

DUCT River Custodianship



Umzimvubu uMngeni Catchment exchange
UCPP – UEIP Learning Exchange

24 August 2015

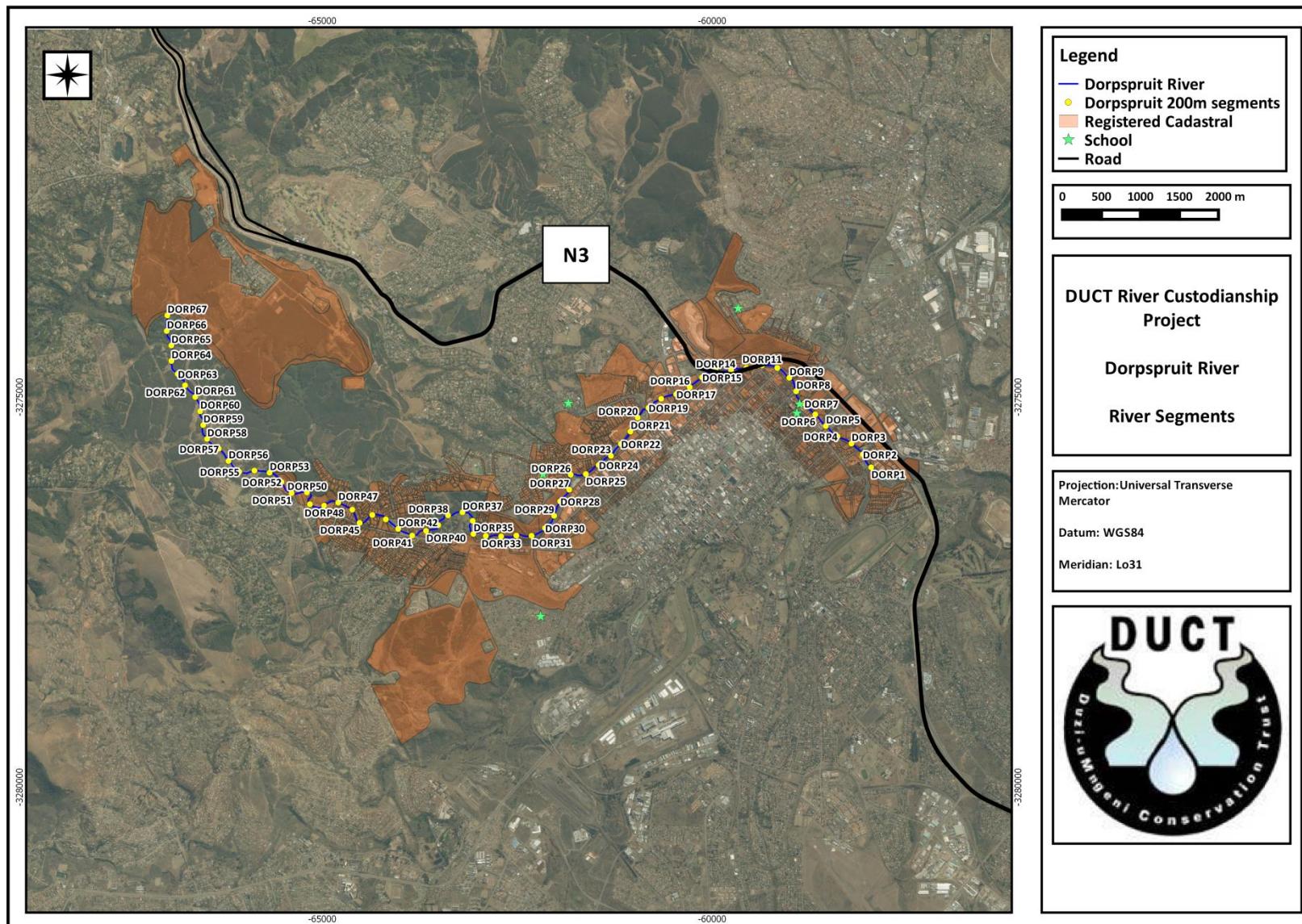


The DUCT interpretation of “custodianship” within this project embodies:

- a sense of place (“it is my river”);
- a sense of community (“I can take part with my community”);
- a pre-existing interest (“I’ve always like butterflies”);
- a sense of discovery (“I had no idea that...”);
- being part of a narrative (“I’m taking part with others ...”); or
- a sense of jeopardy (“my otters are under threat”).

