Section A: Description of datasets and study area

Description of study area

Flanders is the northern region of Belgium. It is part of two international stream basin districts, the Scheldt and the Meuse. It has 11 stream basins. Its main land uses are agriculture (51%), urban land (30%) and forest (10%). In the province West-Flanders agriculture is the dominant land use (67.4%). To the east there are more nature areas with forest (18.3%). Still, even in the eastern province Limburg agriculture still remains the main land use (43.4%).

Water quality in Flanders has improved a lot in recent years because of the installation of new sanitation infrastructure and reducing the diffuse pollution from agriculture. Still, water quality in Flanders does not meet WFD requirements. In 2012 no Flemish waterbodies or local water bodies of the 1st order met all the requirements for reaching a good ecological status (Milieurapport 2013). Table A2 shows a summary of water quality indicators in 2012 for all Flemish water bodies and local water bodies of the 1st order. All water bodies had a moderate physical-chemical status. The biological quality according to the MMIF is good in 25% of the water bodies. Only 8% are in a very bad condition. The hydromorphological quality of most water bodies is bad to moderate.

Table SA1. Number of samples per river type and per ecological quality class.

River Type	Good Status	Moderate Status	Poor Status	Bad Status	Total
Large Brook (Bg)	47	185	364	318	914
Large Campine Brook (BgK)	191	193	109	40	533
Small Brook (Bk)	63	148	376	421	1008
Small Campine Brook (BkK)	142	216	198	104	660
Large river (Rg)	71	257	534	293	1155
Small river (Rk)	25	89	64	5	183
Very Large river (Rzg)	2	21	5	0	28
Total	541	1109	1650	1181	4481

Table SA2. Percentage of samples per quality class for the ecological status based on macroinvertebrates, the physical-chemical status and the hydromorphological status.

Ecological status	MMIF	Physical-Chemical quality	Hydromorphological quality
Very good	0	0	0
Good	26.26	0	9.52
Moderate	32.40	100	42.26
Bad	32.96	0	44.05
Very bad	8.38	0	4.17

Table SA3. Overview of the input variables of the suitability models.

Variable	Code	Unit
Width erosion	WE	-
Width variation	WV	-
Presence of dead wood	PDW	-
Curvature erosion	CE	-
Micromeandering	MM	-
Presence of sediment banks	PSB	-
Sinuosity class	SC	-
Sludge layer	SL	-
Substrate	Su	-
Presence of algae	PA	-
Presence of macrophytes	PM	-
Acidity	Ph	-
Temperature	T	°C
Chlorine concentration	Cl	mg/L
Electrical conductivity	EC20	µs/L
Kjeldahl nitrogen concentration	Kjn	mg/L
Ammonium nitrogen concentration	NH4	mg/L
Nitrate nitrogen concentration	NO3	mg/L
Nitrite nitrogen concentration	NO2	mg/L
Orthophosphate phosphorus concentration	Opo4	mg/L
Total phosphorus concentration	Pt	mg/L
Total suspended solids	TSS	mg/L
Lateral connectivity	LC	-
Bank type	BT	-
Overhanging vegetation	OV	-
Water-related elements in the landscape	Wre	-
Stream pattern variation	SP	-
Pool-riffle pattern	PR	-
Width	W	M
Depth	D	M
Biological oxygen Demand	BOD	mg/L
Chemical oxygen Demand	COD	mg/L
Oxygen concentration	O2	mg/L
Oxygen saturation	O2sat	%