River Kent Special Area of Conservation

Evidence Pack

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Further information

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Contents

1. Site Details

From River Kent Special Area of Conservation citation:

The River Kent's main tributaries have their catchments in the south-eastern Lake District fells. On the higher ground these drain from rocks of Ordovician and Silurian age. Natural mineral enrichment provides the calcium necessary for growth of crayfish with the river Kent and tributaries Site of Special Scientific Interest (SSSI)/Special Area of Conservation (SAC) supporting arguably England's best crayfish river. Downstream from Kendal, the main channel of the Kent flows through a series of limestone defiles and gorges. This stretch is influenced by calcium-rich limestone springs.

The River Kent tributaries rise in the Cumbria High Fells National Character Area, and through the SSSI/SAC boundaries which then flows through the South Cumbria Low Fells and the Morecambe Bay Limestones National Character Areas.

The Kent system presents a variety of habitats for crayfish. This includes extensive areas with a loosely structured but stable stream bed of cobbles and stones. Crayfish are also found in the more unstable, turbulent reaches of the upper Kent and Sprint wherever there are small areas of cobbles and stones at the edge of channels. In the lower reaches, and particularly through Kendal, there are extensive beds of water crowfoot *Ranunculus* spp. and alternate-flowered water-milfoil *Myriophyllum alterniflorum* providing a further habitat and food source for crayfish.

The freshwater pearl mussel (*Margaritifera margaritifera*) is currently found in only one location (Dubbs Beck; unit 102) although there are historic records indicating a more widespread distribution within the Kent catchment. More recently 3 individuals were found in Unit 107 (River Kent in Kentmere). The site is also designated for bullhead (*Cottus gobio*) which are present throughout the catchment in suitable habitat areas.

2. Reasons for European Designation

The SAC is designated for the following features:

- H3260 Water courses of plain to montane levels with *R. fluitantis*
- S1029 Freshwater pearl mussel, *Margaritifera margaritifera*
- S1092 Freshwater crayfish, *Austropotamobius pallipes*
- S1163 Bullhead, *Cottus gobio*

Links to Conservation Advice:

- Conservation Objectives
- Conservation Objectives Supplementary Advice

3. Nutrient Pressure and Water Quality

Nutrient pressure(s) for which the site is unfavourable:

- Phosphorus

Table 1 – Site attribute with water quality targets

Unit name	SSSI Unit	Monitoring point ID	WQ Target	WQ Monitoring Data[1]		Compliance with target Pass/Fail and % reduction needed to achieve the WQ Target
			SRP (ug/l) annual mean	OP reactive as P (ug/l) mean	Timeframe	
Dubbs Beck	102	Dubbs Beck at Capple Howe impoundment - NW-88024648	5	All results below LOD of 10	June 2019–Feb 2022	Unknown
River Gowan	104	River Gowan@ Stubbings Bridge - NW-88023151	15	all results below LOD of 10	June 2019–Oct 2021	PASS
		River Gowan PTC River Kent- NW-88004369	15	20.3	Feb 2018 – March 2020	FAIL 26% reduction needed

1 Water Quality Monitoring data from EA WIMS database. Orthophosphate (OP) is a reasonable approximation to Soluble Reaction Phosphorus (SRP). Any sample results below the level of detection were included at face value in the calculation of the mean. Following the rivers common standards monitoring guidance the mean of 3 years worth of data used where available.

Upper Kent in Kentmere	105	No monitoring location	-	-	-	-
River Kent in Kentmere	107	River Kent upstream Staveley WwTW - NW-88019824	10	2.8	April 2018-March 2020	PASS
River Gowan	108	No monitoring location	-	-	-	-
River Sprint	109	River Sprint PTC River Kent - NW-88004374	18	8.8 – although most below LOD of 10 which lower than target	March 2019 – Feb 2022	PASS
River Mint	110	River Mint at Patton (d/s fish farm) NW-88004387	10	7.8	Feb 2018 – March 2020	PASS
		River Mint PTC River Kent - NW-88004392	27	14.8	Feb 2018 – March 2020	PASS
Greyrigg Beck	111	Flodder beck at A685 Roadbridge - NW-88004390	10	22.6	Feb 2018 – March 2020	FAIL 56% reduction needed
Kent: Gowan to Mint Conf (before Sprint Conf)	112	River Kent PTC River Sprint - NW-88004372	20 (Kent - conf Gowan to conf Sprint)	14.8	April 2019-March 2020	PASS

River Kent in Kendal	113	No monitoring location	30			
Natland Mill Beck	114	Natland Beck at Natland Road Bridge - NW-88025802	40	27	July 2021 – Feb 2022	PASS – although limited data
Kent downstream of Kendal	115	River Kent at Sedgewick - NW-88004397	30	15.8	Feb 2019 – Jan 2022	PASS

The condition of the waterbody and the habitats which support the designated features is in part dependent on the water quality within them. The occurrence of excessive nutrients in the waterbody can impact on the competitive interactions between high plant species and between higher plant species and algae, which can result in a dominance in attached forms of algae, and a loss of characteristic plant species. Changes in plant growth and community composition can have implications for the wider food web, and the species present. Increased nutrients and the occurrence of eutrophication can also impact on the dissolved oxygen levels in the waterbody, also impacting on biota within the river

Recent water quality monitoring data shows that SSSI unit 104 (River Gowan) and SSSI unit 111 (River Greyrigg) are failing their targets. Any nutrients entering the catchment upstream of the locations which are exceeding their nutrient targets, will make their way downstream and have the potential to further add to the current exceedance. Therefore, for the River Kent, the catchment of the Greyrigg Beck (unit 111) and the catchment upstream of unit 104 (upstream of Staveley) and are included within the catchment map.

