	Rating (1	-5)		Ti	ime (min)
Site Code:	KUBU0	1_R				Grid reference (dd mm ss.s) Lat:	S	-32.5072	22				4		7		
Collector/Sampler:	Kylie Fa	arrell				Long	E	27.7313	848			Stones Out Of Current (SOOC)	2				
River	Kubusi					Datum (WGS84/Cane)	. –					Bedrock	4		-		
Lovel 1 Ecorogion:	16. Sou	th Easte	rn Uplar	nds		Altitude (m)				-		Aquatic Veg	2			c ALT U	
Quaternary Catchmont:	S60B		in opia	140		Zonation						Maralia veg	4		CR P	LALIH P	RO
Quaternary Catchinent.	Tamm (· ^ ·				Routine or Project2 (circle one)]					MargVeg Out of Current			20	101	P.
Site Description: 52	Temp (-C):	<u> </u>			Routille of Project? (circle offe)	FIOW		<u> </u>			wargveg Out Of Current	4			36	2
Site Description: 52	_pH:					Project Name:	Clarity	(cm):	<u> </u>			Gravel	3		E 🔨	200	E E
Refer to Report Number:	DO (mg	g/L):				WP11354	Turbidit	y:				Sand	3		DETT. OF	ATEL APPARE & PO	STON
wEW/WMA//00/CON/RDW/0722 and for all	Conduc	ctivity:					Colour:					Mud	2		DEPE OF EXVIE	DATIN AL AITAG	S& TOURSH
water quality	Riparia	n Disturł	bance:									Hand picking/Visual observation	x				
nator quanty	Instream	m Distur	bance:									Biotope Score (%)	62				
Taxon	QV	S	Veg	GSM	TOT	Taxon	QV	S	Veg	GSM	TOT	Taxon	QV	S	Veg	GSM	TOT
PORIFERA (Sponge)	5				Α	HEMIPTERA (Bugs)	1			1		DIPTERA (Flies)					
COELENTERATA (Cnidaria)	1					Belostomatidae* (Giant water bugs)	3					Athericidae (Snipe flies)	10	1			1
TURBELLARIA (Flatworms)	3	1		1	Α	Corixidae* (Water boatmen)	3			Α	Α	Blepharoceridae (Mountain midges)	15				
ANNELIDA						Gerridae* (Pond skaters/Water striders)	5				Α	Ceratopogonidae (Biting midges)	5				1
Oligochaeta (Earthworms)	1	1	Α	Α	В	Hydrometridae* (Water measurers)	6					Chironomidae (Midges)	2		Α		Α
Hirudinea (Leeches)	3			Α	Α	Naucoridae* (Creeping water bugs)	7					Culicidae* (Mosquitoes)	1				
CRUSTACEA						Nepidae* (Water scorpions)	3					Dixidae* (Dixid midge)	10				
Amphipoda (Scuds)	13	1				Notonectidae* (Backswimmers)	3					Empididae (Dance flies)	6				
Potamonautidae* (Crabs)	3	1	Α		Α	Pleidae* (Pygmy backswimmers)	4		1	1		Ephydridae (Shore flies)	3		1		
Atyidae (Freshwater Shrimps)	8					Veliidae/Mveliidae* (Ripple bugs)	5		1			Muscidae (House flies, Stable flies)	1				
Palaemonidae (Freshwater Prawns)	10	1			1	MEGALOPTERA (Fishflies, Dobsonflies &	Alderflie	es)	1			Psychodidae (Moth flies)	1		1		
HYDRACARINA (Mites)	8					Corvdalidae (Fishflies & Dobsonflies)	8		-			Simuliidae (Blackflies)	5				
PLECOPTERA (Stoneflies)						Sialidae (Alderflies)	6		1			Syrphidae* (Rat tailed maggots)	1				
Notonemouridae	14	1				TRICHOPTERA (Caddisflies)						Tabanidae (Horse flies)	5	1		Α	Α
Perlidae	12	Α		Α	Α	Dipseudopsidae	10					Tipulidae (Crane flies)	5				-
EPHEMEROPTERA (Mavflies)						Ecnomidae	8					GASTROPODA (Snails)					
Baetidae 1sp	4	1				Hydropsychidae 1 sp	4					Ancylidae (Limpets)	6	Α			Α
Baetidae 2 sp	6		Α	1		Hydropsychidae 2 sp	6	В	1	Α	В	Bulininae*	3				
Baetidae > 2 sp	12	В			В	Hydropsychidae > 2 sp	12		1			Hvdrobiidae*	3				
Caenidae (Squaregills/Cainfles)	6	1			1	Philopotamidae	10		1			Lymnaeidae* (Pond snails)	3				
Ephemeridae	15					Polycentropodidae	12					Physidae* (Pouch snails)	3				-
Heptageniidae (Flatheaded mavflies)	13	А	1	Α	В	Psychomyiidae/Xiphocentronidae	8		1			Planorbinae* (Orb snails)	3		1		1
Leptophlebiidae (Prongills)	9	A		Α	В	Cased caddis:						Thiaridae* (=Melanidae)	3		1		1
Oligoneuridae (Brushlegged mavflies)	15					Barbarochthonidae SWC	13		-			Viviparidae* ST	5				
Polymitarcvidae (Pale Burrowers)	10					Calamoceratidae ST	11					PELECYPODA (Bivalvles)	-				
Prosopistomatidae (Water specs)	15					Glossosomatidae SWC	11		1			Corbiculidae (Clams)	5	1	А		А
Teloganodidae SWC (Spiny Crawlers)	12					Hvdroptilidae	6		1			Sphaeriidae (Pill clams)	3				
Tricorythidae (Stout Crawlers)	9	1			Α	Hydrosalpingidae SWC	15		1			Unionidae (Perly mussels)	6				
ODONATA (Dragonflies & Damselflies)					1	Lepidostomatidae	10					SASS Score					185
Caloptervgidae ST.T (Demoiselles)	10			1		Leptoceridae	6	А	В	Α	В	No. of Taxa	-				28
Chlorocyphidae (Jewels)	10	А	Α		В	Petrothrincidae SWC	11		1			ASPT	-				6.6
Synlestidae (Chlorolestidae)(Sylphs)	8					Pisuliidae	10					Other biota:					
Coenagrionidae (Sprites and blues)	4		В	Α	В	Sericostomatidae SWC	13										
Lestidae (Emerald Damselflies/Spreadwings	3) 8		_		_	COLEOPTERA (Beetles)											
Platycnemidae (Stream Damselflies)	10					Dytiscidae/Noteridae* (Diving beetles)	5										
Protoneuridae (Threadwings)	8	1	1		1	Elmidae/Dryopidae* (Riffle beetles)	8	Α	1	1	Α						
Aeshnidae (Hawkers & Emperors)	8	1	1	А	Α	Gyrinidae* (Whirligig beetles)	5	A	А	1	В	Comments/Observations:					
Corduliidae (Cruisers)	8	1	1			Haliplidae* (Crawling water beetles)	5			1	_						
Gomphidae (Clubtails)	6	1	1	А	В	Helodidae (Marsh beetles)	12					1			-		-
Libellulidae (Darters/Skimmers)	4	A	1		A	Hydraenidae* (Minute moss beetles)	8		1			1			1	L	1
LEPIDOPTERA (Aquatic Caterpillars/Moths		<u> </u>	· ·			Hydrophilidae* (Water scavenger beetles)	5					1					
Crambidae (Pyralidae)	12	1				Limnichidae (Marsh-Loving Beetles)	10		1			1					
			+	1		Psephenidae (Water Pennies)	10	В			В	1					
								• —			. –						

2023

Buffalo River (Lower)

Not conducted due to health hazard

Keiskamma River (Lower)

Dete (dd mm un):	10-Son	.22								(dd ddd	dd)	Biotones Sampled (tick & rate)	Pating (1	-5)		т	imo (min)
Date (dd-mm-yr):	19-Sep-	-22					-			(นน.นนน	uu)	biotopes Sampled (lick & late)	Kaung (1	-5)	7		nne (nnn)
Site Code:	KEIS02	_R				Grid reference (dd mm ss.s) Lat:	S	-33.075	316			-	5		_		
Collector/Sampler:	Kylie Fa	arrell				Long	: E	27.2185	i34			Stones Out Of Current (SOOC)	3				
River:	Keiskar	nma (Lo	wer)			Datum (WGS84/Cape)	:					Bedrock	0				
Level 1 Ecoregion:	31: EAS	STERN C	OASTAL	BELT		Altitude (m)	:					Aquatic Veg	2			EALTH ,	
Quaternary Catchment:	R10L					Zonation						MargVeg In Current	4		,ER D		ROC
	Tomp (°C)-				Routine or Project? (circle one)	Flow					MargVeg Out Of Current	3		40	100	Py.
Site Description: 52	Temp (0).	-			Project Name:		()	<u> </u>				2		4		S N
Site Description: 52	рн:					Froject Name.	Clarity	(cm):	<u> </u>			Gravei				T	T
Refer to Report Number:	DO (mg	/L):				WP11354	Turbidi	ty:				Sand	2		CEFT. OF W	ATES AFEAIRS & FU	ORESTRY SSION
WEM/WMA//00/CON/RDM/0/22	Conduc	tivity:					Colour:					Mud	2		DEPE OF EXVIR	INNIN AL AITAG	IS & TOURCEN
	Riparia	n Disturb	oance:									Hand picking/Visual observation	x				
	Instream	n Disturl	bance:									Biotope Score (%)	53				
Taxon	QV	s	Vea	GSM	тот	Taxon	QV	S	Vea	GSM	тот	Taxon	QV	s	Vea	GSM	тот
PORIFERA (Sponge)	5	-				HEMIPTERA (Bugs)		-				DIPTERA (Elies)		-			
COELENTERATA (Cnidaria)	1					Belostomatidae* (Giant water bugs)	3					Athericidae (Snine flies)	10				-
TURBELLARIA (Elatworms)	3	Δ			Δ	Corixidae* (Water boatmen)	3		-	-		Blepharoceridae (Mountain middes)	15		-		-
ANNELIDA	<u> </u>	~			~	Gerridae* (Pond skaters/Water striders)	5					Ceratopogopidae (Biting midges)	5				
Oligochaeta (Earthworms)	1					Hydrometridae* (Water measurers)	6					Chironomidae (Midges)	2		в	Δ	в
Hirudinea (Leeches)	3			-		Naucoridae* (Creening water bugs)	7					Culicidae* (Mosquitoes)	1		0	~	
	Ŭ					National (Orcepting water bugs)	3					Dividae* (Divid midge)	10			<u> </u>	-
Amphipoda (Scude)	13					Netopectidae* (Backswimmers)	3		-	-		Empididae (Dance flies)	6		-		
Amphipoda (Scuds)	13					Reidee* (Burgey backswirinners)	3		-			Emploidae (Darice files)	2		-		
At idea (Esselventes Christen)	3					Valiidae (A valiidae* (Diaple buse)	4		4			Ephydridae (Shore files)	3				
Alyidae (Freshwater Shirinps)	0 10					MECALOPTERA (Fishfling, Dobsonfling &	C	2	A		A	Muscidae (House files, Stable files)			-		
	10					MEGALOFTERA (Fishilies, Dobsonnies &	Aldernie	:5)				Cimuliides (Blastifies)		~	~	<u> </u>	0
RECORTERA (Sterrefline)	0					Corydalidae (Fishilies & Dobsonilies)	8					Simulidae (Blacknes)	5	<u></u>	<u></u>	<u> </u>	U
PLECOPTERA (Stonenies)						Slalidae (Alderhies)	0					Syrphidae (Ratitalied maggots)					
Notonemouridae	14					TRICHOPTERA (Caddisfiles)	40					Tabanidae (Horse files)	5				
Perlidae	12	В			В	Dipseudopsidae	10					Lipulidae (Crane flies)	5				
EPHEMEROPTERA (Mayflies)						Ecnomidae	8					GASTROPODA (Snails)					
Baetidae 1sp	4			A		Hydropsychidae 1 sp	4				_	Ancylidae (Limpets)	6	<u>A</u>			В
Baetidae 2 sp	6		В			Hydropsychidae 2 sp	6	B			В	Bulininae*	3			L	_
Baetidae > 2 sp	12	В			В	Hydropsychidae > 2 sp	12					Hydrobiidae*	3				_
Caenidae (Squaregills/Cainfles)	6	A	1		A	Philopotamidae	10					Lymnaeidae* (Pond snails)	3				
Ephemeridae	15					Polycentropodidae	12					Physidae* (Pouch snails)	3		A		Α
Heptageniidae (Flatheaded mayflies)	13	В			В	Psychomyiidae/Xiphocentronidae	8					Planorbinae* (Orb snails)	3				_
Leptophlebiidae (Prongills)	9	В	1		В	Cased caddis:	1					Thiaridae* (=Melanidae)	3				_
Oligoneuridae (Brushlegged mayflies)	15					Barbarochthonidae SWC	13					Viviparidae* ST	5				
Polymitarcyidae (Pale Burrowers)	10					Calamoceratidae ST	11					PELECYPODA (Bivalvles)					
Prosopistomatidae (Water specs)	15					Glossosomatidae SWC	11					Corbiculidae (Clams)	5		В		В
Teloganodidae SWC (Spiny Crawlers)	12					Hydroptilidae	6					Sphaeriidae (Pill clams)	3				
Tricorythidae (Stout Crawlers)	9					Hydrosalpingidae SWC	15					Unionidae (Perly mussels)	6				
ODONATA (Dragonflies & Damselflies)						Lepidostomatidae	10					SASS Score					116
Calopterygidae ST,T (Demoiselles)	10					Leptoceridae	6		A		Α	No. of Taxa					18
Chlorocyphidae (Jewels)	10		1		1	Petrothrincidae SWC	11					ASPT					6.4
Synlestidae (Chlorolestidae)(Sylphs)	8					Pisuliidae	10					Other biota:					
Coenagrionidae (Sprites and blues)	4		В	1	В	Sericostomatidae SWC	13										
Lestidae (Emerald Damselflies/Spreadwings) 8					COLEOPTERA (Beetles)											
Platycnemidae (Stream Damselflies)	10					Dytiscidae/Noteridae* (Diving beetles)	5										
Protoneuridae (Threadwings)	8					Elmidae/Dryopidae* (Riffle beetles)	8										
Aeshnidae (Hawkers & Emperors)	8					Gyrinidae* (Whirligig beetles)	5	1			1	Comments/Observations:					
Corduliidae (Cruisers)	8					Haliplidae* (Crawling water beetles)	5										
Gomphidae (Clubtails)	6					Helodidae (Marsh beetles)	12										
Libellulidae (Darters/Skimmers)	4	Α			Α	Hydraenidae* (Minute moss beetles)	8		1	1	1	1					
LEPIDOPTERA (Aquatic Caterpillars/Moths))			1		Hydrophilidae* (Water scavenger beetles)	5	1	1	1	İ	1					
Crambidae (Pyralidae)	12					Limnichidae (Marsh-Loving Beetles)	10		1	1	1						
		1		1		Psephenidae (Water Pennies)	10		1	1	1	1					

Tyume River

Date (dd-mm-yr):	14-Sep	-22								(dd.ddd	dd)	Biotopes Sampled (tick & rate)	Rating (1	-5)		т	ime (min
Site Code:	Tyum0	1 R				Grid reference (dd mm ss.s) Lat:	s	-32.910	291	1			5		1		
Collector/Sampler:	Kylie F	arrell				Long	· F	26.9322	42			Stones Out Of Current (SOOC)	3		1		
Biver	Tyume					Detum (MCS94/Cons)						Bedrock	2		1		
	18: DR	OUGHT	CORRID	OR		Datum (WGS64/Cape):				-		Agustic Vog	- 4				
Level 1 Ecoregion:	D10H	000111	oonni	OR		Altitude (m):						Aqualic veg	4		RH	EALTH P	RO
Quaternary Catchment:	KTOIT		r			Zonation:	- 	I	-			Margveg in Current			1 AV)=(CP.
	Temp (°C):				Routine or Project? (circle one)	Flow					MargVeg Out Of Current	4		14	36	1
Site Description: 52	pH:					Project Name:	Clarity	(cm):				Gravel	2		H L	200	ME
Refer to Report Number:	DO (mg	g/L):				WP11354	Turbidi	ity:				Sand	2		DETT. OF	CATES ATEAIRS & P	ORFSTRY
WEM/WMA7/00/CON/RDM/0722 and for all	Condu	ctivity:			_		Colour	:				Mud	2		DEPE OF ENVI	OXN'IN AL AITAD	IS & TOURSH
other site information, including in situ	Riparia	n Disturi	bance:									Hand picking/Visual observation	х				
water quanty	Instrea	m Distur	bance:									Biotope Score (%)	62				
Taxon	QV	s	Veq	GSM	тот	Taxon	QV	S	Veq	GSM	TOT	Taxon	QV	s	Veg	GSM	тот
PORIFERA (Sponge)	5	-			В	HEMIPTERA (Bugs)		-				DIPTERA (Flies)		-			
COELENTERATA (Cnidaria)	1					Belostomatidae* (Giant water bugs)	3		1		1	Athericidae (Snipe flies)	10		1	-	
TURBELLARIA (Flatworms)	3	Α			Α	Corixidae* (Water boatmen)	3		1	В	В	Blepharoceridae (Mountain midges)	15			1	
ANNELIDA						Gerridae* (Pond skaters/Water striders)	5		1			Ceratopogonidae (Biting midges)	5			Α	Α
Oligochaeta (Earthworms)	1	А	1		А	Hydrometridae* (Water measurers)	6		1			Chironomidae (Midges)	2	В	Α	Α	В
Hirudinea (Leeches)	3					Naucoridae* (Creeping water bugs)	7		1			Culicidae* (Mosquitoes)	1		-		
CRUSTACEA						Nepidae* (Water scorpions)	3		1			Dixidae* (Dixid midge)	10		-		
Amphipoda (Scuds)	13	1		1		Notonectidae* (Backswimmers)	3		1	Α	Α	Empididae (Dance flies)	6		-		
Potamonautidae* (Crabs)	3	Α			Α	Pleidae* (Pygmy backswimmers)	4					Ephydridae (Shore flies)	3		1	-	
Atvidae (Freshwater Shrimps)	8					Veliidae/M., veliidae* (Ripple bugs)	5		Α		А	Muscidae (House flies, Stable flies)	1		1	-	
Palaemonidae (Ereshwater Prawns)	10	1				MEGALOPTERA (Eishflies Dobsonflies &	Alderflig	es)				Psychodidae (Moth flies)	1				
HYDRACARINA (Mites)	8					Corvdalidae (Fishflies & Dobsonflies)	8	50,				Simuliidae (Blackflies)	5	В	+	В	В
PLECOPTERA (Stoneflies)	-					Sialidae (Alderflies)	6					Syrphidae* (Rat tailed maggots)	1	-			
Notonemouridae	14					TRICHOPTERA (Caddisflies)	-					Tabanidae (Horse flies)	5	1			
Perlidae	12					Dipseudopsidae	10					Tipulidae (Crane flies)	5		+		
EPHEMEROPTERA (Mayflies)	12					Ecoomidae	8	-				GASTROPODA (Snails)					
Bastidao 1sp	4					Hydronsychidae 1 sp	4			1		Appylidae (Limpets)	6	P	A		B
Baetidae 2 sp	6				-	Hydropsychidae 2 sp	6	Δ	-		Δ	Bulininae*	3	P	~		D
Baetidae > 2 sp	12	в	в	в	в	Hydropsychidae > 2 sp	12	-			~	Hydrobiidae*	3		+	<u> </u>	
Caenidae (Squareqills/Cainfles)	6	B	5	Δ	B	Philopotamidae	10	-				Lympaeidae* (Pond spails)	3		+	<u> </u>	
Enhomeridae	15	5		~	5	Polycontropodidao	12					Physidae* (Pouch snails)	3		<u> </u>	├ ───	
Hentageniidae (Elatheaded mayflies)	13	в	٨	Δ.	B	Psychomyjidae/Xinhocentronidae	9					Planorbinae* (Orb spails)	3				
Lentophlebiidae (Prongills)	13 Q	B	~	Δ	B	Cased caddis:	0					Thiaridae* (-Melanidae)	3		+	<u> </u>	
Oligoneuridae (Brushlegged mayflies)	15	5		~	5	Barbarochthonidae SW/C	13					Viviparidae* ST	5		+	<u> </u>	
Polymitarcyidae (Pale Burrowers)	10	-		-		Calamoceratidae ST	10	-				PELECYPODA (Bivalyles)					
Prosonistomatidae (Mater space)	10				-	Glossosomatidae SWC	11					Corbiculidae (Clams)	5	Δ	A		B
Teleganodidae SWC (Spipy Crawlers)	13				-	Hydroptilidae	6					Sphaeriidae (Clams)	3	~	~		D
Triconsthidae (Stout Crawlers)	12	P	٨		B	Hydropalningidae SWC	15			-		Uniopidae (Park/mussels)	6		+		
ODONATA (Dragonfling & Damsolfling)	5	<u></u>	~			Lepidestomatidae	10					SASS Score					156
Calopton/gidae ST T (Demoiselles)	10					Leptocaridae	6		B		B	No. of Taxa					26
Chlorographidae (Jowela)	10	1			•	Petrothrippidge SWC	11		D	-	D				+		20
Supleatides (Chlorolastides)(Sulphs)	0		A		A	Periodi inicidae SWC	10					ASF I			⊥	L	0.0
Coopagriopidae (Childrolestidae)(Sylphs)	0		B	Δ.	B	Soricostomatidae SWC	10					Other blota.					
Lostidos (Emerald Domaelflice/Spreadwings	4	-	D 4	A	4	COLEORTERA (Restles)	13										
Electrone (Emerald Damsellies/Spreadwings	0	-	1	-	-	COLEOFIERA (Beelles)	-										
Protopouridae (Stream Damseilles)	10					Elmidae/Inoteridae* (Diving beetles)	2 8					4					
Apphidae (Hawkers & Emperars)	0					Cyrinidae* (Whitinia bootles)	0			+	В	Commonto/Obconvotiono:					
Corduliidae (Cruisers)	8					Haliplidae* (Crawling water beetles)	5				D	Comments/Observations:					1
Comphidae (Clubtaila)	6					Heledidee (March beetles)	5 12					4					
Gomphidae (Clubialis)	0	-				Incloude (Marsh beetles)	12	+				4					
Libertulidae (Darters/Skimmers)	4	<u> </u>	-	A	A	nyulaenidae (Winute moss beeties)	8		ļ			1					
LEFIDOPTERA (Aquatic Caterpillars/Moths	1					riyurophilidae" (vvater scavenger beetles)	5	<u> </u>	<u> </u>		I	4					
Crambidae (Pyralidae)	12		<u> </u>		<u> </u>	Limnichidae (Marsh-Loving Beetles)	10		<u> </u>		-	4					
		1	1	1	1	Psephenidae (Water Pennies)	10	1	1	1	1	1					

Koonap River

	Time :					SASS Version 5 Score Sh	eet							Version	1 date:	Sep 20	05
Date (dd-mm-vr):	07-Sep	-22								(dd.ddd	dd)	Biotopes Sampled (tick & rate)	Rating (1	-5)		T	ime (min)
Site Code:	Koon01	1 R				Grid reference (dd mm ss. s). Lat	s	-33.042	856				5	.,	1		
Collector/Sempler:	Kylio Er	arroll						26 6595	506			Stance Out Of Current (SOOC)	4		-		
Conector/Sampier:	Keener					Long	: c	20.0303	000			De des ele			-		
River:	Koona	J				Datum (WGS84/Cape):				-		Bedrock	3		-	-	
Level 1 Ecoregion:	18: DRU	JUGHI	LORRIDO	UR		Altitude (m)	:					Aquatic Veg	4		a '	AEALTH F	RO
Quaternary Catchment:	S32K					Zonation:	-					MargVeg In Current	3		AFR		- CP
	Temp (°C):				Routine or Project? (circle one)	Flow					MargVeg Out Of Current	1		4		77
Site Description: 52	pH:					Project Name:	Clarity ((cm):				Gravel	2		H S	25	NE
Refer to Report Number:	DO (mg	₁/L):				WP11354	Turbidit	ty:				Sand	3		SEFL O	WIEKA MISSIO	PORISIES
WEM/WMA7/00/CON/RDM/0722 and for all	Condu	ctivity:				WI 11554	Colour:					Mud	3		WITH DEPT OF BA	TONIDE AL ALTA	SSKIN 15 & YOUTESN
other site information, including in situ	Rinaria	n Dieturk	hance:			1						Hand picking/Visual observation	×		_		
water quality	Instroa	n Disturi	bance.									Piotopo Scoro (%)	62				
-	insuear		Dance.			-					-	=	02				
Taxon	QV	5	Veg	GSM	101	laxon	QV	S	Veg	GSM	101	Taxon	QV	s	Veg	GSM	101
PORIFERA (Sponge)	5					HEMIPTERA (Bugs)						DIPTERA (Flies)			4	4	
COELENTERATA (Chidaria)	1					Belostomatidae" (Giant water bugs)	3		A		A	Athericidae (Snipe files)	10				
TURBELLARIA (Flatworms)	3	1	A		A	Corixidae* (Water boatmen)	3			A	A	Blepharoceridae (Mountain midges)	15				-
ANNELIDA						Gerridae* (Pond skaters/Water striders)	5				A	Ceratopogonidae (Biting midges)	5	1	A	<u> </u>	A
Oligochaeta (Earthworms)	1			1	1	Hydrometridae" (Water measurers)	6					Chironomidae (Midges)	2	A		A	A
Hirudinea (Leeches)	3	1	1	A	A	Naucoridae* (Creeping water bugs)	/					Culicidae* (Mosquitoes)	1		В		В
CRUSTACEA	40					Nepidae* (Water scorpions)	3					Dixidae* (Dixid midge)	10				
Amphipoda (Scuds)	13					Notonectidae* (Backswimmers)	3			4		Empididae (Dance files)	6				
Potamonautidae* (Crabs)	3					Pleidae* (Pygmy backswimmers)	4			1	1	Ephydridae (Shore flies)	3				
Atyidae (Freshwater Shrimps)	8					Veliidae/Mveliidae* (Ripple bugs)	5					Muscidae (House flies, Stable flies)	1	1			1
Palaemonidae (Freshwater Prawns)	10					MEGALOPTERA (Fishflies, Dobsonflies &	Alderflie	es)				Psychodidae (Moth files)	1				-
HYDRACARINA (Mites)	8		_	_		Corydalidae (Fishtlies & Dobsontlies)	8					Simuliidae (Blackfiles)	5	<u>D</u>	B		D
PLECOPTERA (Stoneflies)						Sialidae (Alderflies)	6					Syrphidae* (Rat tailed maggots)	1				
Notonemouridae	14					TRICHOPTERA (Caddisflies)	10					Tabanidae (Horse flies)	5				
Perlidae	12					Dipseudopsidae	10					Tipulidae (Crane files)	5				
EPHEMEROPTERA (Mayflies)						Ecnomidae	8					GASTROPODA (Snails)	-		4	4	
Baetidae 1sp	4					Hydropsychidae 1 sp	4	A		1	A	Ancylidae (Limpets)	6				-
Baetidae 2 sp	6					Hydropsychidae 2 sp	6					Builninae"	3		+		-
Baetidae > 2 sp	12	в	в	A	в	Hydropsychidae > 2 sp	12					Hydrobildae"	3		+		-
Caenidae (Squaregilis/Cainnes)	5					Philopotamidae	10					Lymnaeidae" (Pond Shalls)	3	B	4		B
Ephemendae	15		-	-		Polycentropodidae	12					Physical (Pouch shalls)	3	В			D
Leptophlobiidae (Flatneaded mayfiles)	13	1			•	Psychomylidae/Alphocentronidae	8					Planorbinae" (Orb snalls)	3				
Oligenouridee (Prorigins)	9				A	Cased caddis:	12					Visionaridaet ST	5				
Delugitere video (Delo Burrowero)	10					Calamassastidas ST	13					Viviparidae ST	5		_		
Polymitarcyldae (Pale Burrowers)	10					Classesemetides SWC	11					Cartiaulidae (Clame)	-				-
Tologopodidoo SW(C (Spipy Crowlore)	13					Glossosomalidae SWC	6					Sphooriidae (Clams)	2		+	+	
Tricorythidae (Stout Crawlers)	0					Hydrosaloingidae SWC	15					Unionidae (Perly mussels)	6				-
ODONATA (Dragonfligs & Damsalfligs)	1 3	ł				Lopidostomatidas	10					SASS Score		1	+		70
Calepton/gidae ST T (Demoiselles)	10					Leptostomatidae	6					No. of Taxa	+		+	+	20
Chlorocyphidae (lewels)	10					Petrothrinoidae SWC	11						+				20
Synlectidae (Chlorelectidae)(Sylebs)	0					Piculiidaa	10					Other bioto:					0.0
Coopagriconidae (Childrolestidae)(Sylphis)	0		^	٨	P	Prisoniuae Soricostomatidao SWC	12					Other biota.					
Loctidae (Sprites and Dides)	4		A	~	Б	COLEORTERA (Rection)	13										
Platyonomidae (Stream Damcelflies)	10					Duticoidae/Neteridae* (Diving bestles)	5	1			1						
Protoneuridae (Threadwings)	8					Elmidae/Dr/opidae* (Biffle beetles)	8										
Aoshpidae (Hawkors & Emporers)	0	1			1	Gyrinidae* (Whirligig beetles)	5	P			D	Commonts/Observations:					
Corduliidae (Cruisore)	0					Haliplidae* (Crawling water bestles)	5	P			Б	comments/observations.					T
Gomphidae (Clubtails)	6					Helodidae (Marsh beetles)	12										
Libellulidae (Darters/Skimmers)	4	Δ	Δ	1	۵	Hydraenidae* (Minute moss beetles)	8			+		1					
I EPIDOPTERA (Aquatic Caternillare/Mothe) -		-		-	Hydrophilidae* (Water scavenger beetles)	5			+		1					
Crambidae (Pyralidae)	12	1				Limpichidae (Marsh-Loving Beatles)	10		1	1		1					
cransidae (ryraidae)	12	1	1	1	1	Psephenidae (Water Pennies)	10		-	1		1					
1				1													

Kat River (Lower)

Date (dd-mm-yr):	07-Sep	-22								(dd.ddd	dd)	Biotopes Sampled (tick & rate)	Rating (1	-5)		т	'ime (min
Site Code:	kat01	at01_R				Grid reference (dd mm ss.s) Lat:	s	-32.890	965				4		1		
Collector/Sampler:	Kylie F	arrell				Long	F	26,6840)7			Stones Out Of Current (SOOC)	5				
Bivor:	Lower	Kat				Detum (MCS94/Cono)						Bedrock	0				
	18. DP(OP		Datum (WG304/Cape)			-	-		A mustice Mar	0	-		LTL	
Level 1 Ecoregion:	004E	500111 (UK		Aititude (m)	•	<u> </u>				Aquatic veg	2	— ·	RI	FALIMP	RO
Quaternary Catchment:	Q94F					Zonation:	-	L				Margveg in Current			10		C.P.
	Temp (°C):				Routine or Project? (circle one)	Flow					MargVeg Out Of Current	2	<u> </u>	4	36	3
Site Description: 52	pH:					Project Name:	Clarity	(cm):				Gravel	2		H L	200	M.E
Refer to Report Number:	DO (mg	g/L):				WP11354	Turbidi	ty:				Sand	3		DEPT OF	ATTER AFFAITS & F	ORESTRY
WEM/WMA7/00/CON/RDM/0722 and for all	Condu	ctivity:					Colour	:				Mud	3		DEPT OF ENVI	CNMENTAL AFFAR	IS & TOURSH
other site information, including in situ	Riparia	n Disturl	ance:									Hand picking/Visual observation	х		-		
water quality	Instrea	m Distur	bance:									Biotope Score (%)	49				
Taxon	QV	S	Vea	GSM	TOT	Taxon	QV	s	Veg	GSM	TOT	Taxon	ον	s	Vea	GSM	тот
PORIFERA (Sponge)	5	-	109			HEMIPTERA (Bugs)		<u> </u>	109			DIPTERA (Flies)	<u> </u>				
COELENTERATA (Chidaria)	1					Belostomatidae* (Giant water bugs)	3					Athericidae (Spipe flies)	10				
TURBELLARIA (Flatworms)	3					Corixidae* (Water boatmen)	3			Δ	۵	Blepharoceridae (Mountain midges)	15				-
ANNELIDA						Gerridae* (Pond skaters/Water striders)	5		1	~~~	Δ	Ceratopogonidae (Biting midges)	5			Δ	Δ
Oligochaeta (Earthworms)	1			B	в	Hydrometridae* (Water measurers)	6				~	Chironomidae (Midges)	2	Δ	Δ	~	B
Hirudinea (Leeches)	3			1	1	Naucoridae* (Creening water bugs)	7					Culicidae* (Mosquitoes)		A	^	'	۵ ۱
	3				-	Nanidae* (Water scorpions)	3	-				Dividae* (Divid midge)	10	~	~		~
Amphipoda (Scude)	13					Notopactidae* (Backswimmers)	3		1		1	Empididae (Dance flies)	6				
Amphipoda (Scous)	10				4	Pleidee* (Pramy beekswimmers)	3			-		Enhydridae (Share flies)					
Atvideo (Freebyeter Shrimpe)	0		-		1	Veliidee/M_veliidee* (Pipple buge)	4		4			Ephydridae (Shore flies)					
Advide (Freshwater Shirings)	0	-	-		-	MECALOPTERA (Fichfling, Dobsonfling, 8	Aldorfli	20)	<u>A</u>		A	Muscidae (House files, Stable files)					
Palaemonidae (Freshwater Prawns)	10			4	4	MEGALOPTERA (FISITILES, DODSONTILES &	Aldenii	es)				Psychodidae (Moth Illes)	<u> </u>		0		D
HTDRACARINA (Mites)	0			1	1	Corydaildae (Fishilles & Dobsonilles)	0					Simulidae (Blackfiles)	<u>></u>	Ľ	<u></u>	'	D
PLECOPTERA (Stoneflies)						Slalidae (Alderfiles)	6					Syrphidae" (Rat tailed maggots)	1	ļ		'	
Notonemouridae	14					TRICHOPTERA (Caddisfiles)						Tabanidae (Horse files)	5	Ļ		'	
Perlidae	12					Dipseudopsidae	10					l ipulidae (Crane flies)	5				
EPHEMEROPTERA (Mayflies)						Ecnomidae	8			1	1	GASTROPODA (Snails)					
Baetidae 1sp	4			1		Hydropsychidae 1 sp	4					Ancylidae (Limpets)	6		1		1
Baetidae 2 sp	6					Hydropsychidae 2 sp	6	B			В	Bulininae*	3				
Baetidae > 2 sp	12	В	В		В	Hydropsychidae > 2 sp	12					Hydrobiidae*	3				
Caenidae (Squaregills/Cainfles)	6			Α	A	Philopotamidae	10					Lymnaeidae* (Pond snails)	3				
Ephemeridae	15					Polycentropodidae	12					Physidae* (Pouch snails)	3				
Heptageniidae (Flatheaded mayflies)	13					Psychomyiidae/Xiphocentronidae	8					Planorbinae* (Orb snails)	3				
Leptophlebiidae (Prongills)	9	A			A	Cased caddis:						Thiaridae* (=Melanidae)	3				
Oligoneuridae (Brushlegged mayflies)	15					Barbarochthonidae SWC	13					Viviparidae* ST	5				
Polymitarcyidae (Pale Burrowers)	10			1	1	Calamoceratidae ST	11					PELECYPODA (Bivalvles)					
Prosopistomatidae (Water specs)	15					Glossosomatidae SWC	11					Corbiculidae (Clams)	5				
Teloganodidae SWC (Spiny Crawlers)	12					Hydroptilidae	6					Sphaeriidae (Pill clams)	3				
Tricorythidae (Stout Crawlers)	9					Hydrosalpingidae SWC	15					Unionidae (Perly mussels)	6				
ODONATA (Dragonflies & Damselflies)						Lepidostomatidae	10					SASS Score					120
Calopterygidae ST,T (Demoiselles)	10					Leptoceridae	6		В		В	No. of Taxa					22
Chlorocyphidae (Jewels)	10					Petrothrincidae SWC	11					ASPT					5.5
Synlestidae (Chlorolestidae)(Sylphs)	8					Pisuliidae	10					Other biota:					
Coenagrionidae (Sprites and blues)	4		В		В	Sericostomatidae SWC	13										
Lestidae (Emerald Damselflies/Spreadwings	s) 8					COLEOPTERA (Beetles)											
Platycnemidae (Stream Damselflies)	10					Dytiscidae/Noteridae* (Diving beetles)	5										
Protoneuridae (Threadwings)	8					Elmidae/Dryopidae* (Riffle beetles)	8										
Aeshnidae (Hawkers & Emperors)	8					Gyrinidae* (Whirligig beetles)	5				В	Comments/Observations:					
Corduliidae (Cruisers)	8					Haliplidae* (Crawling water beetles)	5										
Gomphidae (Clubtails)	6					Helodidae (Marsh beetles)	12										
Libellulidae (Darters/Skimmers)	4	1	1	1	1	Hydraenidae* (Minute moss beetles)	8	1		1		1					
LEPIDOPTERA (Aquatic Caterpillars/Moths)					Hydrophilidae* (Water scavenger beetles)	5					l					
Crambidae (Pyralidae)	12					Limnichidae (Marsh-Loving Beetles)	10					l					
		1	Î.	1	1	Psephenidae (Water Pennies)	10	Î.		1		1					

Great Fish River (Middle)

Not conducted due to too high flows from IBT

Great Fish River (Upper)

<u>````````````````````````````````</u>	<u> </u>																
Date (dd-mm-yr):	22-Sep-	22								(dd.ddd	dd)	Biotopes Sampled (tick & rate)	Rating (1	-5)		T	ime (min)
Site Code:	GFIS01_R					Grid reference (dd mm ss.s) Lat:	S	S -31.919527					1]		
Collector/Sampler:	Kylie Fa	arrell				Long	: E	25.3909	74			Stones Out Of Current (SOOC)	2				
River:	Upper Great Fish					Datum (WGS84/Cane)						Bedrock	0				
Lovel 1 Ecorogion	18. DR0	DUGHT (CORRID	OR		Altitudo (m)				-		Aquatic Vog	5			< 11TU	
Cever 1 Ecolegion.	030B					Autude (III)						Aqualic Veg	1		CR P	Furia b	RO
Quaternary Catchinent.	QUOD					Pouting of Project2 (circle one)	- 7					MargVeg In Current	-		20	101-	P.
	Temp ('C):	<u> </u>			Routine or Project? (circle one)	Flow					Margveg Out Of Current	5		4	36	1
Site Description: 52	pH:					Project Name:	Clarity	(cm):				Gravel	0		F ~	1	AE
Refer to Report Number:	DO (mg	/L):				WP11354	Turbidi	ty:				Sand	2		DEFT. OF	ATES AFEAIRS & FO	DRESTRY STON
WEM/WMA7/00/CON/RDM/0722	Conduc	tivity:			_		Colour	:				Mud	5		DEPT OF ENVIR	IXXIN AL AURIC	S & TOURSH
	Riparia	n Disturk	bance:									Hand picking/Visual observation	x				
	Instream	n Disturl	bance:									Biotope Score (%)	47	1			
Taxon	QV	s	Vea	GSM	тот	Taxon	QV	S	Veq	GSM	TOT	Taxon	QV	S	Vea	GSM	тот
PORIFERA (Sponge)	5					HEMIPTERA (Bugs)		-				DIPTERA (Flies)					
COELENTERATA (Cnidaria)	1					Belostomatidae* (Giant water bugs)	3		1		A	Athericidae (Snipe flies)	10				
TURBELLARIA (Flatworms)	3		1			Corixidae* (Water boatmen)	3					Blepharoceridae (Mountain midges)	15				
ANNELIDA	-					Gerridae* (Pond skaters/Water striders)	5	-				Ceratopogonidae (Biting midges)	5	А	Α		В
Oligochaeta (Earthworms)	1		-	1		Hydrometridae* (Water measurers)	6	-				Chironomidae (Midges)	2	С	В		С
Hirudinea (Leeches)	3	Α	Α		В	Naucoridae* (Creeping water bugs)	7					Culicidae* (Mosquitoes)	1	A	Α		A
CRUSTACEA	-				_	Nepidae* (Water scorpions)	3					Dixidae* (Dixid midge)	10				
Amphipoda (Scuds)	13					Notonectidae* (Backswimmers)	3	1			Δ	Empididae (Dance flies)	6				
Potamonautidae* (Crabs)	3					Pleidae* (Pvgmv backswimmers)	4					Enhydridae (Shore flies)	3				
Atvidae (Freshwater Shrimps)	8					Veliidae/Mveliidae* (Ripple bugs)	5	1			1	Muscidae (House flies, Stable flies)	1				
Palaemonidae (Freshwater Prawns)	10					MEGALOPTERA (Fishflies, Dobsonflies &	Alderflie	es)				Psychodidae (Moth flies)	1				
HYDRACARINA (Mites)	8	1			1	Corvdalidae (Fishflies & Dobsonflies)	8	,				Simuliidae (Blackflies)	5	В			Δ
PLECOPTERA (Stoneflies)	-					Sialidae (Alderflies)	6	1				Syrphidae* (Rat tailed maggots)	1				
Notonemouridae	14					TRICHOPTERA (Caddisflies)	-					Tabanidae (Horse flies)	5	1			1
Perlidae	12					Dipseudopsidae	10					Tipulidae (Crane flies)	5		Δ		Δ
EPHEMEROPTERA (Mayflies)						Ecnomidae	8					GASTROPODA (Snails)					
Baetidae 1sp	4					Hydropsychidae 1 sp	4					Ancylidae (Limpets)	6				
Baetidae 2 sp	6		в			Hydropsychidae 2 sp	+ 6					Bulininae*	3			┝───┦	
Baetidae > 2 sp	12	в	5		в	Hydropsychidae > 2 sp	12					Hydrobiidae*	3			┝───┦	
Caenidae (Squaregills/Cainfles)	6	B			B	Philopotamidae	10					Lympaeidae* (Pond spails)	3		Δ	┝───┦	۵
Enbemeridae	15	5			5	Polycentropodidae	12					Physidae* (Pouch snails)	3		~	┝───┦	~
Hentageniidae (Flatheaded mayflies)	13					Psychomyiidae/Xinhocentronidae	8					Planorbinae* (Orb snails)	3			┝───┦	
Leptophlebiidae (Prongills)	9					Cased caddis:						Thiaridae* (-Melanidae)	3			┝───┦	
Oligoneuridae (Brushlegged mayflies)	15					Barbarochthonidae SWC	13					Viviparidae* ST	5				
Polymitarcyidae (Pale Burrowers)	10					Calamoceratidae ST	11					PELECYPODA (Bivalyles)					
Prosopistomatidae (Water specs)	15					Glossosomatidae SWC	11					Corbiculidae (Clams)	5				
Teloganodidae SWC (Spiny Crawlers)	12					Hydroptilidae	6					Sphaeriidae (Bill clams)	3				
Tricon/thidae (Stout Crawlers)	9					Hydrosalpingidae SWC	15					Unionidae (Perly mussels)	6			┝───┦	
ODONATA (Dragonflies & Damselflies)							10					SASS Score					92
Calonterygidae ST T (Demoiselles)	10						6					No. of Taxa	'				19
Chlorocyphidae (lewels)	10					Petrothrincidae SWC	11					ASPT	'				4.8
Synlestidae (Chlorolestidae)(Sylphs)	8					Pisuliidae	10					Other biota:			1		4.0
Coepagriopidae (Sprites and blues)	4	۵	۵		в	Sericostomatidae SWC	13										
Lestidae (Emerald Damselflies/Spreadwings	+ 8	~	~		5	COLEORTERA (Bootlos)	10										
Platycoomidae (Stream Damselflies)	10					Dytiscidae/Neteridae* (Diving beetles)	5		Δ		Δ						
Protoneuridae (Threadwings)	8	<u> </u>	<u> </u>	-		Elmidae/Dryopidae* (Riffle beetles)	8	~	~	+	~	1					
Aeshnidae (Hawkers & Emperore)	8		+	1		Gyrinidae* (Whirlinia beetles)	5	1		+		Comments/Observations:					
Corduliidae (Cruisers)	0					Haliplidae* (Crawling water beetles)	5		<u> </u>			Comments/Observations.					
Condunidae (Clubtails)	6					Helodidae (March bootles)	12		<u> </u>			1			-		
Libellulidee (Dattere/Skimmere)	4		•		٨	Hudroopidoo* (Minuto more bostica)	0	<u> </u>	٨	-		4					
Libeliulidae (Darters/Skimmers)	4	L	A		A	Hydrophilidae* (Water scavenger bestles)	5		A 1	+	A 1	4					
Crembides (Duralides)	40	-				Limitabildes (March Levins Destina)			1			4					
Crambidae (Pyralidae)	12	<u> </u>				Limitichidae (Marsh-Loving Beetles)	10					4					
1		1	1	1	1	r septienidae (water Pennies)	10	1	1	1							

Tarka River

	Time :					SASS Version 5 Score Sho	eet							Version	date:	Sep 2005		
Date (dd-mm-yr):	21-Sep	-22								(dd.ddd	ldd)	Biotopes Sampled (tick & rate)	Rating (1	-5)		Т	ime (min)	
Site Code:	TARKO	1 R				Grid reference (dd mm ss.s) at:	s	-32 283	315				1	· ·	h 1			
Collector/Sampler:	Kylie E	arroll				long		25 7592	8			Stones Out Of Current (SOOC)	3		1			
Diver	TADKA					Detum (MORO//Orma)	· •	20.1002	.0			Bedroek	0		4			
	10. DD			OB		Datum (WGS64/Cape):				-		A mustic Man	1		1		(L	
Level 1 Ecoregion:	16: DR	OUGHI	JUKKIDU	UK		Altitude (m):						Aquatic veg	1		18	AEALTH P	RO	
Quaternary Catchment:	Q44C		r			Zonation			-			MargVeg In Current		ł	14th)=(CP	
	Temp (°C):				Routine or Project? (circle one)	Flow					MargVeg Out Of Current	1		- 44	36	3	
Site Description: 52	pH:					Project Name:	Clarity	(cm):				Gravel	2		H 💙	25	3 m	
Refer to Report Number:	DO (mg	g/L):				WP11354	Turbidi	ty:				Sand	1		SER. OF	WRITER ACTACING IN P	ORESTRY	
WEM/WMA7/00/CON/RDM/0722	Condu	ctivity:					Colour	:				Mud	4		DEPT. OF ENVI	BONNES AT AFFAIR	IS & TOURSH	
	Riparia	n Disturb	ance:									Hand picking/Visual observation	x					
	Instream	m Disturl	bance:									Biotope Score (%)	31					
Taxon	QV	S	Veq	GSM	тот	Taxon	QV	S	Veq	GSM	TOT	Taxon	QV	S	Veq	GSM	тот	
PORIFERA (Sponge)	5				-	HEMIPTERA (Bugs)						DIPTERA (Flies)		-				
COELENTERATA (Cnidaria)	1					Belostomatidae* (Giant water bugs)	3					Athericidae (Snipe flies)	10		-	-		
TURBELLARIA (Flatworms)	3					Corixidae* (Water boatmen)	3	Α	Α		В	Blepharoceridae (Mountain midges)	15					
ANNELIDA						Gerridae* (Pond skaters/Water striders)	5					Ceratopogonidae (Biting midges)	5	Α	Α	-	В	
Oligochaeta (Earthworms)	1					Hydrometridae* (Water measurers)	6					Chironomidae (Midges)	2	C	B	-	C	
Hirudinea (Leeches)	3					Naucoridae* (Creeping water bugs)	7					Culicidae* (Mosquitoes)	1		1	-	1	
CRUSTACEA						Nepidae* (Water scorpions)	3					Dixidae* (Dixid midge)	10		-	-		
Amphipoda (Scuds)	13					Notonectidae* (Backswimmers)	3		Α		Α	Empididae (Dance flies)	6		-	-		
Potamonautidae* (Crabs)	3	Α	1		А	Pleidae* (Pygmy backswimmers)	4					Ephydridae (Shore flies)	3		-	-	-	
Atvidae (Ereshwater Shrimps)	8					Veliidae/M_veliidae* (Ripple bugs)	5					Muscidae (House flies, Stable flies)	1		Δ	-	Δ	
Palaemonidae (Freshwater Prawns)	10					MEGALOPTERA (Fishflies, Dobsonflies &	Alderflie	es)				Psychodidae (Moth flies)	1			-		
HYDRACARINA (Mites)	8					Corvdalidae (Fishflies & Dobsonflies)	8	-,				Simuliidae (Blackflies)	5	В	В	-	В	
PLECOPTERA (Stoneflies)	-					Sialidae (Alderflies)	6					Syrphidae* (Rat tailed maggots)	1			-	_	
Notonemouridae	14					TRICHOPTERA (Caddisflies)	-					Tabanidae (Horse flies)	5		-	-		
Perlidae	12	1			1	Dipseudopsidae	10					Tipulidae (Crane flies)	5		-	-		
EPHEMEROPTERA (Mayflies)						Ecnomidae	8					GASTROPODA (Snails)	-					
Baetidae 1sp	4	1				Hydropsychidae 1 sp	4	1			1	Ancylidae (Limpets)	6		-	-		
Baetidae 2 sp	6	-				Hydropsychidae 2 sp	6	-				Bulininae*	3		-	-		
Baetidae > 2 sp	12		В		в	Hydropsychidae > 2 sp	12					Hvdrobiidae*	3		-	-		
Caenidae (Squaregills/Cainfles)	6		A		A	Philopotamidae	10					Lymnaeidae* (Pond snails)	3		-	-	-	
Ephemeridae	15					Polycentropodidae	12					Physidae* (Pouch snails)	3		-	-		
Heptageniidae (Flatheaded mavflies)	13	1			1	Psychomyiidae/Xiphocentronidae	8					Planorbinae* (Orb snails)	3		-	-		
Leptophlebiidae (Prongills)	9					Cased caddis:						Thiaridae* (=Melanidae)	3		-	+		
Oligoneuridae (Brushlegged mavflies)	15					Barbarochthonidae SWC	13					Viviparidae* ST	5		-	-		
Polymitarcyidae (Pale Burrowers)	10					Calamoceratidae ST	11					PELECYPODA (Bivalyles)	-					
Prosopistomatidae (Water specs)	15					Glossosomatidae SWC	11					Corbiculidae (Clams)	5		-	-		
Teloganodidae SWC (Spiny Crawlers)	12					Hydroptilidae	6					Sphaeriidae (Pill clams)	3		-	-	-	
Tricorythidae (Stout Crawlers)	9					Hydrosalpingidae SWC	15					Unionidae (Perly mussels)	6		-	-	-	
ODONATA (Dragonflies & Damselflies)						Lepidostomatidae	10					SASS Score	-		+	+	87	
Caloptervoidae ST T (Demoiselles)	10					Leptoceridae	6					No. of Taxa	-		-	-	16	
Chlorocyphidae (Jewels)	10					Petrothrincidae SWC	11					ASPT	-		-	-	5.4	
Synlestidae (Chlorolestidae)(Sylphs)	8					Pisuliidae	10					Other biota:						
Coenagrionidae (Sprites and blues)	4		Α		А	Sericostomatidae SWC	13											
Lestidae (Emerald Damselflies/Spreadwings) 8					COLEOPTERA (Beetles)												
Platycnemidae (Stream Damselflies)	10					Dytiscidae/Noteridae* (Diving beetles)	5					1						
Protoneuridae (Threadwings)	8				1	Elmidae/Dryopidae* (Riffle beetles)	8	1	1	1	1	1						
Aeshnidae (Hawkers & Emperors)	8	1		1	-	Gyrinidae* (Whirligig beetles)	5	1	1	1	1	Comments/Observations:						
Corduliidae (Cruisers)	8				1	Haliplidae* (Crawling water beetles)	5	1	1	+	1	commentaropaci valiona.					-	
Gomphidae (Clubtails)	6	1		1	1	Helodidae (Marsh beetles)	12	1		1	1							
Libellulidae (Datters/Skimmers)	4	+		+		Hydraenidae* (Minute moss beetles)	8	Δ	1	+	Δ	1						
I EPIDOPTERA (Aquatic Caternillars/Mothe)		1			-	Hydrophilidae* (Water scavenger bestles)	5	~	Δ	+	Δ							
Crambidae (Pyralidae)	12	1				Limnichidae (Marsh-Loving Beetles)	10		~	+	~	4						
	12	1		1	1	Psephenidae (Water Pennies)	10	1		1	1							
		1	1	1	1			1	1	1	1	1						

