River Eden Special Area of Conservation

Evidence Pack

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Evidence Pack – River Eden SAC

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Further information

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1. Site Details

From the River Eden Special Area of Conservation citation:

The Eden is an outstanding floristically rich, northern river on sandstone and hard limestone. Situated within multiple National Character Areas (NCA) including, Cumbria High Fells, Orton Fells, North Pennines, Solway Basin, Border Moors and Forests, Tyne Gap and Hadrian's Wall and the Yorkshire Dales, the catchment includes headwaters running off the Yorkshire Dales, the North Pennines and the eastern fells of the Lake District and the major standing water body of Ullswater and it flows north to discharge into the Solway Estuary.

Streams flowing from limestone are calcareous, whilst those flowing off the Pennines and the Lake District fells are more acidic. The nutrient status gradually changes along the Eden's length as nutrient loadings naturally increase in the lower reaches. The variation in geology, altitude and flow result in an extremely high number of aquatic plant species with over 180 species recorded, many uncommon and at the edge of their geographical range. In places on the Eden there are natural riparian habitats of wet woodland sedge swamp and oxbow lakes.

The River Irthing in particular supports extensive areas of alder floodplain woodland and the river shingles that this dynamic habitat forms upon. The River Eden is one of the finest rivers in the UK for Atlantic salmon, bullhead and the three lamprey species found in the UK. The limestone streams and the upper main river support an extensive whiteclawed crayfish population. Otter is found throughout the catchment. Ullswater, part of the River Eden Special Area of Conservation (SAC), is the second largest lake in the Lake District. It is a relatively deep lake with both oligotrophic and mesotrophic elements to its flora and fauna.

2. Reasons for European Designation

The River Eden SAC is designated for the following features:

- H3130 Oligotrophic to mesotrophic standing water with vegetation
- H3260 Water courses of plain to montane levels with *R. fluitantis*
- H91E0 Alluvial woods with *A. glutinosa*, *F. excelsior*
- S1092 Freshwater crayfish, *Austropotamobius pallipes*
- S1095 Sea lamprey, *Petromyzon marinus*
- S1096 Brook lamprey, *Lampetra planeri*
- S1099 River lamprey, *Lampetra fluviatilis*
- S1106 Atlantic salmon, *Salmo salar*
- S1163 Bullhead, *Cottus gobio*
- S1355 Otter, *Lutra lutra*

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

In the Conservation Objectives Supplementary advice for the River Eden SAC for rivers with floating vegetation often dominated by Water Crowfoot it states **'the natural regime of the river should be protected, with any anthropogenic enrichment above natural/background concentrations limited to levels at which adverse effects on characteristic biodiversity are unlikely'.**

Table 1 – Water quality data for the riverine units

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	
Mallerstang	201	River eden upstream of Kirby Stephen NW-88006160	15	4.8	April 2019-March 2020	PASS
Eden Stenkrith to Scandal	202					
Scandal Beck	203	Scandal beck AT A685 roadbridge	7	15.8	April 2019-	FAIL

[1] 1Water 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.

		NW-88006163			March 2020	56% reduction needed
		Scandal Beckat Soulby NW-88006452	7	10.1	May 2017-March 2020	FAIL 31% reduction needed
River Belah	204	Argill Beck Bridge near Argill House NW-88006453	15	6.7	July 2016 – June 2019	PASS
		River Belah at Belah bridge NW-88006196	15	5.9	Feb 2018-March 2020	PASS
Eden: Scandal to Helm Beck	205	River Eden at Warcop NW-88006173	15	No recent data	-	Unknown
Helm Beck	206	Helm beck (Mill Beck) at Little Ormside NW-88006181	15	22.5	April 2017-March 2020	FAIL 33% reduction needed
Eden: Helm to Hoff	207	River Eden at Appleby NW-88006180	15	14.0	June 2017-March 2020	PASS
		River Eden at Colby Laithes NW-88010151	15	25.3	March 2017-Feb 2020	FAIL 41% reduction needed
Hilton Beck	208	Hilton Beck at Roman Road Coupland NW-88006185	7	12	April 2019-March 2020	FAIL 42% reduction needed
Hoff Beck	209	Scale Beck at Quarry NW-88006187	15	3.8	May 2019-March 2020	PASS
		Hoff (Ashby) Beck at	15	20.5	May 2017-	FAIL 27%