Dorpspruit River Walk 2014

- Dorpspruit River 'walked' to highlight its current ecological state and data collated will be used to inform on the DUCT custodianship programme.



Methods

- Entire length of the Dorpspruit river traversed by DUCT employees and UKZN honours students (approximately 13 km).
- River divided into 200 m segments and each segment assessed using lotic ecosystem monitoring tools.
- miniSASS¹ was recorded for particular segments to stratify the ecological health of the Dorpspruit River.
- The Index of Habitat Integrity (IHI)² ecoclassification tool was further utilised to comprehend the key anthropogenic impacts driving the ecological health of the system.
- The IHI will be further used to inform possible custodians on actions required to restore their 'adopted' reach.

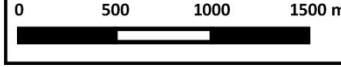
1. Graham, P.M., Dickens C.W.S. and Taylor R.J. (2004) miniSASS — A novel technique for community participation in river health monitoring and management. *African Journal of Aquatic Science* 29 (1): 25–35.
2. Kleynhans CJ, Louw MD, Graham M. 2008. Module G: EcoClassification and EcoStatus determination in River EcoClassification: Index of Habitat Integrity (Section 1, Technical manual). *WRC Report No. TT377/08*. Joint Water Research Commission and Department of Water Affairs and Forestry Report, Pretoria, South Africa.

Index of Habitat Integrity : Instream Zone



Legend

- Dorpspruit 200m segments
- Dorpspruit River
- Natural
- Largely Natural
- Moderately Modified
- Largely Modified
- Seriously Modified
- Msunduzi River



Projection: Universal Transverse Mercator
Datum: WGS84
Meridian: Lo31

DUCT River Custodianship Project

Dorpspruit River

Instream IHI



Index of Habitat Integrity : Riparian Zone



Legend

- Dorpspruit 200m segments
- Dorpspruit River
- Natural
- Largely Natural
- Moderately Modified
- Largely Modified
- Seriously Modified
- Msunduzi River

0 500 1000 1500 m

Projection: Universal Transverse Mercator

Datum: WGS84

Meridian: Lo31

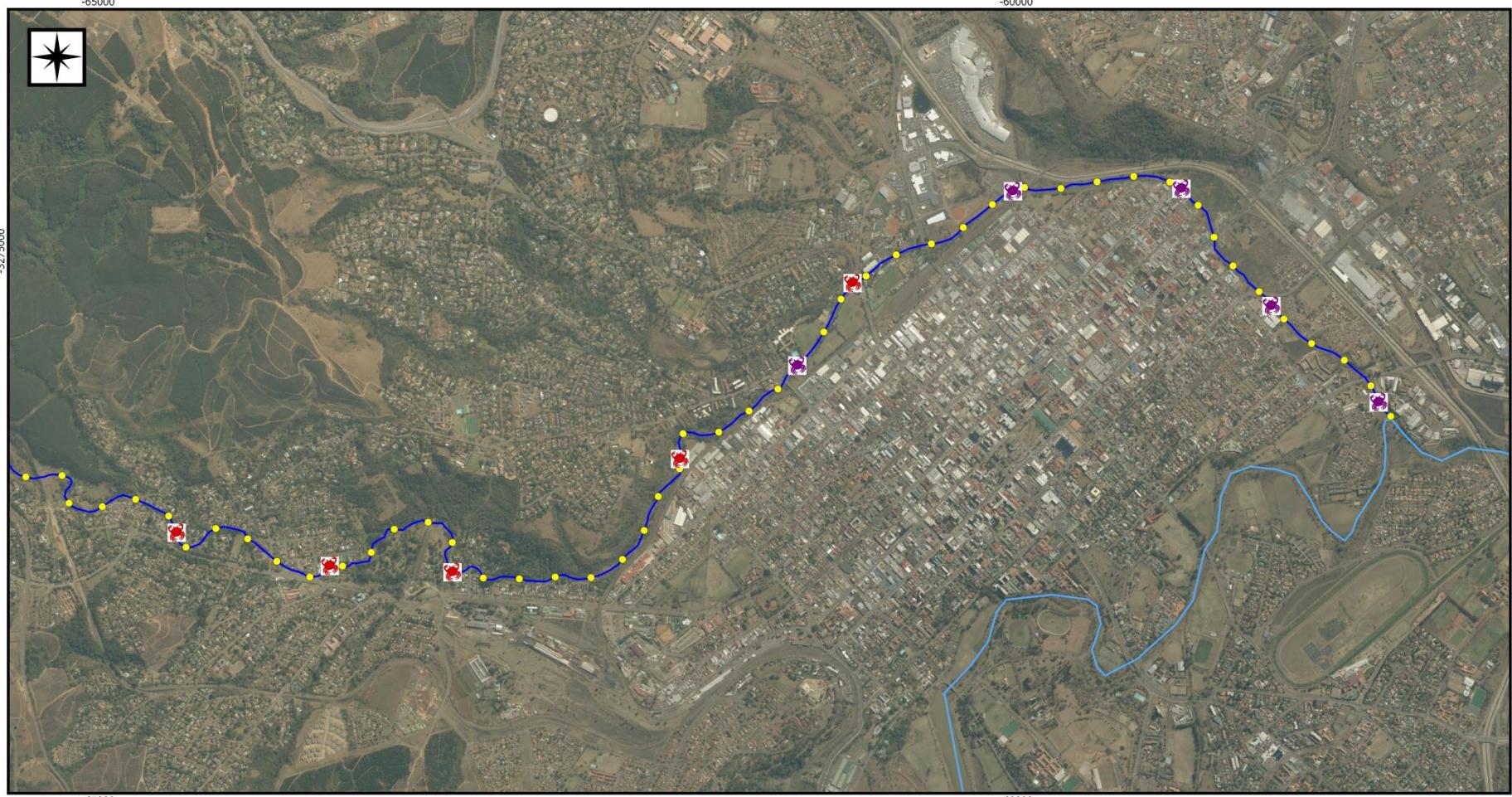
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Dorpspruit River