Sundays River (Lower)

i i																	
Date (dd-mm-yr):	23-Sep	-22						(dd.dddd)				Biotopes Sampled (tick & rate) Rating (1-5)					ime (min)
Site Code:	SUND0	2_R				Grid reference (dd mm ss.s) Lat:	S	-33.404	384				5		1		
Collector/Sampler:	Kylie Fa	arrell				Long	F	25.4079	919			Stones Out Of Current (SOOC)	5				
River:	Sundays (Lower)					Datum (WGS84/Cape)	. –					Bedrock	0				
Lovel 1 Ecorogion:	20: SOUTH FASTERN COASTAL BELT				BELT	Altitude (m)				-		Aquatic Veg	0			5 A 1 7 4 .	
Quaternary Catchment:	N40C					Zonation						MaraVaa In Current	1		SR P	Chill P	ROC
quaternary cateriment.	Tamm (°C).				Routine or Project2 (circle one)]	L				MargVeg Out Of Current	1		20	101-	027
Site Decorintion, 52	Temp (-C):	<u> </u>			Routine of Project (circle one)	FIOW					Margveg Out Of Current			11		37
Site Description. 52	_pH:		<u> </u>			Project Name:	Clarity	(cm):	<u> </u>			Gravel	4		F	1	Ē
Refer to Report Number:	DO (mg	g/L):				WP11354	Turbidi	ty:				Sand	3		DEPT. OF V	ATER AFFAIRS & FU	DRESTRY SECIN
wew/www.a//00/con/RDW/0/22 and for all other site information including in situ	Conduc	ctivity:			-		Colour	:				Mud	2		CEPE OF DWG	ONMENTAL AUTAIL	5 & TOURIEN
water quality	Riparia	n Disturl	bance:									Hand picking/Visual observation	х				
nator quanty	Instream	m Distur	bance:									Biotope Score (%)	47				
Taxon	QV	S	Veg	GSM	TOT	Taxon	QV	S	Veg	GSM	TOT	Taxon	QV	S	Veg	GSM	TOT
PORIFERA (Sponge)	5				В	HEMIPTERA (Bugs)						DIPTERA (Flies)			-		
COELENTERATA (Cnidaria)	1					Belostomatidae* (Giant water bugs)	3					Athericidae (Snipe flies)	10				
TURBELLARIA (Flatworms)	3	1		1	Α	Corixidae* (Water boatmen)	3					Blepharoceridae (Mountain midges)	15				
ANNELIDA						Gerridae* (Pond skaters/Water striders)	5					Ceratopogonidae (Biting midges)	5				
Oligochaeta (Earthworms)	1					Hydrometridae* (Water measurers)	6					Chironomidae (Midges)	2	Α	В		В
Hirudinea (Leeches)	3					Naucoridae* (Creeping water bugs)	7					Culicidae* (Mosquitoes)	1		1		1
CRUSTACEA						Nepidae* (Water scorpions)	3					Dixidae* (Dixid midge)	10				
Amphipoda (Scuds)	13					Notonectidae* (Backswimmers)	3					Empididae (Dance flies)	6				
Potamonautidae* (Crabs)	3	A	Α		Α	Pleidae* (Pygmy backswimmers)	4					Ephydridae (Shore flies)	3				
Atyidae (Freshwater Shrimps)	8					Veliidae/Mveliidae* (Ripple bugs)	5					Muscidae (House flies, Stable flies)	1	Α			Α
Palaemonidae (Freshwater Prawns)	10					MEGALOPTERA (Fishflies, Dobsonflies &	Alderflie	es)				Psychodidae (Moth flies)	1				
HYDRACARINA (Mites)	8					Corydalidae (Fishflies & Dobsonflies)	8					Simuliidae (Blackflies)	5	<u>C</u>	B	В	D
PLECOPTERA (Stoneflies)						Sialidae (Alderflies)	6					Syrphidae* (Rat tailed maggots)	1				1
Notonemouridae	14					TRICHOPTERA (Caddisflies)						Tabanidae (Horse flies)	5				
Perlidae	12					Dipseudopsidae	10					Tipulidae (Crane flies)	5				1
EPHEMEROPTERA (Mayflies)						Ecnomidae	8					GASTROPODA (Snails)					
Baetidae 1sp	4					Hydropsychidae 1 sp	4			1		Ancylidae (Limpets)	6	A	1		В
Baetidae 2 sp	6		Α	Α		Hydropsychidae 2 sp	6	A			Α	Bulininae*	3				1
Baetidae > 2 sp	12	В			В	Hydropsychidae > 2 sp	12					Hydrobiidae*	3				1
Caenidae (Squaregills/Cainfles)	6		1		1	Philopotamidae	10					Lymnaeidae* (Pond snails)	3				1
Ephemeridae	15					Polycentropodidae	12					Physidae* (Pouch snails)	3				1
Heptageniidae (Flatheaded mayflies)	13					Psychomyiidae/Xiphocentronidae	8					Planorbinae* (Orb snails)	3				1
Leptophlebiidae (Prongills)	9	1			1	Cased caddis:						Thiaridae* (=Melanidae)	3				1
Oligoneuridae (Brushlegged mayflies)	15					Barbarochthonidae SWC	13					Viviparidae* ST	5				
Polymitarcyidae (Pale Burrowers)	10					Calamoceratidae ST	11					PELECYPODA (Bivalvles)					
Prosopistomatidae (Water specs)	15					Glossosomatidae SWC	11					Corbiculidae (Clams)	5	Α		Α	Α
Teloganodidae SWC (Spiny Crawlers)	12					Hydroptilidae	6					Sphaeriidae (Pill clams)	3				
Tricorythidae (Stout Crawlers)	9					Hydrosalpingidae SWC	15					Unionidae (Perly mussels)	6				
ODONATA (Dragonflies & Damselflies)						Lepidostomatidae	10					SASS Score					87
Calopterygidae ST,T (Demoiselles)	10					Leptoceridae	6					No. of Taxa					17
Chlorocyphidae (Jewels)	10		1		1	Petrothrincidae SWC	11					ASPT					5.1
Synlestidae (Chlorolestidae)(Sylphs)	8					Pisuliidae	10					Other biota:					-
Coenagrionidae (Sprites and blues)	4		Α		Α	Sericostomatidae SWC	13										
Lestidae (Emerald Damselflies/Spreadwings	s) 8					COLEOPTERA (Beetles)											
Platycnemidae (Stream Damselflies)	10					Dytiscidae/Noteridae* (Diving beetles)	5										
Protoneuridae (Threadwings)	8					Elmidae/Dryopidae* (Riffle beetles)	8										
Aeshnidae (Hawkers & Emperors)	8					Gyrinidae* (Whirligig beetles)	5					Comments/Observations:					
Corduliidae (Cruisers)	8					Haliplidae* (Crawling water beetles)	5	1	1								
Gomphidae (Clubtails)	6					Helodidae (Marsh beetles)	12	1	1	1		1					
Libellulidae (Darters/Skimmers)	4					Hydraenidae* (Minute moss beetles)	8	1	1		1	1					
LEPIDOPTERA (Aquatic Caterpillars/Moths)					Hydrophilidae* (Water scavenger beetles)	5	1	1	1		1					
Crambidae (Pyralidae)	12	1				Limnichidae (Marsh-Loving Beetles)	10	1	1			İ					
		1	1	1	1	Psephenidae (Water Pennies)	10	1	1	1		1					

Kouga River

U																	
Date (dd-mm-yr):	07-Sep-	-22								(dd.ddd	ldd)	Biotopes Sampled (tick & rate)	Rating (1	-5)		Ti	ime (min)
Site Code:	KOUG01_R					Grid reference (dd mm ss.s) Lat:	S	S -33.788449					5		1	l l	
Collector/Sampler:	KYLIE	ARRELI	L			Long	E	24.0258	321			Stones Out Of Current (SOOC)	5				
River:	KOUGA	1				Datum (WGS84/Cane):	. –					Bedrock	1				
Lovel 1 Ecorogion:	19 Sout	thern Fol	Ided Mor	intains		Altitudo (m)				-		Aquatic Veg	5	1		CALTU	
Quatornary Catchmont:	1.82E					Altitude (III).		<u> </u>				Marallas In Current	5		CR P	Earra P	ROS
quaternary catchinent.						Zonation:	1					MargVeg In Current			20	-101-	Py
0% D 1.41 F0	Temp (°C):	<u> </u>			Routine or Project? (circle one)	Flow		<u> </u>			Margveg Out Of Current	3			28	N N
Site Description: 52	_pH:					Project Name:	Clarity	(cm):				Gravel	4		E T	20	m
Refer to Report Number:	DO (mg	ŋ/L):				WP11354	Turbidi	ty:				Sand	1		JEFT. OF 1 WATER	STER AF FAIRS & FO	DRESTRY SSON
WEM/WMA7/00/CON/RDM/0722	Conduc	ctivity:			-		Colour:	:				Mud	1		DEPE OF FIVE	ORDITAT AT ATTACK	S & TOURISM
	Riparia	n Disturk	bance:									Hand picking/Visual observation	х				
	Instream	m Distur	bance:									Biotope Score (%)	67	1			
Taxon	QV	S	Veg	GSM	тот	Taxon	QV	S	Veg	GSM	TOT	Taxon	QV	S	Veg	GSM	TOT
PORIFERA (Sponge)	5					HEMIPTERA (Bugs)						DIPTERA (Flies)		-			
COELENTERATA (Cnidaria)	1		1			Belostomatidae* (Giant water bugs)	3					Athericidae (Snipe flies)	10	1			1
TURBELLARIA (Flatworms)	3	1	1			Corixidae* (Water boatmen)	3	1	1			Blepharoceridae (Mountain midges)	15	1			
ANNELIDA						Gerridae* (Pond skaters/Water striders)	5	1	1			Ceratopogonidae (Biting midges)	5	1			1
Oligochaeta (Earthworms)	1	А			А	Hydrometridae* (Water measurers)	6	1	1			Chironomidae (Midges)	2	В	1		В
Hirudinea (Leeches)	3	1			1	Naucoridae* (Creeping water bugs)	7		1			Culicidae* (Mosquitoes)	1	+	-	+ +	
CRUSTACEA						Nepidae* (Water scorpions)	3		1			Dixidae* (Dixid midge)	10	+	-	+ +	
Amphipoda (Scuds)	13					Notonectidae* (Backswimmers)	3		1			Empididae (Dance flies)	6	+	-	+ +	
Potamonautidae* (Crabs)	3					Pleidae* (Pvgmv backswimmers)	4					Ephydridae (Shore flies)	3	1	1	+ +	
Atvidae (Freshwater Shrimps)	8					Veliidae/Mveliidae* (Ripple bugs)	5					Muscidae (House flies, Stable flies)	1			++	
Palaemonidae (Freshwater Prawns)	10					MEGALOPTERA (Fishflies, Dobsonflies &	Alderflie	es)				Psychodidae (Moth flies)	1			++	
HYDRACARINA (Mites)	8					Corvdalidae (Fishflies & Dobsonflies)	8	1				Simuliidae (Blackflies)	5	В	A	++	С
PLECOPTERA (Stoneflies)	-					Sialidae (Alderflies)	6					Syrphidae* (Rat tailed maggots)	1			++	-
Notonemouridae	14					TRICHOPTERA (Caddisflies)	-					Tabanidae (Horse flies)	5	Α		++	А
Perlidae	12					Dipseudopsidae	10					Tipulidae (Crane flies)	5			++	
EPHEMEROPTERA (Mavflies)						Ecnomidae	8					GASTROPODA (Snails)		-	-		
Baetidae 1sp	4					Hydropsychidae 1 sp	4	В			В	Ancylidae (Limpets)	6	-	-		
Baetidae 2 sp	6		В			Hydropsychidae 2 sp	6	_			_	Bulininae*	3		1	++	1
Baetidae > 2 sp	12	в	_		В	Hydropsychidae > 2 sp	12					Hvdrobiidae*	3		-	++	-
Caenidae (Squaregills/Cainfles)	6	В			В	Philopotamidae	10					Lymnaeidae* (Pond snails)	3	Α		++	А
Ephemeridae	15	_			_	Polycentropodidae	12					Physidae* (Pouch snails)	3	A		++	A
Heptageniidae (Flatheaded mavflies)	13	Α			А	Psychomyiidae/Xiphocentronidae	8					Planorbinae* (Orb snails)	3			++	
Leptophlebiidae (Prongills)	9	В			B	Cased caddis:	-					Thiaridae* (=Melanidae)	3			++	
Oligoneuridae (Brushlegged mayflies)	15	_			_	Barbarochthonidae SWC	13					Viviparidae* ST	5			++	
Polymitarcyidae (Pale Burrowers)	10					Calamoceratidae ST	11					PELECYPODA (Bivalyles)	-		-		
Prosopistomatidae (Water specs)	15					Glossosomatidae SWC	11					Corbiculidae (Clams)	5	A			А
Teloganodidae SWC (Spiny Crawlers)	12					Hydroptilidae	6					Sphaeriidae (Pill clams)	3			++	
Tricorythidae (Stout Crawlers)	9					Hydrosalpingidae SWC	15					Unionidae (Perly mussels)	6			++	
ODONATA (Dragonflies & Damselflies)						Lepidostomatidae	10		1			SASS Score	-			++	145
Caloptervoidae ST.T (Demoiselles)	10					Leptoceridae	6	В	В		В	No. of Taxa	-				24
Chlorocyphidae (Jewels)	10	1			1	Petrothrincidae SWC	11	_	_		_	ASPT	-				6.0
Synlestidae (Chlorolestidae)(Sylphs)	8	-				Pisuliidae	10		1			Other biota:		4			
Coenagrionidae (Sprites and blues)	4		В		В	Sericostomatidae SWC	13										
Lestidae (Emerald Damselflies/Spreadwings	8		_		_	COLEOPTERA (Beetles)											
Platycnemidae (Stream Damselflies)	10		<u> </u>	1	1	Dytiscidae/Noteridae* (Diving beetles)	5	1									
Protoneuridae (Threadwings)	8	1	1	1		Elmidae/Dryopidae* (Riffle beetles)	8	1	1	1							
Aeshnidae (Hawkers & Emperors)	8	Α	1	1	Α	Gyrinidae* (Whirligig beetles)	5	1	1	1		Comments/Observations:					
Corduliidae (Cruisers)	8	Α	1	1	Α	Haliplidae* (Crawling water beetles)	5	1	1	1						·	
Gomphidae (Clubtails)	6	1	<u> </u>	1	1	Helodidae (Marsh beetles)	12		<u> </u>	+		1	-		-		
Libellulidae (Darters/Skimmers)	4	<u> </u>	Δ	+		Hydraenidae* (Minute moss beetles)	8		1	+		1			-		
LEPIDOPTERA (Aquatic Caternillars/Mothe						Hydrophilidae* (Water scavenger beetles)	5	+	+	+		1					
Crambidae (Pyralidae)	12	1				Limnichidae (Marsh-Loving Beetles)	10					1					
				-		Psephenidae (Water Pennies)	10	1			1	1					
INTERMEDIATE SITES

Mthatha River (Lower): July 2022

Data (dd mm yr):	07-Sep	.22								(dd ddd	dd)	Biotopes Sampled (tick & rate)	Rating (1	-5)		Ti	me (min)
Site Code	Mtot01	1				Crid reference (dd mm ce c) etu	e	21.025	202	(uu.uuu	uuj	Dietopee campiea (neit a rate)	i tuting (i	3)		1	
Site Code:	Witato T	.) 				Ghu reference (du min SS.S) Lat.	-	-31.923	0.90								
Collector/Sampler:	Kylle F	arrell				Long	: E	29.1360	48			Stones Out Of Current (SOOC)					—
River:	Lower	Mthatha				Datum (WGS84/Cape):	:					Bedrock					
Level 1 Ecoregion:	31: EAS	STERN CO	OASTAL	BELT		Altitude (m):	:					Aquatic Veg			. 14	ALTH P	0
Quaternary Catchment:	T20G					Zonation:	:					MargVeg In Current			JER		°C,
	Temp (°C):				Routine or Project? (circle one)	Flow					MargVeg Out Of Current			4	1	77,
Site Description: 52	nH·	-,				Project Name:	Clarity	(cm).				Gravel			H.	2.55	D N
Refer to Report Number:						WD44054	Turbidi	tv.				Sand			THE OTHER		D LOTTON
WEM/WMA7/00/CON/RDM/0722 and for all	DO (mg]/∟): 				WP11354	Calaur					Mud			WATER 3	SEARCH COMPANY	NON
other site information, including in situ	Conduc	Suvity.			r		Colour	•				Muu			Reading to the second	and here and	COLUMNO
water quality	Riparia	n Disturb	ance:									Hand picking/visual observation					
	Instrea	m Disturt	bance:									Biotope Score (%)					
Taxon	QV	S	Veg	GSM	TOT	Taxon	QV	S	Veg	GSM	TOT	Taxon	QV	S	Veg	GSM	TOT
PORIFERA (Sponge)	5					HEMIPTERA (Bugs)						DIPTERA (Flies)					-
COELENTERATA (Cnidaria)	1					Belostomatidae* (Giant water bugs)	3					Athericidae (Snipe flies)	10				I
TURBELLARIA (Flatworms)	3					Corixidae* (Water boatmen)	3					Blepharoceridae (Mountain midges)	15				I
ANNELIDA						Gerridae* (Pond skaters/Water striders)	5					Ceratopogonidae (Biting midges)	5				I
Oligochaeta (Earthworms)	1					Hydrometridae* (Water measurers)	6					Chironomidae (Midges)	2			Α	В
Hirudinea (Leeches)	3					Naucoridae* (Creeping water bugs)	7					Culicidae* (Mosquitoes)	1				I
CRUSTACEA						Nepidae* (Water scorpions)	3					Dixidae* (Dixid midge)	10				I
Amphipoda (Scuds)	13					Notonectidae* (Backswimmers)	3					Empididae (Dance flies)	6				I
Potamonautidae* (Crabs)	3			Α	Α	Pleidae* (Pygmy backswimmers)	4					Ephydridae (Shore flies)	3				1
Atyidae (Freshwater Shrimps)	8			Α	В	Veliidae/Mveliidae* (Ripple bugs)	5					Muscidae (House flies, Stable flies)	1				1
Palaemonidae (Freshwater Prawns)	10				В	MEGALOPTERA (Fishflies, Dobsonflies &	Alderflie	es)				Psychodidae (Moth flies)	1				1
HYDRACARINA (Mites)	8					Corydalidae (Fishflies & Dobsonflies)	8					Simuliidae (Blackflies)	5	C		В	D
PLECOPTERA (Stoneflies)						Sialidae (Alderflies)	6					Syrphidae* (Rat tailed maggots)	1				
Notonemouridae	14					TRICHOPTERA (Caddisflies)						Tabanidae (Horse flies)	5				
Perlidae	12				В	Dipseudopsidae	10					Tipulidae (Crane flies)	5				
EPHEMEROPTERA (Mayflies)						Ecnomidae	8					GASTROPODA (Snails)					
Baetidae 1sp	4	Α		1	Α	Hydropsychidae 1 sp	4				Α	Ancylidae (Limpets)	6				В
Baetidae 2 sp	6					Hydropsychidae 2 sp	6					Bulininae*	3				
Baetidae > 2 sp	12					Hydropsychidae > 2 sp	12					Hydrobiidae*	3				
Caenidae (Squaregills/Cainfles)	6					Philopotamidae	10	1			1	Lymnaeidae* (Pond snails)	3				
Ephemeridae	15					Polycentropodidae	12					Physidae* (Pouch snails)	3				
Heptageniidae (Flatheaded mayflies)	13	Α			В	Psychomyiidae/Xiphocentronidae	8					Planorbinae* (Orb snails)	3				
Leptophlebiidae (Prongills)	9	Α			Α	Cased caddis:						Thiaridae* (=Melanidae)	3				
Oligoneuridae (Brushlegged mayflies)	15					Barbarochthonidae SWC	13					Viviparidae* ST	5				
Polymitarcyidae (Pale Burrowers)	10					Calamoceratidae ST	11					PELECYPODA (Bivalvles)					
Prosopistomatidae (Water specs)	15					Glossosomatidae SWC	11					Corbiculidae (Clams)	5				
Teloganodidae SWC (Spiny Crawlers)	12					Hydroptilidae	6					Sphaeriidae (Pill clams)	3			-	í
Tricorythidae (Stout Crawlers)	9					Hydrosalpingidae SWC	15					Unionidae (Perly mussels)	6			-	í
ODONATA (Dragonflies & Damselflies)		1				Lepidostomatidae	10					SASS Score					83
Calopterygidae ST,T (Demoiselles)	10					Leptoceridae	6					No. of Taxa				-	14
Chlorocyphidae (Jewels)	10					Petrothrincidae SWC	11					ASPT				-	5.9
Synlestidae (Chlorolestidae) (Sylphs)	8					Pisuliidae	10					Other biota:					
Coenagrionidae (Sprites and blues)	4					Sericostomatidae SWC	13									-	
Lestidae (Emerald Damselflies/Spreadwings) 8					COLEOPTERA (Beetles)											
Platycnemidae (Stream Damselflies)	10					Dytiscidae/Noteridae* (Diving beetles)	5										
Protoneuridae (Threadwings)	8					Elmidae/Dryopidae* (Riffle beetles)	8										
Aeshnidae (Hawkers & Emperors)	8					Gyrinidae* (Whirligig beetles)	5	А			В	Comments/Observations:					
Corduliidae (Cruisers)	8					Haliplidae* (Crawling water beetles)	5										
Gomphidae (Clubtails)	6	1				Helodidae (Marsh beetles)	12	1				1					
Libellulidae (Darters/Skimmers)	4	Α			Α	Hydraenidae* (Minute moss beetles)	8	1				1					
LEPIDOPTERA (Aquatic Caterpillars/Moths))					Hydrophilidae* (Water scavenger beetles)	5	1				1					
Crambidae (Pyralidae)	12	1				Limnichidae (Marsh-Loving Beetles)	10	1				1					
						Psephenidae (Water Pennies)	10					1					

Mthatha River (Lower): May 2023

Not conducted due to floods

Mbhashe River (Middle): July 2022

Date (dd-mm-vr):	08-Sep-	-22								(dd.ddd	dd)	Biotopes Sampled (tick & rate)	Rating (1	-5)		т	ime (min
Site Code:	Mbas01					Grid reference (dd mm ss.s). I at:	s	-31 958	131				5	.,	1		
Callester/Sempler	Kylio Ea	arroll				Ghurelerence (du min 35.5) Lat.		28 4722	236			Stoppe Out Of Current (SOOC)	5		-		
Conector/Sampier:	Ttylie i a		-			Long:	-	20.4722	230			stones out of current (SOOC)			-		
River:	Middlei	Mabash	e			Datum (WGS84/Cape):			1	4		Bedrock	0		-		
Level 1 Ecoregion:	31: EAS	5 TERN C	OASTAL	. BELI		Altitude (m)	:					Aquatic Veg	0		~ Y	EALTH F	R
Quaternary Catchment:	T13E					Zonation:	_					MargVeg In Current	0		VEN	1.4.4	000
	Temp (°	'C):				Routine or Project? (circle one)	Flow					MargVeg Out Of Current	1		4°		77
Site Description: 52	pH:					Project Name:	Clarity	(cm):				Gravel	4		E S	2,5	S M
Refer to Report Number:	 DO (ma	<i>/</i> 1.)•				WD44254	Turbidi	itv:				Sand	3		DEPT OF	HATTER A FLACES & P	CRENTRY
WEM/WMA7/00/CON/RDM/0722 and for all	Conduc	tivity.				WF11334	Colour					Mud	3		MALES	RESEARCH COMMI	SHON
other site information, including in situ	Dimension	- Diet.ul					ooloal					Hand nicking//igual obconvotion					
water quality	Ripanai	Disturi	bance.														
-	Instream	n Distur	bance:			-						Biotope Score (%)	47				
Taxon	QV	S	Veg	GSM	101	Taxon	QV	S	Veg	GSM	101	Taxon	QV	S	Veg	GSM	101
PORIFERA (Sponge)	5					HEMIPTERA (Bugs)						DIPTERA (Files)	10				
COELENTERATA (Cnidaria)	1					Belostomatidae* (Giant water bugs)	3		A		A	Athericidae (Snipe flies)	10				
TURBELLARIA (Flatworms)	3					Corixidae* (Water boatmen)	3					Blepharoceridae (Mountain midges)	15				
ANNELIDA						Gerridae* (Pond skaters/Water striders)	5					Ceratopogonidae (Biting midges)	5				
Oligochaeta (Earthworms)	1					Hydrometridae* (Water measurers)	6					Chironomidae (Midges)	2				
Hirudinea (Leeches)	3					Naucoridae* (Creeping water bugs)	7					Culicidae* (Mosquitoes)	1				
CRUSTACEA						Nepidae* (Water scorpions)	3					Dixidae* (Dixid midge)	10				
Amphipoda (Scuds)	13					Notonectidae* (Backswimmers)	3					Empididae (Dance flies)	6				
Potamonautidae* (Crabs)	3		1		A	Pleidae* (Pygmy backswimmers)	4					Ephydridae (Shore flies)	3				
Atyidae (Freshwater Shrimps)	8					Veliidae/Mveliidae* (Ripple bugs)	5					Muscidae (House flies, Stable flies)	1				
Palaemonidae (Freshwater Prawns)	10					MEGALOPTERA (Fishflies, Dobsonflies &	Alderflie	es)				Psychodidae (Moth flies)	1				
HYDRACARINA (Mites)	8					Corydalidae (Fishflies & Dobsonflies)	8					Simuliidae (Blackflies)	5	B			В
PLECOPTERA (Stoneflies)						Sialidae (Alderflies)	6					Syrphidae* (Rat tailed maggots)	1				
Notonemouridae	14					TRICHOPTERA (Caddisflies)						Tabanidae (Horse flies)	5				
Perlidae	12					Dipseudopsidae	10					Tipulidae (Crane flies)	5				
EPHEMEROPTERA (Mayflies)						Ecnomidae	8					GASTROPODA (Snails)					
Baetidae 1sp	4					Hydropsychidae 1 sp	4					Ancylidae (Limpets)	6				
Baetidae 2 sp	6	B	Α	Α		Hydropsychidae 2 sp	6	B			В	Bulininae*	3				
Baetidae > 2 sp	12	В		Α	В	Hydropsychidae > 2 sp	12					Hydrobiidae*	3				
Caenidae (Squaregills/Cainfles)	6		Α		Α	Philopotamidae	10					Lymnaeidae* (Pond snails)	3				
Ephemeridae	15					Polycentropodidae	12					Physidae* (Pouch snails)	3		Α		Α
Heptageniidae (Flatheaded mayflies)	13					Psychomyiidae/Xiphocentronidae	8					Planorbinae* (Orb snails)	3				
Leptophlebiidae (Prongills)	9	В		Α	В	Cased caddis:						Thiaridae* (=Melanidae)	3				
Oligoneuridae (Brushlegged mayflies)	15					Barbarochthonidae SWC	13					Viviparidae* ST	5				
Polymitarcyidae (Pale Burrowers)	10					Calamoceratidae ST	11					PELECYPODA (Bivalvles)					
Prosopistomatidae (Water specs)	15					Glossosomatidae SWC	11					Corbiculidae (Clams)	5				
Teloganodidae SWC (Spiny Crawlers)	12					Hydroptilidae	6					Sphaeriidae (Pill clams)	3				
Tricorythidae (Stout Crawlers)	9					Hydrosalpingidae SWC	15					Unionidae (Perly mussels)	6				
ODONATA (Dragonflies & Damselflies)						Lepidostomatidae	10					SASS Score					85
Calopterygidae ST,T (Demoiselles)	10					Leptoceridae	6		Α		Α	No. of Taxa					15
Chlorocyphidae (Jewels)	10					Petrothrincidae SWC	11					ASPT					5.7
Synlestidae (Chlorolestidae)(Sylphs)	8					Pisuliidae	10					Other biota:					
Coenagrionidae (Sprites and blues)	4		Α		Α	Sericostomatidae SWC	13										
Lestidae (Emerald Damselflies/Spreadwings	6) 8					COLEOPTERA (Beetles)											
Platycnemidae (Stream Damselflies)	10	1		1		Dytiscidae/Noteridae* (Diving beetles)	5										
Protoneuridae (Threadwings)	8	1	1		1	Elmidae/Dryopidae* (Riffle beetles)	8		1								
Aeshnidae (Hawkers & Emperors)	8	1	1	1	1	Gyrinidae* (Whirligig beetles)	5	1	1		Α	Comments/Observations:					
Corduliidae (Cruisers)	8	1	1		1	Haliplidae* (Crawling water beetles)	5	A	Α		В						
Gomphidae (Clubtails)	6		1	Α	Α	Helodidae (Marsh beetles)	12					1					
Libellulidae (Darters/Skimmers)	4	А	1		Α	Hydraenidae* (Minute moss beetles)	8					1					
LEPIDOPTERA (Aquatic Caterpillars/Moths))					Hydrophilidae* (Water scavenger beetles)	5		Α		Α	1					
Crambidae (Pyralidae)	12					Limnichidae (Marsh-Loving Beetles)	10					1					
	-		1			Psephenidae (Water Pennies)	10					1					

Mbhashe River (Middle): May 2023

Date (dd-mm-yr):	08-Sen-	22								(dd ddd	dd)	Biotones Sampled (tick & rate)	Rating (1	-5)		T	ime (min)
Site Code:	Mbae01	1				Grid reference (dd mm ce e) I etu	e	-31 958	131	(uu.uuu	uu)	Biotopes campica (liok a fate)	2	-5)	٦		
Site Code:	WIDASUT					Grid reference (dd mm ss.s) Lat:	5	-31.930	131				2		-		
Collector/Sampler:	Kylie Fa	rrell				Long	E	28.4722	36			Stones Out Of Current (SOOC)	3		4		-
River:	Middle	Mabashe	9			Datum (WGS84/Cape):				4		Bedrock	5				
Level 1 Ecoregion:	31: EAS	TERN C	OASTAL	BELT		Altitude (m):						Aquatic Veg	0		. *	EALTHP	'P
Quaternary Catchment:	T13E					Zonation:	_					MargVeg In Current	0		VEN		Co.
	Temp (°	C):				Routine or Project? (circle one)	Flow					MargVeg Out Of Current	1		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		77
Site Description: 52	pH:					Project Name:	Clarity	(cm):				Gravel	3		H.	2.55	
Refer to Report Number:		<i>//</i>				WD44254	Turbidi	()- hv•				Sand	4		NET OF	CHILDROND STORE	0535153
WEM/WMA7/00/CON/RDM/0722 and for all	Conduc	+i.vi+.v.				VVP11354	Calaura	.y.				Mud	4	1	WATER	ESLARCE COMMIS	SHON
other site information, including in situ	conduc		L				Colour						*		E STATUTATI	A LO CALCOLOGICAL	
water quality	Ripariar	Disturb	bance:		<u> </u>							Hand picking/visual observation	x				
	Instream	n Disturl	bance:									Biotope Score (%)	49				
Taxon	QV	S	Veg	GSM	TOT	Taxon	QV	S	Veg	GSM	TOT	Taxon	QV	S	Veg	GSM	TOT
PORIFERA (Sponge)	5					HEMIPTERA (Bugs)						DIPTERA (Flies)					
COELENTERATA (Cnidaria)	1					Belostomatidae* (Giant water bugs)	3		1		1	Athericidae (Snipe flies)	10				
TURBELLARIA (Flatworms)	3					Corixidae* (Water boatmen)	3	Α	Α	1	В	Blepharoceridae (Mountain midges)	15				
ANNELIDA						Gerridae* (Pond skaters/Water striders)	5					Ceratopogonidae (Biting midges)	5				
Oligochaeta (Earthworms)	1					Hydrometridae* (Water measurers)	6					Chironomidae (Midges)	2	1		Α	Α
Hirudinea (Leeches)	3					Naucoridae* (Creeping water bugs)	7					Culicidae* (Mosquitoes)	1				
CRUSTACEA						Nepidae* (Water scorpions)	3					Dixidae* (Dixid midge)	10				
Amphipoda (Scuds)	13					Notonectidae* (Backswimmers)	3		Α		Α	Empididae (Dance flies)	6				
Potamonautidae* (Crabs)	3					Pleidae* (Pygmy backswimmers)	4		В		В	Ephydridae (Shore flies)	3				
Atyidae (Freshwater Shrimps)	8					Veliidae/Mveliidae* (Ripple bugs)	5		<u>A</u>		Α	Muscidae (House flies, Stable flies)	1				
Palaemonidae (Freshwater Prawns)	10					MEGALOPTERA (Fishflies, Dobsonflies &	Alderflie	s)				Psychodidae (Moth flies)	1				
HYDRACARINA (Mites)	8					Corydalidae (Fishflies & Dobsonflies)	8					Simuliidae (Blackflies)	5				
PLECOPTERA (Stoneflies)						Sialidae (Alderflies)	6					Syrphidae* (Rat tailed maggots)	1				
Notonemouridae	14					TRICHOPTERA (Caddisflies)						Tabanidae (Horse flies)	5				
Perlidae	12	1			Α	Dipseudopsidae	10					Tipulidae (Crane flies)	5				
EPHEMEROPTERA (Mayflies)						Ecnomidae	8					GASTROPODA (Snails)					
Baetidae 1sp	4		1	1		Hydropsychidae 1 sp	4					Ancylidae (Limpets)	6				Α
Baetidae 2 sp	6					Hydropsychidae 2 sp	6	B			В	Bulininae*	3				
Baetidae > 2 sp	12	В			В	Hydropsychidae > 2 sp	12					Hydrobiidae*	3				
Caenidae (Squaregills/Cainfles)	6					Philopotamidae	10					Lymnaeidae* (Pond snails)	3				
Ephemeridae	15					Polycentropodidae	12					Physidae* (Pouch snails)	3			В	В
Heptageniidae (Flatheaded mayflies)	13	Α			В	Psychomyiidae/Xiphocentronidae	8					Planorbinae* (Orb snails)	3				
Leptophlebiidae (Prongills)	9	Α			В	Cased caddis:						Thiaridae* (=Melanidae)	3			'	
Oligoneuridae (Brushlegged mayflies)	15	1			1	Barbarochthonidae SWC	13					Viviparidae* ST	5				
Polymitarcyidae (Pale Burrowers)	10					Calamoceratidae ST	11					PELECYPODA (Bivalvles)					
Prosopistomatidae (Water specs)	15					Glossosomatidae SWC	11					Corbiculidae (Clams)	5				
Teloganodidae SWC (Spiny Crawlers)	12					Hydroptilidae	6					Sphaeriidae (Pill clams)	3				
Tricorythidae (Stout Crawlers)	9	<u>A</u>			В	Hydrosalpingidae SWC	15					Unionidae (Perly mussels)	6				
ODONATA (Dragonflies & Damselflies)						Lepidostomatidae	10					SASS Score					124
Calopterygidae ST,T (Demoiselles)	10					Leptoceridae	6					No. of Taxa					19
Chlorocyphidae (Jewels)	10					Petrothrincidae SWC	11					ASPT					6.5
Synlestidae (Chlorolestidae)(Sylphs)	8					Pisuliidae	10					Other biota:					
Coenagrionidae (Sprites and blues)	4		Α		Α	Sericostomatidae SWC	13										
Lestidae (Emerald Damselflies/Spreadwings) 8					COLEOPTERA (Beetles)											
Platycnemidae (Stream Damselflies)	10					Dytiscidae/Noteridae* (Diving beetles)	5		Α		Α						
Protoneuridae (Threadwings)	8					Elmidae/Dryopidae* (Riffle beetles)	8										
Aeshnidae (Hawkers & Emperors)	8					Gyrinidae* (Whirligig beetles)	5					Comments/Observations:					
Corduliidae (Cruisers)	8					Haliplidae* (Crawling water beetles)	5										
Gomphidae (Clubtails)	6		1	В	В	Helodidae (Marsh beetles)	12										
Libellulidae (Darters/Skimmers)	4	Α			Α	Hydraenidae* (Minute moss beetles)	8										
LEPIDOPTERA (Aquatic Caterpillars/Moths))	_				Hydrophilidae* (Water scavenger beetles)	5										
Crambidae (Pyralidae)	12					Limnichidae (Marsh-Loving Beetles)	10										
			-			Psephenidae (Water Pennies)	10		-	-							

Black Kei River: July 2022

Date (dd-mm-vr):	07-Sep	-22								(dd.ddddd)	Biotopes Sampled (tick & rate)	Rating (1	-5)		т	ime (min
Site Code:	BKEI01	1				Grid reference (dd mm ss s) I at:	s	-32,1182	266	, , , , , , , , , , , , , , , , , , ,	· · · · ·	5	Ĺ	1		
Collector/Sampler:	Kylie Ea	arrell						27 0689	03		Stopps Out Of Current (SOOC)	3		-		-
Conector/Sampier:	Disala					Long:		21.0003	00		Stones Out Of Current (SOOC)	5		-		
River:	Black	lei				Datum (WGS84/Cape):		-		-	Bedrock	5				
Level 1 Ecoregion:	18: DRC	JUGHI	CORRID	OR		Altitude (m):					Aquatic Veg	1		0 ¥	EALTHA	Ro
Quaternary Catchment:	S32K					Zonation:	_				MargVeg In Current	2		SER	1.01	C.P
	Temp (°C):				Routine or Project? (circle one)	Flow				MargVeg Out Of Current	2		4		77
Site Description: 52	pH:					Project Name:	Clarity	(cm):			Gravel	3		LH S	2,55	ME
Refer to Report Number:	DO (mo	1/1.).				WD11251	Turbidi	tv:			Sand	2		DEPT. OF	RATER AFFAIRS & P	ORESTER'
WEM/WMA7/00/CON/RDM/0722 and for all	Conduc	rtivity.				WF11554	Colour				Mud	2		WOER DIPL OF TWO	RESERVED COMPLETE	SSION IS & TOURISM
other site information, including in situ	Dimension	n Diaturk						-			Hand nicking//icual observation	-	1			
water quality	Riparia		Jance.													
	Instream	n Disturi	bance:				1				Biotope Score (%)	56				
Taxon	QV	S	Veg	GSM	тот	Taxon	QV	S	Veg	GSM TOT	Taxon	QV	S	Veg	GSM	тот
PORIFERA (Sponge)	5					HEMIPTERA (Bugs)					DIPTERA (Flies)					
COELENTERATA (Cnidaria)	1					Belostomatidae* (Giant water bugs)	3				Athericidae (Snipe flies)	10				
TURBELLARIA (Flatworms)	3					Corixidae* (Water boatmen)	3				Blepharoceridae (Mountain midges)	15				
ANNELIDA						Gerridae* (Pond skaters/Water striders)	5				Ceratopogonidae (Biting midges)	5			1	1
Oligochaeta (Earthworms)	1					Hydrometridae* (Water measurers)	6				Chironomidae (Midges)	2	Α		Α	Α
Hirudinea (Leeches)	3					Naucoridae* (Creeping water bugs)	7				Culicidae* (Mosquitoes)	1				
CRUSTACEA						Nepidae* (Water scorpions)	3			1	Dixidae* (Dixid midge)	10				
Amphipoda (Scuds)	13					Notonectidae* (Backswimmers)	3				Empididae (Dance flies)	6				
Potamonautidae* (Crabs)	3					Pleidae* (Pygmy backswimmers)	4				Ephydridae (Shore flies)	3				
Atyidae (Freshwater Shrimps)	8					Veliidae/Mveliidae* (Ripple bugs)	5				Muscidae (House flies, Stable flies)	1				
Palaemonidae (Freshwater Prawns)	10					MEGALOPTERA (Fishflies, Dobsonflies &	Alderflie	es)			Psychodidae (Moth flies)	1				
HYDRACARINA (Mites)	8					Corydalidae (Fishflies & Dobsonflies)	8				Simuliidae (Blackflies)	5	B	B		D
PLECOPTERA (Stoneflies)						Sialidae (Alderflies)	6				Syrphidae* (Rat tailed maggots)	1				
Notonemouridae	14					TRICHOPTERA (Caddisflies)					Tabanidae (Horse flies)	5				
Perlidae	12					Dipseudopsidae	10				Tipulidae (Crane flies)	5				
EPHEMEROPTERA (Mayflies)						Ecnomidae	8				GASTROPODA (Snails)					
Baetidae 1sp	4					Hydropsychidae 1 sp	4				Ancylidae (Limpets)	6		Α		А
Baetidae 2 sp	6		В	Α		Hydropsychidae 2 sp	6	Α		A	Bulininae*	3				
Baetidae > 2 sp	12	В	В		В	Hydropsychidae > 2 sp	12				Hydrobiidae*	3				
Caenidae (Squaregills/Cainfles)	6					Philopotamidae	10				Lymnaeidae* (Pond snails)	3				
Ephemeridae	15					Polycentropodidae	12				Physidae* (Pouch snails)	3		Α		А
Heptageniidae (Flatheaded mavflies)	13					Psychomyijdae/Xiphocentronidae	8				Planorbinae* (Orb snails)	3				
Leptophlebiidae (Prongills)	9					Cased caddis:					Thiaridae* (=Melanidae)	3				
Oligoneuridae (Brushlegged mayflies)	15					Barbarochthonidae SWC	13				Viviparidae* ST	5				
Polymitarcvidae (Pale Burrowers)	10					Calamoceratidae ST	11				PELECYPODA (Bivalvles)					
Prosopistomatidae (Water specs)	15					Glossosomatidae SWC	11				Corbiculidae (Clams)	5				
Teloganodidae SWC (Spiny Crawlers)	12					Hydroptilidae	6				Sphaeriidae (Pill clams)	3				
Tricorythidae (Stout Crawlers)	9					Hydrosalpingidae SWC	15				Unionidae (Perly mussels)	6				
ODONATA (Dragonflies & Damselflies)	1			1		Lepidostomatidae	10				SASS Score					59
Caloptervoidae ST.T (Demoiselles)	10					Leptoceridae	6				No. of Taxa					12
Chlorocyphidae (Jewels)	10					Petrothrincidae SWC	11				ASPT					4.9
Synlestidae (Chlorolestidae)(Sylphs)	8					Pisuliidae	10				Other biota:				1	
Coepagriopidae (Sprites and blues)	4		в		в	Sericostomatidae SWC	13									
Lestidae (Emerald Damselflies/Spreadwings	. 8		-		-	COLEOPTERA (Beetles)	10									
Platycnemidae (Stream Damselflies)	10					Dytiscidae/Noteridae* (Diving beetles)	5									
Protoneuridae (Threadwings)	8	1	1	1		Elmidae/Dryopidae* (Biffle beetles)	8	1		1 1						
Aeshnidae (Hawkers & Emperarch	8	1	+	1		Gyrinidae* (Whirlinia beetles)	5		۵	A D	Comments/Observations:					
Corduliidae (Cruisers)	8		1			Haliplidae* (Crawling water beatloc)	5	-	A	A D	Commente/Observations.					
Comphidge (Clubels)	0		-			Heledidee (Mareh heatles)	10	-		<u> </u>	1					
Gomphidae (Clubtalls)	6	4	+	A	A	Hudrospidee* (Minute mass heather)	12	+		<u>↓ </u>						
Libellulidae (Darters/Skimmers)	4	1	-	-	1	nyulaenidae" (iviinute moss beetles)	8			+						
Complete (Duralidae))	1				Hydrophilidae* (Water scavenger beetles)	5			<u>↓ </u>	1					
Crambidae (Pyralidae)	12		1			Limnichidae (Marsh-Loving Beetles)	10	1		<u> </u>	1					
		1	1	1	1	Psepnenidae (Water Pennies)	10	1		1 1	1					

Black Kei River: May 2023

Date (dd-mm-vr):	10-May-	-23								(dd.ddd	dd)	Biotopes Sampled (tick & rate)	Rating (1-	-5)		т	ime (min)
Site Code:	BKEI01	1				Grid reference (dd mm ss.s). Lat:	s	-32 118	266	Ľ.			5	· ·	1		
Collector/Sampler:	Kylie Fa	 prroll						27 0689	03			Stones Out Of Current (SOOC)	3				
	Ryne Fa					Long	. =	27.0005	03			Stones Out Of Current (SOOC)			1		
River:	BIACK K	ei				Datum (WGS84/Cape)	:	-		-		Bedrock	5			_	1
Level 1 Ecoregion:	18: DRC	DUGHI	ORRIDO	OR		Altitude (m)	:					Aquatic Veg	1		01	EALTH	Re
Quaternary Catchment:	S32K					Zonation	<u>.</u>					MargVeg In Current	2		JER	1	.000
	Temp (°	'C):				Routine or Project? (circle one)	Flow					MargVeg Out Of Current	2		4		272
Site Description: 52	pH:					Project Name:	Clarity	(cm):				Gravel	3		HI	2,5	ME
Refer to Report Number:	DO (mg	/L):				WD11254	Turbidit	ty:				Sand	2		DET. OF	NOTES STEALS AP	COLUMN
WEM/WMA7/00/CON/RDM/0722 and for all	Conduc	tivity:				VVF11334	Colour:	-				Mud	2		WATER OF THE PARTY	RESERVED COMM	ISSICN US & DV LABOR
other site information, including in situ	Pinaria	Dicturk	anco									Hand nicking/Visual observation			-		And a distance of the second
water quality	Instreet	n Disturi	hannes.										- EC				
-	Instream	n Disturi	bance:			_		-					50	-			
Taxon	QV	5	Veg	GSM	101	laxon	QV	S	Veg	GSM	101	Taxon	QV	S	veg	GSM	101
PORIFERA (Sponge)	5					HEMIPTERA (Bugs)						DIPTERA (Flies)				<u> </u>	
COELENTERATA (Chidaria)	1					Belostomatidae [*] (Giant water bugs)	3					Athericidae (Snipe flies)	10				
TURBELLARIA (Flatworms)	3					Corixidae* (Water boatmen)	3	A			A	Blepharoceridae (Mountain midges)	15				
ANNELIDA						Gerridae* (Pond skaters/Water striders)	5					Ceratopogonidae (Biting midges)	5				
Oligochaeta (Earthworms)	1					Hydrometridae* (Water measurers)	6					Chironomidae (Midges)	2	A		В	В
Hirudinea (Leeches)	3					Naucoridae* (Creeping water bugs)	7					Culicidae* (Mosquitoes)	1			L	
CRUSTACEA						Nepidae* (Water scorpions)	3					Dixidae* (Dixid midge)	10				
Amphipoda (Scuds)	13					Notonectidae* (Backswimmers)	3					Empididae (Dance flies)	6				
Potamonautidae* (Crabs)	3					Pleidae* (Pygmy backswimmers)	4					Ephydridae (Shore flies)	3				
Atyidae (Freshwater Shrimps)	8					Veliidae/Mveliidae* (Ripple bugs)	5					Muscidae (House flies, Stable flies)	1				
Palaemonidae (Freshwater Prawns)	10					MEGALOPTERA (Fishflies, Dobsonflies &	Alderflie	s)				Psychodidae (Moth flies)	1				
HYDRACARINA (Mites)	8					Corydalidae (Fishflies & Dobsonflies)	8					Simuliidae (Blackflies)	5	C		В	D
PLECOPTERA (Stoneflies)						Sialidae (Alderflies)	6					Syrphidae* (Rat tailed maggots)	1				
Notonemouridae	14					TRICHOPTERA (Caddisflies)						Tabanidae (Horse flies)	5				
Perlidae	12					Dipseudopsidae	10					Tipulidae (Crane flies)	5				
EPHEMEROPTERA (Mayflies)						Ecnomidae	8					GASTROPODA (Snails)					
Baetidae 1sp	4					Hydropsychidae 1 sp	4	1			Α	Ancylidae (Limpets)	6				
Baetidae 2 sp	6	<u>B</u>			В	Hydropsychidae 2 sp	6					Bulininae*	3				
Baetidae > 2 sp	12					Hydropsychidae > 2 sp	12					Hydrobiidae*	3				
Caenidae (Squaregills/Cainfles)	6					Philopotamidae	10					Lymnaeidae* (Pond snails)	3				
Ephemeridae	15					Polycentropodidae	12					Physidae* (Pouch snails)	3				
Heptageniidae (Flatheaded mayflies)	13					Psychomyiidae/Xiphocentronidae	8					Planorbinae* (Orb snails)	3				
Leptophlebiidae (Prongills)	9	1			1	Cased caddis:						Thiaridae* (=Melanidae)	3				
Oligoneuridae (Brushlegged mayflies)	15					Barbarochthonidae SWC	13					Viviparidae* ST	5				
Polymitarcyidae (Pale Burrowers)	10					Calamoceratidae ST	11					PELECYPODA (Bivalvles)					
Prosopistomatidae (Water specs)	15					Glossosomatidae SWC	11					Corbiculidae (Clams)	5				
Teloganodidae SWC (Spiny Crawlers)	12					Hydroptilidae	6					Sphaeriidae (Pill clams)	3				
Tricorythidae (Stout Crawlers)	9	1			1	Hydrosalpingidae SWC	15					Unionidae (Perly mussels)	6				
ODONATA (Dragonflies & Damselflies)						Lepidostomatidae	10					SASS Score					58
Calopterygidae ST,T (Demoiselles)	10					Leptoceridae	6					No. of Taxa					11
Chlorocyphidae (Jewels)	10					Petrothrincidae SWC	11					ASPT					5.3
Synlestidae (Chlorolestidae)(Sylphs)	8					Pisuliidae	10					Other biota:					
Coenagrionidae (Sprites and blues)	4					Sericostomatidae SWC	13										
Lestidae (Emerald Damselflies/Spreadwings) 8					COLEOPTERA (Beetles)											
Platycnemidae (Stream Damselflies)	10					Dytiscidae/Noteridae* (Diving beetles)	5										
Protoneuridae (Threadwings)	8					Elmidae/Dryopidae* (Riffle beetles)	8										
Aeshnidae (Hawkers & Emperors)	8					Gyrinidae* (Whirligig beetles)	5	1			Α	Comments/Observations:					
Corduliidae (Cruisers)	8			1		Haliplidae* (Crawling water beetles)	5]					
Gomphidae (Clubtails)	6			Α	Α	Helodidae (Marsh beetles)	12]					
Libellulidae (Darters/Skimmers)	4	Α			Α	Hydraenidae* (Minute moss beetles)	8										
LEPIDOPTERA (Aquatic Caterpillars/Moths))					Hydrophilidae* (Water scavenger beetles)	5			Α	Α						
Crambidae (Pyralidae)	12					Limnichidae (Marsh-Loving Beetles)	10										
			1	1		Psephenidae (Water Pennies)	10										