4. Additional Information

Habitat type impacted by nutrients – Riverine.

The River Kent SAC is legally underpinned by the River Kent and Tributaries SSSI.

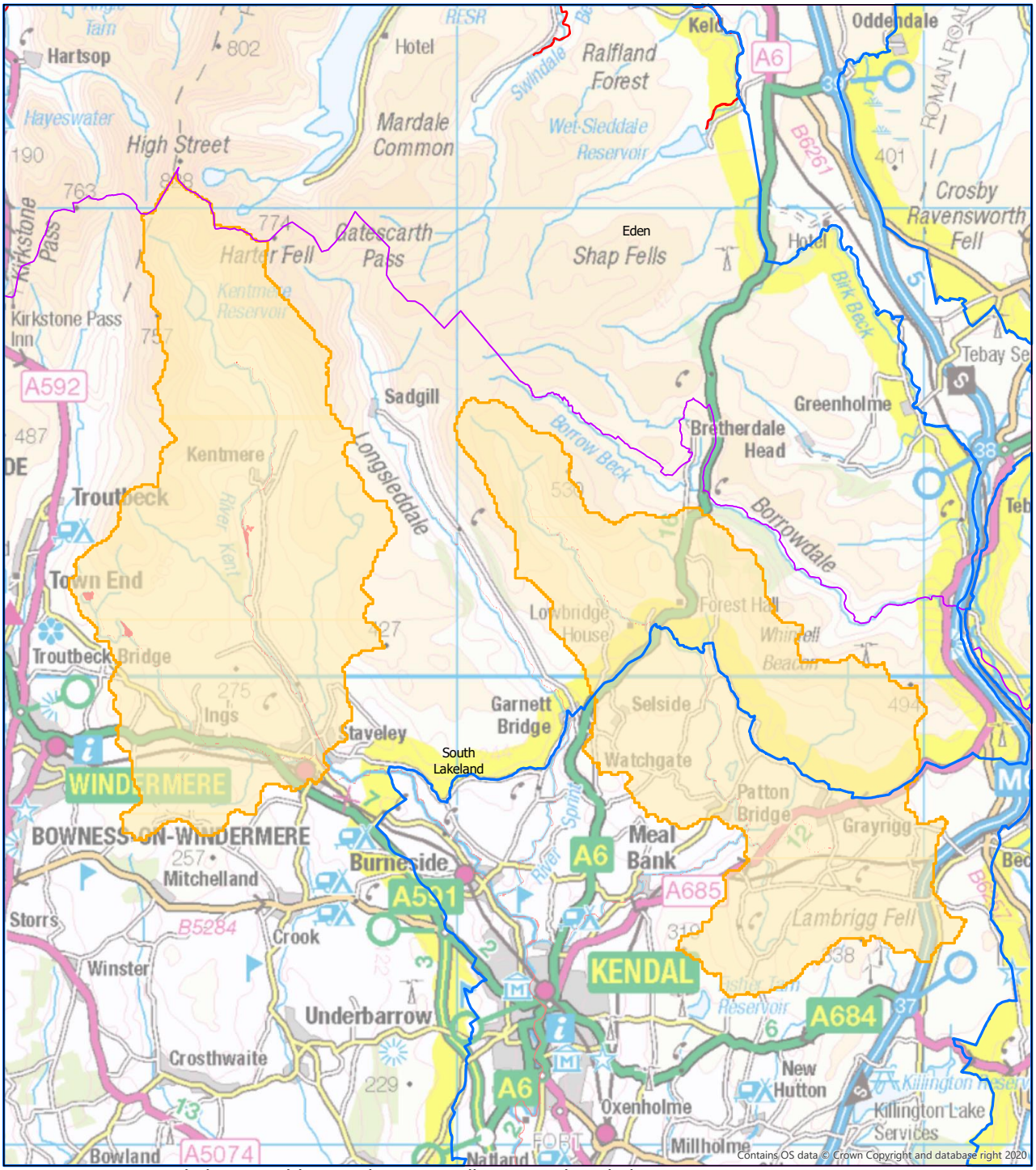
SSSI interest features:

- Population of Schedule 5 mollusc - *Margaritifera margaritifera*, Freshwater Pearl Mussel
- Rivers and Streams
- White-clawed (or Atlantic stream) crayfish, *Austropotamobius pallipes*

Appendix

Component SSSIs of River Kent SAC

Map of component SSSIs of River Kent SAC



European protected sites requiring nutrient neutrality strategic solutions

Scale: 1:80,000

Component SSSIs of
River Kent SAC

- Local Authorities
- SSSI subject to nutrient neutrality strategy
- Nutrient neutrality SSSI catchment
- National Parks

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List of abbreviations

OP – Orthophosphate

SAC – Special Area of Conservation

SRP – Soluble Reaction Phosphorus

SSSI – Site of Special Scientific Interest

WQ – Water Quality

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