Riparian IH



miniSASS



Legend

- Dorpspruit 200m segments
- Dorpspruit River
- Dorpspruit River
- Msunduzi River

	Natural
	Largely Natural
	Moderately Modified
	Largely Modified
	Seriously Modified

0 500 1000 1500 m

Projection: Universal Transverse Mercator

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Meridian: Lo31

DUCT River Custodianship Project

Dorpspruit River

miniSASS



miniSASS: DORP1



Riparian IHI: DORP1

SUBREACH	VEGETATION REMOVAL (IMPACT 1 - 25)	EXOTIC VEGETATION (IMPACT 1 - 25)	BANK EROSION (IMPACT 1 - 25)	CHANNEL MODIFICATION (IMPACT 1 - 25)	WATER ABSTRACTION (IMPACT 1 - 25)	INUNDATION (IMPACT 1 - 25)	FLOW MODIFICATION (IMPACT 1 - 25)	PHYS-CHEM (IMPACT 1 - 25)	PRIPARIAN INTEGRITY SCORE	RIPARIAN INTEGRITY CLASS
DORP1	7	8	6	5	3	0	4	3	82	C/B
DORP2	10	4	8	4	1	0	7	5	80	C/B
DORP3	0	15	6	8	6	0	6	5	68	C
DORP4	15	8	14	10	4	0	6	13	41	D

miniSASS: DORP1



miniSASS: DORP1

SUBREACH	WATER ABSTRACTION (IMPACT 1 - 25)	FLOW MODIFICATION ((IMPACT 1 - 25)	BED MODIFICATION (IMPACT 1 - 25)	CHANNEL MODIFICATION (IMPACT 1 - 25)	PHYS-CHEM MOD (IMPACT 1 - 25)	INUNDATION (IMPACT 1 - 25)	ALIEN MACROPHYTES (IMPACT 1 - 25)	INTRODUCED AQUATIC FAUNA (IMPACT 1 - 25)	RUBBISH DUMPING (IMPACT 1 - 25)	INSTREAM HABITAT INTEGRITY SCORE	INSTREAM INTEGRITY CLASS
DORP1	0	5	4	6	7	0	0	0	8	86	B
DORP2	0	4	6	4	8	0	0	0	8	86	B
DORP3	0	5	7	5	4	0	0	0	6	87	B
DORP4	0	4	8	3	15	0	0	0	13	77	C

Conclusions

- ✓ miniSASS and IHI are effective tools utilised in 'river walks' in providing ecological health of river ecosystems.
- ✓ Ecological and environmental data generated from these methods provide an effective management tool for DUCT.
- ✓ miniSASS ecological categories indicate that the Dorpspruit River is in a largely to seriously modified ecological state throughout the surveyed reaches.
- ✓ However instream IHI scores indicate that there is minimal instream habitat modification in the Dorpspruit River alluding to poor water quality as the key environmental impact.