Tsomo River: July 2022

Date (dd-mm-vr):	07-Sep	-22								(dd.ddd	ldd)	Biotopes Sampled (tick & rate)	Rating (1	-5)		Ti	ime (min
Site Code:	Tsom (01 1				Grid reference (dd mm ss s) I at:	s	-32 0449	92	ri	,		3	Ĺ	1		
Callecter/Complex	Kylio E	arroll						27 8215	57			Stance Out Of Current (SOOC)	4		1		
	Teeme	arren				Long		21.0213	51			Stones Out Of Current (SOOC)	-		1		
River:	TSOMO					Datum (WGS84/Cape):						Bedrock	0				I
Level 1 Ecoregion:	16: SOL	JTH EAS	STERN U	PLANDS		Altitude (m):	:					Aquatic Veg	1		08	EALTH P	Re
Quaternary Catchment:	S50G					Zonation:	<u>.</u>					MargVeg In Current	1		TEN	1. A.	C.C.
	Temp (°C):				Routine or Project? (circle one)	Flow					MargVeg Out Of Current	0		~		772
Site Description: 52	pH:					Project Name:	Clarity	(cm):				Gravel	4		LELS 🧠	2,5	2 3
Refer to Report Number:	 DO (mo					WD11251	Turbidi	tv:				Sand	5		LEFT. OF 1	ATER AFFAIRS & F	SORSTRY
WEM/WMA7/00/CON/RDM/0722 and for all	Conduc	ctivity.				VVF11334	Colour					Mud	5	ļ	WATER OF CHART	RESEARCH CONNES	SIDK
other site information, including in situ	D'						ooloui					liend niching (isual sheep setion		{	None and	and the second	ALC: NOT THE OWNER OF
water quality	Riparia	n Disturi	bance:									Hand picking/visual observation	X				
	Instream	n Distur	bance:	-								Biotope Score (%)	62		r		
Taxon	QV	S	Veg	GSM	TOT	Taxon	QV	S	Veg	GSM	тот	Taxon	QV	S	Veg	GSM	тот
PORIFERA (Sponge)	5					HEMIPTERA (Bugs)						DIPTERA (Flies)					
COELENTERATA (Cnidaria)	1					Belostomatidae* (Giant water bugs)	3					Athericidae (Snipe flies)	10				
TURBELLARIA (Flatworms)	3					Corixidae* (Water boatmen)	3			Α	Α	Blepharoceridae (Mountain midges)	15				
ANNELIDA						Gerridae* (Pond skaters/Water striders)	5					Ceratopogonidae (Biting midges)	5		1	1	A
Oligochaeta (Earthworms)	1					Hydrometridae* (Water measurers)	6					Chironomidae (Midges)	2	В	Α		В
Hirudinea (Leeches)	3					Naucoridae* (Creeping water bugs)	7					Culicidae* (Mosquitoes)	1				
CRUSTACEA						Nepidae* (Water scorpions)	3					Dixidae* (Dixid midge)	10				
Amphipoda (Scuds)	13					Notonectidae* (Backswimmers)	3					Empididae (Dance flies)	6				
Potamonautidae* (Crabs)	3		1		1	Pleidae* (Pygmy backswimmers)	4					Ephydridae (Shore flies)	3				1
Atyidae (Freshwater Shrimps)	8					Veliidae/Mveliidae* (Ripple bugs)	5					Muscidae (House flies, Stable flies)	1		1		1
Palaemonidae (Freshwater Prawns)	10					MEGALOPTERA (Fishflies, Dobsonflies &	Alderflie	es)				Psychodidae (Moth flies)	1				
HYDRACARINA (Mites)	8	Α			Α	Corydalidae (Fishflies & Dobsonflies)	8					Simuliidae (Blackflies)	5	<u>C</u>			D
PLECOPTERA (Stoneflies)						Sialidae (Alderflies)	6					Syrphidae* (Rat tailed maggots)	1				
Notonemouridae	14					TRICHOPTERA (Caddisflies)						Tabanidae (Horse flies)	5				
Perlidae	12					Dipseudopsidae	10					Tipulidae (Crane flies)	5				
EPHEMEROPTERA (Mayflies)						Ecnomidae	8					GASTROPODA (Snails)					
Baetidae 1sp	4					Hydropsychidae 1 sp	4					Ancylidae (Limpets)	6				
Baetidae 2 sp	6		В			Hydropsychidae 2 sp	6	B			В	Bulininae*	3				
Baetidae > 2 sp	12	В			В	Hydropsychidae > 2 sp	12					Hydrobiidae*	3				
Caenidae (Squaregills/Cainfles)	6		1		1	Philopotamidae	10					Lymnaeidae* (Pond snails)	3				
Ephemeridae	15					Polycentropodidae	12					Physidae* (Pouch snails)	3		Α		Α
Heptageniidae (Flatheaded mayflies)	13	Α			Α	Psychomyiidae/Xiphocentronidae	8					Planorbinae* (Orb snails)	3				
Leptophlebiidae (Prongills)	9	Α			Α	Cased caddis:						Thiaridae* (=Melanidae)	3				
Oligoneuridae (Brushlegged mayflies)	15					Barbarochthonidae SWC	13					Viviparidae* ST	5				
Polymitarcyidae (Pale Burrowers)	10					Calamoceratidae ST	11					PELECYPODA (Bivalvles)					
Prosopistomatidae (Water specs)	15					Glossosomatidae SWC	11					Corbiculidae (Clams)	5				
Teloganodidae SWC (Spiny Crawlers)	12					Hydroptilidae	6					Sphaeriidae (Pill clams)	3				
Tricorythidae (Stout Crawlers)	9					Hydrosalpingidae SWC	15					Unionidae (Perly mussels)	6				
ODONATA (Dragonflies & Damselflies)		1			1	Lepidostomatidae	10					SASS Score					87
Calopterygidae ST,T (Demoiselles)	10					Leptoceridae	6					No. of Taxa					15
Chlorocyphidae (Jewels)	10					Petrothrincidae SWC	11					ASPT					5.8
Synlestidae (Chlorolestidae)(Sylphs)	8					Pisuliidae	10					Other biota:					
Coenagrionidae (Sprites and blues)	4					Sericostomatidae SWC	13										
Lestidae (Emerald Damselflies/Spreadwings) 8					COLEOPTERA (Beetles)											
Platycnemidae (Stream Damselflies)	10					Dytiscidae/Noteridae* (Diving beetles)	5					1					
Protoneuridae (Threadwings)	8	1			1	Elmidae/Dryopidae* (Riffle beetles)	8	1				1					
Aeshnidae (Hawkers & Emperors)	8	1	1	1	1	Gvrinidae* (Whirligig beetles)	5	Α			А	Comments/Observations:					
Corduliidae (Cruisers)	8	1	1	1	1	Haliplidae* (Crawling water beetles)	5										
Gomphidae (Clubtails)	6		-	1	1	Helodidae (Marsh beetles)	12			-		1					
Libellulidae (Darters/Skimmers)	4		-		-	Hydraenidae* (Minute moss beetles)	8			-		1					
LEPIDOPTERA (Aquatic Caterpillars/Moths)						Hydrophilidae* (Water scavenger beetles)	5			-		1					
Crambidae (Pyralidae)	12	1				Limnichidae (Marsh-Loving Reetles)	10	1				1					
	12	1	1	1	1	Psenhenidae (Water Pennies)	10	1				<u></u>					
		1	1	1	1	· soprisridde (mater i crimes)	10	1		1	1	1					

Tsomo River: May 2023

Date (dd-mm-yr):	11-May	-23								(dd.ddd	dd)	Biotopes Sampled (tick & rate)	Rating (1	-5)		Ti	ime (min)
Site Code:	Tsom ()1_I				Grid reference (dd mm ss.s) Lat:	s	-32.0449	92				3]		
Collector/Sampler:	Kylie Fa	arrell				Long	F	27.8215	57			Stones Out Of Current (SOOC)	3		1		
Biyer	Tsomo					Dotum (WCS84/Cono)						Podrock	5		1		
River:	46, 201		TEDNU			Datum (WG384/Cape).				-		America Ver	0				
Level 1 Ecoregion:	10. 300	THEAS	I LIKIN OF	LANDS		Attitude (m):						Aquatic veg	0		RH	EALTHP	RO
Quaternary Catchment:	3500		r			Zonation:			r			MargVeg In Current	0	{	14	18.	C.P.
	Temp (°	'C):				Routine or Project? (circle one)	Flow					MargVeg Out Of Current	0		E A		72
Site Description: 52	pH:					Project Name:	Clarity (cm):				Gravel	2		HI	200	ME
Refer to Report Number:	DO (mg	/L):				WP11354	Turbidit	y:				Sand	5	ļ	DEFT. OF W	ATER AFEAIRI & F	ORESTRY
WEM/WMA//00/CON/RDM/0722 and for all	Conduc	ctivity:					Colour:					Mud	5		LEPE OF BAUR	DEMENTAL APPAIR	IS & TOURIEN
water quality	Riparia	n Disturk	ance:									Hand picking/Visual observation	х				
water quanty	Instream	n Disturl	bance:									Biotope Score (%)	51	1			
Taxon	QV	S	Veg	GSM	тот	Taxon	QV	S	Veg	GSM	тот	Taxon	QV	S	Veg	GSM	TOT
PORIFERA (Sponge)	5		-			HEMIPTERA (Bugs)			-			DIPTERA (Flies)					
COELENTERATA (Cnidaria)	1					Belostomatidae* (Giant water bugs)	3					Athericidae (Snipe flies)	10				
TURBELLARIA (Flatworms)	3					Corixidae* (Water boatmen)	3	Α		Α	В	Blepharoceridae (Mountain midges)	15				
ANNELIDA						Gerridae* (Pond skaters/Water striders)	5					Ceratopogonidae (Biting midges)	5				
Oligochaeta (Earthworms)	1					Hydrometridae* (Water measurers)	6					Chironomidae (Midges)	2	Α		Α	Α
Hirudinea (Leeches)	3					Naucoridae* (Creeping water bugs)	7	1		Α	Α	Culicidae* (Mosquitoes)	1				
CRUSTACEA						Nepidae* (Water scorpions)	3					Dixidae* (Dixid midge)	10				
Amphipoda (Scuds)	13					Notonectidae* (Backswimmers)	3					Empididae (Dance flies)	6				
Potamonautidae* (Crabs)	3					Pleidae* (Pygmy backswimmers)	4					Ephydridae (Shore flies)	3				
Atyidae (Freshwater Shrimps)	8					Veliidae/Mveliidae* (Ripple bugs)	5				Α	Muscidae (House flies, Stable flies)	1				
Palaemonidae (Freshwater Prawns)	10					MEGALOPTERA (Fishflies, Dobsonflies &	Alderflie	s)				Psychodidae (Moth flies)	1				
HYDRACARINA (Mites)	8					Corydalidae (Fishflies & Dobsonflies)	8					Simuliidae (Blackflies)	5	Α			В
PLECOPTERA (Stoneflies)						Sialidae (Alderflies)	6					Syrphidae* (Rat tailed maggots)	1				
Notonemouridae	14					TRICHOPTERA (Caddisflies)						Tabanidae (Horse flies)	5				
Perlidae	12	1			Α	Dipseudopsidae	10					Tipulidae (Crane flies)	5				
EPHEMEROPTERA (Mayflies)						Ecnomidae	8					GASTROPODA (Snails)					
Baetidae 1sp	4					Hydropsychidae 1 sp	4					Ancylidae (Limpets)	6				
Baetidae 2 sp	6			Α		Hydropsychidae 2 sp	6				Α	Bulininae*	3				
Baetidae > 2 sp	12	В			В	Hydropsychidae > 2 sp	12					Hydrobiidae*	3				
Caenidae (Squaregills/Cainfles)	6					Philopotamidae	10					Lymnaeidae* (Pond snails)	3				
Ephemeridae	15					Polycentropodidae	12					Physidae* (Pouch snails)	3				
Heptageniidae (Flatheaded mayflies)	13					Psychomyiidae/Xiphocentronidae	8					Planorbinae* (Orb snails)	3				
Leptophlebiidae (Prongills)	9	Α			Α	Cased caddis:						Thiaridae* (=Melanidae)	3				
Oligoneuridae (Brushlegged mayflies)	15					Barbarochthonidae SWC	13					Viviparidae* ST	5				
Polymitarcyidae (Pale Burrowers)	10					Calamoceratidae ST	11					PELECYPODA (Bivalvles)					
Prosopistomatidae (Water specs)	15	Α			Α	Glossosomatidae SWC	11					Corbiculidae (Clams)	5				
Teloganodidae SWC (Spiny Crawlers)	12					Hydroptilidae	6					Sphaeriidae (Pill clams)	3				
Tricorythidae (Stout Crawlers)	9				Α	Hydrosalpingidae SWC	15					Unionidae (Perly mussels)	6				
ODONATA (Dragonflies & Damselflies)		1				Lepidostomatidae	10					SASS Score					106
Calopterygidae ST,T (Demoiselles)	10					Leptoceridae	6					No. of Taxa					15
Chlorocyphidae (Jewels)	10					Petrothrincidae SWC	11					ASPT					7.1
Synlestidae (Chlorolestidae)(Sylphs)	8					Pisuliidae	10					Other biota:					
Coenagrionidae (Sprites and blues)	4					Sericostomatidae SWC	13										
Lestidae (Emerald Damselflies/Spreadwings) 8					COLEOPTERA (Beetles)											
Platycnemidae (Stream Damselflies)	10					Dytiscidae/Noteridae* (Diving beetles)	5										
Protoneuridae (Threadwings)	8					Elmidae/Dryopidae* (Riffle beetles)	8	Α			Α						
Aeshnidae (Hawkers & Emperors)	8					Gyrinidae* (Whirligig beetles)	5	1			1	Comments/Observations:					
Corduliidae (Cruisers)	8			1		Haliplidae* (Crawling water beetles)	5	_									-
Gomphidae (Clubtails)	6	Α		Α	Α	Helodidae (Marsh beetles)	12										
Libellulidae (Darters/Skimmers)	4	Α			Α	Hydraenidae* (Minute moss beetles)	8]					
LEPIDOPTERA (Aquatic Caterpillars/Moths))					Hydrophilidae* (Water scavenger beetles)	5	_									
Crambidae (Pyralidae)	12					Limnichidae (Marsh-Loving Beetles)	10										
					_	Psephenidae (Water Pennies)	10										

Buffalo River (Middle): July 2022

Data (dd mm yr);	16 Con	22								(44 4 4 4 4	44	Piotonos Samplad (tick & rata)	Doting (1	E)			Time (min)
Date (uu-inn-yr).	DUEE0	- 22					~	00.004	504	(uu.uuu	uu)	Diotopes Sampled (lick & rate)	Kating (1	-3)	٦		
Site Code:	BOFFO	0				Grid reference (dd mm ss.s) Lat:	5	-32.991	584			_	4		-		
Collector/Sampler:	Kylie Fa	arrell				Long	: E	27.6405	55			Stones Out Of Current (SOOC)	4				
River:	Middle	Buffalo				Datum (WGS84/Cape):						Bedrock	0				
Level 1 Ecoregion:	31: EAS	STERN C	OASTAI	BELT		Altitude (m):						Aquatic Veg	1			EALTH	D
Quaternary Catchment:	R20F					Zonation:						MargVeg In Current	2		ER	• 5 10 10 10 10 10 10 10 10 10 10 10 10 10	ROC
-	Temn (°C)·				Routine or Project? (circle one)	Flow					MargVeg Out Of Current	2		4	-101-	277
Site Description: 52	Temp (0).				Preiest Name:	Clash w	()					2		4		S MM
Dife Description: 52	_рн:		-			Project Name:	Clarity	(cm):	-			Gravei	3		F		m
Refer to Report Number:	DO (mg	µ/L):				WP11354	Turbidi	ty:				Sand	3		DEPT. OR WVTE	WATER AFFAIRS &	FORESTRY'
other site information including in situ	Conduc	ctivity:			-		Colour	:				Mud	2		DISCOLUMN	RONY INDUARD	USS & TOURSM
water quality	Riparia	n Distur	bance:									Hand picking/Visual observation	х				
water quarty	Instream	n Distur	bance:									Biotope Score (%)	47				
Taxon	ov	s	Veg	GSM	тот	Taxon	ov	s	Veg	GSM	тот	Taxon	οv	s	Veg	GSM	тот
PORIFERA (Sponge)	5			00	Δ	HEMIPTERA (Bugs)			log			DIPTERA (Flies)			Tog	00	
COELENTERATA (Cnidaria)	1				~	Belostomatidae* (Giant water bugs)	3					Athericidae (Snipe flies)	10				
TURBELLARIA (Elatworms)	3	B	1	۵	B	Corividae* (Water boatmen)	3			1	1	Blepharoceridae (Mountain middes)	15				
	<u> </u>	5		~		Gerridge* (Pond skaters/Water striders)	5					Ceratopogonidae (Biting midges)	5			1	1
Oligoshasta (Earthworms)	1		1	1	•	Hudromotridae* (Mater measurers)	5					Chiranomidae (Middae)	2	P	٨	1	- I
Higher (Leaster)	2	4	1		A	Neuerideet (Creening water huge)	7			-		Culicideet (Meeguitees)	2	Б	A		D
All ddillea (Leeches)	<u> </u>	1	1		A	Naucondae (Creeping water bugs)	2					Culicidae (Mosquitoes)	10				
America de (Osudo)	40					Nepidae (water scorpions)	3			4	4	Dixidae (Dixid Midge)	10				-
Amphipoda (Scuds)	13					Notonectidae" (Backswimmers)	3			1	1	Empididae (Dance files)	6				-
Potamonautidae" (Crabs)	3					Pleidae* (Pygmy backswimmers)	4					Ephydridae (Shore flies)	3				-
Atyidae (Freshwater Shrimps)	8					Veliidae/Mveliidae* (Ripple bugs)	5	A	A		A	Muscidae (House flies, Stable flies)	1				-
Palaemonidae (Freshwater Prawns)	10					MEGALOPTERA (Fishflies, Dobsonflies &	Alderflie	es)				Psychodidae (Moth flies)	1				
HYDRACARINA (Mites)	8					Corydalidae (Fishflies & Dobsonflies)	8					Simuliidae (Blackflies)	5	<u>c</u>	B		D
PLECOPTERA (Stoneflies)						Sialidae (Alderflies)	6					Syrphidae* (Rat tailed maggots)	1				
Notonemouridae	14					TRICHOPTERA (Caddisflies)						Tabanidae (Horse flies)	5				
Perlidae	12	1			A	Dipseudopsidae	10					Tipulidae (Crane flies)	5				
EPHEMEROPTERA (Mayflies)						Ecnomidae	8					GASTROPODA (Snails)					
Baetidae 1sp	4					Hydropsychidae 1 sp	4					Ancylidae (Limpets)	6	A			Α
Baetidae 2 sp	6					Hydropsychidae 2 sp	6	B			В	Bulininae*	3				
Baetidae > 2 sp	12	В	В	В	В	Hydropsychidae > 2 sp	12					Hydrobiidae*	3				
Caenidae (Squaregills/Cainfles)	6	Α	1	Α	В	Philopotamidae	10					Lymnaeidae* (Pond snails)	3				
Ephemeridae	15					Polycentropodidae	12					Physidae* (Pouch snails)	3		Α		Α
Heptageniidae (Flatheaded mayflies)	13	Α	1		В	Psychomyiidae/Xiphocentronidae	8					Planorbinae* (Orb snails)	3				
Leptophlebiidae (Prongills)	9	В		Α	В	Cased caddis:						Thiaridae* (=Melanidae)	3				
Oligoneuridae (Brushlegged mayflies)	15					Barbarochthonidae SWC	13					Viviparidae* ST	5				
Polymitarcyidae (Pale Burrowers)	10					Calamoceratidae ST	11					PELECYPODA (Bivalvles)					
Prosopistomatidae (Water specs)	15					Glossosomatidae SWC	11					Corbiculidae (Clams)	5				
Teloganodidae SWC (Spiny Crawlers)	12					Hydroptilidae	6					Sphaeriidae (Pill clams)	3				
Tricorythidae (Stout Crawlers)	9					Hydrosalpingidae SWC	15					Unionidae (Perly mussels)	6				
ODONATA (Dragonflies & Damselflies)						Lepidostomatidae	10					SASS Score					142
Calopterygidae ST,T (Demoiselles)	10					Leptoceridae	6		1		1	No. of Taxa					24
Chlorocyphidae (Jewels)	10		Α		Α	Petrothrincidae SWC	11					ASPT					5.9
Synlestidae (Chlorolestidae)(Sylphs)	8					Pisuliidae	10					Other biota:					
Coenagrionidae (Sprites and blues)	4		В		В	Sericostomatidae SWC	13										
Lestidae (Emerald Damselflies/Spreadwings	s) 8					COLEOPTERA (Beetles)											
Platycnemidae (Stream Damselflies)	10	1	1		1	Dytiscidae/Noteridae* (Diving beetles)	5]					
Protoneuridae (Threadwings)	8					Elmidae/Drvopidae* (Riffle beetles)	8	1			1						
Aeshnidae (Hawkers & Emperors)	8		1	1	1	Gvrinidae* (Whirlining beetles)	5	-	1	1		Comments/Observations:					
Corduliidae (Cruisers)	8		1	-		Haliplidae* (Crawling water beetles)	5	+		1			1		-		
Gomphidae (Clubtails)	6	1		-	1	Helodidae (Marsh beetles)	12	+	1	1							
Libellulidae (Datters/Skimmers)	4	۵	1	+	۵	Hydraenidae* (Minute moss beetlos)	8	+	+	1	<u> </u>	1					
I EPIDOPTERA (Aquatic Caterpillare/Mothe	+	~			~	Hydrophilidae* (Water scavenger bootloc)	5	1	1	-							
Crombidge (Byrolidge)	12	1				Limpichidae (Water scavenger beetles)	5	+	1	-							
Granbluae (Fyranuae)	12	 			+	Deepheridee (Watsh-Loving Beetles)	10	+	+	+	I						
		1	1	1	1	r septieniuae (water Pennies)	10	1	1	1	1	1					

Buffalo River (Middle): May 2023

Date (dd-mm-vr):	10-May-	23								(dd.ddd	dd)	Biotopes Sampled (tick & rate)	Rating (1	-5)		Т	'ime (min)
Site Code:	BUFF01	1				Grid reference (dd mm ss.s). I at:	s	-32 9915	584	(,		4	-7	1		
Collector/Sempler	Kylio Ea	_'				Giu lelerence (uu liilli SS.S) Lat.		27 6405	5			Stenes Out Of Current (SOOC)	4		-		-
Collector/Sampler:	rtyne Fa					Long	-	21.0403	5			Stones Out Of Current (SOOC)	*		-		-
River:	Middle	Buttalo				Datum (WGS84/Cape):				-		Bedrock	0				
Level 1 Ecoregion:	31: EAS	TERN C	OASTAL	. BELT		Altitude (m):						Aquatic Veg	1		H a	EALTHP	R
Quaternary Catchment:	R20F					Zonation:	_					MargVeg In Current	2		J.C.K.	1.00	
	Temp (°	C):				Routine or Project? (circle one)	Flow					MargVeg Out Of Current	2		4		272
Site Description: 52	pH:					Project Name:	Clarity	cm):				Gravel	3		HI M	2,55	ME
Refer to Report Number:	DO (ma	/1.).				WD11251	Turbidit	v:				Sand	3		DEPT. OF M	TTEL AFFAIRS & D	ORISTRY.
WEM/WMA7/00/CON/RDM/0722 and for all	Conduc	tivity.				VVF11334	Colour	<i>.</i>				Mud	2		WORKS DEPT-DI-INVIR	INFARCH COMMIS	SIGN STRUCTURE
other site information, including in situ	Dimension	Diaturk					oolour.					Hand nicking/Vicual observation	~				
water quality	Ripariar	Disturb	ance.											4			
-	Instream		bance:			_		-				Biotope Score (%)	47	-			1
Taxon	QV	S	Veg	GSM	TOT	Taxon	QV	S	Veg	GSM	тот	Taxon	QV	S	Veg	GSM	TOT
PORIFERA (Sponge)	5				A	HEMIPTERA (Bugs)	-					DIPTERA (Files)	40				
COELENTERATA (Chidaria)	1					Belostomatidae" (Glant water bugs)	3		A		A	Athencidae (Shipe files)	10			<u> </u>	
TURBELLARIA (Flatworms)	3	_				Corixidae* (Water boatmen)	3			A	A	Blepharoceridae (Mountain midges)	15			<u> </u>	
ANNELIDA						Gerridae* (Pond skaters/Water striders)	5					Ceratopogonidae (Biting midges)	5			A	A
Oligochaeta (Earthworms)	1	1			1	Hydrometridae* (Water measurers)	6					Chironomidae (Midges)	2	В	В	В	В
Hirudinea (Leeches)	3			1	1	Naucoridae* (Creeping water bugs)	7					Culicidae* (Mosquitoes)	1			—	
CRUSTACEA						Nepidae* (Water scorpions)	3					Dixidae* (Dixid midge)	10			—	
Amphipoda (Scuds)	13					Notonectidae* (Backswimmers)	3	1	A		A	Empididae (Dance flies)	6			—	
Potamonautidae* (Crabs)	3					Pleidae* (Pygmy backswimmers)	4	1			1	Ephydridae (Shore flies)	3			L	_
Atyidae (Freshwater Shrimps)	8					Veliidae/Mveliidae* (Ripple bugs)	5		A		A	Muscidae (House flies, Stable flies)	1	Α		L	A
Palaemonidae (Freshwater Prawns)	10					MEGALOPTERA (Fishflies, Dobsonflies &	Alderflie	s)				Psychodidae (Moth flies)	1			L	
HYDRACARINA (Mites)	8					Corydalidae (Fishflies & Dobsonflies)	8					Simuliidae (Blackflies)	5	B	<u>B</u>		С
PLECOPTERA (Stoneflies)						Sialidae (Alderflies)	6					Syrphidae* (Rat tailed maggots)	1				
Notonemouridae	14					TRICHOPTERA (Caddisflies)						Tabanidae (Horse flies)	5				
Perlidae	12					Dipseudopsidae	10					Tipulidae (Crane flies)	5				
EPHEMEROPTERA (Mayflies)						Ecnomidae	8					GASTROPODA (Snails)					
Baetidae 1sp	4					Hydropsychidae 1 sp	4					Ancylidae (Limpets)	6				
Baetidae 2 sp	6	B	В	Α	В	Hydropsychidae 2 sp	6	B			В	Bulininae*	3			<u> </u>	
Baetidae > 2 sp	12					Hydropsychidae > 2 sp	12					Hydrobiidae*	3				
Caenidae (Squaregills/Cainfles)	6	1			1	Philopotamidae	10					Lymnaeidae* (Pond snails)	3		Α	<u> </u>	Α
Ephemeridae	15					Polycentropodidae	12					Physidae* (Pouch snails)	3		Α		Α
Heptageniidae (Flatheaded mayflies)	13	Α			Α	Psychomyiidae/Xiphocentronidae	8					Planorbinae* (Orb snails)	3				
Leptophlebiidae (Prongills)	9	Α			Α	Cased caddis:						Thiaridae* (=Melanidae)	3				
Oligoneuridae (Brushlegged mayflies)	15					Barbarochthonidae SWC	13					Viviparidae* ST	5				
Polymitarcyidae (Pale Burrowers)	10					Calamoceratidae ST	11					PELECYPODA (Bivalvles)					
Prosopistomatidae (Water specs)	15					Glossosomatidae SWC	11					Corbiculidae (Clams)	5			<u> </u>	1
Teloganodidae SWC (Spiny Crawlers)	12					Hydroptilidae	6					Sphaeriidae (Pill clams)	3				
Tricorythidae (Stout Crawlers)	9					Hydrosalpingidae SWC	15					Unionidae (Perly mussels)	6				
ODONATA (Dragonflies & Damselflies)						Lepidostomatidae	10					SASS Score					141
Calopterygidae ST,T (Demoiselles)	10					Leptoceridae	6	1	В		В	No. of Taxa					28
Chlorocyphidae (Jewels)	10	1			1	Petrothrincidae SWC	11					ASPT				L	5.0
Synlestidae (Chlorolestidae)(Sylphs)	8					Pisuliidae	10					Other biota:					
Coenagrionidae (Sprites and blues)	4	1	В		В	Sericostomatidae SWC	13										
Lestidae (Emerald Damselflies/Spreadwings) 8					COLEOPTERA (Beetles)											
Platycnemidae (Stream Damselflies)	10					Dytiscidae/Noteridae* (Diving beetles)	5										
Protoneuridae (Threadwings)	8					Elmidae/Dryopidae* (Riffle beetles)	8		1		1						
Aeshnidae (Hawkers & Emperors)	8					Gyrinidae* (Whirligig beetles)	5		Α		В	Comments/Observations:					
Corduliidae (Cruisers)	8		1	Α	Α	Haliplidae* (Crawling water beetles)	5										
Gomphidae (Clubtails)	6					Helodidae (Marsh beetles)	12										
Libellulidae (Darters/Skimmers)	4	Α			Α	Hydraenidae* (Minute moss beetles)	8					1					
LEPIDOPTERA (Aquatic Caterpillars/Moths))					Hydrophilidae* (Water scavenger beetles)	5			1	1						
Crambidae (Pyralidae)	12					Limnichidae (Marsh-Loving Beetles)	10										
						Psephenidae (Water Pennies)	10			1							

Keiskamma (Upper): July 2022

Date (dd-mm-yr):	07-Sen-	-22								(dd ddd	dd)	Biotopes Sampled (tick & rate)	Rating (1	-5)		Т	ime (min)
Site Code:	Kois01	1				Grid reference (dd mm ss.s) at:	s	-32 802	217	(,	(5	-,	1		[
Onle obde.	Kylio Er	_'				ond reference (du min 55.5) Lat.	2	27.0240	217			0	5		1		
Collector/Sampler:	Kylle Fa	arren				Long	E	27.0240	192			Stones Out Of Current (SOOC)	5		-		
River:	Keiskar	nma (up	per)			Datum (WGS84/Cape):				_		Bedrock	0				
Level 1 Ecoregion:	18: DR0	DUGHT (CORRIDO	OR		Altitude (m)	:					Aquatic Veg	0		0 P	EALTH P	'R-
Quaternary Catchment:	R10E					Zonation	<u>.</u>					MargVeg In Current	2		The	1.4.1	C.
	Temp (°	°C):				Routine or Project? (circle one)	Flow					MargVeg Out Of Current	2		2		772
Site Description: 52	pH:					Project Name:	Clarity	(cm):				Gravel	4		L'HI	2,5	
Refer to Report Number:	 DO (mo	<i></i>				WD11251	Turbidi	tv:				Sand	4		LEFT. OF 1	DIED AFFAIRS & F	OUBSTRY
WEM/WMA7/00/CON/RDM/0722 and for all	Conduc	rivity.				VVF11334	Colour					Mud	5		WATER	ESEARCH CONNES	1570K
other site information, including in situ	Dimension	n Diaturk	1				ooloui	•				Hand nicking Viewal abconvotion			CONSCIENTS.	and the second	C. C. C. C. C. C. C. C. C. C. C. C. C. C
water quality	Ripariai	Disturt	bance:										X				
	Instream	n Distur	bance:	-								Biotope Score (%)	60				
Taxon	QV	S	Veg	GSM	TOT	Taxon	QV	S	Veg	GSM	TOT	Taxon	QV	S	Veg	GSM	TOT
PORIFERA (Sponge)	5				A	HEMIPTERA (Bugs)						DIPTERA (Flies)					
COELENTERATA (Cnidaria)	1					Belostomatidae* (Giant water bugs)	3		A		A	Athericidae (Snipe flies)	10				
TURBELLARIA (Flatworms)	3	A	A	A	В	Corixidae* (Water boatmen)	3	Α	A		В	Blepharoceridae (Mountain midges)	15				
ANNELIDA						Gerridae* (Pond skaters/Water striders)	5				Α	Ceratopogonidae (Biting midges)	5	1	A	Α	В
Oligochaeta (Earthworms)	1	Α	1	В	В	Hydrometridae* (Water measurers)	6		1		1	Chironomidae (Midges)	2	A	В	В	В
Hirudinea (Leeches)	3					Naucoridae* (Creeping water bugs)	7					Culicidae* (Mosquitoes)	1		Α	1	Α
CRUSTACEA						Nepidae* (Water scorpions)	3					Dixidae* (Dixid midge)	10				
Amphipoda (Scuds)	13					Notonectidae* (Backswimmers)	3	1	A		A	Empididae (Dance flies)	6				
Potamonautidae* (Crabs)	3	<u>A</u>			Α	Pleidae* (Pygmy backswimmers)	4					Ephydridae (Shore flies)	3				
Atyidae (Freshwater Shrimps)	8					Veliidae/Mveliidae* (Ripple bugs)	5		<u>A</u>		Α	Muscidae (House flies, Stable flies)	1	1			1
Palaemonidae (Freshwater Prawns)	10					MEGALOPTERA (Fishflies, Dobsonflies &	Alderflie	es)				Psychodidae (Moth flies)	1				
HYDRACARINA (Mites)	8			1	1	Corydalidae (Fishflies & Dobsonflies)	8					Simuliidae (Blackflies)	5	B	A	Α	В
PLECOPTERA (Stoneflies)						Sialidae (Alderflies)	6					Syrphidae* (Rat tailed maggots)	1				
Notonemouridae	14					TRICHOPTERA (Caddisflies)						Tabanidae (Horse flies)	5	Α	1	1	Α
Perlidae	12					Dipseudopsidae	10					Tipulidae (Crane flies)	5				
EPHEMEROPTERA (Mayflies)						Ecnomidae	8					GASTROPODA (Snails)					
Baetidae 1sp	4					Hydropsychidae 1 sp	4	Α			Α	Ancylidae (Limpets)	6				В
Baetidae 2 sp	6					Hydropsychidae 2 sp	6					Bulininae*	3				
Baetidae > 2 sp	12	В	В	Α	В	Hydropsychidae > 2 sp	12					Hydrobiidae*	3				
Caenidae (Squaregills/Cainfles)	6	Α	Α	В	В	Philopotamidae	10					Lymnaeidae* (Pond snails)	3				
Ephemeridae	15					Polycentropodidae	12					Physidae* (Pouch snails)	3				
Heptageniidae (Flatheaded mayflies)	13					Psychomyiidae/Xiphocentronidae	8					Planorbinae* (Orb snails)	3				
Leptophlebiidae (Prongills)	9	В		Α	В	Cased caddis:						Thiaridae* (=Melanidae)	3				
Oligoneuridae (Brushlegged mayflies)	15					Barbarochthonidae SWC	13					Viviparidae* ST	5				
Polymitarcyidae (Pale Burrowers)	10					Calamoceratidae ST	11					PELECYPODA (Bivalvles)					
Prosopistomatidae (Water specs)	15					Glossosomatidae SWC	11					Corbiculidae (Clams)	5				В
Teloganodidae SWC (Spiny Crawlers)	12					Hydroptilidae	6					Sphaeriidae (Pill clams)	3				
Tricorythidae (Stout Crawlers)	9	B		Α	В	Hydrosalpingidae SWC	15					Unionidae (Perly mussels)	6				
ODONATA (Dragonflies & Damselflies)						Lepidostomatidae	10					SASS Score					163
Calopterygidae ST,T (Demoiselles)	10					Leptoceridae	6		В		В	No. of Taxa					32
Chlorocyphidae (Jewels)	10		1		1	Petrothrincidae SWC	11					ASPT					5.1
Synlestidae (Chlorolestidae)(Sylphs)	8					Pisuliidae	10					Other biota:					
Coenagrionidae (Sprites and blues)	4		В		В	Sericostomatidae SWC	13										
Lestidae (Emerald Damselflies/Spreadwings) 8					COLEOPTERA (Beetles)											
Platycnemidae (Stream Damselflies)	10	1				Dytiscidae/Noteridae* (Diving beetles)	5		Α		А						
Protoneuridae (Threadwings)	8		1			Elmidae/Dryopidae* (Riffle beetles)	8	1				1					
Aeshnidae (Hawkers & Emperors)	8		İ.		Α	Gyrinidae* (Whirligig beetles)	5	B	Α	Α	В	Comments/Observations:					
Corduliidae (Cruisers)	8		1			Haliplidae* (Crawling water beetles)	5			1							
Gomphidae (Clubtails)	6	Α		1	Α	Helodidae (Marsh beetles)	12	1	1			1					
Libellulidae (Darters/Skimmers)	4	1	1		Α	Hydraenidae* (Minute moss beetles)	8	1				1					
LEPIDOPTERA (Aquatic Caterpillars/Moths)						Hydrophilidae* (Water scavenger beetles)	5	1				1					
Crambidae (Pyralidae)	12			1	1	Limnichidae (Marsh-Loving Beetles)	10	1		1		1					
			1			Psephenidae (Water Pennies)	10	1				1					

Keiskamma (Upper): May 2023

Data (dd mm yr);	08-May	22								(44 444	4d)	Biotones Sampled (tick & rate)	Rating (1-	5)		т	ime (min)
	Wel-04	.23					•	00.000		(uu.uuu	uu)	Biotopes campica (liok a rate)	itating (1-	3)	1		
Site Code:	Kelsu1_					Grid reference (dd mm ss.s) Lat:	5	-32.8024	217				5				
Collector/Sampler:	Kylie Fa	arrell				Long:	E	27.0240	92			Stones Out Of Current (SOOC)	5				
River:	Keiskan	nma (up	per)			Datum (WGS84/Cape):						Bedrock	0				
Level 1 Ecoregion:	18: DRC	DUGHT (CORRIDO	DR		Altitude (m):						Aquatic Veg	0		P	EALTH	1
Quaternary Catchment:	R10E					Zonation:						MargVeg In Current	2		JER.		"OG
	Temp (°	(C):				Routine or Project? (circle one)	Flow					MargVeg Out Of Current	2		4	- Min	77
Site Description: 52	nH·	-,-				Project Name:	Clarity	(cm).				Gravel	4		H C	2.5	D M
Refer to Report Number:	 					N/D44054	Turkidi	ciiij.				Sand	4		-		T
WEM/WMA7/00/CON/RDM/0722 and for all	DO (mg	/L):				WP11354		.y.				Sanu	-		WATER	RESERVEN CONNER	S70K
other site information, including in situ	Conduc	tivity:			-		Colour:					Mud	5		PERSONAL PERSON	and the second sec	A PERFORMENT
water quality	Ripariar	n Disturk	bance:									Hand picking/Visual observation	х				
	Instream	n Distur	bance:									Biotope Score (%)	60				
Taxon	QV	S	Veg	GSM	тот	Taxon	QV	S	Veg	GSM	тот	Taxon	QV	S	Veg	GSM	TOT
PORIFERA (Sponge)	5					HEMIPTERA (Bugs)						DIPTERA (Flies)					
COELENTERATA (Cnidaria)	1					Belostomatidae* (Giant water bugs)	3		Α		Α	Athericidae (Snipe flies)	10			Α	Α
TURBELLARIA (Flatworms)	3	1			1	Corixidae* (Water boatmen)	3		1	Α	Α	Blepharoceridae (Mountain midges)	15				
ANNELIDA						Gerridae* (Pond skaters/Water striders)	5				Α	Ceratopogonidae (Biting midges)	5	1		Α	Α
Oligochaeta (Earthworms)	1	Α			Α	Hydrometridae* (Water measurers)	6		В		В	Chironomidae (Midges)	2	В		Α	В
Hirudinea (Leeches)	3					Naucoridae* (Creeping water bugs)	7					Culicidae* (Mosquitoes)	1				
CRUSTACEA						Nepidae* (Water scorpions)	3		1		1	Dixidae* (Dixid midge)	10				
Amphipoda (Scuds)	13					Notonectidae* (Backswimmers)	3		В		В	Empididae (Dance flies)	6				
Potamonautidae* (Crabs)	3		Α	1	Α	Pleidae* (Pygmy backswimmers)	4					Ephydridae (Shore flies)	3				
Atyidae (Freshwater Shrimps)	8					Veliidae/Mveliidae* (Ripple bugs)	5		1		1	Muscidae (House flies, Stable flies)	1				
Palaemonidae (Freshwater Prawns)	10					MEGALOPTERA (Fishflies, Dobsonflies &	Alderflie	s)				Psychodidae (Moth flies)	1				
HYDRACARINA (Mites)	8					Corydalidae (Fishflies & Dobsonflies)	8					Simuliidae (Blackflies)	5	A		1	Α
PLECOPTERA (Stoneflies)						Sialidae (Alderflies)	6					Syrphidae* (Rat tailed maggots)	1				
Notonemouridae	14					TRICHOPTERA (Caddisflies)						Tabanidae (Horse flies)	5	1			1
Perlidae	12					Dipseudopsidae	10					Tipulidae (Crane flies)	5				
EPHEMEROPTERA (Mayflies)						Ecnomidae	8			Α	Α	GASTROPODA (Snails)					
Baetidae 1sp	4					Hydropsychidae 1 sp	4			Α		Ancylidae (Limpets)	6			Α	В
Baetidae 2 sp	6		В	В		Hydropsychidae 2 sp	6	B			В	Bulininae*	3				
Baetidae > 2 sp	12	В			В	Hydropsychidae > 2 sp	12					Hydrobiidae*	3				
Caenidae (Squaregills/Cainfles)	6			Α	Α	Philopotamidae	10					Lymnaeidae* (Pond snails)	3				
Ephemeridae	15					Polycentropodidae	12					Physidae* (Pouch snails)	3				
Heptageniidae (Flatheaded mayflies)	13	Α		Α	В	Psychomyiidae/Xiphocentronidae	8					Planorbinae* (Orb snails)	3				
Leptophlebiidae (Prongills)	9	В		В	В	Cased caddis:						Thiaridae* (=Melanidae)	3				
Oligoneuridae (Brushlegged mayflies)	15					Barbarochthonidae SWC	13					Viviparidae* ST	5				
Polymitarcyidae (Pale Burrowers)	10					Calamoceratidae ST	11					PELECYPODA (Bivalvles)					
Prosopistomatidae (Water specs)	15					Glossosomatidae SWC	11					Corbiculidae (Clams)	5				
Teloganodidae SWC (Spiny Crawlers)	12					Hydroptilidae	6					Sphaeriidae (Pill clams)	3				
Tricorythidae (Stout Crawlers)	9	B		В	С	Hydrosalpingidae SWC	15					Unionidae (Perly mussels)	6				
ODONATA (Dragonflies & Damselflies)						Lepidostomatidae	10					SASS Score					206
Calopterygidae ST,T (Demoiselles)	10					Leptoceridae	6		В	Α	В	No. of Taxa					34
Chlorocyphidae (Jewels)	10		1	Α	Α	Petrothrincidae SWC	11					ASPT					6.1
Synlestidae (Chlorolestidae)(Sylphs)	8					Pisuliidae	10					Other biota:					
Coenagrionidae (Sprites and blues)	4		В		В	Sericostomatidae SWC	13										
Lestidae (Emerald Damselflies/Spreadwings) 8					COLEOPTERA (Beetles)											
Platycnemidae (Stream Damselflies)	10	1			1	Dytiscidae/Noteridae* (Diving beetles)	5		1		1						
Protoneuridae (Threadwings)	8	1			1	Elmidae/Dryopidae* (Riffle beetles)	8			İ	l						
Aeshnidae (Hawkers & Emperors)	8	Α	1	1	Α	Gyrinidae* (Whirligig beetles)	5	A	1	İ	В	Comments/Observations:					
Corduliidae (Cruisers)	8	1			1	Haliplidae* (Crawling water beetles)	5			İ	l						
Gomphidae (Clubtails)	6			В	В	Helodidae (Marsh beetles)	12					1					
Libellulidae (Darters/Skimmers)	4	Α		Α	В	Hydraenidae* (Minute moss beetles)	8					1					
LEPIDOPTERA (Aquatic Caterpillars/Moths)					Hydrophilidae* (Water scavenger beetles)	5		1		1	1					
Crambidae (Pyralidae)	12	1			1	Limnichidae (Marsh-Loving Beetles)	10					1					
	1	1			1	Psephenidae (Water Pennies)	10	Α		1	Α	1					

Kat River (Upper): July 2022

Date (dd-mm-yr):	07-Sep-	22								(dd.ddd	dd)	Biotopes Sampled (tick & rate)	Rating (1	-5)		T	ime (min)
Site Code:	Likat02	1				Grid reference (dd mm ss.s) at:	c	-32 560	705	(44.444	uu)		5	-,	1	1	
	Kulia Ea	,i Ilanı				Ghu reference (du min ss.s) Lat.	-	-32.303	105			01 01 01 0	5		-		
Collector/Sampler:	Купега	irreii				Long:	E	20.7220	41			Stones Out Of Current (SOOC)	4		-		
River:	Upper K	lat				Datum (WGS84/Cape):	:					Bedrock	1				
Level 1 Ecoregion:	18: DRC	DUGHT	CORRIDO	OR		Altitude (m):						Aquatic Veg	1		H	EALTH P	P-
Quaternary Catchment:	Q94B					Zonation:						MargVeg In Current	4		Str		'°Co
	Temp (°	C):				Routine or Project? (circle one)	Flow					MargVeg Out Of Current	3		2		77
Site Description: 52	pH:					Project Name:	Clarity	(cm):				Gravel	2		H S	2.55	S I
Refer to Report Number:	 DO (ma	/1.)-				WD11254	Turbidit	tv:				Sand	2		TOPI SPA	ADDISORAUSZAT	OHNUN
WEM/WMA7/00/CON/RDM/0722 and for all	Conduc	tivity.				VVF11334	Colour	. . .				Mud	3		MATER.	ENLARCH COMPANY	505
other site information, including in situ	Dimension	Disturk					ooloul.					Hand nicking/Visual observation	~		In the local data in the local data		and the second second
water quality	Ripariar	Disturt	Jance.														
	Instream	n Disturi	bance:			-		-				Biotope Score (%)	56	-			
Taxon	QV	S	Veg	GSM	тот	Taxon	QV	S	Veg	GSM	тот	Taxon	QV	S	Veg	GSM	тот
PORIFERA (Sponge)	5				В	HEMIPTERA (Bugs)						DIPTERA (Flies)	10				-
COELENTERATA (Cnidaria)	1					Belostomatidae* (Giant water bugs)	3		A		A	Athericidae (Snipe flies)	10			'	I
TURBELLARIA (Flatworms)	3		1		1	Corixidae* (Water boatmen)	3			1	1	Blepharoceridae (Mountain midges)	15			<u> </u>	L
ANNELIDA						Gerridae* (Pond skaters/Water striders)	5				A	Ceratopogonidae (Biting midges)	5	1	1	Α	A
Oligochaeta (Earthworms)	1					Hydrometridae* (Water measurers)	6	1	Α		A	Chironomidae (Midges)	2		В	A	В
Hirudinea (Leeches)	3					Naucoridae* (Creeping water bugs)	7					Culicidae* (Mosquitoes)	1	A	A		В
CRUSTACEA						Nepidae* (Water scorpions)	3					Dixidae* (Dixid midge)	10				ļ
Amphipoda (Scuds)	13					Notonectidae* (Backswimmers)	3					Empididae (Dance flies)	6			'	
Potamonautidae* (Crabs)	3		1		Α	Pleidae* (Pygmy backswimmers)	4		Α		Α	Ephydridae (Shore flies)	3			I	
Atyidae (Freshwater Shrimps)	8					Veliidae/Mveliidae* (Ripple bugs)	5		<u>A</u>		Α	Muscidae (House flies, Stable flies)	1			I	
Palaemonidae (Freshwater Prawns)	10					MEGALOPTERA (Fishflies, Dobsonflies &	Alderflie	s)				Psychodidae (Moth flies)	1			I	
HYDRACARINA (Mites)	1	1	Α		Α	Corydalidae (Fishflies & Dobsonflies)	8					Simuliidae (Blackflies)	5	<u>A</u>		Α	С
PLECOPTERA (Stoneflies)						Sialidae (Alderflies)	6					Syrphidae* (Rat tailed maggots)	1				
Notonemouridae	14					TRICHOPTERA (Caddisflies)						Tabanidae (Horse flies)	5	1		Α	Α
Perlidae	12					Dipseudopsidae	10					Tipulidae (Crane flies)	5			1	
EPHEMEROPTERA (Mayflies)						Ecnomidae	8					GASTROPODA (Snails)					
Baetidae 1sp	4					Hydropsychidae 1 sp	4		1		1	Ancylidae (Limpets)	6		А	1	В
Baetidae 2 sp	6			Α		Hydropsychidae 2 sp	6					Bulininae*	3			1	
Baetidae > 2 sp	12	В	В		В	Hydropsychidae > 2 sp	12					Hydrobiidae*	3			1	
Caenidae (Squaregills/Cainfles)	6	Α	В	Α	В	Philopotamidae	10					Lymnaeidae* (Pond snails)	3			1	
Ephemeridae	15					Polycentropodidae	12					Physidae* (Pouch snails)	3			1	
Heptageniidae (Flatheaded mayflies)	13	Α	1		В	Psychomyiidae/Xiphocentronidae	8					Planorbinae* (Orb snails)	3		Α	1	Α
Leptophlebiidae (Prongills)	9	Α	Α		В	Cased caddis:						Thiaridae* (=Melanidae)	3			1	
Oligoneuridae (Brushlegged mayflies)	15					Barbarochthonidae SWC	13					Viviparidae* ST	5			1	
Polymitarcyidae (Pale Burrowers)	10		1		1	Calamoceratidae ST	11					PELECYPODA (Bivalvles)					
Prosopistomatidae (Water specs)	15					Glossosomatidae SWC	11					Corbiculidae (Clams)	5		1	1	1
Teloganodidae SWC (Spiny Crawlers)	12					Hydroptilidae	6					Sphaeriidae (Pill clams)	3				
Tricorythidae (Stout Crawlers)	9	<u>A</u>			В	Hydrosalpingidae SWC	15					Unionidae (Perly mussels)	6			1	
ODONATA (Dragonflies & Damselflies)						Lepidostomatidae	10					SASS Score					172
Calopterygidae ST,T (Demoiselles)	10					Leptoceridae	6	1	В		В	No. of Taxa					33
Chlorocyphidae (Jewels)	10		1		1	Petrothrincidae SWC	11					ASPT					5.2
Synlestidae (Chlorolestidae)(Sylphs)	8					Pisuliidae	10					Other biota:					
Coenagrionidae (Sprites and blues)	4		В		В	Sericostomatidae SWC	13					Sciomyzidae (Marsh Fly)					
Lestidae (Emerald Damselflies/Spreadwings) 8		1		1	COLEOPTERA (Beetles)											
Platycnemidae (Stream Damselflies)	10	1			1	Dytiscidae/Noteridae* (Diving beetles)	5		Α		А						
Protoneuridae (Threadwings)	8					Elmidae/Dryopidae* (Riffle beetles)	8										
Aeshnidae (Hawkers & Emperors)	8					Gyrinidae* (Whirligig beetles)	5		Α		Α	Comments/Observations:					
Corduliidae (Cruisers)	8		1	1		Haliplidae* (Crawling water beetles)	5			1							
Gomphidae (Clubtails)	6	1	1	1	1	Helodidae (Marsh beetles)	12	1	1								
Libellulidae (Darters/Skimmers)	4		Α	1	А	Hydraenidae* (Minute moss beetles)	8			1							
LEPIDOPTERA (Aquatic Caterpillars/Moths))					Hydrophilidae* (Water scavenger beetles)	5										
Crambidae (Pyralidae)	12					Limnichidae (Marsh-Loving Beetles)	10										
			1			Psephenidae (Water Pennies)	10										

Kat River (Upper): May 2023

Date (dd-mm-yr):	07-May	-23								(dd ddd	dd)	Biotopes Sampled (tick & rate)	Rating (1	-5)		т	ime (min)
Site Code:	Likat02	1				Crid reference (dd mm ee e) I et	e	-32 560	705	(44.444	uu)	Distopoo Gampioa (aon a rato)	5	•,	٦		[[
	Kulle Ee	_'				Ghu reference (du film SS.S) Lat.	-	26 7220	105				4		-		
Collector/Sampler:	Купега	arren				Long	: E	20.7220	J4 I			Stones Out Of Current (SOOC)	4		-		
River:	Upper P	(at				Datum (WGS84/Cape):		-				Bedrock	5				
Level 1 Ecoregion:	18: DRC	DUGHT	CORRIDO	OR		Altitude (m):						Aquatic Veg	2		×	EALTHA	P
Quaternary Catchment:	Q94B					Zonation:	-					MargVeg In Current	1		JEN.		"°Co
	Temp (°	'C):				Routine or Project? (circle one)	Flow					MargVeg Out Of Current	3		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		377
Site Description: 52	pH:					Project Name:	Clarity	(cm):				Gravel	3		E CHI	2,5	
Refer to Report Number:	DO (mg	/1).				WD11254	Turbidi	tv:				Sand	3		SEEL OF	STER ACTACKS & F	OF STRY
WEM/WMA7/00/CON/RDM/0722 and for all	Conduc	tivity:				WF11334	Colour					Mud	3	1	WATER DEST OF DAM	INSEARCH COMMIT	SSECN 15.4 YOUTHAN
other site information, including in situ	Dimentari	- D'					001041	•				Hand nicking/Visual observation			Intelligible Basker		
water quality	Riparia	Disturi	bance.														
-	Instream	n Distur	bance:			-					-	Biotope Score (%)	64				
Taxon	QV	S	Veg	GSM	TOT	Taxon	QV	S	Veg	GSM	тот	Taxon	QV	S	Veg	GSM	тот
PORIFERA (Sponge)	5				В	HEMIPTERA (Bugs)	2		•		•	DIPIERA (Flies)	10				-
COELENTERATA (Chidaria)	1					Belostomatidae" (Glant water bugs)	3		A		A	Athericidae (Shipe files)	10				
TURBELLARIA (Flatworms)	3	1			1	Corixidae* (Water boatmen)	3		1	A	A	Blepharoceridae (Mountain midges)	15				
ANNELIDA						Gerridae* (Pond skaters/Water striders)	5					Ceratopogonidae (Biting midges)	5		1	A	A
Oligochaeta (Earthworms)	1					Hydrometridae* (Water measurers)	6					Chironomidae (Midges)	2	1	A	A	В
Hirudinea (Leeches)	3					Naucoridae* (Creeping water bugs)	7					Culicidae* (Mosquitoes)	1		1		1
CRUSTACEA						Nepidae* (Water scorpions)	3					Dixidae* (Dixid midge)	10				
Amphipoda (Scuds)	13					Notonectidae* (Backswimmers)	3		A		Α	Empididae (Dance flies)	6				
Potamonautidae* (Crabs)	3	1			Α	Pleidae* (Pygmy backswimmers)	4		1	Α	A	Ephydridae (Shore flies)	3				
Atyidae (Freshwater Shrimps)	8					Veliidae/Mveliidae* (Ripple bugs)	5			Α	A	Muscidae (House flies, Stable flies)	1				
Palaemonidae (Freshwater Prawns)	10					MEGALOPTERA (Fishflies, Dobsonflies &	Alderflie	es)				Psychodidae (Moth flies)	1				
HYDRACARINA (Mites)	1					Corydalidae (Fishflies & Dobsonflies)	8					Simuliidae (Blackflies)	5				
PLECOPTERA (Stoneflies)						Sialidae (Alderflies)	6					Syrphidae* (Rat tailed maggots)	1				
Notonemouridae	14					TRICHOPTERA (Caddisflies)						Tabanidae (Horse flies)	5		1		1
Perlidae	12					Dipseudopsidae	10					Tipulidae (Crane flies)	5				
EPHEMEROPTERA (Mayflies)						Ecnomidae	8					GASTROPODA (Snails)					
Baetidae 1sp	4		1	1		Hydropsychidae 1 sp	4	1			1	Ancylidae (Limpets)	6	B		1	В
Baetidae 2 sp	6			Α		Hydropsychidae 2 sp	6					Bulininae*	3				
Baetidae > 2 sp	12	Α			В	Hydropsychidae > 2 sp	12					Hydrobiidae*	3				
Caenidae (Squaregills/Cainfles)	6		1	1	Α	Philopotamidae	10					Lymnaeidae* (Pond snails)	3				
Ephemeridae	15					Polycentropodidae	12					Physidae* (Pouch snails)	3				
Heptageniidae (Flatheaded mayflies)	13	В	1	1	В	Psychomyiidae/Xiphocentronidae	8					Planorbinae* (Orb snails)	3		1		1
Leptophlebiidae (Prongills)	9	Α		1	В	Cased caddis:						Thiaridae* (=Melanidae)	3				
Oligoneuridae (Brushlegged mayflies)	15					Barbarochthonidae SWC	13					Viviparidae* ST	5				
Polymitarcyidae (Pale Burrowers)	10					Calamoceratidae ST	11					PELECYPODA (Bivalvles)					
Prosopistomatidae (Water specs)	15					Glossosomatidae SWC	11					Corbiculidae (Clams)	5				
Teloganodidae SWC (Spiny Crawlers)	12					Hydroptilidae	6					Sphaeriidae (Pill clams)	3				
Tricorythidae (Stout Crawlers)	9	B		1	С	Hydrosalpingidae SWC	15					Unionidae (Perly mussels)	6				
ODONATA (Dragonflies & Damselflies)						Lepidostomatidae	10					SASS Score					167
Calopterygidae ST,T (Demoiselles)	10					Leptoceridae	6		В	в	В	No. of Taxa					30
Chlorocyphidae (Jewels)	10			Α	Α	Petrothrincidae SWC	11					ASPT					5.6
Synlestidae (Chlorolestidae)(Sylphs)	8					Pisuliidae	10					Other biota:					
Coenagrionidae (Sprites and blues)	4			1	В	Sericostomatidae SWC	13					Sciomyzidae (Marsh Fly)					
Lestidae (Emerald Damselflies/Spreadwings) 8					COLEOPTERA (Beetles)											
Platycnemidae (Stream Damselflies)	10					Dytiscidae/Noteridae* (Diving beetles)	5		1		1						
Protoneuridae (Threadwings)	8					Elmidae/Dryopidae* (Riffle beetles)	8										
Aeshnidae (Hawkers & Emperors)	8	1			1	Gyrinidae* (Whirligig beetles)	5				В	Comments/Observations:					
Corduliidae (Cruisers)	8					Haliplidae* (Crawling water beetles)	5										
Gomphidae (Clubtails)	6	1		Α	А	Helodidae (Marsh beetles)	12		1		l						
Libellulidae (Darters/Skimmers)	4	1	1	Α	А	Hydraenidae* (Minute moss beetles)	8		1		l						
LEPIDOPTERA (Aquatic Caterpillars/Moths)					Hydrophilidae* (Water scavenger beetles)	5		1		l						
Crambidae (Pyralidae)	12					Limnichidae (Marsh-Loving Beetles)	10		1		l						
		1				Psephenidae (Water Pennies)	10	1	1		1	1					

Great Fish River (Lower): July 2022

Date (dd-mm-yr):	20-Sep	-22								(dd.ddd	dd)	Biotopes Sampled (tick & rate)	Rating (1	-5)		Ti	ime (min)
Site Code:	GFIS03	1				Grid reference (dd mm ss.s) Lat:	: S	-33.083	607				5		1		
Collector/Sampler:	Kylie Ea	arrell						26 2252	285			Stopps Out Of Current (SOOC)	2				
conector/sampler.	Creek E	lah (Lau	(01)			Long). E	2012202				Badaaala	-		1		
River:	de DD			OB		Datum (WGS84/Cape)	•			-		Bedrock	4				
Level 1 Ecoregion:	To: DRU	JUGHI	JUKKID	UK		Altitude (m):	:					Aquatic Veg	0			EALTHP	Ro
Quaternary Catchment:	Q91B					Zonation	<u>:</u>					MargVeg In Current	4		200	1.00.7	GR
	Temp (°C):				Routine or Project? (circle one)	Flow					MargVeg Out Of Current	2		4		77
Site Description: 52	pH:					Project Name:	Clarity	(cm):				Gravel	2		HI	2,5	NE
Refer to Report Number:	DO (mo	ŧ∕L):				WP11354	Turbidi	ty:				Sand	2		SEEL OF	RELER AL INLISS & D	OF LET IF:
WEM/WMA7/00/CON/RDM/0722	Conduc	ctivity:				WI 11554	Colour					Mud	3	1	WITH DEPT OF DAT	SUSPECT CONTRACTOR	ISKIN 15 & TOUMSN
	Rinaria	n Dieturk	ance.			1						Hand nicking/Visual observation	×				
	Instroat	n Dietur	hanco:									Pietene Seere (%)	52				
-	matrear		Marie C.	0.014	TOT	*	01/		Man	0.014	TOT		01	-	Man	0.014	TOT
Taxon	QV E	5	veg	GSM	101		QV	5	veg	GSM	101		QV	5	veg	GSW	101
	5					HEMIPTERA (Bugs)	-					DIPTERA (Files)	40				
COELENTERATA (Chidaria)	1					Belostomatidae" (Glant water bugs)	3					Athencidae (Shipe files)	10				
TURBELLARIA (Flatworms)	3	A			A	Corixidae" (water boatmen)	3					Biepharoceridae (Mountain midges)	15				-
ANNELIDA				-	-	Gerridae* (Pond skaters/Water striders)	5					Ceratopogonidae (Biting midges)	5	В	1	<u> </u>	В
Oligochaeta (Earthworms)	1	A		В	В	Hydrometridae* (Water measurers)	6	_		_		Chironomidae (Midges)	2	В	В	A	В
Hirudinea (Leeches)	3		_		A	Naucoridae* (Creeping water bugs)	7					Culicidae* (Mosquitoes)	1			<u> </u>	
CRUSTACEA						Nepidae* (Water scorpions)	3					Dixidae* (Dixid midge)	10			<u> </u>	
Amphipoda (Scuds)	13					Notonectidae* (Backswimmers)	3					Empididae (Dance flies)	6			<u> </u>	
Potamonautidae* (Crabs)	3					Pleidae* (Pygmy backswimmers)	4					Ephydridae (Shore flies)	3			<u> </u>	
Atyidae (Freshwater Shrimps)	8					Veliidae/Mveliidae* (Ripple bugs)	5					Muscidae (House flies, Stable flies)	1				
Palaemonidae (Freshwater Prawns)	10					MEGALOPTERA (Fishflies, Dobsonflies &	Alderflie	es)				Psychodidae (Moth flies)	1			<u> </u>	
HYDRACARINA (Mites)	8					Corydalidae (Fishflies & Dobsonflies)	8					Simuliidae (Blackflies)	5	<u>B</u>			В
PLECOPTERA (Stoneflies)						Sialidae (Alderflies)	6					Syrphidae* (Rat tailed maggots)	1				
Notonemouridae	14					TRICHOPTERA (Caddisflies)						Tabanidae (Horse flies)	5	Α			Α
Perlidae	12					Dipseudopsidae	10					Tipulidae (Crane flies)	5				
EPHEMEROPTERA (Mayflies)						Ecnomidae	8					GASTROPODA (Snails)					
Baetidae 1sp	4					Hydropsychidae 1 sp	4					Ancylidae (Limpets)	6	<u>A</u>	1		В
Baetidae 2 sp	6		В	Α		Hydropsychidae 2 sp	6	B			В	Bulininae*	3				
Baetidae > 2 sp	12	В			В	Hydropsychidae > 2 sp	12					Hydrobiidae*	3				
Caenidae (Squaregills/Cainfles)	6					Philopotamidae	10					Lymnaeidae* (Pond snails)	3				
Ephemeridae	15					Polycentropodidae	12					Physidae* (Pouch snails)	3	Α	В		В
Heptageniidae (Flatheaded mayflies)	13					Psychomyiidae/Xiphocentronidae	8					Planorbinae* (Orb snails)	3				
Leptophlebiidae (Prongills)	9	1			1	Cased caddis:	- 1					Thiaridae* (=Melanidae)	3				
Oligoneuridae (Brushlegged mayflies)	15					Barbarochthonidae SWC	13					Viviparidae* ST	5				
Polymitarcyidae (Pale Burrowers)	10					Calamoceratidae ST	11					PELECYPODA (Bivalvles)					
Prosopistomatidae (Water specs)	15					Glossosomatidae SWC	11					Corbiculidae (Clams)	5			1	1
Teloganodidae SWC (Spiny Crawlers)	12					Hydroptilidae	6					Sphaeriidae (Pill clams)	3				
Tricorythidae (Stout Crawlers)	9					Hydrosalpingidae SWC	15					Unionidae (Perly mussels)	6				
ODONATA (Dragonflies & Damselflies)						Lepidostomatidae	10					SASS Score					86
Calopterygidae ST,T (Demoiselles)	10					Leptoceridae	6		1		1	No. of Taxa					17
Chlorocyphidae (Jewels)	10					Petrothrincidae SWC	11					ASPT					5.1
Synlestidae (Chlorolestidae)(Sylphs)	8					Pisuliidae	10					Other biota:					
Coenagrionidae (Sprites and blues)	4		Α		Α	Sericostomatidae SWC	13										
Lestidae (Emerald Damselflies/Spreadwings)) 8					COLEOPTERA (Beetles)											
Platycnemidae (Stream Damselflies)	10					Dytiscidae/Noteridae* (Diving beetles)	5										
Protoneuridae (Threadwings)	8					Elmidae/Dryopidae* (Riffle beetles)	8										
Aeshnidae (Hawkers & Emperors)	8					Gyrinidae* (Whirligig beetles)	5	<u>B</u>	Α		В	Comments/Observations:					
Corduliidae (Cruisers)	8					Haliplidae* (Crawling water beetles)	5										
Gomphidae (Clubtails)	6	Α		Α	Α	Helodidae (Marsh beetles)	12										
Libellulidae (Darters/Skimmers)	4	1				Hydraenidae* (Minute moss beetles)	8		1	1							
LEPIDOPTERA (Aquatic Caterpillars/Moths))					Hydrophilidae* (Water scavenger beetles)	5										
Crambidae (Pyralidae)	12					Limnichidae (Marsh-Loving Beetles)	10										
						Psephenidae (Water Pennies)	10										

Great Fish River (Lower): May 2023

Date (dd-mm-vr):	04-May	-23								(dd.ddd	dd)	Biotopes Sampled (tick & rate)	Rating (1	-5)		т	ime (min)
Site Code:	GFIS03	1				Grid reference (dd mm ss.s) Lat:	s	-33.083	607	Ĺ.	,	/	5		1	1	
Collector/Sampler:	Kylie Ea	arrell					. F	26 2252	85			Stones Out Of Current (SOOC)	0		-		
b:	Creat E	ich (Leur	(a.r.)			Eoing.		LUILLUL				De des etc. et current (0000)	2		-		-
River:	Great F	ISH (LOW	er)			Datum (WGS84/Cape)	•			-		Bedrock	2				
Level 1 Ecoregion:	18: DRC	JUGHI	ORRIDO	JR		Altitude (m):	•					Aquatic Veg	0		e 1	EALTH P	Ro
Quaternary Catchment:	Q91B		r			Zonation	-		r			MargVeg In Current	4		Acr		GP
	Temp (°	'C):				Routine or Project? (circle one)	Flow					MargVeg Out Of Current	1		4		77
Site Description: 52	pH:					Project Name:	Clarity (cm):				Gravel	2		HI.	2,5	ME
Refer to Report Number:	DO (mg	/L):				WP11354	Turbidit	y:				Sand	3		SEELOF	WERA MAN &	OFFICE
WEM/WMA7/00/CON/RDM/0722	Conduc	tivity:				WI 11554	Colour:					Mud	1		WATCH DEPT OF BASE	ONHER ALL AFTAT	SREN 15 ± YOUNSN
	Rinaria	n Disturk	ance.									Hand picking/Visual observation	×				
	Instroar	n Disturi	hance.									Biotone Score (%)	40				
Taxon		e 1	Vog	GSM	TOT	Taxon	01	6	Vog	GSM	TOT	Taxon	01	6	Vog	GSM	тот
BODIEEDA (Spongo)	QV	3	veg	0.01W	101		QV	3	veg	0.0111	101		Q.V	3	veg	0.011	101
COELENTERATA (Crideric)	1			_		Releatemetides* (Cient water huge)	2	٨				Atherioidee (Spine flige)	10				
	1			_		Cerivideet (Meter heetman)	3	A	•		A	Athencidae (Shipe files)	10				
	3					Contridae* (Water Doatmen)	5		A		A	Corstopogopidae (Riting midges)	15				
ANNELIDA Oligophoeto (Forthwormo)	1					Gerridae (Polid skalers/Water striders)	5					Ceratopogonidae (Biting midges)	5		٨		•
Oligochaeta (Earthworms)	1				4	Hydrometridae" (Water measurers)	6					Chironomidae (Midges)	2		A		A
Hirudinea (Leeches)	3				1	Naucoridae" (Creeping water bugs)	/					Culicidae" (Mosquitoes)	1				
CRUSTACEA	10					Nepidae" (water scorpions)	3					Dixidae" (Dixid midge)	10				
Amphipoda (Scuds)	13					Notonectidae [*] (Backswimmers)	3					Empididae (Dance files)	6				
Potamonautidae* (Crabs)	3					Pleidae* (Pygmy backswimmers)	4					Ephydridae (Shore files)	3				
Atyidae (Freshwater Shrimps)	8					Veliidae/Mveliidae* (Ripple bugs)	5		Α		A	Muscidae (House flies, Stable flies)	1				
Palaemonidae (Freshwater Prawns)	10					MEGALOPTERA (Fishflies, Dobsonflies &	Alderflie	s)				Psychodidae (Moth flies)	1				
HYDRACARINA (Mites)	8					Corydalidae (Fishflies & Dobsonflies)	8					Simuliidae (Blackflies)	5	<u>A</u>			A
PLECOPTERA (Stoneflies)						Sialidae (Alderflies)	6					Syrphidae* (Rat tailed maggots)	1				
Notonemouridae	14					TRICHOPTERA (Caddisflies)						Tabanidae (Horse flies)	5	1			1
Perlidae	12	A			A	Dipseudopsidae	10					Tipulidae (Crane flies)	5				
EPHEMEROPTERA (Mayflies)						Ecnomidae	8					GASTROPODA (Snails)					
Baetidae 1sp	4	Α				Hydropsychidae 1 sp	4	1			A	Ancylidae (Limpets)	6				
Baetidae 2 sp	6		A		A	Hydropsychidae 2 sp	6					Bulininae*	3				
Baetidae > 2 sp	12					Hydropsychidae > 2 sp	12					Hydrobiidae*	3				
Caenidae (Squaregills/Cainfles)	6		A	1	A	Philopotamidae	10					Lymnaeidae* (Pond snails)	3				
Ephemeridae	15					Polycentropodidae	12					Physidae* (Pouch snails)	3				
Heptageniidae (Flatheaded mayflies)	13					Psychomyiidae/Xiphocentronidae	8					Planorbinae* (Orb snails)	3				
Leptophlebiidae (Prongills)	9	A			A	Cased caddis:						Thiaridae* (=Melanidae)	3				
Oligoneuridae (Brushlegged mayflies)	15					Barbarochthonidae SWC	13					Viviparidae* ST	5				
Polymitarcyidae (Pale Burrowers)	10					Calamoceratidae ST	11					PELECYPODA (Bivalvles)					
Prosopistomatidae (Water specs)	15					Glossosomatidae SWC	11					Corbiculidae (Clams)	5			1	1
Teloganodidae SWC (Spiny Crawlers)	12					Hydroptilidae	6					Sphaeriidae (Pill clams)	3				
Tricorythidae (Stout Crawlers)	9					Hydrosalpingidae SWC	15					Unionidae (Perly mussels)	6				
ODONATA (Dragonflies & Damselflies)						Lepidostomatidae	10					SASS Score					106
Calopterygidae ST,T (Demoiselles)	10					Leptoceridae	6		1		1	No. of Taxa					20
Chlorocyphidae (Jewels)	10					Petrothrincidae SWC	11					ASPT					5.3
Synlestidae (Chlorolestidae)(Sylphs)	8					Pisuliidae	10					Other biota:					
Coenagrionidae (Sprites and blues)	4		В	1	В	Sericostomatidae SWC	13										
Lestidae (Emerald Damselflies/Spreadwings) 8					COLEOPTERA (Beetles)											
Platycnemidae (Stream Damselflies)	10					Dytiscidae/Noteridae* (Diving beetles)	5	Α			Α						
Protoneuridae (Threadwings)	8					Elmidae/Dryopidae* (Riffle beetles)	8	Α			A						
Aeshnidae (Hawkers & Emperors)	8					Gyrinidae* (Whirligig beetles)	5				В	Comments/Observations:					
Corduliidae (Cruisers)	8					Haliplidae* (Crawling water beetles)	5										
Gomphidae (Clubtails)	6	В	Α	Α	В	Helodidae (Marsh beetles)	12]					
Libellulidae (Darters/Skimmers)	4					Hydraenidae* (Minute moss beetles)	8]					
LEPIDOPTERA (Aquatic Caterpillars/Moths)	,					Hydrophilidae* (Water scavenger beetles)	5					1					
Crambidae (Pyralidae)	12					Limnichidae (Marsh-Loving Beetles)	10					1					
						Psephenidae (Water Pennies)	10]					

KwaZungu/Swartkops River: July 2022

Date (dd-mm-vr):	24 Sept	emer 20	22							(dd.ddd	dd)	Biotopes Sampled (tick & rate)	Rating (1	-5)		т	ime (min)
Site Code:	SWAR	01 1				Grid reference (dd mm ss.s). Lat:	s	-33.722	183				5		٦		
Collector/Sampler:	Kylie Es	arroll						25 3008	216			Stopps Out Of Current (SOOC)	5		-		
conector/sampler.	CIA/A DT	KORE						20.0000	/10			Deduced	0		-		-
River:	SWARI	KUP3				Datum (WGS84/Cape):		-		-		Bedrock	0				
Level 1 Ecoregion:	19.Sout	thern Fo	Ided Mou	intains		Altitude (m):						Aquatic Veg	3		e f	EALTHP	Ro
Quaternary Catchment:	M10C					Zonation:	<u> </u>		-			MargVeg In Current	4		ALL	1	GR
	Temp (*	°C):				Routine or Project? (circle one)	Flow					MargVeg Out Of Current	4				77
Site Description: 52	pH:					Project Name:	Clarity	(cm):				Gravel	5		1.11	25	N N
Refer to Report Number:	DO (mo	1/L):				WD11254	Turbidi	ty:				Sand	5		SEAL OF	WIER AS MUSS & P	ORISTE:
WEM/WMA7/00/CON/RDM/0722	Conduc	stivity.				WF11334	Colour					Mud	1	i	WATER DEPT OF DAG	ONMENTAL APTAC	ISKIN IS & TOURSN
	Piparia	n Dicturi	anco:									Hand nicking/Visual observation	×				
	Instroar	n Dictur	banco:									Piotopo Scoro (%)	71				
-	insuear		bance.			-					-						
Taxon	QV	5	Veg	GSM	101	Taxon	QV	S	veg	GSM	101	Taxon	QV	S	Veg	GSM	101
PORIFERA (Sponge)	5					HEMIPIERA (Bugs)	0					DIPTERA (Flies)	40	4		<u> </u>	
COELENTERATA (Chidaria)	1					Belostomatidae" (Giant water bugs)	3					Athericidae (Snipe files)	10	1			1
TURBELLARIA (Flatworms)	3					Corixidae* (Water boatmen)	3					Blepharoceridae (Mountain midges)	15			<u> </u>	
ANNELIDA						Gerridae* (Pond skaters/Water striders)	5		A		A	Ceratopogonidae (Biting midges)	5		_		
Oligochaeta (Earthworms)	1			1	1	Hydrometridae* (Water measurers)	6					Chironomidae (Midges)	2	A	В	A	В
Hirudinea (Leeches)	3					Naucoridae* (Creeping water bugs)	7		1		A	Culicidae* (Mosquitoes)	1				
CRUSTACEA						Nepidae* (Water scorpions)	3					Dixidae* (Dixid midge)	10				
Amphipoda (Scuds)	13					Notonectidae* (Backswimmers)	3					Empididae (Dance flies)	6				
Potamonautidae* (Crabs)	3	<u>A</u>			A	Pleidae* (Pygmy backswimmers)	4					Ephydridae (Shore flies)	3				
Atyidae (Freshwater Shrimps)	8					Veliidae/Mveliidae* (Ripple bugs)	5		<u>A</u>		A	Muscidae (House flies, Stable flies)	1				
Palaemonidae (Freshwater Prawns)	10					MEGALOPTERA (Fishflies, Dobsonflies &	Alderflie	es)				Psychodidae (Moth flies)	1				
HYDRACARINA (Mites)	8			1	1	Corydalidae (Fishflies & Dobsonflies)	8					Simuliidae (Blackflies)	5	<u>A</u>			A
PLECOPTERA (Stoneflies)						Sialidae (Alderflies)	6					Syrphidae* (Rat tailed maggots)	1				
Notonemouridae	14					TRICHOPTERA (Caddisflies)						Tabanidae (Horse flies)	5				
Perlidae	12					Dipseudopsidae	10					Tipulidae (Crane flies)	5				
EPHEMEROPTERA (Mayflies)						Ecnomidae	8					GASTROPODA (Snails)					
Baetidae 1sp	4					Hydropsychidae 1 sp	4			1		Ancylidae (Limpets)	6				
Baetidae 2 sp	6		В	В		Hydropsychidae 2 sp	6					Bulininae*	3				
Baetidae > 2 sp	12	Α			В	Hydropsychidae > 2 sp	12	Α			Α	Hydrobiidae*	3				
Caenidae (Squaregills/Cainfles)	6					Philopotamidae	10	A		1	В	Lymnaeidae* (Pond snails)	3				
Ephemeridae	15					Polycentropodidae	12					Physidae* (Pouch snails)	3				
Heptageniidae (Flatheaded mayflies)	13					Psychomyiidae/Xiphocentronidae	8					Planorbinae* (Orb snails)	3				
Leptophlebiidae (Prongills)	9					Cased caddis:						Thiaridae* (=Melanidae)	3				
Oligoneuridae (Brushlegged mayflies)	15					Barbarochthonidae SWC	13					Viviparidae* ST	5				
Polymitarcyidae (Pale Burrowers)	10					Calamoceratidae ST	11					PELECYPODA (Bivalvles)					
Prosopistomatidae (Water specs)	15					Glossosomatidae SWC	11					Corbiculidae (Clams)	5				
Teloganodidae SWC (Spiny Crawlers)	12					Hydroptilidae	6					Sphaeriidae (Pill clams)	3				
Tricorythidae (Stout Crawlers)	9					Hydrosalpingidae SWC	15					Unionidae (Perly mussels)	6				
ODONATA (Dragonflies & Damselflies)						Lepidostomatidae	10					SASS Score					122
Calopterygidae ST,T (Demoiselles)	10					Leptoceridae	6		Α	В	В	No. of Taxa					21
Chlorocyphidae (Jewels)	10	Α		1	Α	Petrothrincidae SWC	11					ASPT					5.8
Synlestidae (Chlorolestidae)(Sylphs)	8					Pisuliidae	10					Other biota:					
Coenagrionidae (Sprites and blues)	4		В		В	Sericostomatidae SWC	13					Ptilodactylidae (Toed-winged beetle) - r	not part of t	he SAS	S5 - 2 inc	ividuals	
Lestidae (Emerald Damselflies/Spreadwings) 8					COLEOPTERA (Beetles)						recorded					
Platycnemidae (Stream Damselflies)	10					Dytiscidae/Noteridae* (Diving beetles)	5		Α		Α						
Protoneuridae (Threadwings)	8					Elmidae/Dryopidae* (Riffle beetles)	8										
Aeshnidae (Hawkers & Emperors)	8	Α			Α	Gyrinidae* (Whirligig beetles)	5	Α	В	1	В	Comments/Observations:					
Corduliidae (Cruisers)	8					Haliplidae* (Crawling water beetles)	5										
Gomphidae (Clubtails)	6	1				Helodidae (Marsh beetles)	12		1								
Libellulidae (Darters/Skimmers)	4	Α	Α		В	Hydraenidae* (Minute moss beetles)	8										
LEPIDOPTERA (Aquatic Caterpillars/Moths))					Hydrophilidae* (Water scavenger beetles)	5										
Crambidae (Pyralidae)	12					Limnichidae (Marsh-Loving Beetles)	10										
						Psephenidae (Water Pennies)	10										

KwaZungu/Swartkops River: May 2023

Data (dd mm yr);	06-May	22								(44 444	4d)	Biotones Sampled (tick & rate)	Rating (1	-5)		т	ime (min)
Date (dd-filli-yr).	CIM A DO	4.1					~	22 7224	102	(uu.uuu	uu)	Biotopes Gampiea (liok a rate)	Rating (1	-5)	h		
Site Code:	SWARU	<u> </u>				Grid reference (dd mm ss.s) Lat:	5	-33.722	103				5		-		-
Collector/Sampler:	Kylie Fa	rrell				Long	: Е	25.3008	16			Stones Out Of Current (SOOC)	5		_		
River:	SWART	KOPS				Datum (WGS84/Cape):				-		Bedrock	0				
Level 1 Ecoregion:	19.Sout	hern Fol	ded Mou	intains		Altitude (m):						Aquatic Veg	3		H	EALTH P	'P
Quaternary Catchment:	M10C					Zonation:	_					MargVeg In Current	4		26th		000
	Temp (°	C):				Routine or Project? (circle one)	Flow					MargVeg Out Of Current	4		8		77
Site Description: 52	pH:					Project Name:	Clarity (cm):				Gravel	5		H S	2,50	
Refer to Report Number:	DO (ma	<i>n</i>				WD44254	Turbidit	v.				Sand	5		DEFL OF #	NUER ASIACIS & D	ORISTRY.
WEM/WMA7/00/CON/RDM/0722	Conduc	/∟). tivitv:				VVP11334	Colour	.				Mud	1		WATER DEPT. OF EXAM	INTERPT COMMISSION	SICIN IS & TOUTISM
	Dimention	Distant					colour.					Hand nicking//icual chapmatics				-	
	Ripariar	Disturt	bance.		-								^				
-	Instream	n Disturi	bance:			L_		-				Biotope Score (%)	/1	-	L		
Taxon	QV	S	Veg	GSM	TOT	Taxon	QV	S	Veg	GSM	тот	Taxon	QV	S	Veg	GSM	тот
PORIFERA (Sponge)	5				1	HEMIPTERA (Bugs)						DIPTERA (Flies)					
COELENTERATA (Cnidaria)	1					Belostomatidae* (Giant water bugs)	3					Athericidae (Snipe flies)	10			L	
TURBELLARIA (Flatworms)	3					Corixidae* (Water boatmen)	3					Blepharoceridae (Mountain midges)	15			L	
ANNELIDA						Gerridae* (Pond skaters/Water striders)	5			1	A	Ceratopogonidae (Biting midges)	5	A			A
Oligochaeta (Earthworms)	1	1			1	Hydrometridae* (Water measurers)	6					Chironomidae (Midges)	2	1	1		A
Hirudinea (Leeches)	3					Naucoridae* (Creeping water bugs)	7					Culicidae* (Mosquitoes)	1				
CRUSTACEA						Nepidae* (Water scorpions)	3					Dixidae* (Dixid midge)	10				
Amphipoda (Scuds)	13					Notonectidae* (Backswimmers)	3					Empididae (Dance flies)	6				
Potamonautidae* (Crabs)	3	<u>A</u>	1	1	Α	Pleidae* (Pygmy backswimmers)	4					Ephydridae (Shore flies)	3				
Atyidae (Freshwater Shrimps)	8					Veliidae/Mveliidae* (Ripple bugs)	5	1	1	Α	В	Muscidae (House flies, Stable flies)	1				
Palaemonidae (Freshwater Prawns)	10					MEGALOPTERA (Fishflies, Dobsonflies &	Alderflie	s)				Psychodidae (Moth flies)	1				
HYDRACARINA (Mites)	8					Corydalidae (Fishflies & Dobsonflies)	8					Simuliidae (Blackflies)	5				
PLECOPTERA (Stoneflies)						Sialidae (Alderflies)	6					Syrphidae* (Rat tailed maggots)	1				
Notonemouridae	14					TRICHOPTERA (Caddisflies)						Tabanidae (Horse flies)	5				
Perlidae	12					Dipseudopsidae	10					Tipulidae (Crane flies)	5				
EPHEMEROPTERA (Mayflies)						Ecnomidae	8					GASTROPODA (Snails)					
Baetidae 1sp	4		1			Hydropsychidae 1 sp	4					Ancylidae (Limpets)	6	A			Α
Baetidae 2 sp	6			Α		Hydropsychidae 2 sp	6	A			Α	Bulininae*	3				
Baetidae > 2 sp	12	В			В	Hydropsychidae > 2 sp	12					Hydrobiidae*	3				
Caenidae (Squaregills/Cainfles)	6	1		1	Α	Philopotamidae	10					Lymnaeidae* (Pond snails)	3				
Ephemeridae	15					Polycentropodidae	12					Physidae* (Pouch snails)	3				
Heptageniidae (Flatheaded mayflies)	13					Psychomyiidae/Xiphocentronidae	8					Planorbinae* (Orb snails)	3				
Leptophlebiidae (Prongills)	9					Cased caddis:						Thiaridae* (=Melanidae)	3				
Oligoneuridae (Brushlegged mayflies)	15					Barbarochthonidae SWC	13					Viviparidae* ST	5				
Polymitarcyidae (Pale Burrowers)	10					Calamoceratidae ST	11					PELECYPODA (Bivalvles)					
Prosopistomatidae (Water specs)	15					Glossosomatidae SWC	11					Corbiculidae (Clams)	5				<u> </u>
Teloganodidae SWC (Spiny Crawlers)	12					Hydroptilidae	6					Sphaeriidae (Pill clams)	3				-
Tricorythidae (Stout Crawlers)	9					Hydrosalpingidae SWC	15					Unionidae (Perly mussels)	6				
ODONATA (Dragonflies & Damselflies)				1	1	Lepidostomatidae	10					SASS Score					103
Calopterygidae ST,T (Demoiselles)	10		1		1	Leptoceridae	6	1	1	1	Α	No. of Taxa	1				18
Chlorocyphidae (Jewels)	10	Α	1	Α	В	Petrothrincidae SWC	11					ASPT	1				5.7
Synlestidae (Chlorolestidae)(Sylphs)	8					Pisuliidae	10					Other biota:					
Coenagrionidae (Sprites and blues)	4	1	В		В	Sericostomatidae SWC	13					Ptilodactylidae (Toed-winged beetle) - r	ot part of	the SAS	S5 - A ab	undance	3
Lestidae (Emerald Damselflies/Spreadwings)	8					COLEOPTERA (Beetles)						SIC and GSM					
Platycnemidae (Stream Damselflies)	10					Dytiscidae/Noteridae* (Diving beetles)	5										
Protoneuridae (Threadwings)	8					Elmidae/Drvopidae* (Riffle beetles)	8										
Aeshnidae (Hawkers & Emperors)	8	Α			А	Gyrinidae* (Whirligig beetles)	5		Α	1	В	Comments/Observations:					
Corduliidae (Cruisers)	8		1	1		Haliplidae* (Crawling water beetles)	5				_				1		
Gomphidae (Clubtails)	6					Helodidae (Marsh beetles)	12			-		1					
Libellulidae (Darters/Skimmers)	4	А	Α	Α	в	Hydraenidae* (Minute moss beetles)	8			-		1					
I EPIDOPTERA (Aquatic Caternillare/Mothe)			- ···			Hydrophilidae* (Water scavenger beetles)	5			1		1					
Crambidae (Pyralidae)	12	1				Limpichidae (Marsh-Loving Beetloo)	10		l	+		1					
Grambiade (r yrailuae)	12					Psenhenidae (Water Pennies)	10	<u> </u>				1					
1		1	1	1	1	· oopnonidae (mater i ennies)	1 10	1	1	1	1	1					

Gamtoos River: July 2022

Date (dd-mm-yr):	07-Sep	-22								(dd.ddd	ldd)	Biotopes Sampled (tick & rate)	Rating (1	-5)	-	Т	ime (min
Site Code:	GAMTO)1_l				Grid reference (dd mm ss.s) Lat:	S	-33.760	983				3				
Collector/Sampler:	Kylie Fa	arrell				Long	: E	24.6936	677			Stones Out Of Current (SOOC)	5				
River:	GAMTO	DOS				Datum (WGS84/Cape):						Bedrock	0				
Level 1 Ecoregion:	19.Sout	thern Fo	Ided Mou	untains		Altitude (m):						Aquatic Veg	4			SALTH .	0
Quaternary Catchment:	L90A					Zonation						MargVeg In Current	4		43.		ROC
Lucionia, y cutoninonii	Tomp (°C)-				Routine or Project? (circle one)	Flow	· · · · ·				MargVeg Out Of Current	4		20	-ini-	2º7
Site Description: 52	remp (0):				Project Name:	FIOW					Margveg Out of Current	4		2		
Site Description. 52	_рн:		-			Froject Name:	Clarity	(cm):				Gravel	4		F T		m
Refer to Report Number:	DO (mg	g/L):				WP11354	Turbidi	ity:				Sand	3		SEFL G	WIER ASIALSS & I WELFARE F. COWN	FORESTRY FISSION
WEW/WMA7/00/CON/RDW/0722	Conduc	ctivity:					Colour	:				Mud	2		DET. OF DA	IONIMESTIC APPA	IS & YOUTESN
	Riparia	n Disturk	bance:									Hand picking/Visual observation	х				
	Instream	m Distur	bance:									Biotope Score (%)	64				
Taxon	QV	S	Veg	GSM	тот	Taxon	QV	S	Veg	GSM	тот	Taxon	QV	S	Veg	GSM	тот
PORIFERA (Sponge)	5					HEMIPTERA (Bugs)						DIPTERA (Flies)					
COELENTERATA (Cnidaria)	1					Belostomatidae* (Giant water bugs)	3					Athericidae (Snipe flies)	10				
TURBELLARIA (Flatworms)	3		А	1	Α	Corixidae* (Water boatmen)	3	А		В	В	Blepharoceridae (Mountain midges)	15				
ANNELIDA						Gerridae* (Pond skaters/Water striders)	5				А	Ceratopogonidae (Biting midges)	5		1		1
Oligochaeta (Earthworms)	1			А	А	Hydrometridae* (Water measurers)	6					Chironomidae (Midges)	2	А	А	В	В
Hirudinea (Leeches)	3					Naucoridae* (Creeping water bugs)	7					Culicidae* (Mosquitoes)	1			1	1
CRUSTACEA	-					Nepidae* (Water scorpions)	3					Dixidae* (Dixid midge)	10			-	-
Amphipoda (Scuds)	13					Notonectidae* (Backswimmers)	3					Empididae (Dance flies)	6				-
Potamonautidae* (Crabs)	3					Pleidae* (Pygmy backswimmers)	4					Enhydridae (Shore flies)	3				-
Atvidae (Freshwater Shrimps)	8					Veliidae/M_veliidae* (Ripple bugs)	5					Muscidae (House flies, Stable flies)	1	1	۵	1	Δ
Palaemonidae (Freshwater Prawns)	10					MEGAL OPTERA (Fishflies Dobsonflies &	Alderflig	95)				Psychodidae (Moth flies)	1		~		~
HYDRACARINA (Mites)	8					Condalidae (Fishflies & Dobsonflies)	8	(3)				Simuliidae (Blackflies)	5	C	B	B	D
PLECOPTERA (Stonoflios)	Ū					Siplidae (Alderflier)	6					Surphidae* (Bat tailed maggets)	1	<u> </u>	2		5
Netenomouridae	14					TRICHORTERA (Caddicflice)	0					Tabapidae (Horse flice)	5				-
Perlidae	14					Disseudopsidae	10					Tipulidae (Crane flies)	5				-
EDHEMERORTERA (Maufling)	12					Ecoomidaa	0					CASTROPODA (Spaile)					
Pactidos 1cp	4	•				Echomidae Hydropsychidae 1 cp	0	-				Apgylidae (Limpote)	6			A	A .
Paetidae 1sp	6	A	P	٨	P	Hydropsychidae 2 sp	4					Ancylidae (Eimpets)	2			~	~
Paetidae 2 Sp	12		Б	A	Б	Hydropsychidae > 2 cp	12					Buillinae Hydrobiidao*	2				
Cappidae (Squaregille/Caipflee)	6					Philopotomidae	10					Lympooidae* (Bond spails)	2	٨	1	٨	٨
Caerinae (Squaregins/Carines)	15					Philopotaniidae	10	-				Eyrinaeidae (Fond Shalis)		P	B	R	R
	10					Polycentropodidae	12	-				Planetinet (Orbanella)		Б	Б	Б	Б
Heptagenildae (Platheaded maynies)	13					Psychonylidae/Alphocentronidae	0					Flanoibinae (Orbisnails)	3		_	<u> </u>	
Clines e unida e (Prorigins)	9					Cased caddis:	40					Mising and a st OT	5		_	<u> </u>	
Dilgoneuridae (Brushlegged maynes)	15					Barbarochthonidae SWC	13					Vivipandae ST	5				
Polymitarcyidae (Pale Burrowers)	10						11					PELECTFODA (Bivalvies)					
Flosopistomatidae (Water specs)	15					Glossosomatidae SWC						Corbiculidae (Clarifs)	5				
Telogariodidae SWC (Spiny Crawlers)	12					Hydroptilidae	0					Sphaenidae (Philicianis)	3				
Theorythidae (Stout Crawlers)	9					Hydrosalpingidae SWC	15					Onionidae (Perly mussels)	0			<u> </u>	
ODONATA (Dragonfiles & Damseifiles)	1.10					Lepidostomatidae	10					SASS Score					65
Calopterygidae ST, T (Demoiselles)	10					Leptoceridae	6					No. of Taxa					17
Chlorocyphidae (Jeweis)	10					Petrothrincidae SWC	11					ASPI					3.8
Synlestidae (Chlorolestidae)(Sylphs)	8					Pisuliidae	10					Other blota:					
Coenagrionidae (Sprites and blues)	4		В	A	В	Sericostomatidae SWC	13					J					
Lestidae (Emerald Damselflies/Spreadwings) 8					COLEOPTERA (Beetles)	_										
Platycnemidae (Stream Damsetflies)	10		1	1	+	Dytiscidae/Noteridae* (Diving beetles)	5	-									
Protoneuridae (Threadwings)	8					Elmidae/Dryopidae* (Riffle beetles)	8										
Aeshnidae (Hawkers & Emperors)	8		1	1	1	Gyrinidae* (Whirligig beetles)	5		A	Α	В	Comments/Observations:					
Corduliidae (Cruisers)	8	1	1	1		Haliplidae* (Crawling water beetles)	5										
Gomphidae (Clubtails)	6	1				Helodidae (Marsh beetles)	12										
Libellulidae (Darters/Skimmers)	4	<u> </u>	А	Α	A	Hydraenidae* (Minute moss beetles)	8		1		1						
LEPIDOPTERA (Aquatic Caterpillars/Moths)					Hydrophilidae* (Water scavenger beetles)	5										
Crambidae (Pyralidae)	12			1	1	Limnichidae (Marsh-Loving Beetles)	10										
		1	1	1	1	Psephenidae (Water Pennies)	10		1								

Gamtoos River: May 2023

Not conducted due to dry downstream of low water bridge

5. Appendix D: Riparian vegetation inventory and VEGRAI Models

This section outlines information and details of Intermediate sites not shown in volume 1 and Table 5-1 shows species observed in the field. The full VEGRAI Excel sheets will be submitted to DWS as separate electronic folders.

Table 5-1. Observed plant species per site

										Ρ	reser	nce o	n site	s			
Species	Family	Common Name/s	Alien	Threat status	Protection Level	SA Endemic	GKEI01_I (Great Kei)	TSOMO01_I (Tsomo)	BKEI01_I (Black Kei)	BUFF01_I (Mid Buffalo)	KEIS01_I (Upper	GAMT01_I (Gamtoos)	FISH03_I (Middle Great Fish)	SWART01_I (Swartkops)	KAT01_I (Upper Kat)	MTHA01_I (Mthatha)	MBSA01_I (Middle Mbhashe)
Acacia dealbata	FABACEAE	Silver Wattle	*	Not Evaluated				у		у							
Acacia mearnsii	FABACEAE	Black Wattle	*	Not Evaluated				у		у		у					
Achyranthes aspera var. aspera	AMARANTHACEAE	Burweed	*	Not Evaluated					у								
Afrocarpus falcatus	PODOCARPACEAE	Outeniqua yellowwood		LC	Nationa I					у				у	у		
Agrostis lachnantha var. lachnantha	POACEAE	Bent grass		LC						у							у
Aloe ferox	ASPHODELACEAE			LC				У									
Araujia sericifera	ASCLEPIADACEAE	Moth catcher	*	Not Evaluated					у								

							MBSA01_I (Middle Mbhas) MTHA01_I (Mthatha) KAT01_I (Upper Kat) SWART01_I (Swartkops GAMT01_I (Swartkops) KEIS01_I (Middle Great Fither BUFF01_I (Gamtoos) BKEI01_I (Black Kei) GKEI01_I (Great Kei)										
Species	Family	Common Name/s	Alien	Threat status	Protection Level	SA Endemic	GKEI01_I (Great Kei)	TSOMO01_I (Tsomo)	BKEI01_I (Black Kei)	BUFF01_I (Mid Buffalo)	KEIS01_I (Upper	GAMT01_I (Gamtoos)	FISH03_I (Middle Great Fish)	SWART01_I (Swartkops)	KAT01_I (Upper Kat)	MTHA01_I (Mthatha)	MBSA01_I (Middle Mbhashe)
Argemone ochroleuca	PAPAVERACEAE	White Mexican Poppy	*	Not Evaluated			у	у	у			у					У
Arundinella nepalensis	POACEAE	River Grass		LC				у								у	у
Arundo donax	POACEAE	Spanish Reed	*	Not Evaluated					у			У					
Asparagus suaveolens	ASPARAGACEAE	Wild Asparagus		LC			у		у		У						
Berula thunbergii	APIACEAE	Toothache Root		LC							У				у		
Bidens pilosa	ASTERACEAE	Black Jack	*	Not Evaluated			у	у	у	у	У	у	у		у		у
Celtis africana	CELTIDACEAE	White Stinkwood		LC				у	у		У				у		
Centella asiatica	APIACEAE	Pennywort		LC						у					у		
Cestrum laevigatum	SOLANACEAE	Inkberry	*	Not Evaluated												У	
Cliffortia strobilifera	ROSACEAE	Cone Rice Bush		LC					у	у				у	у		
Combretum caffrum	COMBRETACEAE	Cape bushwillow		LC		Yes	У	у		у	У		у		у	У	У
Commelina diffusa subsp. diffusa	COMMELINACEAE			LC						у							
Conyza bonariensis	ASTERACEAE	Horseweed	*	Not Evaluated			у	У	У	У	У	у	у		У	У	У

							Presence on sites MBSA01_I (Middle Mbhashe) MTHA01_I (Middle Mbhashe) KAT01_I (Upper Kat) KAT01_I (Upper Kat) BUFF01_I (Middle Great Fish) V V BKEI01_I (Black Kei) V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V V										
Species	Family	Common Name/s	Alien	Threat status	Protection Level	SA Endemic	GKEI01_I (Great Kei)	TSOMO01_I (Tsomo)	BKEI01_I (Black Kei)	BUFF01_I (Mid Buffalo)	KEIS01_I (Upper	GAMT01_I (Gamtoos)	FISH03_I (Middle Great Fish)	SWART01_I (Swartkops)	KAT01_I (Upper Kat)	MTHA01_I (Mthatha)	MBSA01_I (Middle Mbhashe)
Cotula nigellifolia var. nigellifolia	ASTERACEAE			LC		Yes				у	у	у			у		
Cyclosorus interruptus	THELYPTERIDACEAE	Water fern		LC										у	у		
Cynodon dactylon	POACEAE	Coach grass		LC			у	У	У	у	У	У				у	У
Cyperus dives	CYPERACEAE	Giant sedge		LC						у	у						
Cyperus laevigatus	CYPERACEAE			LC													у
Cyperus longus	CYPERACEAE	Sweet Cyperus		LC			у	у	у		У						
Cyperus sexangularis	CYPERACEAE			LC					у				у				
Cyperus textilis	CYPERACEAE	Tall star sedge		LC		Yes	у			у	У	у	у	у	у		
Dais cotinifolia	THYMELAEACEAE	Pompom Tree		LC						у							у
Dietes butcheriana	IRIDACEAE	Forest Iris		LC						у				у			
Eichhornia crassipes	PONTEDERIACEAE	Water Hyacinth	*	Not Evaluated						у							
Equisetum ramosissimum	EQUISETACEAE			LC					у								у
Erica caffra var. caffra	ERICACEAE	Water Tree Erica		LC						у				у			

								Presence on sites MBSA01_I (Middle Mbhashe) MTHA01_I (Middle Mbhashe) KAT01_I (Upper Kat) KAT01_I (Upper Kat) IV GAMT01_I (Gamtoos) Y IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV IV									
Species	Family	Common Name/s	Alien	Threat status	Protection Level	SA Endemic	GKEI01_I (Great Kei)	TSOMO01_I (Tsomo)	BKEI01_I (Black Kei)	BUFF01_I (Mid Buffalo)	KEIS01_I (Upper	GAMT01_I (Gamtoos)	FISH03_I (Middle Great Fish)	SWART01_I (Swartkops)	KAT01_I (Upper Kat)	MTHA01_I (Mthatha)	MBSA01_I (Middle Mbhashe)
Euclea divinorum	EBENACEAE			LC										у			
Ficus ingens	MORACEAE	Red-leaved fig		LC							у						
Ficus sur	MORACEAE	Broomcluster Fig		LC			у									у	
Fraxinus americana	OLEACEAE	American Ash	*	Not Evaluated					у								
Fuirena hirsuta	CYPERACEAE			LC							у						
Gleditsia tracanthos	FABACEAE	Honey Locust	*	Not Evaluated					у								
Gomphocarpus fruticosus	APOCYNACEAE	Milkweed		LC									У				
Gomphostigma virgatum	BUDDLEJACEAE	River stars		LC			у	у			у				у		у
Grevillea robusta	PROTEACEAE	Australian silky oak	*	Not Evaluated										у			
Gymnosporia buxifolia	CELASTRACEAE	Common Spike-thorn		LC			у			у	у	у			у		у
Hemarthria altissima	POACEAE	Swamp Couch		LC						у						у	
Ischaemum fasciculatum	POACEAE	Hippo Grass		LC						у	у	у					
Juncus effusus	JUNCACEAE	Soft rush		LC													у

							Presence on sites MBSA01_1 (Middle Mbhashe) MTHA01_1 (Middle Mbhashe) KAT01_1 (Upper Kat) KAT01_1 (Upper Kat) KAT01_1 (Upper Kat) BUFF01_1 (Middle Great Fish) SWART01_1 (Gamtoos) Y Y Y MTHA01_1 (Middle Buffalo) I I Y Y Y Y Y Y Y Y I I I I Y Y Y Y I Y I I I Y Y Y I I I I I Y Y Y I I I I I I Y Y I I I I I I I Y Y Y Y I I I I I Y Y Y Y I I I I I Y Y Y I I <thi< th=""><th></th></thi<>										
Species	Family	Common Name/s	Alien	Threat status	Protection Level	SA Endemic	GKEI01_I (Great Kei)	TSOMO01_I (Tsomo)	BKEI01_I (Black Kei)	BUFF01_I (Mid Buffalo)	KEIS01_I (Upper	GAMT01_I (Gamtoos)	FISH03_I (Middle Great Fish)	SWART01_I (Swartkops)	KAT01_I (Upper Kat)	MTHA01_I (Mthatha)	MBSA01_I (Middle Mbhashe)
Kyllinga elatior	CYPERACEAE			LC											у		
Lantana camara	VERBENACEAE	Bird's Brandy	*	Not Evaluated			у			у							у
Leersia hexandra	POACEAE	Rice Grass		LC										У			
Lemna gibba	LEMNACEAE	Duckweed		LC						у							
Leonotis intermedia	LAMIACEAE			LC				у		у						у	
Leucaena leucocephala	FABACEAE	Leucaena	*	Not Evaluated					у								
Lippia javanica	VERBENACEAE	Fever Tea										у					
Melia azedarach	MELIACEAE	Syringa	*	Not Evaluated			у		у	у	у				у		
Mentha aquatica	LAMIACEAE	Water Mint		LC								у			у		
Miscanthus ecklonii	POACEAE	Daba grass		LC			у		у	у	у			у	у	у	у
Nicotiana glaucea	SOLANACEAE	Wild tobacco	*	Not Evaluated													у
Nymphaea nouchali	NYMPHAEACEAE	Blue Water Lily		LC										у			
Olea europaea subsp. africana	OLEACEAE	Wild Olive		LC										у	у		У

								Presence on sites MBSA01_I (Middle Mbhashe) MTHA01_I (Mthatha) MTHA01_I (Mthatha) KAT01_I (Upper Kat) SWART01_I (Swartkops) KAT01_I (Upper Kat) KEIS01_I (Gamtoos) SBKEI01_I (Black Kei) Y Y Y Y Y MT Y Y Y Y Y Y MT Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y									
Species	Family	Common Name/s	Alien	Threat status	Protection Level	SA Endemic	GKEI01_I (Great Kei)	TSOMO01_I (Tsomo)	BKEI01_I (Black Kei)	BUFF01_I (Mid Buffalo)	KEIS01_I (Upper	GAMT01_I (Gamtoos)	FISH03_I (Middle Great Fish)	SWART01_I (Swartkops)	KAT01_I (Upper Kat)	MTHA01_I (Mthatha)	MBSA01_I (Middle Mbhashe)
Opuntia ficus-indica	CACTACEAE	Prickly pear	*	Not Evaluated			у			у	у		у		у		
Panicum maximum	POACEAE	Guinea Grass		LC							у		у				
Paspalum distichum	POACEAE	Water Couch		LC									у				
Pennisetum clandestinum	POCEAE	Kikuyu Grass	*	Not Evaluated								у					
Pennisetum macrourum	POCEAE	Riverbed grass		LC									у				
Persicaria decipiens	POLYGONACEAE			LC			у		у								
Persicaria lapathifolia	POLYGONACEAE	Spotted Knotweed	*	Not Evaluated						у					у		
Persicaria madagascariensis	POLYGONACEAE			LC			У				У			у			
Phoenix reclinata	ARECACEAE	Wild date palm		LC						у						у	
Phragmites australis	POACEAE	Common Reed		LC								у	у				
Phragmites mauritianus	POACEAE			LC													у
Plectranthus ecklonii	LAMIACEAE	Large Spur- flower bush		LC			у				у						
Pluchea dioscoridis	ASTERACEAE			LC							у	у		у	у		

							Presence on sites										
Species	Family	Common Name/s	Alien	Threat status	Protection Level	SA Endemic	GKEI01_I (Great Kei)	TSOMO01_I (Tsomo)	BKEI01_I (Black Kei)	BUFF01_I (Mid Buffalo)	KEIS01_I (Upper	GAMT01_I (Gamtoos)	FISH03_I (Middle Great Fish)	SWART01_I (Swartkops)	KAT01_I (Upper Kat)	MTHA01_I (Mthatha)	MBSA01_I (Middle Mbhashe)
Plumbago auriculata	PLUMBAGINACEAE										у		у				
Populus X canescens	SALICACEAE	Grey Poplar	*	Not Evaluated					у								
Potamogeton schweinfurthii	POTAMOGETONACE AE	Broad-leaved Pondweed		LC								У					
Prionium serratum	PRIONIACEAE			Declining		Yes								у			
Pycreus intactus	CYPERACEAE			LC			у										
Pycreus polystachyos var. polystachyos	CYPERACEAE			LC				у	у	у				У			
Ranunculus baurii	RANUNCULACEAE			LC								у					
Ricinus communis	EUPHORBIACEAE	Cateroil Bush	*	Not Evaluated							У	у	у				
Rubus fruticosus	ROSACEAE	European Blackberry	*	Not Evaluated										у			
Salix babylonica var. babylonica	SALICACEAE	Weeping Willow	*	Not Evaluated				у	у								
Salix fragilis var. fragilis	SALICACEAE	Crack Willow	*	Not Evaluated					у								
Salix mucronata subsp. mucronata	SALICACEAE	Cape willow		LC			у	у	у		у		у		У		
Sansevieria hyacinthoides	DRACAENACEAE	Mother-in- law's-tongue		LC			У										

							Presence on sites										
Species	Family	Common Name/s	Alien	Threat status	Protection Level	SA Endemic	GKEI01_I (Great Kei)	TSOMO01_I (Tsomo)	BKEI01_I (Black Kei)	BUFF01_I (Mid Buffalo)	KEIS01_I (Upper	GAMT01_I (Gamtoos)	FISH03_I (Middle Great Fish)	SWART01_I (Swartkops)	KAT01_I (Upper Kat)	MTHA01_I (Mthatha)	MBSA01_I (Middle Mbhashe)
Schkuhria pinnata	ASTERACEAE	Dwarf Marigold	*	Not Evaluated					у								
Schoenoplectus corymbosus	CYPERACEAE			LC				у	у								
Schoenoplectus decipiens	CYPERACEAE			LC										у			у
Schoenoplectus paludicola	CYPERACEAE			LC		Yes	у										
Searsia dentata	ANACARDIACEAE			LC								у					
Searsia lancea	ANACARDIACEAE	Karee tree		LC										у			
Searsia lepidictya	ANACARDIACEAE								у								
Searsia lucida	ANACARDIACEAE	Glossy Currant		LC		Yes								у			
Searsia pyroides var. pyroides	ANACARDIACEAE			LC				у	у						у		
Senegalia ataxacantha	FABACEAE	Flame thorn		LC			у										
Senegalia caffra	FABACEAE	Common hook thorn		LC		Yes		у		у	у				у		у
Senegalia schweinfurthii var. schweinfurthii	FABACEAE	River climbing thorn		LC											у		
Senna didymobotrya	FABACEAE	Peanut butter cassia	*	Not Evaluated						у		у				у	

							Presence on sites										
Species	Family	Common Name/s	Alien	Threat status	Protection Level	SA Endemic	GKEI01_I (Great Kei)	TSOMO01_I (Tsomo)	BKEI01_I (Black Kei)	BUFF01_I (Mid Buffalo)	KEIS01_I (Upper	GAMT01_I (Gamtoos)	FISH03_I (Middle Great Fish)	SWART01_I (Swartkops)	KAT01_I (Upper Kat)	MTHA01_I (Mthatha)	MBSA01_I (Middle Mbhashe)
Sesbania punicea	FABACEAE	Red Sesbania	*	Not Evaluated			у		у	у	у	у				у	у
Setaria megaphylla	POACEAE	Broad-leaved bristle grass		LC											у		
Setaria sphacelata var. sericea	POACEAE	Golden Bristle Grass		LC									у				
Sida dregei	MALVACEAE	Fanpetals		LC			у			у	у				у		у
Solanum mauritianum	SOLANACEAE	Bugweed	*	Not Evaluated				у		у							У
Solanum torvum	SOLANACEAE	Turkey berry	*	Not Evaluated						у						у	У
Sporobolus fimbriatus	POACEAE	Dropseed Grass		LC				у		у						у	
Sporobolus ioclados	POACEAE	Pan Dropseed		LC							У		У				у
Stuckenia pectinatus	POTAMOGETONACE AE	Fennel-leaved Pondweed		LC								у					
Tagetes minuta	ASTERACEAE	Khaki Weed	*	Not Evaluated				у	у	у			у				у
Tithonia diversifolia	ASTERACEAE	Mexican sunflower	*	Not Evaluated									у				
Tithonia rotundifolia	ASTERACEAE	Red sunflower	*	Not Evaluated					у								у
Typha capensis	TYPHACEAE	Bulrush		LC								у					

							Presence on sites										
Species	Family	Common Name/s	Alien	Threat status	Protection Level	SA Endemic	GKEI01_I (Great Kei)	TSOMO01_I (Tsomo)	BKEI01_I (Black Kei)	BUFF01_I (Mid Buffalo)	KEIS01_I (Upper	GAMT01_I (Gamtoos)	FISH03_I (Middle Great Fish)	SWART01_I (Swartkops)	KAT01_I (Upper Kat)	MTHA01_I (Mthatha)	MBSA01_I (Middle Mbhashe)
Vachellia karroo	FABACEAE	Sweet Thorn		LC			У	У	У	У	у	У	У	У	у	У	У
Vachellia robusta	FABACEAE			LC			У										
Verbena bonariensis	VERBENACEAE	Wild Verbena	*	*				у	у	У	у	у	У				у
Vinca minor	APOCYNACEAE	Periwinkle	*	Not Evaluated								у					у
Xanthium strumarium	ASTERACEAE	Large Cocklebur	*	Not Evaluated			У		у	у	у	у			у		
Zinnia peruviana	ASTERACEAE	Peruvian zinnia	*				у										
Ziziphus mucronata	RHAMNACEAE	Buffalo thorn		LC			У	У	У						у		
No Species observed from pool of 118:							30	25	35	41	33	27	20	21	30	15	30

6. Appendix E: Summary of IHI Models

RAPID 3 SITES ONLY

Mngazi River: MNGA01_R

Instream									
Criteria	Score	Rationale							
Water abstraction	4								
Flow modification	3	Mhlangu Dam in upper reaches							
Bed modification	7	Gravel mining, bridges							
Channel modification	6	Bridges approaches, gravel mining approaches, trampling							
Physical-chemical modification	4								
Inundation	0								
Alien macrophytes	0								
Introduced aquatic fauna	2	TSPA							
Rubbish dumping	5								
Instream PES	60								
		Riparian							
Vegetation removal	6	Road access, firewood collection							
Exotic vegetation	18	Solanum spp, lantana, peanut cassia (senna)							
Bank erosion	8	Trampling, river access, recent floods							
Channel modification	5	River access, bridge approaches, gullying							
Water abstraction	0								
Inundation	0								
Flow modification	0								
Physical-chemical modification	2								
Riparian PES	74								

Nqabarha River: NQAB01_R

Instream								
Criteria	Score	Rationale						
Water abstraction	5	Towns, villages along river						
Flow modification	5	Degradation of wetlands in upper catchment – baseflow reduction						
Bed modification	10	Bridges, cattle/ sheep crossings, sedimentation						
Channel modification	15	Bank erosion, incision, animal trampling						
Physical-chemical modification	7	Villages and towns upstream, WWTW, wetlands filtering						
Inundation	0							
Alien macrophytes	0							
Introduced aquatic fauna	2	Bass						
Rubbish dumping	2							
Instream PES	73							
		Riparian						
Vegetation removal	5	Grazing along riparian zone						
Exotic vegetation	7	Wattle						
Bank erosion	18	Bank erosion due to trampling, recent floods impacts larger due to catchment degradation						
Channel modification	8	Trampling, animal access						
Water abstraction	1							
Inundation	0							
Flow modification	1							
Physical-chemical modification	5	WWTW						
Riparian PES	62							

Mtentu River: MTEN01_R

Instream									
Criteria	Score	Rationale							
Water abstraction	3	Domestic, stock							
Flow modification	1								
Bed modification	5								
Channel modification	4	Bridge, some gravel mining							
Physical-chemical modification	3								
Inundation	0								
Alien macrophytes	0								
Introduced aquatic fauna	2	Bass (MSAL)							
Rubbish dumping	2								
Instream PES	90								
		Riparian							
Vegetation removal	2								
Exotic vegetation	15	Lantana, peanut cassia (senna)							
Bank erosion	4	Trampling, bridge							
Channel modification	6	Roads, gravel mining up- and downstream, livestock tracks							
Water abstraction	9								
Inundation	9								
Flow modification	9								
Physical-chemical modification	9								
Riparian PES	61								

Mbhashe River: MBHA02_R

Instream									
Criteria	Score	Rationale							
Water abstraction	5								
Flow modification	6	Check water transfer from Tsomo							
Bed modification	7	Bridges and weirs, cattle crossing							
Channel modification	1								
Physical-chemical modification	3								
Inundation	0								
Alien macrophytes	0								
Introduced aquatic fauna	3	Small mouth yellow fish							
Rubbish dumping	1								
Instream PES	87								
		Riparian							
Vegetation removal	6	Localised wood collection, overgrazing							
Exotic vegetation	3	Wattles at bridges and weirs							
Bank erosion	8	Cattle trampling							
Channel modification	2	Localised sand mining in catchment							
Water abstraction	0								
Inundation	1								
Flow modification	1								
Physical-chemical modification	1								
Riparian PES	89								

Gcuwa River: GCUW01_R (although a VEGRAI was also run for this site to aid in higher confidence)

Instream									
Criteria	Score	Rationale							
Water abstraction	7	Golf course, irrigation							
Flow modification	15	Xilinxa and Gcuwa Dams, weirs							
Bed modification	7	Several weirs, dam, low water crossings							
Channel modification	5	Engineering works, weirs, localised scour around bridges and weirs							
Physical-chemical modification	18	Dysfunctional sewage works, informal settlements, poor waste management							
Inundation	4								
Alien macrophytes	1								
Introduced aquatic fauna	1								
Rubbish dumping	16	Extensive along reaches in town							
Instream PES	60								
		Riparian							
Vegetation removal	8	Fire wood collection, urbanisation – clearing of riparian zone							
Exotic vegetation	10	Wattle, lantana, eucalyptus							
Bank erosion	9	Access and bridges, trampling, grazing							
Channel modification	7	Erosion, engineering works, dumping of rubble on banks							
Water abstraction	3								
Inundation	4	For reach – weirs, dam							
Flow modification	8	Baseflows, freshets in dam, weirs							
Physical-chemical modification	3								
Riparian PES	74								

Indwe River: INDW01_R

Instream										
Criteria	Score	Rationale								
Water abstraction	4	Check if any								
Flow modification	10	Indwe Dam upstream								
Bed modification	15	Sand mining, erosion								
Channel modification	6	Sand mining, trampling, bank erosion								
Physical-chemical modification	3									
Inundation	1									
Alien macrophytes	0									
Introduced aquatic fauna	3	Barbel, small mouth yellow fish								
Rubbish dumping	2	Localised								
Instream PES	75									
		Riparian								
Vegetation removal	7	Fire wood harvesting, sand mining, grazing								
Exotic vegetation	3									
Bank erosion	10	Cattle trampling and grazing								
Channel modification	5									
Water abstraction	1									
Inundation	4									
Flow modification	13	Loss of baseflows, freshets, annual floods due to dam upstream								
Physical-chemical modification	1									
Riparian PES	71									
White Kei River: WKEI01_R

Instream		
Criteria	Score	Rationale
Water abstraction	5	Possible irrigation
Flow modification	13	Indwe and Xonxa Dams upstream
Bed modification	8	Sand mining, erosion
Channel modification	10	Sand mining, trampling, bank erosion
Physical-chemical modification	8	Algae
Inundation	0	
Alien macrophytes	0	
Introduced aquatic fauna	3	Barbel, small mouth yellow fish
Rubbish dumping	6	Instream rubbish
Instream PES	74	
		Riparian
Vegetation	10	Fire wood harvesting, sand mining, grazing
removal		
removal Exotic vegetation	3	
removal Exotic vegetation Bank erosion	3 12	Trampling, sand mining
removal Exotic vegetation Bank erosion Channel modification	3 12 4	Trampling, sand mining
removal Exotic vegetation Bank erosion Channel modification Water abstraction	3 12 4 2	Trampling, sand mining
removal Exotic vegetation Bank erosion Channel modification Water abstraction Inundation	3 12 4 2 0	Trampling, sand mining
removal Exotic vegetation Bank erosion Channel modification Water abstraction Inundation Flow modification	3 12 4 2 0 10	Trampling, sand mining Loss of baseflows, freshets, annual floods due to dams upstream
removal Exotic vegetation Bank erosion Channel modification Water abstraction Inundation Flow modification Physical-chemical modification	3 12 4 2 0 10 3	Trampling, sand mining Loss of baseflows, freshets, annual floods due to dams upstream

Kubusi (Middle) River: KUBU01_R (although a VEGRAI was also run for this site to aid in higher confidence)

Instream		
Criteria	Score	Rationale
Water abstraction	3	
Flow modification	13	
Bed modification	7	
Channel modification	7	
Physical-chemical modification	8	
Inundation	0	
Alien macrophytes	0	
Introduced aquatic fauna	4	
Rubbish dumping	7	
Instream PES	77	
		Riparian
Vegetation removal	6	
Exotic vegetation	14	
Bank erosion	8	
Channel modification	4	
Water abstraction	0	
Inundation	0	
Flow modification	4	
Physical-chemical modification	2	
Riparian PES	72	

Buffalo (Lower) River: BUFF02_R

Instream		
Criteria	Score	Rationale
Water abstraction	20	Water released from Bridle Drift Dam is abstracted at weir just upstream of the site to the water works
Flow modification	18	Limited baseflows and freshets, only large floods overtopping Bridle Drift Dam
Bed modification	15	Sediment starvation due to Bridle Drift Dam and abstraction weir downstream
Channel modification	4	
Physical-chemical modification	12	Nutrient enrichment from leakage of sewage pipeline and surrounding villages and town
Inundation	0	
Alien macrophytes	15	Hyacinths, persicaria
Introduced aquatic fauna	5	CCAR, CGAR, LUMB
Rubbish dumping	14	Mainly from local villages and town
Instream PES	38	
		Riparian
Vegetation removal	3	Localised wood harvesting
Exotic vegetation	5	Caesalpinia pulcherrima (pride of Bardados)
Bank erosion	3	
Channel modification	4	
Water abstraction	8	Loss of baseflows
Inundation	8	Upstream weir
Flow modification	9	Encroachment due to loss of floods
Physical-chemical modification	3	
Riparian PES	79	

Keiskamma (Lower) River: KEIS02_R

Instream		
Criteria	Score	Rationale
Water abstraction	5	Some for irrigation, towns and villages upstream
Flow modification	7	Dams upstream (Sandile, Tyume), loss of some floods
Bed modification	4	Low water bridge, some siltation
Channel modification	4	River crossings, cattle access
Physical-chemical modification	12	Extensive algae Diatoms indicative of poorly modified water quality
Inundation	2	Localised
Alien macrophytes	0	
Introduced aquatic fauna	4	CCAR, CGAR, LUMB
Rubbish dumping	1	
Instream PES	76	
		Riparian
Vegetation removal	6	Cattle grazing and trampling
Exotic vegetation	2	
Bank erosion	5	Localised at bridge and cattle crossings
Channel modification	6	Bridge approach, river crossings
Water abstraction	1	
Inundation	1	
Flow modification	3	
Physical-chemical modification	1	
Riparian PES	87	

Tyume River: TYUM01_R

Instream		
Criteria	Score	Rationale
Water abstraction	5	Irrigation, domestic
Flow modification	9	Reduced floods
Bed modification	8	Low water and cattle crossings, filamentous algae
Channel modification	4	
Physical-chemical modification	12	Nutrients from irrigation and WWTW
Inundation	0	
Alien macrophytes		Check if invasive 'parsley'
Introduced aquatic fauna	2	LMAC, TSPA, CGAR present
Rubbish dumping	1	
Instream PES	74	
		Riparian
Vegetation removal	3	Riparian Limited wood harvesting, clearing for sand mining
Vegetation removal Exotic vegetation	3	Riparian Limited wood harvesting, clearing for sand mining Salix
Vegetation removal Exotic vegetation Bank erosion	3 3 6	Riparian Limited wood harvesting, clearing for sand mining Salix Around crossings and cattle access points
Vegetation removal Exotic vegetation Bank erosion Channel modification	3 3 6 3	Riparian Limited wood harvesting, clearing for sand mining Salix Around crossings and cattle access points
Vegetation removal Exotic vegetation Bank erosion Channel modification Water abstraction	3 3 6 3 2	Riparian Limited wood harvesting, clearing for sand mining Salix Around crossings and cattle access points
Vegetation removal Exotic vegetation Bank erosion Channel modification Water abstraction Inundation	3 3 6 3 2 1	Riparian Limited wood harvesting, clearing for sand mining Salix Around crossings and cattle access points
Vegetation removal Exotic vegetation Bank erosion Channel modification Water abstraction Inundation Flow modification	3 3 6 3 2 1 6	Riparian Limited wood harvesting, clearing for sand mining Salix Around crossings and cattle access points Reduced floods due to dam upstream
Vegetation removal Exotic vegetation Bank erosion Channel modification Water abstraction Inundation Flow modification Physical-chemical modification	3 3 6 3 2 1 6 3	Riparian Limited wood harvesting, clearing for sand mining Salix Around crossings and cattle access points Reduced floods due to dam upstream

Koonap River: KOON01_R

Instream		
Criteria	Score	Rationale
Water abstraction	8	Mainly irrigation
Flow modification	5	Weir upstream, not changing flows
Bed modification	5	Limited embeddedness, fine sediments trapped at weirs
Channel modification	7	Localised scouring, trampling, bridges
Physical-chemical modification	12	Extensive algae
Inundation	1	
Alien macrophytes	3	Cloverleaf???
Introduced aquatic fauna	7	CCAR (Carp), LCAP
Rubbish dumping	1	
Instream PES	72	
Riparian		
Vegetation removal	15	Wood harvesting, overgrazing
Exotic vegetation	3	Willow (salix)
Bank erosion	9	Bank collapse due to trampling, overgrazing, vegetation removal, downstream of bridges and weirs
Channel modification	6	Bridges, trampling, vegetation removal
Water abstraction	2	
Inundation	0	
Flow modification	1	
Physical-chemical modification	3	
Riparian PES	70	

Kat River: KAT02_R

Instream		
Criteria	Score	Rationale
Water abstraction	17	Extensive irrigation
Flow modification	12	Release pattern from dam, loss of floods
Bed modification	15	Large number of weirs – changes in habitat type from riffle to pool
Channel modification	5	Crossings, weirs
Physical-chemical modification	10	High nutrients
Inundation	12	Large number of weirs
Alien macrophytes	5	Lemnae sp???
Introduced aquatic fauna	2	Small mouth yellow fish, barbel
Rubbish dumping	1	
Instream PES	51	
		Riparian
Vegetation removal	4	
Exotic vegetation	6	Eucalyptus, salix
Bank erosion	7	Cattle trampling, scouring downstream of weirs
Channel modification	7	Weirs, bridges
Water abstraction	2	
Inundation	7	Weirs in reach
Flow modification	12	Loss of floods
Physical-chemical modification	4	
Riparian PES	68	

Great Fish (Upper) River: FISH01_R

Instream		
Criteria	Score	Rationale
Water abstraction	4	Water taken out via canal upstream of site
Flow modification	10	Low water bridge, upstream canal diverting flow
Bed modification	16	Siltation due to reduced flows
Channel modification	6	Narrowing due to reduced flows and siltation
Physical-chemical modification	7	Algae
Inundation	8	
Alien macrophytes	2	Azolla (red water fern)
Introduced aquatic fauna	2	
Rubbish dumping	1	
Instream PES	66	
		Riparian
Vegetation removal	14	Cattle crazing and trampling
Exotic vegetation	9	
Bank erosion	12	On macro channel due to trampling and low vegetation cover
Channel modification	7	
Water abstraction	1	
Inundation	15	Low water bridge, upstream weir
Flow modification	3	
Physical-chemical modification	2	
Riparian PES		

Tarka River: TARK01_R

Instream		
Criteria	Score	Rationale
Water abstraction	5	Mostly from canals from upstream dam
Flow modification	20	Lake Arthur and Kommandodrift Dams upstream – no releases into river
Bed modification	18	Silted (bed built-up more than 2m over time), reeds
Channel modification	8	Channel manipulation due to silting of canal
Physical-chemical modification	15	High salinity (natural and from irrigation return flows), anoxic sediments
Inundation	1	
Alien macrophytes	0	
Introduced aquatic fauna	3	
Rubbish dumping	1	
Instream PES	49	
		Riparian
Vegetation removal	2	
Exotic vegetation	1	
Bank erosion	4	Cattle trampling in areas
Channel modification	3	Crossings
Water abstraction	2	
Inundation	0	
Flow modification	15	Encroachment due to no floods
Physical-chemical modification	1	
Riparian PES	76	

Sundays (Lower) River: SUND02_R

Instream		
Criteria	Score	Rationale
Water abstraction	6	Mostly from irrigation canal from Korhaansdrift
Flow modification	20	Limited flows due to upstream Darlington Dam and Korhaansdrift weir
Bed modification	17	Armoured, increased reeds, narrowing of bed, crossings
Channel modification	4	
Physical-chemical modification	14	Conductivity high, algae
Inundation	2	
Alien macrophytes	0	
Introduced aquatic fauna	3	CCAR, CGAR, MSAL, TSPA, GAFF
Rubbish dumping	4	
Instream PES	50	
		Riparian
Vegetation removal	3	
Exotic vegetation	15	Spanish reeds, gums, seringa
Bank erosion	4	
Channel modification	6	Crossings, landscaping around orchards
Water abstraction	4	
Inundation	1	
Flow modification	17	Loss of most floods
Physical-chemical modification	8	Increased nutrients from return flows
Riparian PES	52	

Kouga River: KOUG01_R

Instream		
Criteria	Score	Rationale
Water abstraction	8	Mostly for irrigation in upper catchment (fruit)
Flow modification	14	Loss of baseflows due to groundwater abstractions for irrigation
Bed modification	2	
Channel modification	3	
Physical-chemical modification	5	Nutrients from return flows
Inundation	2	
Alien macrophytes	0	
Introduced aquatic fauna	1	MDOL, CGAR
Rubbish dumping	1	
Instream PES	81	
		Riparian
Vegetation removal	3	
Exotic vegetation	15	Wattle, Spanish reed
Bank erosion	4	
Channel modification	1	
Water abstraction	2	
Inundation	1	
Flow modification	4	Possibly lower baseflows due to water abstraction in upper catchment
Physical-chemical modification	2	
Riparian PES	75	

Field Verifications

Mtakatye River: MTAK01_FV

Instream		
Criteria	Score	Rationale
Water abstraction	4	
Flow modification	3	
Bed modification	8	Localised at bridges
Channel modification	10	Localised at road crossings, bank erosion due to cattle grazing, grazing and crossings
Physical-chemical modification	7	Communities (Libode) upstream
Inundation	1	
Alien macrophytes	0	
Introduced aquatic fauna	1	
Rubbish dumping	4	
Instream PES	81	
		Riparian
Vegetation removal	2	
Exotic vegetation	3	
Bank erosion	10	River crossings, cattle trampling and grazing
Channel modification	4	Bridges, erosion, washing, cattle paths
Water abstraction	1	
Inundation	0	
Flow modification	1	
Physical-chemical modification	1	
Riparian PES	87	

Klipplaats River: KLIP01_FV

Instream		
Criteria	Score	Rationale
Water abstraction	5	
Flow modification	9	Changes to the flow component due to the upstream dam
		Possible releases during dry or low flow months
Bed modification	5	
Channel modification	10	Upstream Waterdown Dam, bridges
Physical-chemical modification	7	
Inundation	3	
Alien macrophytes	2	
Introduced aquatic fauna	3	
Rubbish dumping	1	
Instream PES	78	
		Riparian
Vegetation removal	3	
Exotic vegetation	7	
Bank erosion	5	
Channel modification	12	Confinement of floodplain
Water abstraction	4	
Inundation	1	
Flow modification	7	Lots more floods/freshets due to the upstream Waterdown Dam
Physical-chemical modification	2	
Riparian PES	71	

Klaas Smits River: KSMI01_FV

Instream		
Criteria	Score	Rationale
Water abstraction	15	Extensive irrigation in lower Komani and Klaas Smits, domestic and industrial (Komani)
Flow modification	8	Small dams in upper catchments, reduced freshets and low flows
Bed modification	6	Weirs, bridges, low water crossings
Channel modification	5	Engineering works
Physical-chemical modification	18	Irrigation return flows, WWTWs
Inundation	4	Low water bridges
Alien macrophytes	0	
Introduced aquatic fauna	2	
Rubbish dumping	1	
Instream PES	59	
		Riparian
Vegetation removal	3	
Exotic vegetation	4	Eucalyptus, salix – low numbers
Bank erosion	3	
Channel modification	3	
Water abstraction	6	Very low baseflows
Inundation	3	
Flow modification	10	Number of off-channel dams - reduced freshets and low flows
Physical-chemical modification	7	
Riparian PES	81	

Buffalo (Upper) River: BUFF03_FV

Instream		
Criteria	Score	Rationale
Water abstraction	3	
Flow modification	10	Dams, forestry upstream
Bed modification	7	Bridge, weirs
Channel modification	6	Crossings, bridge approaches, trampling, overgrazing
Physical-chemical modification	8	Upstream villages/rural areas, diatoms indicative of moderately modified condition s(eutrophication), forestry
Inundation	0	
Alien macrophytes	0	
Introduced aquatic fauna	3	
Rubbish dumping	4	Localised at site
Instream PES	80	
		Riparian
Vegetation removal	9	Wood harvesting, grazing, cultivation on terraces
Exotic vegetation	8	Melia, limited wattle
Bank erosion	9	Crossings, scour around bridges, weirs
Channel modification	6	Cattle trampling, erosion around alien plants, weir and bridge structures
Water abstraction	1	
Inundation	0	
Flow modification	6	Reduced baseflows
Physical-chemical modification	2	
Riparian PES	79	

Kubusi (Upper) River: KUBU02_FV

Instream		
Criteria	Score	Rationale
Water abstraction	3	Possibly for Stutterheim
Flow modification	13	Forestry, Gubu Dam - reduced baseflows
Bed modification	7	Weirs, bridges
Channel modification	7	Alien vegetation resulting in bank collapse, scouring
Physical-chemical modification	8	Algae – nutrient enrichment
Inundation	0	
Alien macrophytes	0	
Introduced aquatic fauna	4	CCAR, CGAR, BAEN
Rubbish dumping	7	
Instream PES	77	
		Riparian
Vegetation removal	6	Wood harvesting, cultivation in riparian zone
Exotic vegetation	14	Gums, wattle, syringa
Bank erosion	8	Undercutting of banks, mainly due to alien trees
Channel modification	4	
Water abstraction	0	
Inundation	0	
Flow modification	4	
Physical-chemical modification	2	
Riparian PES	72	

Great Fish River (Upstream from Craddock): GFIS04_FV

Instream		
Criteria	Score	Rationale
Water abstraction	4	Irrigation abstraction upstream
Flow modification	10	Increased flows due to transfer of water
Bed modification	16	Scour, bed armouring due to increased flows
Channel modification	6	Crossings, weirs
Physical-chemical modification	7	Increased TSS
Inundation	8	Invert habitat inundated
Alien macrophytes	2	
Introduced aquatic fauna	2	CCAR, CGAR, LAEN
Rubbish dumping	1	
Instream PES	66	
		Riparian
Vegetation removal	14	Removal for picnic area, sport area, burning of riparian vegetation
Exotic vegetation	9	Spanish reeds, gums
Bank erosion	12	Inset bench erosion
Channel modification	7	Bridges
Water abstraction	1	
Inundation	15	Increased flows
Flow modification	3	
Physical-chemical modification	2	
Riparian PES	46	

Great Brak River: GBRA01_FV

Instream		
Criteria	Score	Rationale
Water abstraction	2	
Flow modification	15	Increased flows due to transfer
Bed modification	15	Incision and armouring due to increased flows
Channel modification	7	Bank erosion at bridges
Physical-chemical modification	9	High turbidity, water temperature lower
Inundation	13	Habitats inundated due to transfer
Alien macrophytes	0	
Introduced aquatic fauna	4	CCAR, CGAR, TSPA, BAEN, LCAP
Rubbish dumping	1	
Instream PES	63	
		Riparian
Vegetation removal	2	
Exotic vegetation	5	Limited salix
Bank erosion	14	Increased flows
Channel modification	7	Bank erosion due to increased flows
Water abstraction	0	
Inundation	18	Increased flows inundate riparian zone
Flow modification	2	
Physical-chemical modification	1	
Riparian PES	55	

Little Fish (Upper) River: LFIS01_FV

Instream		
Criteria	Score	Rationale
Water abstraction	18	Most flows abstracted for irrigation
Flow modification	2	
Bed modification	3	
Channel modification	4	
Physical-chemical modification	5	
Inundation	1	
Alien macrophytes	0	
Introduced aquatic fauna	0	
Rubbish dumping	1	
Instream PES	74	
		Riparian
Vegetation removal	6	Grazing
Exotic vegetation	5	
Bank erosion	8	Trampling, bridges
Channel modification	4	
Water abstraction	1	
Inundation	0	
Flow modification	1	
Physical-chemical modification	1	
Riparian PES	87	

Little Fish (Lower) River: LFIS02_FV

Instream		
Criteria	Score	Rationale
Water abstraction	6	Most water use from canal system, release from the De Mistkraal Dam
Flow modification	12	Increased flows from Great Fish
Bed modification	7	Increased flows washes out fine sediments
Channel modification	8	Incision of channel
Physical-chemical modification	8	Return flows from irrigation
Inundation	0	
Alien macrophytes	0	
Introduced aquatic fauna	4	CCAR, CGAR
Rubbish dumping	1	
Instream PES	77	
		Riparian
Vegetation removal	5	
Exotic vegetation	4	
Bank erosion	8	Constant high flows
Channel modification	3	
Water abstraction	0	
Inundation	8	Increased flows
Flow modification	2	
Physical-chemical modification	1	
Riparian PES	85	

Sundays (Upper) River: SUND01_FV

Instream			
Criteria	Score	Rationale	
Water abstraction	4		
Flow modification	3	Limited impact from Van Ryneveld Dam	
Bed modification	4	Bridge, weirs	
Channel modification	4		
Physical-chemical modification	4		
Inundation	3		
Alien macrophytes	0		
Introduced aquatic fauna	0		
Rubbish dumping	1		
Instream PES	75		
	Riparian		
Vegetation removal	7	Grazing	
Exotic vegetation	8	Tamarisk parviflora, nicotiana glauca, eucalyptus, thistle bush, terminalia australis	
Bank erosion	8	Trampling, overgrazing	
Channel modification	3	Bridge, weirs	
Water abstraction	1		
Inundation	0		
Flow modification	1		
Physical-chemical modification	0		
Riparian PES	73		

Kabeljous (Lower) River: KABE01_FV

Instream		
Criteria	Score	Rationale
Water abstraction	6	Mostly for irrigation
Flow modification	14	Numerous dams on Kabeljous and tributaries
Bed modification	3	
Channel modification	4	
Physical-chemical modification	14	Possible acidic return flows
Inundation	5	
Alien macrophytes	2	
Introduced aquatic fauna	1	MSAL
Rubbish dumping	2	
Instream PES	71	
		Riparian
Vegetation removal	5	Grazing in upper catchment
Exotic vegetation	3	
Bank erosion	2	
Channel modification	3	
Water abstraction	3	Loss of baseflows
Inundation	7	Dams in catchment
Flow modification	5	Loss of baseflows
Physical-chemical modification	4	
Riparian PES	84	

Groot (Upper) River: GROO01_FV

Instream		
Criteria	Score	Rationale
Water abstraction	6	Mostly for irrigation
Flow modification	15	Forestry and farm dams
Bed modification	5	Weir and crossings
Channel modification	3	
Physical-chemical modification	4	Return flows from irrigation
Inundation	1	
Alien macrophytes	0	
Introduced aquatic fauna	1	
Rubbish dumping	1	
Instream PES	81	
		Riparian
Vegetation removal	3	
Exotic vegetation	20	Bugweed, bramble, black wattle, pine plantation
Bank erosion	5	
Channel modification	3	
Water abstraction	1	
Inundation	1	
Flow modification	5	Changes to baseflows due to forestry
Physical-chemical modification	3	
Riparian PES	66	

Twee Riviere River: TWEE01_FV

Instream		
Criteria	Score	Rationale
Water abstraction	6	Limited for town and irrigation
Flow modification	2	
Bed modification	7	Bridges, crossings
Channel modification	4	Localised
Physical-chemical modification	18	WWTW upstream
Inundation	1	
Alien macrophytes	0	
Introduced aquatic fauna	1	
Rubbish dumping	5	
Instream PES	71	
		Riparian
Vegetation removal	7	Wood harvesting, grazing
Exotic vegetation	8	Gum trees, wattle
Bank erosion	6	River crossings, alien plants, trampling
Channel modification	3	
Water abstraction	1	
Inundation	0	
Flow modification	1	
Physical-chemical modification	3	
Riparian PES	85	

7. Appendix F: EcoStatus Models

Determination of Water Resource Classes, Reserve and RQOs in the Keiskamma and Fish to Tsitsikamma catchment: Wetland Eco-	2023
categorisation Report	

RAPID 3 SITES

Mngazi River

INSTREAM BIOTA	IMPORTANCE SCORE	WEIGHT	FRAI/FISHC	FRAI/FISHCON &
			ON &	MIRAI/INCON EC
FISH				
1. What is the natural diversity of fish species with different flow requirements	3.00	60.00		
2. What is the natural diversity of fish species with a preference for different cover types	4.00	85.00		
3.What is the natural diversity of fish species with a preference for different flow depth classes	5.00	100.00		
4. What is the natural diversity of fish species with various tolerances to modified water quality	2.00	30.00		
FISH ECOLOGICAL CATEGORY (FRAI/FISHCON %)	14.00	275.00	68.90	C
AQUATIC INVERTEBRATES				
1. What is the natural diversity of invertebrate biotopes	4.00	90.00		
2. What is the natural diversity of invertebrate taxa with different velocity requirements	5.00	100.00		
3. What is the natural diversity of invertebrate taxa with different tolerances to modified water quality	3.00	70.00		
AQUATIC INVERTEBRATE ECOLOGICAL CATEGORY (MIRAI/INCON %)	12.00	260.00	84.73	В
INSTREAM ECOLOGICAL CATEGORY (EC AND %): NOT CONFIDENCE RATED, ONLY FISH IN			78.13	C/B
INVERTEBRATE INDICATOR RATINGS FOR WEIGHTING OF FRAI/FISHCON AND MIRAI/INCON				
CONSIDERED		535.00		
INSTREAM ECOLOGICAL CATEGORY: CONFIDENCE RATED	FRAI/FISHCON & MIRAI/INCON			
	CONFIDENCE RATINGS			
Confidence rating for fish information	2.00			
Confidence rating for macro-invertebrate information	3.00			
INSTREAM ECOLOGICAL CATEGORY (%)	5.00	78.26		
INSTREAM ECOLOGICAL CATEOGORY		C/B		
			-	
RIPARIAN VEGETATION	RIPARIAN VEGETATION	RIPARIAN		
	(VEGRAI/VEGCON) EC %	VEGETATION		
		(VEGRAI/VEGCON) EC		
RIPARIAN VEGETATION ECOLOGICAL CATEGORY	74.00	C ,	1	
	74.00	<u> </u>		
	•			
INTEGRATED (INSTREAM & RIPARIAN VEGETATION) ECOSTATUS	CONFIDENCE BATING			
Confidence rating for instream biological information	2 59			
Confidence rating for ringrian vegetation zone information	2.00			
	2.00	76 44		

Ngabarha River

INSTREAM BIOTA	IMPORTANCE SCORE	WEIGHT	FRAI/FISHC	FRAI/FISHCON &
			ON &	MIRAI/INCON EC
FISH				
1.What is the natural diversity of fish species with different flow requirements	2.00	95.00		
2.What is the natural diversity of fish species with a preference for different cover types	2.00	100.00		
3.What is the natural diversity of fish species with a preference for different flow depth classes	1.00	35.00		
4. What is the natural diversity of fish species with various tolerances to modified water quality	1.00	35.00		
FISH ECOLOGICAL CATEGORY (FRAI/FISHCON %)	6.00	265.00	17.60	F
AQUATIC INVERTEBRATES	-			
1. What is the natural diversity of invertebrate biotopes	2.00	75.00		
2. What is the natural diversity of invertebrate taxa with different velocity requirements	2.00	60.00		
3. What is the natural diversity of invertebrate taxa with different tolerances to modified water quality	3.00	100.00		
AQUATIC INVERTEBRATE ECOLOGICAL CATEGORY (MIRAI/INCON %)	7.00	235.00	69.03	С
INSTREAM ECOLOGICAL CATEGORY (EC AND %): NOT CONFIDENCE RATED, ONLY FISH IN			51.07	D
INVERTEBRATE INDICATOR RATINGS FOR WEIGHTING OF FRAI/FISHCON AND MIRAI/INCON				
CONSIDERED		500.00		
INSTREAM ECOLOGICAL CATEGORY: CONFIDENCE RATED	FRAI/FISHCON & MIRAI/INCON			
	CONFIDENCE RATINGS			
Confidence rating for fish information	1.00			
Confidence rating for macro-invertebrate information	2.00			
INSTREAM ECOLOGICAL CATEGORY (%)	3.00	51.48		
INSTREAM ECOLOGICAL CATEOGORY		D		
		1		
RIPARIAN VEGETATION	RIPARIAN VEGETATION	RIPARIAN		
	(VEGRAI/VEGCON) EC %	VEGETATION		
		(VEGRAI/VEGCON) EC		
RIPARIAN VEGETATION ECOLOGICAL CATEGORY	62.00	C/D		
	02.00			
INTEGRATED (INSTREAM & RIPARIAN VEGETATION) ECOSTATUS	CONFIDENCE RATING			
Confidence rating for instream biological information	1.66			
Confidence rating for riparian vegetation zone information	2.00			
INTEGRATED ECOLOGICAL CATEGORY (%)	3.66	57.23		
INTEGRATED ECOSTATUS CATEGORY		D		

Mtentu River

INSTREAM BIOTA	IMPORTANCE SCORE	WEIGHT	FRAI/FISHC	FRAI/FISHCON &
			ON &	MIRAI/INCON EC
FISH				
1. What is the natural diversity of fish species with different flow requirements	3.00	60.00		
2.What is the natural diversity of fish species with a preference for different cover types	4.00	95.00		
3.What is the natural diversity of fish species with a preference for different flow depth classes	5.00	100.00		
4. What is the natural diversity of fish species with various tolerances to modified water quality	2.00	35.00		
FISH ECOLOGICAL CATEGORY (FRAI/FISHCON %)	14.00	290.00	67.00	С
AQUATIC INVERTEBRATES		-		
1. What is the natural diversity of invertebrate biotopes	4.00	90.00		
2. What is the natural diversity of invertebrate taxa with different velocity requirements	5.00	100.00		
3. What is the natural diversity of invertebrate taxa with different tolerances to modified water quality	3.00	70.00		
AQUATIC INVERTEBRATE ECOLOGICAL CATEGORY (MIRAI/INCON %)	12.00	260.00	78.10	C/B
INSTREAM ECOLOGICAL CATEGORY (EC AND %): NOT CONFIDENCE RATED, ONLY FISH IN			73.49	С
INVERTEBRATE INDICATOR RATINGS FOR WEIGHTING OF FRAI/FISHCON AND MIRAI/INCON				
CONSIDERED		550.00		
INSTREAM ECOLOGICAL CATEGORY: CONFIDENCE RATED	FRAI/FISHCON & MIRAI/INCON			
	CONFIDENCE RATINGS			
Confidence rating for fish information	2.00			
Confidence rating for macro-invertebrate information	4.00			
INSTREAM ECOLOGICAL CATEGORY (%)	6.00	73.95		
INSTREAM ECOLOGICAL CATEOGORY		С		
RIPARIAN VEGETATION	RIPARIAN VEGETATION	RIPARIAN		
	(VEGRAI/VEGCON) EC %	VEGETATION		
		(VEGRAI/VEGCON) EC		
RIPARIAN VEGETATION ECOLOGICAL CATEGORY	61.00	C/D		
	01.00			
INTEGRATED (INSTREAM & RIPARIAN VEGETATION) ECOSTATUS	CONFIDENCE RATING			
Confidence rating for instream biological information	3.25			
Confidence rating for riparian vegetation zone information	2.00			
INTEGRATED ECOLOGICAL CATEGORY (%)	5.25	69.02		
INTEGRATED ECOSTATUS CATEGORY		С		

Mbashe River (Upper)

INSTREAM BIOTA	IMPORTANCE SCORE	WEIGHT	FRAI/FISHC ON &	FRAI/FISHCON & MIRAI/INCON EC
			MIRAI/INCO	
FISH				
1.What is the natural diversity of fish species with different flow requirements	2.00	40.00		
2.What is the natural diversity of fish species with a preference for different cover types	4.00	100.00		
3.What is the natural diversity of fish species with a preference for different flow depth classes	4.00	100.00		
4. What is the natural diversity of fish species with various tolerances to modified water quality	2.00	30.00		
FISH ECOLOGICAL CATEGORY (FRAI/FISHCON %)	12.00	270.00	63.50	С
AQUATIC INVERTEBRATES			-	
1. What is the natural diversity of invertebrate biotopes	5.00	100.00		
2. What is the natural diversity of invertebrate taxa with different velocity requirements	4.00	90.00		
3. What is the natural diversity of invertebrate taxa with different tolerances to modified water quality	4.00	85.00		
AQUATIC INVERTEBRATE ECOLOGICAL CATEGORY (MIRAI/INCON %)	13.00	275.00	78.14	C/B
INSTREAM ECOLOGICAL CATEGORY (EC AND %): NOT CONFIDENCE RATED, ONLY FISH IN			72.66	С
INVERTEBRATE INDICATOR RATINGS FOR WEIGHTING OF FRAI/FISHCON AND MIRAI/INCON				
CONSIDERED		545.00		
INSTREAM ECOLOGICAL CATEGORY: CONFIDENCE RATED	FRAI/FISHCON & MIRAI/INCON			
	CONFIDENCE RATINGS			
Confidence rating for fish information	3.00			
Confidence rating for macro-invertebrate information	4.00			
INSTREAM ECOLOGICAL CATEGORY (%)	7.00	72.26		
INSTREAM ECOLOGICAL CATEOGORY		С		
RIPARIAN VEGETATION	RIPARIAN VEGETATION	RIPARIAN		
	(VEGRAI/VEGCON) EC %	VEGETATION		
		(VEGRAI/VEGCON) EC		
RIPARIAN VEGETATION ECOLOGICAL CATEGORY	58.90	C/D		
INTEGRATED (INSTREAM & RIPARIAN VEGETATION) ECOSTATUS	CONFIDENCE RATING			
Confidence rating for instream biological information	3.60			
Confidence rating for riparian vegetation zone information	3.20			
INTEGRATED ECOLOGICAL CATEGORY (%)	6.80	65.97		
INTEGRATED ECOSTATUS CATEGORY		C		

Gcuwa River

INSTREAM BIOTA	IMPORTANCE SCORE	WEIGHT	FRAI/FISHC ON & MIRAI/INCO N EC %	FRAI/FISHCON & MIRAI/INCON EC
FISH				
1.What is the natural diversity of fish species with different flow requirements	2.00	50.00		
2.What is the natural diversity of fish species with a preference for different cover types	3.00	100.00		
3.What is the natural diversity of fish species with a preference for different flow depth classes	3.00	95.00		
4. What is the natural diversity of fish species with various tolerances to modified water quality	1.00	30.00		
FISH ECOLOGICAL CATEGORY (FRAI/FISHCON %)	9.00	275.00	51.50	D
AQUATIC INVERTEBRATES				
1. What is the natural diversity of invertebrate biotopes	2.00	50.00		
2. What is the natural diversity of invertebrate taxa with different velocity requirements	2.00	55.00		
3. What is the natural diversity of invertebrate taxa with different tolerances to modified water quality	3.00	100.00		
AQUATIC INVERTEBRATE ECOLOGICAL CATEGORY (MIRAI/INCON %)	7.00	205.00	47.26	D
INSTREAM ECOLOGICAL CATEGORY (EC AND %): NOT CONFIDENCE RATED, ONLY FISH IN INVERTEBRATE INDICATOR RATINGS FOR WEIGHTING OF FRAI/FISHCON AND MIRAI/INCON CONSIDERED		480.00	49.12	D
OONOIDEIRED	-	400.00		
INSTREAM ECOLOGICAL CATEGORY: CONFIDENCE RATED	FRAI/FISHCON & MIRAI/INCON CONFIDENCE RATINGS			
Confidence rating for fish information	2 00			
Confidence rating for macro-invertebrate information	2.00			
INSTREAM ECOLOGICAL CATEGORY (%)	4.00	49.25		
		D		
RIPARIAN VEGETATION	RIPARIAN VEGETATION (VEGRAI/VEGCON) EC %	RIPARIAN VEGETATION (VEGRAI/VEGCON) EC		
RIPARIAN VEGETATION ECOLOGICAL CATEGORY	58.00	D		
INTEGRATED (INSTREAM & RIPARIAN VEGETATION) ECOSTATUS	CONFIDENCE RATING			
Confidence rating for instream biological information	2.00			
Confidence rating for riparian vegetation zone information	3.00			
INTEGRATED ECOLOGICAL CATEGORY (%)	5.00	54.50		
INTEGRATED ECOSTATUS CATEGORY		D		

Indwe River

		WEIGHT		
INSTREAM BIOTA	IMPORTANCE SCORE	WEIGHT		
			N EC %	
rion	4.00	05.00		
1. What is the natural diversity of ish species with different flow requirements	1.00	35.00		
2.What is the natural diversity of fish species with a preference for different cover types	2.00	100.00		
3.What is the natural diversity of fish species with a preference for different flow depth classes	2.00	100.00		
4. What is the natural diversity of fish species with various tolerances to modified water quality	1.00	35.00		
FISH ECOLOGICAL CATEGORY (FRAI/FISHCON %)	6.00	270.00	16.30	F
AQUATIC INVERTEBRATES				
1. What is the natural diversity of invertebrate biotopes	3.00	80.00		
2. What is the natural diversity of invertebrate taxa with different velocity requirements	4.00	100.00		
3. What is the natural diversity of invertebrate taxa with different tolerances to modified water quality	2.00	70.00		
AQUATIC INVERTEBRATE ECOLOGICAL CATEGORY (MIRAI/INCON %)	9.00	250.00	59.03	C/D
INSTREAM ECOLOGICAL CATEGORY (EC AND %): NOT CONFIDENCE RATED, ONLY FISH IN			46.42	D
INVERTEBRATE INDICATOR RATINGS FOR WEIGHTING OF FRAI/FISHCON AND MIRAI/INCON				
CONSIDERED		520.00		
INSTREAM ECOLOGICAL CATEGORY: CONFIDENCE RATED	FRAI/FISHCON & MIRAI/INCON			
	CONFIDENCE RATINGS			
Confidence rating for fish information	1.00			
Confidence rating for macro-invertebrate information	3.00			
INSTREAM ECOLOGICAL CATEGORY (%)	4.00	47.39		
		D		
RIPARIAN VEGETATION	RIPARIAN VEGETATION	RIPARIAN		
		VEGETATION		
		(VEGRAI/VEGCON) EC		
RIPARIAN VEGETATION ECOLOGICAL CATEGORY	71.00	C		
INTEGRATED (INSTREAM & RIPARIAN VEGETATION) ECOSTATUS	CONFIDENCE RATING			
Confidence rating for instream biological information	2.45			
Confidence rating for riparian vegetation zone information	3.00			
INTEGRATED ECOLOGICAL CATEGORY (%)	5.45	60.37		
INTEGRATED ECOSTATUS CATEGORY		C/D		

White Kei River

INSTREAM BIOTA	IMPORTANCE SCORE	WEIGHT	FRAI/FISHC	FRAI/FISHCON &
			ON &	MIRAI/INCON FC
			MIRAI/INCO	
			N FC %	
FISH				
1.What is the natural diversity of fish species with different flow requirements	1.00	35.00		
2.What is the natural diversity of fish species with a preference for different cover types	2.00	100.00		
3. What is the natural diversity of fish species with a preference for different flow depth classes	2.00	100.00		
4. What is the natural diversity of fish species with various tolerances to modified water quality	1.00	35.00		
FISH ECOLOGICAL CATEGORY (FRAI/FISHCON %)	6.00	270.00	25.10	E
AQUATIC INVERTEBRATES				
1. What is the natural diversity of invertebrate biotopes	3.00	90.00		
2. What is the natural diversity of invertebrate taxa with different velocity requirements	4.00	100.00		
3. What is the natural diversity of invertebrate taxa with different tolerances to modified water quality	2.00	70.00		
AQUATIC INVERTEBRATE ECOLOGICAL CATEGORY (MIRAI/INCON %)	9.00	260.00	64.36	С
INSTREAM ECOLOGICAL CATEGORY (EC AND %): NOT CONFIDENCE RATED, ONLY FISH IN			52.77	D
INVERTEBRATE INDICATOR RATINGS FOR WEIGHTING OF FRAI/FISHCON AND MIRAI/INCON				
CONSIDERED		530.00		
INSTREAM ECOLOGICAL CATEGORY: CONFIDENCE RATED	FRAI/FISHCON & MIRAI/INCON			
	CONFIDENCE RATINGS			
Confidence rating for fish information	4.00			
Confidence rating for macro-invertebrate information	4.00			
INSTREAM ECOLOGICAL CATEGORY (%)	8.00	48.75		
INSTREAM ECOLOGICAL CATEOGORY		D		
RIPARIAN VEGETATION	RIPARIAN VEGETATION	RIPARIAN		
	(VEGRAI/VEGCON) EC %	VEGETATION		
		(VEGRAI/VEGCON) EC		
RIPARIAN VEGETATION ECOLOGICAL CATEGORY	68.00	С		
	08.00			
INTEGRATED (INSTREAM & RIPARIAN VEGETATION) ECOSTATUS	CONFIDENCE RATING			
Confidence rating for instream biological information	4.00			
Confidence rating for riparian vegetation zone information	3.00			
INTEGRATED ECOLOGICAL CATEGORY (%)	7.00	57.00		
INTEGRATED ECOSTATUS CATEGORY		D		

Kubusi River

		WEIGHT		ED AI/EISHCON &
		WEIGHT		
			N FC %	
FISH				
1.What is the natural diversity of fish species with different flow requirements	2.00	50.00		
2.What is the natural diversity of fish species with a preference for different cover types	4.00	100.00		
3. What is the natural diversity of fish species with a preference for different flow depth classes	3.00	90.00		
4. What is the natural diversity of fish species with various tolerances to modified water quality	1.00	20.00		
FISH ECOLOGICAL CATEGORY (FRAI/FISHCON %)	10.00	260.00	39.40	D/E
AQUATIC INVERTEBRATES				
1. What is the natural diversity of invertebrate biotopes	5.00	100.00		
2. What is the natural diversity of invertebrate taxa with different velocity requirements	4.00	90.00		
3. What is the natural diversity of invertebrate taxa with different tolerances to modified water quality	3.00	85.00		
AQUATIC INVERTEBRATE ECOLOGICAL CATEGORY (MIRAI/INCON %)	12.00	275.00	78.01	C/B
INSTREAM ECOLOGICAL CATEGORY (EC AND %): NOT CONFIDENCE RATED, ONLY FISH IN			64.12	С
INVERTEBRATE INDICATOR RATINGS FOR WEIGHTING OF FRAI/FISHCON AND MIRAI/INCON				
CONSIDERED		535.00		
INSTREAM ECOLOGICAL CATEGORY: CONFIDENCE RATED	FRAI/FISHCON & MIRAI/INCON			
	CONFIDENCE RATINGS			
Confidence rating for fish information	4.00			
Confidence rating for macro-invertebrate information	4.00			
INSTREAM ECOLOGICAL CATEGORY (%)	8.00	61.41		
INSTREAM ECOLOGICAL CATEOGORY		C/D		
RIPARIAN VEGETATION	RIPARIAN VEGETATION	RIPARIAN		
	(VEGRAI/VEGCON) EC %	VEGETATION		
		(VEGRAI/VEGCON) EC		
RIPARIAN VEGETATION ECOLOGICAL CATEGORY	72.00	C	1	
	72.00	-		
INTEGRATED (INSTREAM & RIPARIAN VEGETATION) ECOSTATUS	CONFIDENCE RATING			
Confidence rating for instream biological information	4.00			
Confidence rating for riparian vegetation zone information	3.00			
INTEGRATED ECOLOGICAL CATEGORY (%)	7.00	65.95		
INTEGRATED ECOSTATUS CATEGORY		С		

Keiskamma River (Lower)

		WEICHT		
	INFORTANCE SCORE	WEIGHT		
			N EC %	
FISH				
1. What is the natural diversity of fish species with different flow requirements	2.00	40.00		
2. What is the natural diversity of fish species with a preference for different cover types	5.00	100.00		
3. What is the natural diversity of fish species with a preference for different flow depth classes	4.00	95.00		
4. What is the natural diversity of fish species with various tolerances to modified water quality	3.00	70.00		
FISH ECOLOGICAL CATEGORY (FRAI/FISHCON %)	14.00	305.00	36,60	Е
AQUATIC INVERTEBRATES				
1. What is the natural diversity of invertebrate biotopes	5.00	100.00		
2. What is the natural diversity of invertebrate taxa with different velocity requirements	3.00	70.00		
3. What is the natural diversity of invertebrate taxa with different tolerances to modified water quality	4.00	85.00		
AQUATIC INVERTEBRATE ECOLOGICAL CATEGORY (MIRAI/INCON %)	12.00	255.00	77.06	С
INSTREAM ECOLOGICAL CATEGORY (EC AND %): NOT CONFIDENCE RATED, ONLY FISH IN			60.42	C/D
INVERTEBRATE INDICATOR RATINGS FOR WEIGHTING OF FRAI/FISHCON AND MIRAI/INCON				
CONSIDERED		560.00		
INSTREAM ECOLOGICAL CATEGORY: CONFIDENCE RATED	FRAI/FISHCON & MIRAI/INCON			
	CONFIDENCE RATINGS			
Confidence rating for fish information	3.00			
Confidence rating for macro-invertebrate information	4.00			
INSTREAM ECOLOGICAL CATEGORY (%)	7.00	60.07		
INSTREAM ECOLOGICAL CATEOGORY		C/D		
RIPARIAN VEGETATION	RIPARIAN VEGETATION	RIPARIAN		
	(VEGRAI/VEGCON) EC %	VEGETATION		
		(VEGRAI/VEGCON) EC		
RIPARIAN VEGETATION ECOLOGICAL CATEGORY	97.00	В		
	87.00			
	•			
INTEGRATED (INSTREAM & RIPARIAN VEGETATION) ECOSTATUS	CONFIDENCE RATING			
Confidence rating for instream biological information	3.58			
Confidence rating for riparian vegetation zone information	3.00			
INTEGRATED ECOLOGICAL CATEGORY (%)	6.58	72.35		
INTEGRATED ECOSTATUS CATEGORY		C		

Tyume River

		WEIGHT		ED A I/EISHCON &
NOTICE AND DO TA		WEIGHT		
FISH			NLC /8	
1 What is the natural diversity of fish species with different flow requirements	2.00	35.00		
2 What is the natural diversity of fish species with a preference for different cover types	4.00	100.00		
3 What is the natural diversity of fish species with a preference for different flow denth classes	4 00	100.00		
4. What is the natural diversity of fish species with various tolerances to modified water quality	3.00	70.00		
FISH ECOLOGICAL CATEGORY (FRAI/FISHCON %)	13.00	305.00	41.00	D/E
AQUATIC INVERTEBRATES	10100			
1. What is the natural diversity of invertebrate biotopes	4.00	85.00		
2. What is the natural diversity of invertebrate taxa with different velocity requirements	5.00	100.00		
3. What is the natural diversity of invertebrate taxa with different tolerances to modified water quality	3.00	75.00		
AQUATIC INVERTEBRATE ECOLOGICAL CATEGORY (MIRAI/INCON %)	12.00	260.00	79.34	C/B
INSTREAM ECOLOGICAL CATEGORY (EC AND %): NOT CONFIDENCE RATED, ONLY FISH IN			64.26	С
INVERTEBRATE INDICATOR RATINGS FOR WEIGHTING OF FRAI/FISHCON AND MIRAI/INCON				
CONSIDERED		565.00		
INSTREAM ECOLOGICAL CATEGORY: CONFIDENCE RATED	FRAI/FISHCON & MIRAI/INCON			
	CONFIDENCE RATINGS			
Confidence rating for fish information	2.00			
Confidence rating for macro-invertebrate information	4.00			
INSTREAM ECOLOGICAL CATEGORY (%)	6.00	65.41	ĺ	
INSTREAM ECOLOGICAL CATEOGORY		С		
RIPARIAN VEGETATION	RIPARIAN VEGETATION	RIPARIAN		
	(VEGRAI/VEGCON) EC %	VEGETATION		
		(VEGRAI/VEGCON) EC		
RIPARIAN VEGETATION ECOLOGICAL CATEGORY	00.00	В	1	
	88:00			
	•			
INTEGRATED (INSTREAM & RIPARIAN VEGETATION) ECOSTATUS	CONFIDENCE RATING			
Confidence rating for instream biological information	3.27			
Confidence rating for riparian vegetation zone information	3.00			
INTEGRATED ECOLOGICAL CATEGORY (%)	6.27	75.26		
INTEGRATED ECOSTATUS CATEGORY		С		

Koonap River

	-			
INSTREAM BIOTA	IMPORTANCE SCORE	WEIGHT	FRAI/FISHC ON & MIRAI/INCO N EC %	FRAI/FISHCON & MIRAI/INCON EC
FISH				
1.What is the natural diversity of fish species with different flow requirements	2.00	35.00		
2.What is the natural diversity of fish species with a preference for different cover types	4.00	95.00		
3.What is the natural diversity of fish species with a preference for different flow depth classes	5.00	100.00		
4. What is the natural diversity of fish species with various tolerances to modified water quality	3.00	75.00		
FISH ECOLOGICAL CATEGORY (FRAI/FISHCON %)	14.00	305.00	27.50	E
AQUATIC INVERTEBRATES				
1. What is the natural diversity of invertebrate biotopes	3.00	75.00		
2. What is the natural diversity of invertebrate taxa with different velocity requirements	4.00	100.00		
3. What is the natural diversity of invertebrate taxa with different tolerances to modified water quality	2.00	40.00		
AQUATIC INVERTEBRATE ECOLOGICAL CATEGORY (MIRAI/INCON %)	9.00	215.00	55.24	D
INSTREAM ECOLOGICAL CATEGORY (EC AND %): NOT CONFIDENCE RATED, ONLY FISH IN INVERTEBRATE INDICATOR RATINGS FOR WEIGHTING OF FRAI/FISHCON AND MIRAI/INCON			42.25	D
CONSIDERED		520.00		
INSTREAM ECOLOGICAL CATEGORY: CONFIDENCE RATED	FRAI/FISHCON & MIRAI/INCON CONFIDENCE RATINGS			
Confidence rating for fish information	2.00			
Confidence rating for macro-invertebrate information	4.00			
INSTREAM ECOLOGICAL CATEGORY (%)	6.00	44.12		
INSTREAM ECOLOGICAL CATEOGORY		D		
RIPARIAN VEGETATION	RIPARIAN VEGETATION (VEGRAI/VEGCON) EC %	RIPARIAN VEGETATION (VEGRAI/VEGCON) EC		
RIPARIAN VEGETATION ECOLOGICAL CATEGORY	70.00	С		
INTEGRATED (INSTREAM & RIPARIAN VEGETATION) ECOSTATUS	CONFIDENCE RATING			
Confidence rating for instream biological information	3.20			
Confidence rating for riparian vegetation zone information	2.00			
INTEGRATED ECOLOGICAL CATEGORY (%)	5.20	54.08		
INTEGRATED ECOSTATUS CATEGORY		D		
Kat River (Lower)

INSTREAM BIOTA	IMPORTANCE SCORE	WEIGHT	FRAI/FISHC ON & MIRAI/INCO N EC %	FRAI/FISHCON & MIRAI/INCON EC
FISH				
1.What is the natural diversity of fish species with different flow requirements	1.00	35.00		
2.What is the natural diversity of fish species with a preference for different cover types	4.00	100.00		
3.What is the natural diversity of fish species with a preference for different flow depth classes	3.00	80.00		
4. What is the natural diversity of fish species with various tolerances to modified water quality	3.00	80.00		
FISH ECOLOGICAL CATEGORY (FRAI/FISHCON %)	11.00	295.00	26.30	E
AQUATIC INVERTEBRATES		•		
1. What is the natural diversity of invertebrate biotopes	4.00	100.00		
2. What is the natural diversity of invertebrate taxa with different velocity requirements	2.00	60.00		
3. What is the natural diversity of invertebrate taxa with different tolerances to modified water quality	3.00	80.00		
AQUATIC INVERTEBRATE ECOLOGICAL CATEGORY (MIRAI/INCON %)	9.00	240.00	67.49	С
INSTREAM ECOLOGICAL CATEGORY (EC AND %): NOT CONFIDENCE RATED, ONLY FISH IN INVERTEBRATE INDICATOR RATINGS FOR WEIGHTING OF FRAI/FISHCON AND MIRAI/INCON			50.05	D
CONSIDERED		535.00		
INSTREAM ECOLOGICAL CATEGORY: CONFIDENCE RATED	FRAI/FISHCON & MIRAI/INCON CONFIDENCE RATINGS			
Confidence rating for fish information	2.00			
Confidence rating for macro-invertebrate information	4.00			
INSTREAM ECOLOGICAL CATEGORY (%)	6.00	51.90		
INSTREAM ECOLOGICAL CATEOGORY		D		
RIPARIAN VEGETATION	RIPARIAN VEGETATION (VEGRAI/VEGCON) EC %	RIPARIAN VEGETATION (VEGRAI/VEGCON) EC		
RIPARIAN VEGETATION ECOLOGICAL CATEGORY	68.00	С		
INTEGRATED (INSTREAM & RIPARIAN VEGETATION) ECOSTATUS	CONFIDENCE RATING			
Confidence rating for instream biological information	3.24			
Confidence rating for riparian vegetation zone information	3.00			
INTEGRATED ECOLOGICAL CATEGORY (%)	6.24	59.64		
INTEGRATED ECOSTATUS CATEGORY		C/D		

Great Fish River (Upper)

INSTREAM BIOTA	IMPORTANCE SCORE	WEIGHT	FRAI/FISHC ON & MIRAI/INCO N EC %	FRAI/FISHCON & MIRAI/INCON EC
FISH				
1. What is the natural diversity of fish species with different flow requirements	1.00	50.00		
2. What is the natural diversity of fish species with a preference for different cover types	2.00	100.00		
3. What is the natural diversity of fish species with a preference for different flow depth classes	2.00	100.00		
4. What is the natural diversity of fish species with various tolerances to modified water quality	1.00	50.00		
FISH ECOLOGICAL CATEGORY (FRAI/FISHCON %)	6.00	300.00	17.50	F
AQUATIC INVERTEBRATES				
1. What is the natural diversity of invertebrate biotopes	1.00	25.00		
2. What is the natural diversity of invertebrate taxa with different velocity requirements	2.00	55.00		
3. What is the natural diversity of invertebrate taxa with different tolerances to modified water quality	3.00	100.00		
AQUATIC INVERTEBRATE ECOLOGICAL CATEGORY (MIRAI/INCON %)	6.00	180.00	60.63	C/D
INSTREAM ECOLOGICAL CATEGORY (EC AND %): NOT CONFIDENCE RATED, ONLY FISH IN INVERTEBRATE INDICATOR RATINGS FOR WEIGHTING OF FRAI/FISHCON AND MIRAI/INCON		480.00	45.93	D
CONSIDERED		460.00		
INSTREAM ECOLOGICAL CATEGORY: CONFIDENCE RATED	FRAI/FISHCON & MIRAI/INCON CONFIDENCE RATINGS			
Confidence rating for fish information	2.00			
Confidence rating for macro-invertebrate information	2.00			
INSTREAM ECOLOGICAL CATEGORY (%)	4.00	42.50		
INSTREAM ECOLOGICAL CATEOGORY		D		
RIPARIAN VEGETATION	RIPARIAN VEGETATION (VEGRAI/VEGCON) EC %	RIPARIAN VEGETATION (VEGRAI/VEGCON) EC		
RIPARIAN VEGETATION ECOLOGICAL CATEGORY	46.00	D		
INTEGRATED (INSTREAM & RIPARIAN VEGETATION) ECOSTATUS	CONFIDENCE RATING			
Confidence rating for instream biological information	2.00			
Confidence rating for riparian vegetation zone information	2.00			
INTEGRATED FCOLOGICAL CATEGORY (%)	4.00	44.25		
INTEGRATED ECOSTATUS CATEGORY		D		

Tarka River

INSTREAM BIOTA	IMPORTANCE SCORE	WEIGHT	FRAI/FISHC ON & MIRAI/INCO N EC %	FRAI/FISHCON & MIRAI/INCON EC
FISH				
1.What is the natural diversity of fish species with different flow requirements	1.00	30.00		
2.What is the natural diversity of fish species with a preference for different cover types	3.00	100.00		
3.What is the natural diversity of fish species with a preference for different flow depth classes	3.00	100.00		
4. What is the natural diversity of fish species with various tolerances to modified water quality	2.00	50.00		
FISH ECOLOGICAL CATEGORY (FRAI/FISHCON %)	9.00	280.00	10.30	F
AQUATIC INVERTEBRATES				
1. What is the natural diversity of invertebrate biotopes	3.00	100.00		
2. What is the natural diversity of invertebrate taxa with different velocity requirements	1.00	35.00		
3. What is the natural diversity of invertebrate taxa with different tolerances to modified water quality	2.00	50.00		
AQUATIC INVERTEBRATE ECOLOGICAL CATEGORY (MIRAI/INCON %)	6.00	185.00	47.29	D
INSTREAM ECOLOGICAL CATEGORY (EC AND %): NOT CONFIDENCE RATED, ONLY FISH IN INVERTEBRATE INDICATOR RATINGS FOR WEIGHTING OF FRAI/FISHCON AND MIRAI/INCON			30.50	Е
CONSIDERED		465.00		
INSTREAM ECOLOGICAL CATEGORY: CONFIDENCE RATED	FRAI/FISHCON & MIRAI/INCON CONFIDENCE RATINGS			
Confidence rating for fish information	1.00			
Confidence rating for macro-invertebrate information	2.00			
INSTREAM ECOLOGICAL CATEGORY (%)	3.00	32.73		
INSTREAM ECOLOGICAL CATEOGORY		E		
RIPARIAN VEGETATION	RIPARIAN VEGETATION (VEGRAI/VEGCON) EC %	RIPARIAN VEGETATION (VEGRAI/VEGCON) EC		
RIPARIAN VEGETATION ECOLOGICAL CATEGORY	76.00	С		
	1			
INTEGRATED (INSTREAM & RIPARIAN VEGETATION) ECOSTATUS	CONFIDENCE RATING			
Confidence rating for instream biological information	1.61			
Confidence rating for riparian vegetation zone information	2.00			
INTEGRATED ECOLOGICAL CATEGORY (%)	3.61	56.73		
INTEGRATED ECOSTATUS CATEGORY		D		

Sundays River (Lower)

INSTREAM BIOTA	IMPORTANCE SCORE	WEIGHT	FRAI/FISHC ON & MIRAI/INCO N EC %	FRAI/FISHCON & MIRAI/INCON EC
FISH				
1. What is the natural diversity of fish species with different flow requirements	2.00	35.00		
2. What is the natural diversity of fish species with a preference for different cover types	5.00	100.00		
3.What is the natural diversity of fish species with a preference for different flow depth classes	4.00	90.00		
4. What is the natural diversity of fish species with various tolerances to modified water quality	3.00	60.00		
FISH ECOLOGICAL CATEGORY (FRAI/FISHCON %)	14.00	285.00	50.40	D
AQUATIC INVERTEBRATES				
1. What is the natural diversity of invertebrate biotopes	5.00	100.00		
2. What is the natural diversity of invertebrate taxa with different velocity requirements	2.00	45.00		
3. What is the natural diversity of invertebrate taxa with different tolerances to modified water quality	3.00	75.00		
AQUATIC INVERTEBRATE ECOLOGICAL CATEGORY (MIRAI/INCON %)	10.00	220.00	58.63	C/D
INSTREAM ECOLOGICAL CATEGORY (EC AND %): NOT CONFIDENCE RATED, ONLY FISH IN INVERTEBRATE INDICATOR RATINGS FOR WEIGHTING OF FRAI/FISHCON AND MIRAI/INCON			55.00	D
CONSIDERED		505.00		
INSTREAM ECOLOGICAL CATEGORY: CONFIDENCE RATED	FRAI/FISHCON & MIRAI/INCON CONFIDENCE RATINGS			
Confidence rating for fish information	2.00			
Confidence rating for macro-invertebrate information	2.00			
INSTREAM ECOLOGICAL CATEGORY (%)	4.00	54.76		
INSTREAM ECOLOGICAL CATEOGORY		D		
RIPARIAN VEGETATION	RIPARIAN VEGETATION (VEGRAI/VEGCON) EC %	RIPARIAN VEGETATION (VEGRAI/VEGCON) EC		
RIPARIAN VEGETATION ECOLOGICAL CATEGORY	52.00	D		
INTEGRATED (INSTREAM & RIPARIAN VEGETATION) ECOSTATUS	CONFIDENCE RATING			
Confidence rating for instream biological information	2.00			
Confidence rating for riparian vegetation zone information	2.00			
INTEGRATED ECOLOGICAL CATEGORY (%)	4.00	53.38		
INTEGRATED ECOSTATUS CATEGORY		D		

Kouga River

		WEIGUT		
	IMPORTANCE SCORE	WEIGHT	FRAI/FISHC	
EICH			NEC %	
FIGH 1. What is the natural diversity of fish species with different flow requirements	2.00	70.00		
1. What is the natural diversity of isin species with dimension requirements	2.00	70.00		
2. What is the natural diversity of isin species with a preference for different flow dorth slopes	3.00	70.00		
5. What is the natural diversity of 151 species with a preference for different now depth classes	2.00	70.00		
4. What is the natural diversity of this species with various tolerances to modified water quality	1.00	45.00	7.10	E
	8.00	265.00	7.10	<u> </u>
	4.00	05.00		
1. What is the natural diversity of invertebrate biotopes	4.00	95.00		
2. What is the natural diversity of invertebrate taxa with different velocity requirements	5.00	100.00		
3. What is the natural diversity of invertebrate taxa with different tolerances to modified water quality	3.00	85.00	70.00	0/B
AQUATIC INVERTEBRATE ECOLOGICAL CATEGORY (MIRAI/INCON %)	12.00	280.00	78.93	C/B
INSTREAM ECOLOGICAL CATEGORY (EC AND %): NOT CONFIDENCE RATED, ONLY FISH IN			58.20	C/D
INVERTEBRATE INDICATOR RATINGS FOR WEIGHTING OF FRAI/FISHCON AND MIRAI/INCON				
CONSIDERED		565.00		
INSTREAM ECOLOGICAL CATEGORY: CONFIDENCE RATED	FRAI/FISHCON & MIRAI/INCON			
	CONFIDENCE RATINGS			
Confidence rating for fish information	2.00			
Confidence rating for macro-invertebrate information	4.00			
INSTREAM ECOLOGICAL CATEGORY (%)	6.00	56.59		
INSTREAM ECOLOGICAL CATEOGORY		D		
RIPARIAN VEGETATION	RIPARIAN VEGETATION	RIPARIAN		
	(VEGRAI/VEGCON) EC %	VEGETATION		
		(VEGRAI/VEGCON) EC		
RIPARIAN VEGETATION ECOLOGICAL CATEGORY	75.00	С		
	13.00			
				
INTEGRATED (INSTREAM & RIPARIAN VEGETATION) ECOSTATUS	CONFIDENCE RATING			
Confidence rating for instream biological information	3.38			
Confidence rating for riparian vegetation zone information	3.00			
INTEGRATED ECOLOGICAL CATEGORY (%)	6.38	65.25		
INTEGRATED ECOSTATUS CATEGORY		C		

Kromme River

		WEICHT		
	INFORTANCE SCORE	WEIGHT	ON &	
			N FC %	
FISH				
1.What is the natural diversity of fish species with different flow requirements	1.00	70.00		
2.What is the natural diversity of fish species with a preference for different cover types	3.00	100.00		
3.What is the natural diversity of fish species with a preference for different flow depth classes	2.00	90.00		
4. What is the natural diversity of fish species with various tolerances to modified water quality	1.00	70.00		
FISH ECOLOGICAL CATEGORY (FRAI/FISHCON %)	7.00	330.00	9.20	F
AQUATIC INVERTEBRATES				
1. What is the natural diversity of invertebrate biotopes	4.00	100.00		
2. What is the natural diversity of invertebrate taxa with different velocity requirements	3.00	90.00		
3. What is the natural diversity of invertebrate taxa with different tolerances to modified water quality	2.00	85.00		
AQUATIC INVERTEBRATE ECOLOGICAL CATEGORY (MIRAI/INCON %)	9.00	275.00	70.00	С
INSTREAM ECOLOGICAL CATEGORY (EC AND %): NOT CONFIDENCE RATED, ONLY FISH IN			50.81	D
INVERTEBRATE INDICATOR RATINGS FOR WEIGHTING OF FRAI/FISHCON AND MIRAI/INCON				
CONSIDERED		605.00		
INSTREAM ECOLOGICAL CATEGORY: CONFIDENCE RATED	FRAI/FISHCON & MIRAI/INCON			
	CONFIDENCE RATINGS			
Confidence rating for fish information	2.00			
Confidence rating for macro-invertebrate information	5.00			
INSTREAM ECOLOGICAL CATEGORY (%)	7.00	51.72	ĺ	
INSTREAM ECOLOGICAL CATEOGORY		D		
RIPARIAN VEGETATION	RIPARIAN VEGETATION	RIPARIAN		
	(VEGRAI/VEGCON) EC %	VEGETATION		
		(VEGRAI/VEGCON) EC		
RIPARIAN VEGETATION ECOLOGICAL CATEGORY	65.00	С		
	00.00			
INTEGRATED (INSTREAM & RIPARIAN VEGETATION) ECOSTATUS	CONFIDENCE RATING			
Confidence rating for instream biological information	4.10			
Confidence rating for riparian vegetation zone information	3.00			
INTEGRATED ECOLOGICAL CATEGORY (%)	7.10	57.33		
INTEGRATED ECOSTATUS CATEGORY		D		

INTERMEDIATE SITES

Mthatha River (Lower)

INSTREAM BIOTA	IMPORTANCE SCORE	WEIGHT	FRAI/FISHC ON &	FRAI/FISHCON & MIRAI/INCON EC
			MIRAI/INCO N EC %	
FISH				
1.What is the natural diversity of fish species with different flow requirements	4.00	70.00		
2.What is the natural diversity of fish species with a preference for different cover types	5.00	100.00		
3.What is the natural diversity of fish species with a preference for different flow depth classes	5.00	100.00		
4. What is the natural diversity of fish species with various tolerances to modified water quality	3.00	50.00		
FISH ECOLOGICAL CATEGORY (FRAI/FISHCON %)	17.00	320.00	70.00	С
AQUATIC INVERTEBRATES				
1. What is the natural diversity of invertebrate biotopes	4.00	95.00		
2. What is the natural diversity of invertebrate taxa with different velocity requirements	5.00	100.00		
3. What is the natural diversity of invertebrate taxa with different tolerances to modified water quality	3.00	85.00		
AQUATIC INVERTEBRATE ECOLOGICAL CATEGORY (MIRAI/INCON %)	12.00	280.00	66.04	С
INSTREAM ECOLOGICAL CATEGORY (EC AND %): NOT CONFIDENCE RATED, ONLY FISH IN INVERTEBRATE INDICATOR RATINGS FOR WEIGHTING OF FRAUFISHCON AND MIRAU/INCON			67.83	С
CONSIDERED		600.00		L
Confidence rating for fish information	3.00			
Confidence rating for macro-invertebrate information	4.00			
INSTREAM ECOLOGICAL CATEGORY (%)	7.00	67.78	1	
INSTREAM ECOLOGICAL CATEOGORY		С		
RIPARIAN VEGETATION	RIPARIAN VEGETATION	RIPARIAN		
	(VEGRAI/VEGCON) EC %	VEGETATION		
		(VEGRAI/VEGCON) EC		
RIPARIAN VEGETATION ECOLOGICAL CATEGORY	53 70	D		
	00.70			
INTEGRATED (INSTREAM & RIPARIAN VEGETATION) ECOSTATUS	CONFIDENCE RATING			
Confidence rating for instream biological information	3.56			
Confidence rating for riparian vegetation zone information	2.00			
INTEGRATED ECOLOGICAL CATEGORY (%)	5 56	62 72	1	
	5.50	02.72		

Mbhashe River (Middle)

INSTREAM BIOTA	IMPORTANCE SCORE	WEIGHT	FRAI/FISHC ON & MIRAI/INCO N EC %	FRAI/FISHCON & MIRAI/INCON EC
FISH				
1.What is the natural diversity of fish species with different flow requirements	3.00	50.00		
2.What is the natural diversity of fish species with a preference for different cover types	4.00	100.00		
3.What is the natural diversity of fish species with a preference for different flow depth classes	4.00	100.00		
4. What is the natural diversity of fish species with various tolerances to modified water quality	2.00	45.00		
FISH ECOLOGICAL CATEGORY (FRAI/FISHCON %)	13.00	295.00	46.20	D
AQUATIC INVERTEBRATES				
1. What is the natural diversity of invertebrate biotopes	4.00	95.00		
2. What is the natural diversity of invertebrate taxa with different velocity requirements	5.00	100.00		
3. What is the natural diversity of invertebrate taxa with different tolerances to modified water quality	3.00	80.00		
AQUATIC INVERTEBRATE ECOLOGICAL CATEGORY (MIRAI/INCON %)	12.00	275.00	67.17	С
INSTREAM ECOLOGICAL CATEGORY (EC AND %): NOT CONFIDENCE RATED, ONLY FISH IN			58.92	C/D
INVERTEBRATE INDICATOR RATINGS FOR WEIGHTING OF FRAI/FISHCON AND MIRAI/INCON				
CONSIDERED		570.00		
INSTREAM ECOLOGICAL CATEGORY: CONFIDENCE RATED	FRAI/FISHCON & MIRAI/INCON CONFIDENCE RATINGS			
Confidence rating for fish information	3.00			
Confidence rating for macro-invertebrate information	4.00			
INSTREAM ECOLOGICAL CATEGORY (%)	7.00	58.55		
INSTREAM ECOLOGICAL CATEOGORY		C/D		
RIPARIAN VEGETATION	RIPARIAN VEGETATION (VEGRAI/VEGCON) EC %	RIPARIAN VEGETATION (VEGRAI/VEGCON) EC		
RIPARIAN VEGETATION ECOLOGICAL CATEGORY	58.90	C/D		
INTEGRATED (INSTREAM & RIPARIAN VEGETATION) ECOSTATUS	CONFIDENCE RATING			
Contidence rating for instream biological information	3.59			
Confidence rating for riparian vegetation zone information	3.20			
INTEGRATED ECOLOGICAL CATEGORY (%)	6.79	58.71		
INTEGRATED ECOSTATUS CATEGORY		C/D		

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Black Kei River

INSTREAM BIOTA	IMPORTANCE SCORE	WEIGHT	FRAI/FISHC ON & MIRAI/INCO N EC %	FRAI/FISHCON & MIRAI/INCON EC
FISH				
1.What is the natural diversity of fish species with different flow requirements	1.00	50.00		
2.What is the natural diversity of fish species with a preference for different cover types	2.00	100.00		
3.What is the natural diversity of fish species with a preference for different flow depth classes	2.00	100.00		
4. What is the natural diversity of fish species with various tolerances to modified water quality	1.00	50.00		
FISH ECOLOGICAL CATEGORY (FRAI/FISHCON %)	6.00	300.00	23.50	E
AQUATIC INVERTEBRATES				
1. What is the natural diversity of invertebrate biotopes	3.00	100.00		
2. What is the natural diversity of invertebrate taxa with different velocity requirements	3.00	90.00		
3. What is the natural diversity of invertebrate taxa with different tolerances to modified water quality	2.00	85.00		
AQUATIC INVERTEBRATE ECOLOGICAL CATEGORY (MIRAI/INCON %)	8.00	275.00	40.65	D/E
INSTREAM ECOLOGICAL CATEGORY (EC AND %): NOT CONFIDENCE RATED, ONLY FISH IN INVERTEBRATE INDICATOR RATINGS FOR WEIGHTING OF FRAI/FISHCON AND MIRAI/INCON			35.21	E
CONSIDERED		575.00		
INSTREAM ECOLOGICAL CATEGORY: CONFIDENCE RATED	FRAI/FISHCON & MIRAI/INCON CONFIDENCE RATINGS			
Confidence rating for fish information	4.00			
Confidence rating for macro-invertebrate information	4.00			
INSTREAM ECOLOGICAL CATEGORY (%)	8.00	33.64		
INSTREAM ECOLOGICAL CATEOGORY		E		
RIPARIAN VEGETATION	RIPARIAN VEGETATION	RIPARIAN		
	(VEGRAI/VEGCON) EC %	VEGETATION		
	((VEGRAI/VEGCON) EC		
	48.60			
INTEGRATED (INSTREAM & RIPARIAN VEGETATION) ECOSTATUS	CONFIDENCE RATING			
Confidence rating for instream biological information	4 00			
Contidence rating for instream biological information	4.00			
	7.10	/0.17		
	1.10	40.17		
INTEGRATED ECOSTATUS CATEGORT				

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Great Kei River

INSTREAM BIOTA	IMPORTANCE SCORE	WEIGHT	FRAI/FISHC ON &	FRAI/FISHCON & MIRAI/INCON EC
FISH				
1.What is the natural diversity of fish species with different flow requirements	3.00	65.00		
2.What is the natural diversity of fish species with a preference for different cover types	5.00	100.00		
3. What is the natural diversity of fish species with a preference for different flow depth classes	4.00	90.00		
4. What is the natural diversity of fish species with various tolerances to modified water quality	2.00	30.00		
FISH ECOLOGICAL CATEGORY (FRAI/FISHCON %)	14.00	285.00	47.50	D
AQUATIC INVERTEBRATES	-		-	
1. What is the natural diversity of invertebrate biotopes	4.00	95.00		
2. What is the natural diversity of invertebrate taxa with different velocity requirements	5.00	100.00		
3. What is the natural diversity of invertebrate taxa with different tolerances to modified water quality	3.00	80.00		
AQUATIC INVERTEBRATE ECOLOGICAL CATEGORY (MIRAI/INCON %)	12.00	275.00	65.10	С
INSTREAM ECOLOGICAL CATEGORY (EC AND %): NOT CONFIDENCE RATED, ONLY FISH IN			57.73	D
INVERTEBRATE INDICATOR RATINGS FOR WEIGHTING OF FRAI/FISHCON AND MIRAI/INCON				
CONSIDERED		560.00		
INSTREAM ECOLOGICAL CATEGORY: CONFIDENCE RATED	FRAI/FISHCON & MIRAI/INCON			
	CONFIDENCE RATINGS			
Confidence rating for fish information	2.00			
Confidence rating for macro-invertebrate information	4.00			
INSTREAM ECOLOGICAL CATEGORY (%)	6.00	58.48		
INSTREAM ECOLOGICAL CATEOGORY		C/D		
RIPARIAN VEGETATION	RIPARIAN VEGETATION	RIPARIAN		
	(VEGRAI/VEGCON) EC %	VEGETATION		
	· · · · · · · · · · · · · · · · · · ·	(VEGRAI/VEGCON) EC		
RIPARIAN VEGETATION ECOLOGICAL CATEGORY	59.20	C/D	1	
	58.20	•,=		
INTEGRATED (INSTREAM & RIPARIAN VEGETATION) ECOSTATUS	CONFIDENCE RATING			
Confidence rating for instream biological information	3.25			
Confidence rating for riparian vegetation zone information	3.20			
INTEGRATED ECOLOGICAL CATEGORY (%)	6.45	58.34		
INTEGRATED ECOSTATUS CATEGORY		C/D		

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Tsomo River

INSTREAM BIOTA	IMPORTANCE SCORE	WEIGHT	FRAI/FISHC ON & MIRAI/INCO N EC %	FRAI/FISHCON & MIRAI/INCON EC
FISH				
1.What is the natural diversity of fish species with different flow requirements	1.00	50.00		
2.What is the natural diversity of fish species with a preference for different cover types	2.00	100.00		
3.What is the natural diversity of fish species with a preference for different flow depth classes	2.00	100.00		
4. What is the natural diversity of fish species with various tolerances to modified water quality	1.00	50.00		
FISH ECOLOGICAL CATEGORY (FRAI/FISHCON %)	6.00	300.00	33.90	E
AQUATIC INVERTEBRATES				
1. What is the natural diversity of invertebrate biotopes	2.00	80.00		
2. What is the natural diversity of invertebrate taxa with different velocity requirements	3.00	90.00		
3. What is the natural diversity of invertebrate taxa with different tolerances to modified water quality	4.00	100.00		
AQUATIC INVERTEBRATE ECOLOGICAL CATEGORY (MIRAI/INCON %)	9.00	270.00	63.66	С
INSTREAM ECOLOGICAL CATEGORY (EC AND %): NOT CONFIDENCE RATED, ONLY FISH IN INVERTEBRATE INDICATOR RATINGS FOR WEIGHTING OF FRAI/FISHCON AND MIRAI/INCON			55.06	D
CONSIDERED		570.00		
INSTREAM ECOLOGICAL CATEGORY: CONFIDENCE RATED	FRAI/FISHCON & MIRAI/INCON CONFIDENCE RATINGS			
Confidence rating for fish information	2.00			
Confidence rating for macro-invertebrate information	2.00			
INSTREAM ECOLOGICAL CATEGORY (%)	4.00	51.92		
INSTREAM ECOLOGICAL CATEOGORY		D		
RIPARIAN VEGETATION	RIPARIAN VEGETATION (VEGRAI/VEGCON) EC %	RIPARIAN VEGETATION (VEGRAI/VEGCON) EC		
RIPARIAN VEGETATION ECOLOGICAL CATEGORY	61.60	C/D		
	01.00			
INTEGRATED (INSTREAM & RIPARIAN VEGETATION) ECOSTATUS	CONFIDENCE RATING			
Confidence rating for instream biological information	2.00			
Confidence rating for riparian vegetation zone information	3.10			
INTEGRATED ECOLOGICAL CATEGORY (%)	5.10	57.80		
INTEGRATED ECOSTATUS CATEGORY		D		

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Buffalo River (Middle)

INSTREAM BIOTA	IMPORTANCE SCORE	WEIGHT	FRAI/FISHC ON & MIRAI/INCO	FRAI/FISHCON & MIRAI/INCON EC
			N EC %	
FISH				
1.What is the natural diversity of fish species with different flow requirements	3.00	60.00		
2.What is the natural diversity of fish species with a preference for different cover types	5.00	100.00		
3.What is the natural diversity of fish species with a preference for different flow depth classes	4.00	90.00		
4. What is the natural diversity of fish species with various tolerances to modified water quality	3.00	60.00		
FISH ECOLOGICAL CATEGORY (FRAI/FISHCON %)	15.00	310.00	28.50	E
AQUATIC INVERTEBRATES		•		
1. What is the natural diversity of invertebrate biotopes	4.00	85.00		
2. What is the natural diversity of invertebrate taxa with different velocity requirements	3.00	75.00		
3. What is the natural diversity of invertebrate taxa with different tolerances to modified water quality	5.00	100.00		
AQUATIC INVERTEBRATE ECOLOGICAL CATEGORY (MIRAI/INCON %)	12.00	260.00	61.62	C/D
INSTREAM ECOLOGICAL CATEGORY (EC AND %): NOT CONFIDENCE RATED, ONLY FISH IN			47.75	D
INVERTEBRATE INDICATOR RATINGS FOR WEIGHTING OF FRAI/FISHCON AND MIRAI/INCON				
CONSIDERED		570.00		
INSTREAM ECOLOGICAL CATEGORY: CONFIDENCE RATED	FRAI/FISHCON & MIRAI/INCON			
	CONFIDENCE RATINGS			
Confidence rating for fish information	3.00			
Confidence rating for macro-invertebrate information	3.00			
INSTREAM ECOLOGICAL CATEGORY (%)	6.00	46.40		
INSTREAM ECOLOGICAL CATEOGORY		D		
RIPARIAN VEGETATION	RIPARIAN VEGETATION	RIPARIAN		
	(VEGRAI/VEGCON) EC %	VEGETATION		
		(VEGRAI/VEGCON) EC		
RIPARIAN VEGETATION ECOLOGICAL CATEGORY	E1 20	D		
	51.20			
	•			
INTEGRATED (INSTREAM & RIPARIAN VEGETATION) ECOSTATUS	CONFIDENCE RATING			
Confidence rating for instream biological information	3.00			
Confidence rating for riparian vegetation zone information	3.10			
INTEGRATED ECOLOGICAL CATEGORY (%)	6.10	48.84		
INTEGRATED ECOSTATUS CATEGORY		D		

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Keiskamma (Upper)

INSTREAM BIOTA	IMPORTANCE SCORE	WEIGHT	FRAI/FISHC ON & MIRAI/INCO N EC %	FRAI/FISHCON & MIRAI/INCON EC
FISH				
1.What is the natural diversity of fish species with different flow requirements	2.00	50.00		
2.What is the natural diversity of fish species with a preference for different cover types	4.00	100.00		
3.What is the natural diversity of fish species with a preference for different flow depth classes	3.00	80.00		
4. What is the natural diversity of fish species with various tolerances to modified water quality	3.00	80.00		
FISH ECOLOGICAL CATEGORY (FRAI/FISHCON %)	12.00	310.00	28.80	E
AQUATIC INVERTEBRATES				
1. What is the natural diversity of invertebrate biotopes	2.00	75.00		
2. What is the natural diversity of invertebrate taxa with different velocity requirements	3.00	80.00		
3. What is the natural diversity of invertebrate taxa with different tolerances to modified water quality	4.00	100.00		
AQUATIC INVERTEBRATE ECOLOGICAL CATEGORY (MIRAI/INCON %)	9.00	255.00	74.60	С
INSTREAM ECOLOGICAL CATEGORY (EC AND %): NOT CONFIDENCE RATED, ONLY FISH IN			54.74	D
INVERTEBRATE INDICATOR RATINGS FOR WEIGHTING OF FRAI/FISHCON AND MIRAI/INCON				
CONSIDERED		565.00		
INSTREAM ECOLOGICAL CATEGORY: CONFIDENCE RATED	FRAI/FISHCON & MIRAI/INCON CONFIDENCE RATINGS			
Confidence rating for fish information	2.00			
Confidence rating for macro-invertebrate information	4.00			
INSTREAM ECOLOGICAL CATEGORY (%)	6.00	57.04		
INSTREAM ECOLOGICAL CATEOGORY		D		
RIPARIAN VEGETATION	RIPARIAN VEGETATION (VEGRAI/VEGCON) EC %	RIPARIAN VEGETATION (VEGRAI/VEGCON) EC		
RIPARIAN VEGETATION ECOLOGICAL CATEGORY	46.60	D		
INTEGRATED (INSTREAM & RIPARIAN VEGETATION) ECOSTATUS	CONFIDENCE RATING			
	3.23			
Confidence rating for riparian vegetation zone information	3.00			
INTEGRATED ECOLOGICAL CATEGORY (%)	6.23	52.01		
INTEGRATED ECOSTATUS CATEGORY		D		

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Kat River (Upper)

INSTREAM BIOTA	IMPORTANCE SCORE	WEIGHT	FRAI/FISHC ON & MIRAI/INCO N EC %	FRAI/FISHCON & MIRAI/INCON EC
FISH				
1.What is the natural diversity of fish species with different flow requirements	1.00	40.00		
2.What is the natural diversity of fish species with a preference for different cover types	3.00	100.00		
3.What is the natural diversity of fish species with a preference for different flow depth classes	3.00	100.00		
4. What is the natural diversity of fish species with various tolerances to modified water quality	2.00	80.00		
FISH ECOLOGICAL CATEGORY (FRAI/FISHCON %)	9.00	320.00	62.90	С
AQUATIC INVERTEBRATES				
1. What is the natural diversity of invertebrate biotopes	2.00	80.00		
2. What is the natural diversity of invertebrate taxa with different velocity requirements	3.00	90.00		
3. What is the natural diversity of invertebrate taxa with different tolerances to modified water quality	4.00	100.00		
AQUATIC INVERTEBRATE ECOLOGICAL CATEGORY (MIRAI/INCON %)	9.00	270.00	68.64	С
INSTREAM ECOLOGICAL CATEGORY (EC AND %): NOT CONFIDENCE RATED, ONLY FISH IN			66.47	С
INVERTEBRATE INDICATOR RATINGS FOR WEIGHTING OF FRAI/FISHCON AND MIRAI/INCON				
CONSIDERED		590.00		
INSTREAM ECOLOGICAL CATEGORY: CONFIDENCE RATED	FRAI/FISHCON & MIRAI/INCON CONFIDENCE RATINGS			
Confidence rating for fish information	3.00			
Confidence rating for macro-invertebrate information	4.00			
INSTREAM ECOLOGICAL CATEGORY (%)	7.00	66.32		
INSTREAM ECOLOGICAL CATEOGORY		С		
RIPARIAN VEGETATION	RIPARIAN VEGETATION (VEGRAI/VEGCON) EC %	RIPARIAN VEGETATION (VEGRAI/VEGCON) EC		
RIPARIAN VEGETATION ECOLOGICAL CATEGORY	73.90	С		
INTEGRATED (INSTREAM & RIPARIAN VEGETATION) ECOSTATUS	CONFIDENCE RATING			
Confidence rating for instream biological information	3.60			
Confidence rating for riparian vegetation zone information	3.60			
INTEGRATED ECOLOGICAL CATEGORY (%)	7.20	70.11		
INTEGRATED ECOSTATUS CATEGORY		С		

Great Fish River (Lower)

INSTREAM BIOTA	IMPORTANCE SCORE	WEIGHT	FRAI/FISHC ON & MIRAI/INCO N EC %	FRAI/FISHCON & MIRAI/INCON EC
FISH				
1.What is the natural diversity of fish species with different flow requirements	2.00	50.00		
2.What is the natural diversity of fish species with a preference for different cover types	4.00	100.00		
3.What is the natural diversity of fish species with a preference for different flow depth classes	3.00	90.00		
4. What is the natural diversity of fish species with various tolerances to modified water quality	2.00	50.00		
FISH ECOLOGICAL CATEGORY (FRAI/FISHCON %)	11.00	290.00	27.60	E
AQUATIC INVERTEBRATES				
1. What is the natural diversity of invertebrate biotopes	2.00	50.00		
2. What is the natural diversity of invertebrate taxa with different velocity requirements	2.00	65.00		
3. What is the natural diversity of invertebrate taxa with different tolerances to modified water quality	3.00	100.00		
AQUATIC INVERTEBRATE ECOLOGICAL CATEGORY (MIRAI/INCON %)	7.00	215.00	67.04	С
INSTREAM ECOLOGICAL CATEGORY (EC AND %): NOT CONFIDENCE RATED, ONLY FISH IN INVERTEBRATE INDICATOR RATINGS FOR WEIGHTING OF FRAI/FISHCON AND MIRAI/INCON			48.22	D
CONSIDERED		505.00		
INSTREAM ECOLOGICAL CATEGORY: CONFIDENCE RATED	FRAI/FISHCON & MIRAI/INCON CONFIDENCE RATINGS			
Confidence rating for fish information	2.00			
Confidence rating for macro-invertebrate information	2.00			
INSTREAM ECOLOGICAL CATEGORY (%)	4.00	47.77		
INSTREAM ECOLOGICAL CATEOGORY		D		
RIPARIAN VEGETATION	RIPARIAN VEGETATION (VEGRAI/VEGCON) EC %	RIPARIAN VEGETATION (VEGRAI/VEGCON) EC		
RIPARIAN VEGETATION ECOLOGICAL CATEGORY	71.50	С		
INTEGRATED (INSTREAM & RIPARIAN VEGETATION) ECOSTATUS	CONFIDENCE RATING			
Confidence rating for instream biological information	2.00			
Confidence rating for riparian vegetation zone information	3.00			
INTEGRATED ECOLOGICAL CATEGORY (%)	5.00	62.01		
INTEGRATED ECOSTATUS CATEGORY		С		

KwaZungu/Swartkops River

INSTREAM BIOTA	IMPORTANCE SCORE	WEIGHT	FRAI/FISHC ON & MIRAI/INCO N EC %	FRAI/FISHCON & MIRAI/INCON EC
FISH				
1.What is the natural diversity of fish species with different flow requirements	2.00	70.00		
2.What is the natural diversity of fish species with a preference for different cover types	3.00	100.00		
3.What is the natural diversity of fish species with a preference for different flow depth classes	3.00	100.00		
4. What is the natural diversity of fish species with various tolerances to modified water quality	2.00	70.00		
FISH ECOLOGICAL CATEGORY (FRAI/FISHCON %)	10.00	340.00	41.60	D/E
AQUATIC INVERTEBRATES				
1. What is the natural diversity of invertebrate biotopes	2.00	80.00		
2. What is the natural diversity of invertebrate taxa with different velocity requirements	3.00	85.00		
3. What is the natural diversity of invertebrate taxa with different tolerances to modified water quality	4.00	100.00		
AQUATIC INVERTEBRATE ECOLOGICAL CATEGORY (MIRAI/INCON %)	9.00	265.00	73.77	С
INSTREAM ECOLOGICAL CATEGORY (EC AND %): NOT CONFIDENCE RATED, ONLY FISH IN			61.32	C/D
INVERTEBRATE INDICATOR RATINGS FOR WEIGHTING OF FRAI/FISHCON AND MIRAI/INCON				
CONSIDERED		605.00		
INSTREAM ECOLOGICAL CATEGORY: CONFIDENCE RATED	FRAI/FISHCON & MIRAI/INCON CONFIDENCE RATINGS			
Confidence rating for fish information	4.00			
Confidence rating for macro-invertebrate information	5.00			
INSTREAM ECOLOGICAL CATEGORY (%)	9.00	60.40		
INSTREAM ECOLOGICAL CATEOGORY		C/D		
RIPARIAN VEGETATION	RIPARIAN VEGETATION (VEGRAI/VEGCON) EC %	RIPARIAN VEGETATION (VEGRAI/VEGCON) EC		
RIPARIAN VEGETATION ECOLOGICAL CATEGORY	82.40	В		
INTEGRATED (INSTREAM & RIPARIAN VEGETATION) ECOSTATUS	CONFIDENCE RATING			
Confidence rating for instream biological information	4.58			
Confidence rating for riparian vegetation zone information	3.00			
INTEGRATED ECOLOGICAL CATEGORY (%)	7.58	69.10		
INTEGRATED ECOSTATUS CATEGORY		C		

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Gamtoos River

INSTREAM BIOTA	IMPORTANCE SCORE	WEIGHT	FRAI/FISHC ON & MIRAI/INCO N EC %	FRAI/FISHCON & MIRAI/INCON EC
FISH				
1. What is the natural diversity of fish species with different flow requirements	2.00	60.00		
2.What is the natural diversity of fish species with a preference for different cover types	4.00	100.00		
3.What is the natural diversity of fish species with a preference for different flow depth classes	4.00	100.00		
4. What is the natural diversity of fish species with various tolerances to modified water quality	2.00	60.00		
FISH ECOLOGICAL CATEGORY (FRAI/FISHCON %)	12.00	320.00	45.50	D
AQUATIC INVERTEBRATES				
1. What is the natural diversity of invertebrate biotopes	2.00	70.00		
2. What is the natural diversity of invertebrate taxa with different velocity requirements	3.00	100.00		
3. What is the natural diversity of invertebrate taxa with different tolerances to modified water quality	2.00	80.00		
AQUATIC INVERTEBRATE ECOLOGICAL CATEGORY (MIRAI/INCON %)	7.00	250.00	42.13	D
INSTREAM ECOLOGICAL CATEGORY (EC AND %): NOT CONFIDENCE RATED, ONLY FISH IN INVERTEBRATE INDICATOR RATINGS FOR WEIGHTING OF FRAVFISHCON AND MIRAV/INCON			43.83	D
CONSIDERED		570.00		
INSTREAM ECOLOGICAL CATEGORY: CONFIDENCE RATED	FRAI/FISHCON & MIRAI/INCON CONFIDENCE RATINGS			
Confidence rating for fish information	3.00			
Confidence rating for macro-invertebrate information	4.00			
INSTREAM ECOLOGICAL CATEGORY (%)	7.00	43.70		
INSTREAM ECOLOGICAL CATEOGORY		D		
RIPARIAN VEGETATION	RIPARIAN VEGETATION (VEGRAI/VEGCON) EC %	RIPARIAN VEGETATION (VEGRAI/VEGCON) EC		
RIPARIAN VEGETATION ECOLOGICAL CATEGORY	54.40	D		
INTEGRATED (INSTREAM & RIPARIAN VEGETATION) ECOSTATUS	CONFIDENCE RATING			
Confidence rating for instream biological information	3.53			
Confidence rating for riparian vegetation zone information	3.00			
INTEGRATED ECOLOGICAL CATEGORY (%)	6.53	48.61		
INTEGRATED ECOSTATUS CATEGORY		D		

8. Appendix G: Summary of HAI Models

Please refer to the excel spreadsheets as per Chapter 1.

9. Appendix H: Summary of GAI Models

Please refer to the excel spreadsheets as per Chapter 1.

10. Appendix I: Summary of EI-ES Results

Important to note all areas under the Rapid/Intermediate column (this Study) which are not highlighted in green reflect that criteria whereby there was no available information or obtained data collected to re-evaluate this criterion. Consequently, it was retained as per the DWS (2014).

RAPID 3 SITES

		DADID	Mativatian
	DESKTOP (2014)	KAPID	Iviotivation
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH)	Low	Low	
RIPARIAN-WETLAND NATURAL VEG RATING			
BASED ON % NATURAL VEG IN 500m	Moderate	Moderate	
(100%=5)			
RIPARIAN-WETLAND NATURAL VEG IMPORTANCE BASED ON EXPERT RATING	Low	Low	
HABITAT DIVERSITY CLASS	Low	Moderate	Limited marginal vegetation and no instream aquatic vegetation Undercut banks
HABITAT SIZE (LENGTH) CLASS	High	High	
INSTREAM MIGRATION LINK CLASS	Very high	Very high	
RIPARIAN-WETLAND ZONE MIGRATION LINK	Very high	Very high	
RIPARIAN-WETLAND ZONE HABITAT			Exotic vegetation encroachment
INTEGRITY CLASS	Very high	Moderate	Cattle trampling and grazing (erosion)
INSTREAM HABITAT INTEGRITY CLASS	Very high	Moderate	 Mhlangu Dam in upper reaches (flow modification) Localised gravel mining Cattle trampling and grazing (erosion)
FINAL ECOLOGICAL IMPORTANCE FOR SITE	High	High	Remains high
ES METRIC	DESKTOP	RAPID	
FISH	1		
FISH PHYS-CHEMICAL SENSITIVITY	High	Moderate	All fish species expected and occuring regarded as moderately tolerant to modified water quality
FISH NO-FLOW SENSITIVITY	High	Moderate	Most fish species expected and occuring are considered to be tolerant to no-flow conditions, with several considered to be moderately tolerant and only one species expected to be moderately intolerant
INVER	TS		
INVERT PHYS-CHEMICAL SENSITIVITY	Very high	High	3 out of 4 expected taxa and 6 out of 14 expected taxa (with high FROCs) recorded for unmodified and moderately unmodified physico-chemical conditions changed
INVERTS VELOCITY SENSITIVITY	Very high	High	• 4 out of 5 and 4 out of 9 expected taxa (with high FROCs) recorded with a preference for very fast and moderately fast flowing water respectively
RIPARIAN-WETLAND VER	TEBRATES (NON-FISH)	
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH) INTOLERANCE TO WATER LEVEL/FLOW CHANGES	Low	Low	
RIPARIAN-WETLAN	D VEGETATION		
RIPARIAN-WETLAND VEGETATION INTOLERANCE TO WATER LEVEL CHANGES	Low	Low	
STREAM	SIZE	-	
STREAM SIZE SENSITIVITY TO MODIFIED FLOW/WATER LEVEL CHANGES	Low	High	 Small to moderate sized river Modified flows will have an impact on the current existing riffle habitats and longitudinal connectivity
FINAL ECOLOGICAL SENSITIVITY FOR SITE	Moderate	High	 Stream size sensitivity is the driving factor

Nqabarha River			
EI METRIC	DESKTOP (2014)	RAPID	Motivation
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH)	Low	Low	
RIPARIAN-WETLAND NATURAL VEG RATING			
BASED ON % NATURAL VEG IN 500m (100%=5)	High	High	
RIPARIAN-WETLAND NATURAL VEG IMPORTANCE BASED ON EXPERT RATING	Low	Low	
HABITAT DIVERSITY CLASS	Moderate	Low	• Stream reminiscent of incised valley-bottom wetland with limited fow sensitive habitat classes
HABITAT SIZE (LENGTH) CLASS	High	High	
INSTREAM MIGRATION LINK CLASS	Very high	Low	• Site located high in the catchment, with only one eel species (AMOS) expected, and at a low FROC. However, not sampled or expected under present state.
RIPARIAN-WETLAND ZONE MIGRATION LINK	Very high	Very high	
RIPARIAN-WETLAND ZONE HABITAT INTEGRITY CLASS	Very high	Moderate	 Macroplastics Cattle trampling and grazing (bank erosion) Recent floods impact largely due to catchment degradation
INSTREAM HABITAT INTEGRITY CLASS	High	Moderate	 Reduced baseflows owing to degradation of wetlands in upper catchment Bank erosion, incision Cattle trampling and grazing
FINAL ECOLOGICAL IMPORTANCE FOR SITE	Moderate	Moderate	Remains Moderate
ES METRIC	DESKTOP	RAPID	
FISF	1		
FISH PHYS-CHEMICAL SENSITIVITY	Moderate	Low	Limited fish diversity expected, with system currently dominated by non-native MSAL which is considered moderately tolerant to modified water quality
FISH NO-FLOW SENSITIVITY	Moderate	Low	• Limited fish diversity expected, with system currently dominated by non-native MSAL which is tolerant to no-flow conditions
INVER	RTS		
INVERT PHYS-CHEMICAL SENSITIVITY	Very high	Low	 1 out of 2 expected taxa and 3 out of 14 expected taxa (with high FROCs) recorded for unmodified and moderately unmodified physico-chemical conditions changed
INVERTS VELOCITY SENSITIVITY	Very high	Moderate	• 2 out of 4 and 3 out of 7 expected taxa (with high FROCs) recorded with a preference for very fast and moderately fast flowing water respectively
RIPARIAN-WETLAND VER	TEBRATES (NON-FISH)	
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH) INTOLERANCE TO WATER LEVEL/FLOW CHANGES	Low	Low	
RIPARIAN-WETLAN	D VEGETATION		
RIPARIAN-WETLAND VEGETATION INTOLERANCE TO WATER LEVEL CHANGES	High	High	
STREAM	SIZE		
STREAM SIZE SENSITIVITY TO MODIFIED FLOW/WATER LEVEL CHANGES	Low	High	Small stream size, moderate extent of riffle type habitats and several wetlands upstream
FINAL ECOLOGICAL SENSITIVITY FOR SITE	Moderate	Moderate	Remains Moderate

Mtentu River			
EI METRIC	DESKTOP (2014)	RAPID	Motivation
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH)	Low	Low	
RIPARIAN-WETLAND NATURAL VEG RATING BASED ON % NATURAL VEG IN 500m (100%=5)	High	High	
RIPARIAN-WETLAND NATURAL VEG IMPORTANCE BASED ON EXPERT RATING	Low	Low	
HABITAT DIVERSITY CLASS	Low	Moderate	Limited cover features (limited marginal vegetation and no aquatic macrophytes)
HABITAT SIZE (LENGTH) CLASS	Moderate	Moderate	
INSTREAM MIGRATION LINK CLASS	Very high		
RIPARIAN-WETLAND ZONE MIGRATION LINK	Very high	Very high	
RIPARIAN-WETLAND ZONE HABITAT INTEGRITY CLASS	Very high	Moderate	Exotic vegetation encroachment
INSTREAM HABITAT INTEGRITY CLASS	Very high	Very high	
FINAL ECOLOGICAL IMPORTANCE FOR SITE	High	High	Remains High
ES METRIC	DESKTOP	RAPID	
FISH	1		
FISH PHYS-CHEMICAL SENSITIVITY	High	Moderate	 Majority of species expected and occuring are considered to be moderately tolerant to modified water quality, with remainder considered to be tolerant
FISH NO-FLOW SENSITIVITY	High	Moderate	 Majority of species expected and occuring are considered to be moderately tolerant to tolerant of no-flow conditions, with only one species (MCAP) considered to be moderately intolerant and occurring at a low FROC
INVER	TS		
INVERT PHYS-CHEMICAL SENSITIVITY	Very high	High	 3 out of 6 expected taxa and 7 out of 13 expected taxa (with high FROCs) recorded for unmodified and moderately unmodified physico-chemical conditions changed
INVERTS VELOCITY SENSITIVITY	Very high	Very high	• 7 out of 7 and 6 out of 9 expected taxa (with high FROCs) recorded with a preference for very fast and moderately fast flowing water respectively
RIPARIAN-WETLAND VER	TEBRATES (NON-FISH)	
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH) INTOLERANCE TO WATER LEVEL/FLOW CHANGES	Low	Low	
RIPARIAN-WETLAN	D VEGETATION		
RIPARIAN-WETLAND VEGETATION INTOLERANCE TO WATER LEVEL CHANGES	Low	Low	
STREAM	SIZE		
STREAM SIZE SENSITIVITY TO MODIFIED FLOW/WATER LEVEL CHANGES	Low	Moderate	 Small to moderate sized river Seasonal limited flows will have an impact on the current existing riffle habitats
FINAL ECOLOGICAL SENSITIVITY FOR SITE	Moderate	High	 Stream size sensitivity is the driving factor

Mbhashe Rive (Upper)

EI METRIC	DESKTOP (2014)	RAPID	Motivation
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH)	Low	Low	
RIPARIAN-WETLAND NATURAL VEG RATING BASED ON % NATURAL VEG IN 500m (100%=5)	Very high	Very high	
RIPARIAN-WETLAND NATURAL VEG IMPORTANCE BASED ON EXPERT RATING	Low	Low	
HABITAT DIVERSITY CLASS	Very Low	Moderate	 Limited cover features present Bedrock, large boulders dominated
HABITAT SIZE (LENGTH) CLASS	Low	Low	
INSTREAM MIGRATION LINK CLASS	Very high	High	 Decreased FROC of species with a catchment-scale migrations requirements (ABIC, AMAR, AMOS), but non-native species present (BAEN) also undertaking upstream migration
RIPARIAN-WETLAND ZONE MIGRATION LINK	High	High	
RIPARIAN-WETLAND ZONE HABITAT INTEGRITY CLASS	High	Very high	
INSTREAM HABITAT INTEGRITY CLASS	High	Very high	
FINAL ECOLOGICAL IMPORTANCE FOR SITE	Moderate	High	• The driver being the habitat diversity class
ES METRIC	DESKTOP	RAPID	
FISH	1		
FISH PHYS-CHEMICAL SENSITIVITY	Moderate	Moderate	
FISH NO-FLOW SENSITIVITY	Moderate	Moderate	
INVER	TS		
INVERT PHYS-CHEMICAL SENSITIVITY	Very high	Moderate	• 3 out of 9 expected taxa and 5 out of 19 expected taxa (several with high FROCs) recorded for unmodified and moderately unmodified physico-chemical conditions changed
INVERTS VELOCITY SENSITIVITY	Very high	Very high	 4 out of 7 and 5 out of 9 expected taxa (with high FROCs) recorded with a preference for very fast and moderately fast flowing water respectively
RIPARIAN-WETLAND VER	TEBRATES (NON-FISH))	
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH) INTOLERANCE TO WATER LEVEL/FLOW CHANGES	Low	Low	
RIPARIAN-WETLAN	D VEGETATION		
RIPARIAN-WETLAND VEGETATION INTOLERANCE TO WATER LEVEL CHANGES	Low	Low	
STREAM	SIZE		
STREAM SIZE SENSITIVITY TO MODIFIED FLOW/WATER LEVEL CHANGES	Low	Moderate	Moderate size river and will loose habitat/riffles if flows are altered
FINAL ECOLOGICAL SENSITIVITY FOR SITE	Moderate	Moderate	Remained Moderate

Gcuwa River			
EI METRIC	DESKTOP (2014)	RAPID	Motivation
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH)	Low	Low	
RIPARIAN-WETLAND NATURAL VEG RATING			
BASED ON % NATURAL VEG IN 500m (100%=5)	Very high	Very high	
RIPARIAN-WETLAND NATURAL VEG IMPORTANCE BASED ON EXPERT RATING	Low	Low	
HABITAT DIVERSITY CLASS	Low	Low	
HABITAT SIZE (LENGTH) CLASS	High	High	
INSTREAM MIGRATION LINK CLASS	Moderate	Low	Gcuwa Dam wall impeding any further migration upstream
RIPARIAN-WETLAND ZONE MIGRATION LINK	Moderate	Moderate	
RIPARIAN-WETLAND ZONE HABITAT INTEGRITY CLASS	Moderate	Moderate	
INSTREAM HABITAT INTEGRITY CLASS	High	Low	• Bed and flow modification as the site is located directly downstream of the Gcuwa Dam wall
FINAL ECOLOGICAL IMPORTANCE FOR SITE	Moderate	Moderate	
ES METRIC	DESKTOP	RAPID	
FISH	1		
FISH PHYS-CHEMICAL SENSITIVITY	Moderate	Moderate	
FISH NO-FLOW SENSITIVITY	Moderate	Moderate	
INVER	TS		
INVERT PHYS-CHEMICAL SENSITIVITY	Moderate	Moderate	• 1 out of 5 and 1 out of 12 expected taxa (majority of the absent taxa have high frocs) recorded for unmodified and moderately unmodified physico- chemical conditions changed respectively.
INVERTS VELOCITY SENSITIVITY	Very high	Moderate	• 3 out of 6 and 2 out of 9 expected taxa (majority of the absent taxa have high frocs) recorded with a preference for very fast and moderately fast flowing water respectively
RIPARIAN-WETLAND VER	TEBRATES (NON-FISH)	
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH) INTOLERANCE TO WATER LEVEL/FLOW CHANGES	Low	Low	
RIPARIAN-WETLAN	D VEGETATION		
RIPARIAN-WETLAND VEGETATION INTOLERANCE TO WATER LEVEL CHANGES	Low	Low	
STREAM	SIZE		
STREAM SIZE SENSITIVITY TO MODIFIED FLOW/WATER LEVEL CHANGES	Low	Moderate	Small stream and largely pool type habitat
FINAL ECOLOGICAL SENSITIVITY FOR SITE	Moderate	Moderate	

Indwe River			
EI METRIC	DESKTOP (2014)	RAPID	Motivation
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH)	Low	Low	
RIPARIAN-WETLAND NATURAL VEG RATING			
BASED ON % NATURAL VEG IN 500m	Moderate	Moderate	
(100%=5)			
RIPARIAN-WETLAND NATURAL VEG	Low/	Low	
IMPORTANCE BASED ON EXPERT RATING	LOW	LOW	
HABITAT DIVERSITY CLASS	Low	Low	
HABITAT SIZE (LENGTH) CLASS	High	High	
INSTREAM MIGRATION LINK CLASS	Very high	Moderate	 Although one species with a requirment for catchment-scale migration is expected (AMOS), this is expected at a low FROC and was not expected under present conditions. Migration is however required for non-native species identified to be present (BAEN)
RIPARIAN-WETLAND ZONE MIGRATION LINK	Moderate	Moderate	
RIPARIAN-WETLAND ZONE HABITAT INTEGRITY CLASS	Moderate	High	
INSTREAM HABITAT INTEGRITY CLASS	Moderate	Moderate	
FINAL ECOLOGICAL IMPORTANCE FOR SITE	Moderate	Moderate	Remains Moderate
ES METRIC	DESKTOP	RAPID	
FISH	1		
FISH PHYS-CHEMICAL SENSITIVITY	Moderate	Low	Limited fish diversity expected, with system currently dominated by non-native species (BAEN and CGAR) which are considered moderately tolerant to modified water quality
FISH NO-FLOW SENSITIVITY	Moderate	Moderate	Limited fish diversity expected, with assemblage currently dominated by non-native BAEN which is considered moderately intolerant to no-flow conditions
INVER	rts		
INVERT PHYS-CHEMICAL SENSITIVITY	Moderate	Low	• 1 out of 4 expected taxa (mostly with high FROCs) recorded for unmodified physico-chemical conditions changed
INVERTS VELOCITY SENSITIVITY	Very high	Moderate	• 3 out of 5 and 0 out of 9 expected taxa (mostely with high FROCs) recorded with a preference for very fast and moderately fast flowing water respectively
RIPARIAN-WETLAND VER	TEBRATES (NON-FISH)	
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH) INTOLERANCE TO WATER LEVEL/FLOW CHANGES	Low	Low	
RIPARIAN-WETLAND VEGETATION			
RIPARIAN-WETLAND VEGETATION INTOLERANCE TO WATER LEVEL CHANGES	Low	Low	
STREAM	SIZE		
STREAM SIZE SENSITIVITY TO MODIFIED FLOW/WATER LEVEL CHANGES	Low	High	 Small to moderate sized river Modified flows will have an impact on the current existing riffle habitats
FINAL ECOLOGICAL SENSITIVITY FOR SITE	Moderate	Moderate	Remains Moderate

W/hite	Kei	River
vviiite	Ner	nivei

EI METRIC	DESKTOP (2014)	RAPID	Motivation
RIPARIAN-WETLAND-INSTREAM			
VERTEBRATES (EX FISH)	LOW	LOW	
RIPARIAN-WETLAND NATURAL VEG RATING			
BASED ON % NATURAL VEG IN 500m	Very high	Very high	
(100%=5)	, 0	, 0	
RIPARIAN-WETLAND NATURAL VEG			
IMPORTANCE BASED ON EXPERT RATING	Low	Low	
HABITAT DIVERSITY CLASS	Verv Low	Low	
HABITAT SIZE (LENGTH) CLASS	low	Low	
	2011	LOW	Although one species with a requirment for
			catchment-scale migration is expected (AMOS), this
			is expected at a moderate FROC under reference and
INSTREAM MIGRATION LINK CLASS	High	High	and was likely to occur at a low FROC under present
			conditions.Reach-scale migration is however
			considered for non-native species identified to be
			present (BAEN)
DIDADIAN WETLAND ZONE MICRATION LINK	N de elevente	Madauata	
RIPARIAN-WEILAND ZONE MIGRATION LINK	Moderate	Moderate	
RIPARIAN-WETLAND ZONE HABITAT	Moderate	Moderate	
INTEGRITY CLASS	moderate	Moderate	
			Indwe and Xonxa Dams upstream
INSTREAM HABITAT INTEGRITY CLASS	High	Moderate	• Sand mining
		-	Cattle trampling and grazing (bank erosion)
FINAL ECOLOGICAL IMPORTANCE FOR SITE	Moderate	Moderate	Remains Moderate
ES METRIC	DESKTOP	RAPID	
FISH	1		
			Limited fish diversity expected, with system currently
	Moderate	Low	dominated by non-native species (BAEN and CGAR)
FISH FITTS-CHEIWICAE SENSITIVITT			which are considered moderately tolerant to
			modified water quality
			Limited fish diversity expected, with assemblage
	Moderate	Moderate	currently dominated by non-native BAEN which is
			considered moderately intolerant to no-flow
			conditions
INVER	rts		
			 2 out of 5 and 4 out of 14 expected taxa (several
	Manlausta	Madauata	with high FROCs) recorded for unmodified and
INVERT PHYS-CHEIVIICAL SEINSTITUTY	wouerate	woderate	moderately unmodified physico-chemical conditions
			changed respectively
	Vony high	Voruhigh	• 4 out of 7 and 6 out of 10 expected taxa (several
INVERTS VELOCITE SENSITIVITE	very nign	very nigh	with high FROCs) recorded with a preference for very
			fast and moderately fast flowing water respectively
RIPARIAN-WETLAND VER	TEBRATES (NON-FISH)	
RIPARIAN-WETLAND-INSTREAM			
VERTEBRATES (EX FISH) INTOLERANCE TO	Low	Low	
WATER LEVEL/FLOW CHANGES			
RIPARIAN-WETLAN	D VEGETATION		
RIPARIAN-WETLAND VEGETATION	Lew-	1.000	
INTOLERANCE TO WATER LEVEL CHANGES	LOW	LOW	
STREAM	SIZE		
			Moderate sized river
	Low	Moderate	Modified flows will have an impact on the current
FLOW/WATEK LEVEL CHANGES			existing riffle habitats
FINAL ECOLOGICAL SENSITIVITY FOR SITE	Moderate	Moderate	Remains Moderate

Kubusi River (Lower)

EI METRIC	DESKTOP (2014)	RAPID	Motivation
RIPARIAN-WETLAND-INSTREAM	Low	Low	
VERTEBRATES (EX FISH)	LOW	LOW	
RIPARIAN-WETLAND NATURAL VEG RATING			
BASED ON % NATURAL VEG IN 500m	Very high	Very high	
(100%=5)			
RIPARIAN-WETLAND NATURAL VEG	Low	Low	
IMPORTANCE BASED ON EXPERT RATING	LOw	LOW	
HABITAT DIVERSITY CLASS	High	High	
HABITAT SIZE (LENGTH) CLASS	Very high	Very high	
INSTREAM MIGRATION LINK CLASS	Very high	High	
RIPARIAN-WETLAND ZONE MIGRATION LINK	Moderate	Moderate	
RIPARIAN-WETLAND ZONE HABITAT	Madauata	Maslausta	
INTEGRITY CLASS	woderate	woderate	
INSTREAM HABITAT INTEGRITY CLASS	High	High	
FINAL ECOLOGICAL IMPORTANCE FOR SITE	High	High	
ES METRIC	DESKTOP	RAPID	
FISH	1		
FISH PHYS-CHEMICAL SENSITIVITY	High	Moderate	
FISH NO-FLOW SENSITIVITY	High	Moderate	
INVER	TS		
INVERT PHYS-CHEMICAL SENSITIVITY	Very high	Moderate	 3 out of 9 (Hydropsychidae >2spp (froc5) absent) and 8 out of 20 expected taxa (majority of the absent taxa have low frocs) recorded for unmodified and moderately unmodified physico-chemical conditions changed respectively.
INVERTS VELOCITY SENSITIVITY	Very high	Very high	 4 out of 8 and 8 out of 9 expected taxa recorded with a preference for very fast and moderately fast flowing water respectively
RIPARIAN-WETLAND VER	TEBRATES (NON-FISH)	
RIPARIAN-WETLAND-INSTREAM			
VERTEBRATES (EX FISH) INTOLERANCE TO	Low	Low	
WATER LEVEL/FLOW CHANGES			
RIPARIAN-WETLAN	D VEGETATION		
RIPARIAN-WETLAND VEGETATION	Low	Low	
INTOLERANCE TO WATER LEVEL CHANGES	CIZE		
	SILE		
FLOW/WATER LEVEL CHANGES	High	High	
FINAL ECOLOGICAL SENSITIVITY FOR SITE	High	High	

Buffalo River (Lower) Did not sample

Keiskamma River (Lower)

EI METRIC	DESKTOP (2014)	RAPID	Motivation
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH)	Low	Low	
RIPARIAN-WETLAND NATURAL VEG RATING BASED ON % NATURAL VEG IN 500m (100%=5)	Very high	Very high	
RIPARIAN-WETLAND NATURAL VEG IMPORTANCE BASED ON EXPERT RATING	Low	Low	
HABITAT DIVERSITY CLASS	Low	High	 All aquatic biotopes except aquatic macrophytes, varying velocity-depth classes
HABITAT SIZE (LENGTH) CLASS	Very high	Very high	
INSTREAM MIGRATION LINK CLASS	Moderate	Moderate	
RIPARIAN-WETLAND ZONE MIGRATION LINK	High	High	
RIPARIAN-WETLAND ZONE HABITAT INTEGRITY CLASS	High	High	
INSTREAM HABITAT INTEGRITY CLASS	High	High	
FINAL ECOLOGICAL IMPORTANCE FOR SITE	High	High	Remains High
ES METRIC	DESKTOP	RAPID	
FISH	1		
FISH PHYS-CHEMICAL SENSITIVITY	Very high	Moderate	 Fish assemblage under reference conditions and under present conditions is expected to be dominated by species considered moderately tolerant of modified water quality, wth no species under present conditions expected to be moderately intolerant or intolerant to modified water quality.
FISH NO-FLOW SENSITIVITY	High	Moderate	 Fish assemblage under reference conditions and under present conditions dominated by species considered moderately tolerant of no-flow conditions
INVER	TS		
INVERT PHYS-CHEMICAL SENSITIVITY	Very high	High	 5 out of 11 and 8 out of 15 expected taxa (several with high FROCs) recorded for unmodified and moderately unmodified physico-chemical conditions changed respectively
INVERTS VELOCITY SENSITIVITY	Very high	Very high	• 4 out of 9 and 8 out of 9 expected taxa (several with high FROCs) recorded with a preference for very fast and moderately fast flowing water respectively
RIPARIAN-WETLAND VER	TEBRATES (NON-FISH)	
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH) INTOLERANCE TO WATER LEVEL/FLOW CHANGES	Low	Low	
RIPARIAN-WETLAN	D VEGETATION		
RIPARIAN-WETLAND VEGETATION INTOLERANCE TO WATER LEVEL CHANGES	Low	Low	
STREAM SIZE			
STREAM SIZE SENSITIVITY TO MODIFIED FLOW/WATER LEVEL CHANGES	Low	Moderate	 Small to moderate sized river Although mostly pool habitat along the reach, any modified flows will have an impact on some of the current existing riffle habitats
FINAL ECOLOGICAL SENSITIVITY FOR SITE	High	Hiah	Remains High

Tyume River			
EI METRIC	DESKTOP (2014)	RAPID	Motivation
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH)	Low	Low	
RIPARIAN-WETLAND NATURAL VEG RATING BASED ON % NATURAL VEG IN 500m (100%=5)	Very high	Very high	
RIPARIAN-WETLAND NATURAL VEG IMPORTANCE BASED ON EXPERT RATING	Low	Low	
HABITAT DIVERSITY CLASS	Low	High	 All aquatic biotopes except aquatic macrophytes, varying velocity-depth classes
HABITAT SIZE (LENGTH) CLASS	Moderate	Moderate	
INSTREAM MIGRATION LINK CLASS	High	High	
RIPARIAN-WETLAND ZONE MIGRATION LINK	High	High	
RIPARIAN-WETLAND ZONE HABITAT INTEGRITY CLASS	High	High	
INSTREAM HABITAT INTEGRITY CLASS	High	Moderate	Water quality (nutrients from irrigation and WWTW
FINAL ECOLOGICAL IMPORTANCE FOR SITE	Moderate	High	 Driver being the habitat diversity class
ES METRIC	DESKTOP	RAPID	
FISH	1	-	
FISH PHYS-CHEMICAL SENSITIVITY	Very high	High	Fish assemblage under reference and present conditions is expected to be domnated by species considered to be moderately tolerant to modified water quality, with one species (SBAI) considered to be intolerant to modified water quality and occuring at a low FROC under present conditions
FISH NO-FLOW SENSITIVITY	High	Moderate	 Fish assemblage under reference conditions and under present conditions dominated by species considered moderately tolerant of no-flow conditions
INVER	TS		
INVERT PHYS-CHEMICAL SENSITIVITY	Very high	High	 2 out of 6 and 8 out of 10 expected taxa (several with high FROCs) recorded for unmodified and moderately unmodified physico-chemical conditions changed respectively
INVERTS VELOCITY SENSITIVITY	Very high	High	 4 out of 6 and 7 out of 10 expected taxa (several with high FROCs) recorded with a preference for very fast and moderately fast flowing water respectively
RIPARIAN-WETLAND VER	TEBRATES (NON-FISH)	
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH) INTOLERANCE TO WATER LEVEL/FLOW CHANGES	Low	Low	
RIPARIAN-WETLAN	D VEGETATION		
RIPARIAN-WETLAND VEGETATION INTOLERANCE TO WATER LEVEL CHANGES	High	High	
STREAM	SIZE		
STREAM SIZE SENSITIVITY TO MODIFIED FLOW/WATER LEVEL CHANGES	Low	High	 Small sized river Modified flows will have an impact on the widespread riffle habitats and longitudinal connectivity
FINAL ECOLOGICAL SENSITIVITY FOR SITE	High	High	•Remains High

Koonap River			
EI METRIC	DESKTOP (2014)	RAPID	Motivation
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH)	Low	Low	
RIPARIAN-WETLAND NATURAL VEG RATING			
BASED ON % NATURAL VEG IN 500m (100%=5)	High	High	
RIPARIAN-WETLAND NATURAL VEG IMPORTANCE BASED ON EXPERT RATING	Low	Low	
HABITAT DIVERSITY CLASS	Low	Moderate	All aquatic biotopes present, although SIC smothered by filamentous algae
HABITAT SIZE (LENGTH) CLASS	Very Low	Very Low	
INSTREAM MIGRATION LINK CLASS	Very high	Very high	
RIPARIAN-WETLAND ZONE MIGRATION LINK	High	High	
RIPARIAN-WETLAND ZONE HABITAT INTEGRITY CLASS	High	Moderate	 Cattle trampling and grazing (causing bank collapse) Vegetation removal Several weirs
INSTREAM HABITAT INTEGRITY CLASS	Very high	Moderate	Water quality (extensive algae) Irrigation
FINAL ECOLOGICAL IMPORTANCE FOR SITE	Moderate	Moderate	Remains Moderate
ES METRIC	DESKTOP	RAPID	
FISI	H		
FISH PHYS-CHEMICAL SENSITIVITY	Very high	Moderate	• Fish assemblage under reference and present conditions is expected to be domnated by species considered to be moderately tolerant to modified water quality, with no species considered to be intolerant to modified water quality occuring under present conditions
FISH NO-FLOW SENSITIVITY	Moderate	High	• Fish assemblage under reference conditions dominated by species considered moderately tolerant of no-flow conditions. However, the presence of non-native BAEN and LCAP which are considered to be moderately intolerant of no-flow conditions does elevate the value to High
INVEF	RTS		
INVERT PHYS-CHEMICAL SENSITIVITY	Very high	Low	 1 out of 6 and 1 out of 13 expected taxa (all with high FROCs) recorded for unmodified and moderately unmodified physico-chemical conditions changed respectively
INVERTS VELOCITY SENSITIVITY	Very high	Moderate	• 2 out of 6 and 3 out of 9 expected taxa (all with high FROCs) recorded with a preference for very fast and moderately fast flowing water respectively
RIPARIAN-WETLAND VER	TEBRATES (NON-FISH)	
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH) INTOLERANCE TO WATER LEVEL/FLOW CHANGES	Low	Low	
RIPARIAN-WETLAN	D VEGETATION		
RIPARIAN-WETLAND VEGETATION INTOLERANCE TO WATER LEVEL CHANGES	Low	Low	
STREAN	1 SIZE		
STREAM SIZE SENSITIVITY TO MODIFIED FLOW/WATER LEVEL CHANGES	Low	Moderate	 Small to moderate sized river Modified flows will have an impact on the current existing riffle habitats Owing to compromised water quality in the system (upstream unmaintained WWTW), lower flows may increase further algal stimulation
FINAL ECOLOGICAL SENSITIVITY FOR SITE	Moderate	Moderate	Remains Moderate

Kat	River	(Lower)	

EI METRIC	DESKTOP (2014)	RAPID	Motivation
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH)	Low	Low	
RIPARIAN-WETLAND NATURAL VEG RATING BASED ON % NATURAL VEG IN 500m (100%=5)	Very high	Very high	
RIPARIAN-WETLAND NATURAL VEG IMPORTANCE BASED ON EXPERT RATING	Low	Low	
HABITAT DIVERSITY CLASS	Very Low	Low	Limited velocity-depth classess, no aquatic macrophyt
HABITAT SIZE (LENGTH) CLASS	Moderate	Moderate	
INSTREAM MIGRATION LINK CLASS	Moderate	Low	Although some species with a reach-scale migration w
RIPARIAN-WETLAND ZONE MIGRATION LINK	High	High	
RIPARIAN-WETLAND ZONE HABITAT INTEGRITY CLASS	High	Moderate	• Flow modification (loss of floods)
INSTREAM HABITAT INTEGRITY CLASS	High	Low	 Extensive irrigation Release pattern from dam and loss of floods Large number of weirs along reach (resulting in changes in instream habitat availability)
FINAL ECOLOGICAL IMPORTANCE FOR SITE	Moderate	Moderate	Remains Moderate
ES METRIC	DESKTOP	RAPID	
FISH	ł	-	
FISH PHYS-CHEMICAL SENSITIVITY	Very high	Moderate	• Fish assemblage under reference and present conditions is expected to be dominated by species considered to be moderately tolerant and tolerant to modified water quality, with no species considered to be intolerant to modified water quality occuring under present conditions
FISH NO-FLOW SENSITIVITY	Moderate	Moderate	
INVER	RTS	•	
INVERT PHYS-CHEMICAL SENSITIVITY	Moderate	Moderate	• 2 out of 7 and 9 out of 15 expected taxa (all with high FROCs) recorded for unmodified and moderately unmodified physico-chemical conditions changed respectively
INVERTS VELOCITY SENSITIVITY	Very high	Moderate	• 4 out of 6 and 4 out of 11 expected taxa (all with high FROCs) recorded with a preference for very fast and moderately fast flowing water respectively
RIPARIAN-WETLAND VER	TEBRATES (NON-FISH)	
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH) INTOLERANCE TO WATER LEVEL/FLOW CHANGES	Low	Low	
RIPARIAN-WETLAN	ID VEGETATION		
RIPARIAN-WETLAND VEGETATION INTOLERANCE TO WATER LEVEL CHANGES	Low	Low	
STREAM	1 SIZE		
STREAM SIZE SENSITIVITY TO MODIFIED FLOW/WATER LEVEL CHANGES	Low	Moderate	 Small sized river Modified flows (loss of floods due to Kat River dam) will have an impact on the current existing riffle habitats High density of weirs upstream changed river to a pool dominated system with less riffle habitats
FINAL ECOLOGICAL SENSITIVITY FOR SITE	Moderate	Moderate	Remains Moderate

Great Fish River (Upper)

EI METRIC	DESKTOP (2014)	RAPID	Motivation
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH)	Low	Low	
RIPARIAN-WETLAND NATURAL VEG RATING BASED ON % NATURAL VEG IN 500m (100%=5)	Moderate	Moderate	
RIPARIAN-WETLAND NATURAL VEG IMPORTANCE BASED ON EXPERT RATING	Low	Low	
HABITAT DIVERSITY CLASS	Very Low	Very Low	
HABITAT SIZE (LENGTH) CLASS	Moderate	Moderate	
INSTREAM MIGRATION LINK CLASS	High	Low	• Limited species expected under natural conditions, with lack of sufficient flow limiting possible upstream migration (attraction for upstream migration associated with Groot Brak River and increased flows due to IBT)
RIPARIAN-WETLAND ZONE MIGRATION LINK	Low	Low	
RIPARIAN-WETLAND ZONE HABITAT INTEGRITY CLASS	Low	Low	
INSTREAM HABITAT INTEGRITY CLASS	Very high	Moderate	Increased flows due to IBTScoring and bed armouring due to increased flows
FINAL ECOLOGICAL IMPORTANCE FOR SITE	Moderate	Moderate	Remains Moderate
ES METRIC	DESKTOP	RAPID	
FISH	1	-	
FISH PHYS-CHEMICAL SENSITIVITY	Moderate	Low	 Limited species expected under natural conditions, with lack of sufficient flow limiting occurrence of species with a moderate tolerannce to unmodified water quality
FISH NO-FLOW SENSITIVITY	Moderate	Moderate	
INVER	TS		
INVERT PHYS-CHEMICAL SENSITIVITY	Very high	Low	• 1 out of 5 and 2 out of 10 expected taxa (mostly with high FROCs) recorded for unmodified and moderately unmodified physico-chemical conditions changed respectively
INVERTS VELOCITY SENSITIVITY	Very high	Low	• 2 out of 5 and 1 out of 9 expected taxa (mostly with high FROCs) recorded with a preference for very fast and moderately fast flowing water respectively
RIPARIAN-WETLAND VER	TEBRATES (NON-FISH,)	
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH) INTOLERANCE TO WATER LEVEL/FLOW CHANGES	Low	Low	
RIPARIAN-WETLAN			
RIPARIAN-WETLAND VEGETATION INTOLERANCE TO WATER LEVEL CHANGES	Low	Low	
STREAM			
STREAM SIZE SENSITIVITY TO MODIFIED FLOW/WATER LEVEL CHANGES	Low	High	 Small sized river Riffle habitats sensitive to changes in flow and sedimentation
FINAL ECOLOGICAL SENSITIVITY FOR SITE	Moderate	Moderate	

Farka River				
EI METRIC	DESKTOP (2014)	RAPID	Motivation	
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH)	Low	Low		
RIPARIAN-WETLAND NATURAL VEG RATING BASED ON % NATURAL VEG IN 500m (100%=5)	Low	Low		
RIPARIAN-WETLAND NATURAL VEG IMPORTANCE BASED ON EXPERT RATING	Low	Low		
HABITAT DIVERSITY CLASS	Moderate	Low	 Upstream abstraction reducing flows and habitat availability High sedimentation thus resulting in Spanish Reed encroachment into instream channel 	
HABITAT SIZE (LENGTH) CLASS	Low	Low		
INSTREAM MIGRATION LINK CLASS	Moderate	Low	• Upstream abstraction and offtake severely impacts occurrence of fish species and possible use of reach for upstream migration	
RIPARIAN-WETLAND ZONE MIGRATION LINK	Moderate	Moderate		
RIPARIAN-WETLAND ZONE HABITAT INTEGRITY CLASS	Moderate	Moderate		
INSTREAM HABITAT INTEGRITY CLASS	Moderate	Low	 Lake Arthur and Kommandodrift Dams upstream – no releases into river Silted (bed built-up more than 2m over time) High salinity (natural and from irrigation return flows) Anoxic sediments 	
FINAL ECOLOGICAL IMPORTANCE FOR SITE	Moderate	Moderate	Remains Moderate	
ES METRIC	DESKTOP	RAPID		
FISH	1			
FISH PHYS-CHEMICAL SENSITIVITY	Moderate	Low	 Although fish diversity is expected to naturally be low, upstream abstraction has resulted in loss of most fish species from the system, with only one species (BANO) expected to occur at a very low FROC 	
FISH NO-FLOW SENSITIVITY	Moderate	Low	 Although fish diversity is expected to naturally be low, upstream abstraction has resulted in loss of most fish species from the system, with only one species (BANO) expected to occur at a very low FROC 	
INVER	TS			
INVERT PHYS-CHEMICAL SENSITIVITY	High	Low	• 3 out of 5 and 1 out of 11 expected taxa (mostly with high FROCs) recorded for unmodified and moderately unmodified physico-chemical conditions changed respectively	
INVERTS VELOCITY SENSITIVITY	Very high	Moderate	 3 out of 5 and 2 out of 9 expected taxa (mostly with high FROCs) recorded with a preference for very fast and moderately fast flowing water respectively 	
RIPARIAN-WETLAND VER	TEBRATES (NON-FISH)		
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH) INTOLERANCE TO WATER LEVEL/FLOW CHANGES	Low	Low		
RIPARIAN-WETLAN				
RIPARIAN-WETLAND VEGETATION INTOLERANCE TO WATER LEVEL CHANGES	Low	Low		
STREAM				
STREAM SIZE SENSITIVITY TO MODIFIED FLOW/WATER LEVEL CHANGES	Low	Moderate	 Small sized river System is largely silted with slow flow through reeds • Major offtake from upstream / large dams upstream for small system - Lake Arthur and Kommandodrift Dams not releasing into downstream system As a result of loss of flow, bed has built up with silt more than 2m in places 	
FINAL ECOLOGICAL SENSITIVITY FOR SITE	Moderate	Moderate	Remains Moderate	

Sundays River (Lower)

EI METRIC	DESKTOP (2014)	RAPID	Motivation
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH)	Low	Low	
RIPARIAN-WETLAND NATURAL VEG RATING BASED ON % NATURAL VEG IN 500m (100%=5)	Very Low	Very Low	
RIPARIAN-WETLAND NATURAL VEG IMPORTANCE BASED ON EXPERT RATING	Very Low	Very Low	
HABITAT DIVERSITY CLASS	Very Low	Low	Marginal vegetatation primarily Spanish Reeds, no aquatic macrophytes, limited GSM and various velocity-depth classes
HABITAT SIZE (LENGTH) CLASS	Low	Low	
INSTREAM MIGRATION LINK CLASS	High	Moderate	 Limited flows due to upstream Darlington Dam and Korhaansdrift weir which also create a migration barrier
RIPARIAN-WETLAND ZONE MIGRATION LINK	Moderate	Moderate	
RIPARIAN-WETLAND ZONE HABITAT INTEGRITY CLASS	Moderate	Low	 Exotic vegetation encroachment Loss of floods and/or freshetts
INSTREAM HABITAT INTEGRITY CLASS	Moderate	Low	 Darlington Dam and Korhaansdrift weir (limited flows) Armoured bed and narrowing of bed River crossings Extensive irrigation from abstraction from upstream Korhaansdrift weir
FINAL ECOLOGICAL IMPORTANCE FOR SITE	Moderate	Low	• Driver being the instream migration link class (Darlington Dam and Korhaansdrift weir which also create a migration barrier), coupled with both riparian and instream habitat integrity loss
ES METRIC	DESKTOP	RAPID	
EISI			
1151	1		
FISH PHYS-CHEMICAL SENSITIVITY	High	High	 Although only one species of fish considered moderately intolerant of modified water quality was expected and present, it occurred at a high FROC
FISH PHYS-CHEMICAL SENSITIVITY FISH NO-FLOW SENSITIVITY	High Moderate	High Moderate	• Although only one species of fish considered moderately intolerant of modified water quality was expected and present, it occurred at a high FROC
FISH PHYS-CHEMICAL SENSITIVITY FISH NO-FLOW SENSITIVITY INVER	High Moderate	High Moderate	• Although only one species of fish considered moderately intolerant of modified water quality was expected and present, it occurred at a high FROC
FISH PHYS-CHEMICAL SENSITIVITY FISH NO-FLOW SENSITIVITY INVERT PHYS-CHEMICAL SENSITIVITY	High Moderate RTS High	High Moderate Low	 Although only one species of fish considered moderately intolerant of modified water quality was expected and present, it occurred at a high FROC 1 out of 6 and 3 out of 12 expected taxa (several with high FROCs) recorded for unmodified and moderately unmodified physico-chemical conditions changed respectively
FISH PHYS-CHEMICAL SENSITIVITY FISH NO-FLOW SENSITIVITY INVERT PHYS-CHEMICAL SENSITIVITY INVERTS VELOCITY SENSITIVITY	High Moderate RTS High High	High Moderate Low Moderate	 Although only one species of fish considered moderately intolerant of modified water quality was expected and present, it occurred at a high FROC 1 out of 6 and 3 out of 12 expected taxa (several with high FROCs) recorded for unmodified and moderately unmodified physico-chemical conditions changed respectively 3 out of 5 and 2 out of 6 expected taxa (several with high FROCs) recorded with a preference for very fast and moderately fast flowing water respectively
FISH PHYS-CHEMICAL SENSITIVITY FISH NO-FLOW SENSITIVITY INVERT PHYS-CHEMICAL SENSITIVITY INVERTS VELOCITY SENSITIVITY RIPARIAN-WETLAND VER	High Moderate RTS High High TEBRATES (NON-FISH	High Moderate Low Moderate	 Although only one species of fish considered moderately intolerant of modified water quality was expected and present, it occurred at a high FROC 1 out of 6 and 3 out of 12 expected taxa (several with high FROCs) recorded for unmodified and moderately unmodified physico-chemical conditions changed respectively 3 out of 5 and 2 out of 6 expected taxa (several with high FROCs) recorded with a preference for very fast and moderately fast flowing water respectively
FISH PHYS-CHEMICAL SENSITIVITY FISH NO-FLOW SENSITIVITY INVERT PHYS-CHEMICAL SENSITIVITY INVERTS VELOCITY SENSITIVITY RIPARIAN-WETLAND VERTEBRATES (EX FISH) INTOLERANCE TO WATER LEVEL/FLOW CHANGES	High Moderate TS High High TEBRATES (NON-FISH	High Moderate Low Moderate Low	 Although only one species of fish considered moderately intolerant of modified water quality was expected and present, it occurred at a high FROC 1 out of 6 and 3 out of 12 expected taxa (several with high FROCs) recorded for unmodified and moderately unmodified physico-chemical conditions changed respectively 3 out of 5 and 2 out of 6 expected taxa (several with high FROCs) recorded with a preference for very fast and moderately fast flowing water respectively
FISH PHYS-CHEMICAL SENSITIVITY FISH NO-FLOW SENSITIVITY INVERT PHYS-CHEMICAL SENSITIVITY INVERTS VELOCITY SENSITIVITY RIPARIAN-WETLAND VERTEBRATES (EX FISH) INTOLERANCE TO WATER LEVEL/FLOW CHANGES RIPARIAN-WETLAN	High Moderate TS High High TEBRATES (NON-FISH Low	High Moderate Low Moderate	 Although only one species of fish considered moderately intolerant of modified water quality was expected and present, it occurred at a high FROC 1 out of 6 and 3 out of 12 expected taxa (several with high FROCs) recorded for unmodified and moderately unmodified physico-chemical conditions changed respectively 3 out of 5 and 2 out of 6 expected taxa (several with high FROCs) recorded with a preference for very fast and moderately fast flowing water respectively
FISH PHYS-CHEMICAL SENSITIVITY FISH NO-FLOW SENSITIVITY INVERT PHYS-CHEMICAL SENSITIVITY INVERTS VELOCITY SENSITIVITY INVERTS VELOCITY SENSITIVITY RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH) INTOLERANCE TO WATER LEVEL/FLOW CHANGES RIPARIAN-WETLAND VEGETATION INTOLERANCE TO WATER LEVEL CHANGES	High Moderate TS High High Low Low	High Moderate Low Moderate	 Although only one species of fish considered moderately intolerant of modified water quality was expected and present, it occurred at a high FROC 1 out of 6 and 3 out of 12 expected taxa (several with high FROCs) recorded for unmodified and moderately unmodified physico-chemical conditions changed respectively 3 out of 5 and 2 out of 6 expected taxa (several with high FROCs) recorded with a preference for very fast and moderately fast flowing water respectively
FISH PHYS-CHEMICAL SENSITIVITY FISH NO-FLOW SENSITIVITY INVERT PHYS-CHEMICAL SENSITIVITY INVERTS VELOCITY SENSITIVITY INVERTS VELOCITY SENSITIVITY RIPARIAN-WETLAND -INSTREAM VERTEBRATES (EX FISH) INTOLERANCE TO WATER LEVEL/FLOW CHANGES RIPARIAN-WETLAND VEGETATION INTOLERANCE TO WATER LEVEL CHANGES STREAM	High Moderate RTS High High Low D VEGETATION Low	High Moderate Low Moderate	 Although only one species of fish considered moderately intolerant of modified water quality was expected and present, it occurred at a high FROC 1 out of 6 and 3 out of 12 expected taxa (several with high FROCs) recorded for unmodified and moderately unmodified physico-chemical conditions changed respectively 3 out of 5 and 2 out of 6 expected taxa (several with high FROCs) recorded with a preference for very fast and moderately fast flowing water respectively
FISH PHYS-CHEMICAL SENSITIVITY FISH NO-FLOW SENSITIVITY INVERT PHYS-CHEMICAL SENSITIVITY INVERTS VELOCITY SENSITIVITY INVERTS VELOCITY SENSITIVITY RIPARIAN-WETLAND VERTEBRATES (EX FISH) INTOLERANCE TO WATER LEVEL/FLOW CHANGES RIPARIAN-WETLAND VEGETATION INTOLERANCE TO WATER LEVEL CHANGES STREAM SIZE SENSITIVITY TO MODIFIED FLOW/WATER LEVEL CHANGES	High Moderate RTS High High Low D VEGETATION Low SIZE	High Moderate Low Moderate Low Low Moderate	 Although only one species of fish considered moderately intolerant of modified water quality was expected and present, it occurred at a high FROC 1 out of 6 and 3 out of 12 expected taxa (several with high FROCs) recorded for unmodified and moderately unmodified physico-chemical conditions changed respectively 3 out of 5 and 2 out of 6 expected taxa (several with high FROCs) recorded with a preference for very fast and moderately fast flowing water respectively modification (upstream weir offtake and canal system) System is largely pool habitats and already so modified

Kouga River

EI METRIC	DESKTOP (2014)	RAPID	Motivation
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH)	Low	Low	
RIPARIAN-WETLAND NATURAL VEG RATING BASED ON % NATURAL VEG IN 500m (100%=5)	Very high	Very high	
RIPARIAN-WETLAND NATURAL VEG IMPORTANCE BASED ON EXPERT RATING	Low	Low	
HABITAT DIVERSITY CLASS	Very Low	High	 All aquatic biotopes presenting, including a range of velocity-depth classes
HABITAT SIZE (LENGTH) CLASS	Low	Low	
INSTREAM MIGRATION LINK CLASS	Moderate	Low	Large weir downstream limiting upstream migration
RIPARIAN-WETLAND ZONE MIGRATION LINK	Very high	Very high	
RIPARIAN-WETLAND ZONE HABITAT INTEGRITY CLASS	Very high	Moderate	• Exotic vegetation encroachment (Black Wattle within riparian zone)
INSTREAM HABITAT INTEGRITY CLASS	Very high	High	 Loss of baseflows due to groundwater abstractions for irrigation High irrigation in upper catchment (fruit)
FINAL ECOLOGICAL IMPORTANCE FOR SITE	Moderate	High	 Driver being high habitat diversity class
ES METRIC	DESKTOP	RAPID	
FISH	1		
FISH PHYS-CHEMICAL SENSITIVITY	High	Moderate	 Although species with a moderate intolerance for modified water quality were expected under reference conditions, these species were unlikely to occur as a result of dominance of predatory non- native fish species (MDOL, MSAL, CGAR). Nevertheless, the non-native species were considered to be moderately tolerant to water quality impairment
FISH NO-FLOW SENSITIVITY	Very high	Low	 Although one species (PAFE) regarded as moderately intolerant of no-flow conditions was expected under reference conditions, under present conditions the species was expected to occur at very low FROC (if any). Similarly, one species (LUMB) regarded as moderately tolerant of no-flow conditions was expected under reference conditions, but under present conditions the species was expected to occur at very low FROC (if any). Non- native species confirmed to be present and dominant were considered to be tolerant of no-flow conditions.
INVER	RTS		
INVERT PHYS-CHEMICAL SENSITIVITY	Very high	Very high	 2 out of 8 and 13 out of 19 expected taxa (several with high FROCs) recorded for unmodified and moderately unmodified physico-chemical conditions changed respectively
INVERTS VELOCITY SENSITIVITY	Very high	Very high	 5 out of 6 and 8 out of 13 expected taxa (several with high FROCs) recorded with a preference for very fast and moderately fast flowing water respectively
RIPARIAN-WETLAND VER			
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH) INTOLERANCE TO WATER LEVEL/FLOW CHANGES	Low	Low	
RIPARIAN-WETLAN	ID VEGETATION	Γ	
RIPARIAN-WETLAND VEGETATION	Low	Low	
STREAM	- Madanata sizad siyan		
STREAM SIZE SENSITIVITY TO MODIFIED FLOW/WATER LEVEL CHANGES	Low	High	 Moderate sized river Modified flows will have an impact on the current existing riffle habitats
FINAL ECOLOGICAL SENSITIVITY FOR SITE	Moderate	High	•Driver being stream size sensitivity to modified flow/water level changes being high
INTERMEDIATE SITES

Mthatha River (Lower)

EI METRIC	DESKTOP (2014) INTERMEDIATE (for reach) (2023) (for site)		Motivation
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH)	Low Low		
RIPARIAN-WETLAND NATURAL VEG RATING BASED ON % NATURAL VEG IN 500m (100%=5)	Very high	Very high	 Natural vegetation in a 500m buffer is very high for most of SQ in the gorge, but very low at the site due to vegetation removal and agriculture
RIPARIAN-WETLAND NATURAL VEG IMPORTANCE BASED ON EXPERT RATING	Low	Low	
HABITAT DIVERSITY CLASS	Moderate	Moderate	
HABITAT SIZE (LENGTH) CLASS	Very high	Very high	
INSTREAM MIGRATION LINK CLASS	Very high	Very high	
RIPARIAN-WETLAND ZONE MIGRATION LINK	Moderate	Moderate	 Corridor highly fragmented downstream of the site, more intact upstream but has a high degree of AIP, funtionality maintained in upstream gorge.
RIPARIAN-WETLAND ZONE HABITAT INTEGRITY CLASS	Moderate	Low	 Flood features and banks have high degree of AIP.
INSTREAM HABITAT INTEGRITY CLASS	Very high	High	 Some bed modification (algae over stones biotope, marginal vegetation limited)
FINAL ECOLOGICAL IMPORTANCE FOR SITE	High	High	
ES METRIC	DESKTOP	INTERMEDIATE (2023) (for site)	
FISH	1		
FISH PHYS-CHEMICAL SENSITIVITY	Very high	High	•Only two species with moderate intolerance to modified water quality expected (MFLU, RDEW), but at a low FROC
FISH NO-FLOW SENSITIVITY	High	High	
INVEF	RTS		
INVERT PHYS-CHEMICAL SENSITIVITY	Very high	Very high	 4 out of 8 (Taxa with low frocs absent) and 6 out of 19 expected taxa (Taxa with low frocs absent) recorded for unmodified and moderately unmodified physico-chemical conditions changed respectively.
INVERTS VELOCITY SENSITIVITY	Very high	Very high	 4 out of 7 (Trichorythidae (froc4) absent) and 6 out of 9 expected taxa (Turbellaria (Froc3) absent) recorded with a preference for very fast and moderately fast flowing water respectively. Mostly low frocs absent.
RIPARIAN-WETLAND VER			
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH) INTOLERANCE TO WATER LEVEL/FLOW CHANGES	Low	Low	
RIPARIAN-WETLAN			
RIPARIAN-WETLAND VEGETATION INTOLERANCE TO WATER LEVEL CHANGES	Low	Low	
STREAM	I SIZE		
STREAM SIZE SENSITIVITY TO MODIFIED FLOW/WATER LEVEL CHANGES	Low	Low	 Large size river and will loose habitat/riffles if flows are altered
FINAL ECOLOGICAL SENSITIVITY FOR SITE	High	High	

Mbhashe River (Middle)

EI METRIC	DESKTOP (2014) INTERMEDIATE (2023) (for site)		Motivation
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH)	Low Low		
RIPARIAN-WETLAND NATURAL VEG RATING BASED ON % NATURAL VEG IN 500m (100%=5)	High	Moderate	 The majority of the reach has high levels of vegetation clearing, mainly for agricultural activities.
RIPARIAN-WETLAND NATURAL VEG IMPORTANCE BASED ON EXPERT RATING	Low	Moderate	2 SA endemic species (Combretum caffra, Senegalia caffrum). 18 species observed at site. Rip habitats includeAlluvial banks, mud slides, sandy bars, pools, riffles, cobble / boulder / bedrock
HABITAT DIVERSITY CLASS	Low	Low	
HABITAT SIZE (LENGTH) CLASS	Very Low	Very Low	
INSTREAM MIGRATION LINK CLASS	Very high	Very high	
RIPARIAN-WETLAND ZONE MIGRATION LINK	Moderate	Moderate	Mostly fragmented but more important in the gorge
RIPARIAN-WETLAND ZONE HABITAT INTEGRITY CLASS	Moderate	Moderate	
INSTREAM HABITAT INTEGRITY CLASS	Very high	High	 Flow modification from upstream water transfer from Ncora Dam
FINAL ECOLOGICAL IMPORTANCE FOR SITE	Moderate	Moderate	
ES METRIC	DESKTOP (2023) (for site)		
FISH			
FISH PHYS-CHEMICAL SENSITIVITY	Moderate	Moderate	
FISH NO-FLOW SENSITIVITY	Moderate	Moderate	
INVER	rts		
INVERT PHYS-CHEMICAL SENSITIVITY	Very high	High	 4 out of 11 and 4 out of 20 expected taxa recorded for unmodified and moderately unmodified physico- chemical conditions changed respectively. Oligoneuridae recorded although just one individual
INVERTS VELOCITY SENSITIVITY	TIVITY Very high		• 5 out of 9 (Prosopistomatidae, Hydropsychidae >2spp (froc4) absent) and 7 out of 9 expected taxa (Ashnidae (froc3) absent) recorded with a preference for very fast and moderately fast flowing water respectively. Mostly low frocs absent.
RIPARIAN-WETLAND VER	TEBRATES (NON-FISH		
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH) INTOLERANCE TO WATER LEVEL/FLOW CHANGES	Low	Low	
RIPARIAN-WETLAN			
RIPARIAN-WETLAND VEGETATION INTOLERANCE TO WATER LEVEL CHANGES	Low	Low	 Marginal zone grasses and sedges and the rheophyte Gomphostigma virgatum; riffle rhephyte habitats
STREAM	SIZE		
STREAM SIZE SENSITIVITY TO MODIFIED FLOW/WATER LEVEL CHANGES	Low	Low	• Large size river. Although will loose habitat/riffles if flows are altered at the site. Upstream of the site is a pool and downstream bedrock. The riparian zone is also dominated by grasss banks, bedrock and cobbles thus will not deactive or active habitat.
FINAL ECOLOGICAL SENSITIVITY FOR SITE	Moderate	Moderate	

Determination of Water Resource Classes, Reserve and RQOs in the Keiskamma and Fish to Tsitsikamma catchment: Wetland Eco-2023 categorisation Report

Black Kei River

EI METRIC	DESKTOP (2014)	INTERMEDIATE (2023) (for site)	Motivation
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH)	Low	Low	
RIPARIAN-WETLAND NATURAL VEG RATING BASED ON % NATURAL VEG IN 500m (100%=5)	Very high	Low	 The 500m buffer within the reach has high levels of vegetation clearing for agricultural activities.
RIPARIAN-WETLAND NATURAL VEG IMPORTANCE BASED ON EXPERT RATING	Low	Moderate	 Falls within the Maputaland Pondoland Region of Plant Endemism with 16 species observed at site. Rip habitats include floodplain, alluvial vegetated banks, alluvial marginal zone, mixed bedrock alluvial bar with Salix mucronata
HABITAT DIVERSITY CLASS	Low	Low	
HABITAT SIZE (LENGTH) CLASS	Moderate	Moderate	
INSTREAM MIGRATION LINK CLASS	Very high	Moderate	 Only AMOS likel to use the system as a migratory corridor, but the species has not been recorded at the site for a number of years. BAEN (alien) present and will utilise the reach for migration
RIPARIAN-WETLAND ZONE MIGRATION LINK	Moderate	Low	• Low, fragmented
RIPARIAN-WETLAND ZONE HABITAT INTEGRITY CLASS	Moderate	Low	 High levels of grazing and trampling pressure have denatured habitats and AIP have altered species composition.
INSTREAM HABITAT INTEGRITY CLASS	High	Moderate	 Irrigation and abstraction. Dams on the tributaries
FINAL ECOLOGICAL IMPORTANCE FOR SITE	Moderate	Moderate	
ES METRIC	DESKTOP	INTERMEDIATE (2023) (for site)	
FISH	1		
FISH PHYS-CHEMICAL SENSITIVITY	Moderate	Moderate	
FISH NO-FLOW SENSITIVITY	Moderate	Moderate	
INVER	TS		
INVERT PHYS-CHEMICAL SENSITIVITY	Moderate	Low	 1 out of 7 (3 taxa with high frocs absent) and 2 out of 13 expected taxa (Taxa with froc3 absent and 1 taxa with a froc5 absent) recorded for unmodified and moderately unmodified physico-chemical conditions changed respectively.
INVERTS VELOCITY SENSITIVITY	Very high	Moderate	 3 out of 7 (2 taxa with a froc 5 were absent. Simuliidae in D abundances) and 3 out of 10 expected taxa (Several high froc taxa absent) recorded with a preference for very fast and moderately fast flowing water respectively. Mostly low frocs absent.
RIPARIAN-WETLAND VER			
RIPARIAN-WETLAND-INSTREAM			
VERTEBRATES (EX FISH) INTOLERANCE TO WATER LEVEL/FLOW CHANGES	Low	Low	
RIPARIAN-WETLAN			
RIPARIAN-WETLAND VEGETATION INTOLERANCE TO WATER LEVEL CHANGES	Low	Low	Marginal zone grasses and sedges
STREAM	SIZE		
STREAM SIZE SENSITIVITY TO MODIFIED FLOW/WATER LEVEL CHANGES	Low	Moderate	 Moderate sized river Modified flows will have an impact on the current existing riffle habitats
FINAL ECOLOGICAL SENSITIVITY FOR SITE	Moderate	Moderate	

Determination of Water Resource Classes, Reserve and RQOs in the Keiskamma and Fish to Tsitsikamma catchment: Wetland Eco-2023 categorisation Report

Tsomo River

EI METRIC	DESKTOP (2014)	INTERMEDIATE (2023) (for site)	Motivation
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH)	Low Low		
RIPARIAN-WETLAND NATURAL VEG RATING BASED ON % NATURAL VEG IN 500m (100%=5)	Very high	Very high	 Most of the reach has intact buffer vegetation but does deteriorate around the site area due to the bridge and nearby development and settlement.
RIPARIAN-WETLAND NATURAL VEG IMPORTANCE BASED ON EXPERT RATING	Low	Moderate	 Two SA endemic species (Combretum caffrum, Senegalia caffra) and 17 indigenous species observed at site. Riparian habitats include mid-channel bar (protection against floods), alluvial flood bench, alluvuial woody banks, lateral bars sedges, grasses.
HABITAT DIVERSITY CLASS	Low	Low	
HABITAT SIZE (LENGTH) CLASS	Low	Low	
INSTREAM MIGRATION LINK CLASS	High	Low	 Only a single species of eel (AMOS) expected to be present, but at reduced FROC relative to reference Weir immediately upstream of site creating significant movement barrier
RIPARIAN-WETLAND ZONE MIGRATION LINK	Moderate	Moderate	 Corridor mostly intact and maintains functionality upstream and downstream of the site but deterioraates in the vicinity of the bridge and site.
RIPARIAN-WETLAND ZONE HABITAT INTEGRITY CLASS	Moderate	Moderate	• Moderate levels of AIP (mainly Wattle), with high grazing pressure and selec wwod removal.
INSTREAM HABITAT INTEGRITY CLASS	High	Moderate	 Opstream weir and bridge crossing (bed and channel modification). Localised water abstraction, macroplastics (nappies) and cattle trampling and grazing
FINAL ECOLOGICAL IMPORTANCE FOR SITE	Moderate	Moderate	
ES METRIC	DESKTOP	INTERMEDIATE (2023) (for site)	
FISH			
FISH PHYS-CHEMICAL SENSITIVITY	Moderate	Moderate	
FISH NO-FLOW SENSITIVITY	Moderate	Moderate	
INVER			
INVERT PHYS-CHEMICAL SENSITIVITY	Very high	Moderate	 4 out of 8 (Hydropsychidae >2spp (froc4) absent, rest low frocs. Prosopistomatidae recorded in A abundance) and 4 out of 17 expected taxa (Several taxa with froc 3,4 absent) recorded for unmodified and moderately unmodified physico-chemical conditions changed respectively.
INVERTS VELOCITY SENSITIVITY	Very high	High	 5 out of 8 (Hydropsychidae >2spp (froc 4) absent. Rest are froc 1 absent. Prosopistomatidae recorded in A abundance) and 4 out of 9 expected taxa (Several froc 3,4 absent) recorded with a preference for very fast and moderately fast flowing water respectively. Mostly low frocs absent.
RIPARIAN-WETLAND VER			
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH) INTOLERANCE TO WATER LEVEL/FLOW CHANGES	Low	Low	
RIPARIAN-WETLAN			
RIPARIAN-WETLAND VEGETATION INTOLERANCE TO WATER LEVEL CHANGES	Low	Moderate	Marginal zone grasses, sedges, and the rheophyte Gomphostigma virgatum, as well as Salix mucronata riffle habitats
STREAM	SIZE		
STREAM SIZE SENSITIVITY TO MODIFIED FLOW/WATER LEVEL CHANGES	Low	Moderate	 Moderate sized river Modified flows will have an impact on the current existing riffle habitats
FINAL ECOLOGICAL SENSITIVITY FOR SITE	Moderate	Moderate	

Buffalo River (Middle)

EI METRIC	DESKTOP (2014)	INTERMEDIATE (2023) (for site)	Motivation
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH)	Low	Low	
RIPARIAN-WETLAND NATURAL VEG RATING BASED ON % NATURAL VEG IN 500m (100%=5)	High	High	 Mostly intact besides dams and weirs, also high levels of AIP for the site
RIPARIAN-WETLAND NATURAL VEG IMPORTANCE BASED ON EXPERT RATING	Low	Moderate	 Outeniqua Yellowwood (Afrocarpus falcatus) protected in SA; 4 SA endemic species (Combretum caffrum, Cotula nigellifolia var. nigellifolia, Cyperus textilis, Senegalia caffra) and 28 indigenous species observed on site. Riparian habitats include pools, rapids, flood bench, banks
HABITAT DIVERSITY CLASS	Moderate	Moderate	
HABITAT SIZE (LENGTH) CLASS	Very high	Very high	
INSTREAM MIGRATION LINK CLASS	Low	Low	
RIPARIAN-WETLAND ZONE MIGRATION LINK	Moderate	Moderate	• Corridor mostly intact but fragmented by weirs and upstream and downstream dams.
RIPARIAN-WETLAND ZONE HABITAT	Low	Moderate	Main causes are AIP and scour from the weir.
INSTREAM HABITAT INTEGRITY CLASS	High	Low	Weir, water quality impairment (nutrients), alien invasive aquatic macrophytes (Eichhornia crassipes - Hyacinth)
FINAL ECOLOGICAL IMPORTANCE FOR SITE	High	Moderate	
ES METRIC	DESKTOP	INTERMEDIATE (2023) (for site)	
FISI	H	-	
FISH PHYS-CHEMICAL SENSITIVITY	Very high	Moderate	Only 3 of the expected 12 species present (AMOS, GCAL, OMOS), all of which are moderately tolerant to water quality impairment. High prevelance of Anchor Worm (external parasite) on GCAL and LUMB (translocated)
FISH NO-FLOW SENSITIVITY	High	Moderate	Only 3 of the expected 12 species present (AMOS, GCAL, OMOS), all of which are moderately tolerant to no-flow conditions. High prevelance of alien/translocated fish species, all of which are tolerant of low flow conditions. Site located immediately upstream of Bridle Drift Dam, and below a weir. More impoundments located upstream
INVE	RTS	-	
INVERT PHYS-CHEMICAL SENSITIVITY	Very high	Moderate	 3 out of 4 (only Hydrophysidae >2spp absent) and 5 out of 10 expected taxa (Only 2 taxa with high frocs absent, rest low frocs) recorded for unmodified and moderately unmodified physico-chemical conditions changed respectively.
INVERTS VELOCITY SENSITIVITY	Very high	Moderate	• 3 out of 6 (1 taxa with high froc taxa absent. Simuliidae abundance exceeding reference state at a C) and 7 out of 9 expected taxa (low froc taxa absent) recorded with a preference for very fast and moderately fast flowing water respectively. Mostly low frocs absent.
VERTEBRATES (EX FISH) INTOLERANCE TO WATER LEVEL/FLOW CHANGES	Low	Low	
RIPARIAN-WETLAN			
RIPARIAN-WETLAND VEGETATION INTOLERANCE TO WATER LEVEL CHANGES	Low	Low	Marginal zone sedges and grasses, but sparse and scattered
STREAM	1 SIZE		
STREAM SIZE SENSITIVITY TO MODIFIED FLOW/WATER LEVEL CHANGES	Low	Low	 Moderate sized river The site is located just upstream of the Bridledrift dam Modified flows will have an impact on the current existing riffle habitats
FINAL FCOLOGICAL SENSITIVITY FOR SITE	Moderate	Moderate	

Keiskamma (Upper)

EI METRIC	DESKTOP (2014) INTERMEDIATE (2023) (for site)		Motivation
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH)	Low Low		
RIPARIAN-WETLAND NATURAL VEG RATING BASED ON % NATURAL VEG IN 500m (100%=5)	High	High	Mostly intact but generally less than 500m.
RIPARIAN-WETLAND NATURAL VEG IMPORTANCE BASED ON EXPERT RATING	Low	Moderate	• Within the Maputaland-Pondoland region of plant endemism, with 4 SA endemic species (Combretum caffra, Senegalia caffrum, Cotula nigellifolia var. nigellifolia, Cyperus textilis) and 26 species observed at site. Riparian habitats include alluvial banks, mud slides, gravel bars, pools, riffles, cobble / boulder / bedrock, alluvial side channel
HABITAT DIVERSITY CLASS	Moderate	Moderate	
HABITAT SIZE (LENGTH) CLASS	Moderate	Moderate	
INSTREAM MIGRATION LINK CLASS	High	Low	 Greatly reduced fish diversity, with only only 3 fish species confirmed, including AMOS. Raw sewage entering system from Middledrift (downstream) presents a water quality barrier for migration. Upstream is Sandile Dam which prevents further upstream migration
RIPARIAN-WETLAND ZONE MIGRATION LINK	Moderate	High	• Corridor mostly intact and maintains functionality.
RIPARIAN-WETLAND ZONE HABITAT INTEGRITY CLASS	Moderate	Moderate	• Mainly affected by vegetation removal, clearing, AIP and changes to water quantity.
INSTREAM HABITAT INTEGRITY CLASS	High	Moderate	• Low water bridge (bed modification), some nutrients (algae), cattlle trampling and grazing
FINAL ECOLOGICAL IMPORTANCE FOR SITE	Moderate	Moderate	
ES METRIC	DESKTOP	INTERMEDIATE (2023) (for site)	
FISH	1		
FISH PHYS-CHEMICAL SENSITIVITY	Very high	Moderate	Greatly reduced fish diversity, with only only 3 fish species confirmed, including AMOS. Only species expected to be sensitive (SBAI) not sampled, and highly unlikely to be present.
FISH NO-FLOW SENSITIVITY	Moderate	Moderate	
INVEF	RTS		
INVERT PHYS-CHEMICAL SENSITIVITY	Very high	Moderate	 3 out of 9 (Perlidae absent (froc5), rest low frocs) and 9 out of 12 expected taxa (taxa with low frocs absesnt) recorded for unmodified and moderately unmodified physico-chemical conditions changed respectively.
INVERTS VELOCITY SENSITIVITY	Very high	Moderate	• 4 out of 11 (1 taxon with froc 3 absent, rest have low frocs) and 7 out of 11 expected taxa ((Perlidae absent which was a froc 5, the rest of the absent taxa have low frocs) recorded with a preference for very fast and moderately fast flowing water respectively. Mostly low frocs absent.
RIPARIAN-WETLAND VER	TEBRATES (NON-FISH	1)	
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH) INTOLERANCE TO WATER LEVEL/FLOW CHANGES	Low	Low	
RIPARIAN-WETLAN			
RIPARIAN-WETLAND VEGETATION INTOLERANCE TO WATER LEVEL CHANGES	Low	Moderate	Marginal zone grasses and sedges and the rheophyte Gomphostigma virgatum in riffle habitats.
STREAN	1 SIZE		
STREAM SIZE SENSITIVITY TO MODIFIED FLOW/WATER LEVEL CHANGES	Low	Moderate	 Small to moderate sized river Although mostly pool habitat upstream of bridge - there is the critical zone of riffle and stone habitat downstream of the bridge. Any modified flows will have an impact on some of the current existing riffle habitats
FINAL FCOLOGICAL SENSITIVITY FOR SITE	Moderate	Moderate	

Kat River (Upper):

EI METRIC	DESKTOP (2014) INTERMEDIATE (2023) (for site)		Motivation
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH)	Low	Low	
RIPARIAN-WETLAND NATURAL VEG RATING BASED ON % NATURAL VEG IN 500m (100%=5)	High	High	 Mostly intact but has become fragmented in places by encroaching agriculture, generally less than 500m
RIPARIAN-WETLAND NATURAL VEG IMPORTANCE BASED ON EXPERT RATING	Low	High	 Afrocarpus falcatus (Outeniqua yellowwood) protected in SA, with 4 SA endemic species (Combretum caffra, Senegalia caffrum, Cotula nigellifolia var. nigellifolia, Cyperus textilis) and 25 species observed at site. Riparian habitats include alluvial banks, mud slides, gravel & boulder bars, pools, riffles, cobble / boulder / bedrock, flood bench and channel, boulder in-channel with tufted grasses.
HABITAT DIVERSITY CLASS	Low	Low	-
HABITAT SIZE (LENGTH) CLASS	Very Low	Very Low	
INSTREAM MIGRATION LINK CLASS	High	Low	 Large number of weirs located upstream and downstream of the site. Only a single species requirig reach-scale migration present (AMOS) but in low FROC. Species assemblage dominated by species with requirement for movement within the reach.
RIPARIAN-WETLAND ZONE MIGRATION LINK	High	High	• Corridor mostly intact and maintains functionality below the Kat River Dam.
RIPARIAN-WETLAND ZONE HABITAT INTEGRITY CLASS	High	High	 AIP present but low, vegetation removal also low, main impacts are related to potential altered flow regime.
INSTREAM HABITAT INTEGRITY CLASS	High	High	 Upstream Kat River Dam (flow modification), cattle trampling, grazing, crossing (bed modification)
FINAL ECOLOGICAL IMPORTANCE FOR SITE	Moderate	Moderate	
ES METRIC	DESKTOP	INTERMEDIATE (2023) (for site)	
	1 Vory high	Vonchigh	
FISH NO-FLOW SENSITIVITY	Moderate	Moderate	
INVER	RTS	moderate	
INVERT PHYS-CHEMICAL SENSITIVITY	Very high	High	• 2 out of 7 (Several taxa with high frocs absent) and 12 out of 16 expected taxa (Several taxa with high frocs absent) recorded for unmodified and moderately unmodified physico-chemical conditions respectively.
INVERTS VELOCITY SENSITIVITY	Very high	High	 4 out of 6 (2 taxa with froc 3 absent) and 7 out of 11 expected taxa (3 taxa with froc 3 and 5 absent) recorded with a preference for very fast and moderately fast flowing water respectively. Mostly low frocs absent.
RIPARIAN-WETLAND VER	TEBRATES (NON-FISH)	
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH) INTOLERANCE TO WATER LEVEL/FLOW CHANGES	Low	Low	
RIPARIAN-WETLAN			
RIPARIAN-WETLAND VEGETATION INTOLERANCE TO WATER LEVEL CHANGES	Low	Moderate	 Marginal zone grasses and sedges and the rheophyte Gomphostigma virgatum in riffle habitats.
STREAM	I SIZE		
STREAM SIZE SENSITIVITY TO MODIFIED FLOW/WATER LEVEL CHANGES	High	High	 Small river system Channel is relatively narrow where there is critical habitat, thus should flow/water level changes take place, this zone will be compromised from a biotic perspective. The pushback from the downstream weir is not sensitive to flow/water level changes.
	High	High	

Great Fish River (Lower)

EI METRIC	DESKTOP (2014) INTERMEDIATE (2023) (for site)		Motivation
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH)	Low Low		
RIPARIAN-WETLAND NATURAL VEG RATING BASED ON % NATURAL VEG IN 500m (100%=5)	Very high	High	 Some agricultural encroachment has occurred.
RIPARIAN-WETLAND NATURAL VEG IMPORTANCE BASED ON EXPERT RATING	Low	Moderate	 2 SA endemic species (Cyperus textilis, Combretum caffrum) and 14 indigenous species observed at. Riparian habitats include bedrock controlled channel, reeds, woody alluvial banks, grass, sedge inset bench.
HABITAT DIVERSITY CLASS	Low	Low	
HABITAT SIZE (LENGTH) CLASS	Low	Low	
INSTREAM MIGRATION LINK CLASS	Very high	Moderate	 Species assemblage dominated by alien fish species. However, some indigenous species with catchment-scale or between reach migration requirements likely to be present but at lower FROC Reduced flows due to interbasin transfer and significant abstraction likely to be impacting migration cues
RIPARIAN-WETLAND ZONE MIGRATION LINK	High	High	• Corridor mostly intact and maintains functionality.
RIPARIAN-WETLAND ZONE HABITAT INTEGRITY CLASS	High	Moderate	 Marginal zone has shifted due to transfer with elevated flows, which has also scoured the site.
INSTREAM HABITAT INTEGRITY CLASS	High	Low	•Paterbasin Transfer scheme (extensive flow modification), water quality compromised (upstream Craddock town, high sedimentation loads)
FINAL ECOLOGICAL IMPORTANCE FOR SITE	Moderate	Moderate	
ES METRIC	DESKTOP	INTERMEDIATE (2023) (for site)	
FISH	1		
FISH PHYS-CHEMICAL SENSITIVITY	Moderate	Moderate	
FISH NO-FLOW SENSITIVITY	Moderate	Moderate	
INVER	275		
INVERT PHYS-CHEMICAL SENSITIVITY	Moderate	Moderate	 2 out of 5 (Taxa with a froc 5 and 3 absent) and 2 out of 11 expected taxa (Taxa with a froc 5, 4 and 3 absent) recorded for unmodified and moderately unmodified physico-chemical conditions changes respectively.
INVERTS VELOCITY SENSITIVITY	Very high	High	 3 out of 5 (Trichorythidae (Froc5) absent) and 5 out of 9 expected taxa (froc 5,4 and 3 absent) recorded with a preference for very fast and moderately fast flowing water respectively. Mostly low frocs absent.
RIPARIAN-WETLAND VER			
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH) INTOLERANCE TO WATER LEVEL/FLOW CHANGES	Low	Low	
RIPARIAN-WETLAN			
RIPARIAN-WETLAND VEGETATION INTOLERANCE TO WATER LEVEL CHANGES	Low	Low	 Marginal zone grasses, sedges, and Salix mucronata, but flows have been regulated.
STREAM			
STREAM SIZE SENSITIVITY TO MODIFIED FLOW/WATER LEVEL CHANGES	Low	Low	 IBT thus the system is under stress from flow modification and regulation (lost seasonal variation) however it's a large system
FINAL ECOLOGICAL SENSITIVITY FOR SITE	Moderate	Moderate	

KwaZungu/Swartkops River

EI METRIC	DESKTOP (2014)	INTERMEDIATE (2023) (for site)	Motivation
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH)	Low	Low	
RIPARIAN-WETLAND NATURAL VEG RATING BASED ON % NATURAL VEG IN 500m (100%=5)	Moderate	Low	The buffer is mostly natural at the site and upstream through the Groendal Reserve, but is fragmented downstream where the sand mining starts (most of the SQ)
RIPARIAN-WETLAND NATURAL VEG IMPORTANCE BASED ON EXPERT RATING	Low	High	 Afrocarpus falcatus (Outeniqua yellowwood) protected in SA; Prionium serratum (Palmiet) has a threat status of "Declining"; 3 SA endemic species (Cyperus textilis, Prionium serratum, Searsia lucida) and 19 indigenous species observed at site excluding Fynbos elements. Riparian habitats include confined channel with boulder floodplain (terrestrial species), cobble / buolder / bedrock riffle / runs, pools with aqautic vegetation, alluvial banks with tall tree and forest elements, alluvial narrow inset benches.
HABITAT DIVERSITY CLASS	Low	Low	
HABITAT SIZE (LENGTH) CLASS	Very Low	Very Low	
INSTREAM MIGRATION LINK CLASS	High	Low	(AMOS & AMAR) due to sand mining immediately downstream (manipulation of channel) as well as water quality impacts from Uitenhage • Remainder of fish species have requirement for within-reach movement
RIPARIAN-WETLAND ZONE MIGRATION LINK	Moderate	Low	•Corridor mostly intact and maintains functionality between the Groendal Dam (upstream) and the Albany Alluvial Vegetation (downstream), but downstream of this (most of the SQ) the corridor is severely fragmented or removed.
RIPARIAN-WETLAND ZONE HABITAT INTEGRITY CLASS	Low	High	Integrity is high at the site with only a few alien plants and remains high in the Groendal Reserve, but deteriorates severly downstream from where the sand mining starts.
INSTREAM HABITAT INTEGRITY CLASS	Moderate	High	 Limited impacts as the site is located within the Groendal Nature Reserve - Groendal Dam (channel modification)
FINAL ECOLOGICAL IMPORTANCE FOR SITE	Moderate	Moderate	
ES METRIC	DESKTOP	INTERMEDIATE (2023) (for site)	
FISH	1		
FISH PHYS-CHEMICAL SENSITIVITY	High	High	
FISH NO-FLOW SENSITIVITY	Very high	Moderate	 Species present regarded as having moderate tolerance to no-flow conditions. Only species likely to be present with intolerance to no-flow conditions (PAFE) not recorded within mainstem - only present in
INVER	rts		
INVERT PHYS-CHEMICAL SENSITIVITY	Moderate	High	 4 out of 9 (Hydropsychidae >2spp (froc5) absent) and 10 out of 19 expected taxa (low frocs mostly absent) recorded for unmodified and moderately unmodified physico-chemical conditions changed respectively.
INVERTS VELOCITY SENSITIVITY	Very high	Very high	 5 out of 7 (1 FROC 5 absent) and 6 out of 9 expected taxa ((low frocs mostly absent) recorded with a preference for very fast and moderately
RIPARIAN-WETLAND VER			fast flowing water respectively.
	TEBRATES (NON-FISH)	fast flowing water respectively.
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH) INTOLERANCE TO WATER LEVEL/FLOW CHANGES	TEBRATES (NON-FISH) Low	fast flowing water respectively.
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH) INTOLERANCE TO WATER LEVEL/FLOW CHANGES <i>RIPARIAN-WETLAN</i>	Low) Low	fast flowing water respectively.
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH) INTOLERANCE TO WATER LEVEL/FLOW CHANGES RIPARIAN-WETLAND VEGETATION INTOLERANCE TO WATER LEVEL CHANGES	TEBRATES (NON-FISH Low ID VEGETATION Low	Low Moderate	fast flowing water respectively. • Marginal zone grasses, sedges, shrubs and Palmiet. Also aquatic vegetation, Nymphae nouchali - Pool with aquatic vegetation, riffle rheophyte habitats
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH) INTOLERANCE TO WATER LEVEL/FLOW CHANGES RIPARIAN-WETLAND VEGETATION INTOLERANCE TO WATER LEVEL CHANGES STREAM	Low Low Low Low Low Low) Low Moderate	 fast flowing water respectively. Marginal zone grasses, sedges, shrubs and Palmiet. Also aquatic vegetation, Nymphae nouchali - Pool with aquatic vegetation, riffle rheophyte habitats
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH) INTOLERANCE TO WATER LEVEL/FLOW CHANGES RIPARIAN-WETLAN RIPARIAN-WETLAND VEGETATION INTOLERANCE TO WATER LEVEL CHANGES STREAM STREAM SIZE SENSITIVITY TO MODIFIED FLOW/WATER LEVEL CHANGES	ID VEGETATION Low Low Low SIZE Low	Low Moderate High	fast flowing water respectively. • Marginal zone grasses, sedges, shrubs and Palmiet. Also aquatic vegetation, Nymphae nouchali - Pool with aquatic vegetation, riffle rheophyte habitats • Small river system • Channel is relatively narrow where there is critical habitat, thus should flow/water level changes take place, this zone will be compromised from a biotic perspective.

Gamtoos River

EI METRIC	DESKTOP (2014) INTERMEDIATE (2023) (for site)		Motivation
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH)	Low Low		
RIPARIAN-WETLAND NATURAL VEG RATING BASED ON % NATURAL VEG IN 500m (100%=5)	Moderate	Low	Fragmentation by agriculture.
RIPARIAN-WETLAND NATURAL VEG IMPORTANCE BASED ON EXPERT RATING	Low	Moderate	• EN Albany Alluvial Vegetation & Kouga - Baviaanskloof Complex IBA; 2 SA endemic species (Cotula nigellifolia var. nigellifolia, Cyperus textilis) and 18 indigenous species observed at site. Riparian habitats include deep pools, mixed bedrock alluvial shallow channel with aqautic and emergent vegetation, sedge and reed beds
HABITAT DIVERSITY CLASS	Very Low	Very Low	
HABITAT SIZE (LENGTH) CLASS	High	High	
INSTREAM MIGRATION LINK CLASS	High	Moderate	 Species with a requirement for catchment-scale and between reach scale migration requirements occuring at a lower FROC than expected Site often dry
RIPARIAN-WETLAND ZONE MIGRATION LINK	Very high	Moderate	• Corridor fragmentation is high but the upland is mainly agriculture, so functionality persists.
RIPARIAN-WETLAND ZONE HABITAT INTEGRITY CLASS	Very high	Moderate	• AIP high
INSTREAM HABITAT INTEGRITY CLASS	INTEGRITY CLASS High		 Upstream Kouga Dam, low water bridge (channel and bed modification), extensive citrus farming, irrigation, abstraction and return flows (nutrients), high algae over biotopes
FINAL ECOLOGICAL IMPORTANCE FOR SITE	ECOLOGICAL IMPORTANCE FOR SITE High Moderate		
ES METRIC DESKTOP INTERMEDIAT (2023) (for site		INTERMEDIATE (2023) (for site)	
FISH			
FISH PHYS-CHEMICAL SENSITIVITY	High	High	
FISH NO-FLOW SENSITIVITY	Very high	Moderate	 Only a single species regarded as moderately intolerant to no-flow conditions likely present at very low FROC. Remainder of fish moderately tolerant or tolerant.
INVER	RTS		
INVERT PHYS-CHEMICAL SENSITIVITY	Moderate	Low	• 1 out of 11 (1 taxa with FROC5 absent) and 1 out of 22 expected taxa (several taxa with FROC 5,4,3 absent) recorded for unmodified and moderately unmodified physico-chemical conditions changed respectively.
INVERTS VELOCITY SENSITIVITY Very high		Moderate	• 3 out of 7 (Key expected taxa with high FROCs expected but absent) and 3 out of 4 expected taxa (Key expected taxa with high FROCs expected but absent) recorded with a preference for very fast and moderately fast flowing water respectively.
RIPARIAN-WETLAND VER			
RIPARIAN-WETLAND-INSTREAM VERTEBRATES (EX FISH) INTOLERANCE TO WATER LEVEL/FLOW CHANGES	Low	Low	
RIPARIAN-WETLAN			
RIPARIAN-WETLAND VEGETATION INTOLERANCE TO WATER LEVEL CHANGES	Low	Moderate	Marginal zone grasses, sedges, and the aqautic species Stuckenia pectinatus.
STREAM	I SIZE		
STREAM SIZE SENSITIVITY TO MODIFIED FLOW/WATER LEVEL CHANGES	Low	Moderate	 Small river system Inundation upstream of the low water bridge During times of high abstraction, and flows/water levels are zero, compromising aquatic biotopes downstream of the low water bridge
FINAL FCOLOGICAL SENSITIVITY FOR SITE	Moderate	Moderate	

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