		Colby Hall NW-88006190			March 2020	reduction needed
Hoff to Crowdundle Confluence	210	River Eden at Bolton NW-88006186	15	19.1	Feb 2019 – Jan 2022	FAIL 21% reduction needed
		River Eden at Temple Sowerby NW-88006220	15	21.7	Feb 2019 - Jan 2022	FAIL 31% reduction needed
Trout and Swindale Becks	211	RSN1639 Swindale Beck nr Knock Pike NW-RSN1639	7	1.8	Jan 2021- Jan 2022	PASS
		Swindale Beck u/s Billys Beck NW-8800619	7	12.1	July 2017- March 2020	FAIL 42% reduction needed
		Trout Beck At Kirkby Thore NW-88006197	15	29.7	April 2017- March 2020	FAIL 49% reduction needed
River Lyvennet	212	River Lyvennet at Meaburn Hall NW-88006213	15	10.9	March 2017- Feb 2020	PASS
		River Lyvennet upstream of River Leith NW-88006212	15	24.2	June 2017 – March 2020	FAIL 38% reduction needed
Crowdundle Beck	214	RSN0095 R. Leith - Sheriff Park Wood NW-RSN0095	25	26.1	April 2021 – Feb 2022	FAIL 4% reduction needed Note limited data – 11 monthly samples
		River Leith Upstream of River Lyvennet	25	35.5	Feb 2019 – Jan 2022	FAIL 30%

		Cliburn NW-88006202				reduction needed
		River Leith @ Cliburn d/s weir NW-88021261	25	33.2	Feb 2018 – Feb 2020	FAIL 25% reduction needed
Crowdundle to Briggle Confluences	215	No monitoring point	15	No data	-	Unknown
River Lowther	216	Swindale Beck at Rosgill Moor Bridge NW-88006241	15	1.4	April 2017 – March 2020	PASS
		Haweswater Beck at Bomby Bridge NW-88006244	25	36.2	April 2017 – March 2020	FAIL 31% reduction needed
		River Lowther at Bampton Grange NW-88006258	15	3.3	Oct 2015 – May 2018	PASS
		River Lowther at Lowther Bridge NW-88006261	15	9.6	April 2019 – March 2020	PASS
Goldrill Beck	217	Goldrill Beck u/s Ullswater NW-88009739	7	1.8	April 2019 – March 2020	PASS
Sandwick Beck	218	Howe G rain at Sandwick NW-88006218	7	4.5	May 2014-April 2017	PASS
Dacre Beck	220	Dacre Beck near Sparket mill NW-88024204	15	32.7	March 2019 – Feb 2022	FAIL 54% reduction
		Dacre Beck at Dacre Bridge NW-88022212	15	37	Feb 2019 – Jan 2022	FAIL 59% reduction
		Dacre Beck atA592 NW-	15	29.1	April 2017 – March	FAIL 48%

		88006238			2020	reduction
River Eamont	221	River Eamont at exit from Ullswater NW-88006262	10	8.7	Feb 2018-March 2020	PASS
		River Eamont at Eamont Bridge NW-88006246	10	9.5	Feb 2018 – Jan 2019	PASS
Lower Lowther	222	RSN0607 Eamont - at Whinfell Park NW-RSN0607	10	12.3	Feb 2021 – Dec 2021	FAIL 19% reduction needed
		River Eamont at Udford NW-8800626	10	11.2	Jan 2019 – Dec 2021	FAIL 11% reduction needed
Briggle Beck	223	Briggle Beck at Briggle Bridge NW-88006266	255	62.8	April 2017 – March 2020	FAIL 60% reduction needed
Briggle Confluence to Lazonby	224	River Eden at Lazonby NW-88006288	30	19.6	Jan 2019 – Dec 2021	PASS
Lazonby to Armathwaite	225	River Eden at Armathwaite NW-88006301	27	23.8	June 2017 - 2020	PASS
Armathwaite to Irthing Confluence	226	River Eden at Warwick Bridge NW-88006301	30	23.8	June 2017 -March 2020	PASS
River Gelt	227	River Gelt at Low Geltside NW-88006306	27	14.2	Feb 2018-Feb 2020	PASS
Upper Irthing	228	River Irthing at Lanercost NW-88006313	27	10.1	March 2018-March 2020	PASS
Kingwater	2296	King Water at Dovecote Bridge NW-88006317	30	21.7	Jan 2010 – Dec 2012	PASS Old data

Mid Irthing	230	River Irthing @ Ruleholme Bridge NW-88006321	30	No recent data		Unknown
Lower Irthing	231	River Irthing at Newby East NW-88006332	30	18.5	Feb 2018-March 2020	PASS
Irthing to Caldew Confluences	232	River Eden at Eden Bridge NW-88006382	38	30.6	July 2015-April 2018	PASS
Caldew – Carrock **Fell to Cald Beck**	233	River Caldew 50m d/s Grainsgill Beck NW-88006387	10	3.9	Feb 2016-Jan 2019	PASS
		River Caldewat Mosedale Bridge NW-88006388	10	6.3	Feb 2017 – March 2020	PASS
		Caldew at Hesket Newmarket NW-88020889	10	14.5	Aug 2014 – July 2017	FAIL 31% reduction needed
River Caldew – CaldBeck to Gaitsgilll	234	River Caldewat Sebergham NW-88006393	15	15.2	June 2017-March 2020	FAIL 1.3% reduction needed
Gaitsgill to Eden Confluence	235	RSN0043 R Caldew at the green, Dalston NW-RSN0043	30	28.4	Jan 2021 – Feb 2022	PASS
		River C aldew at Bitts Park NW-88006424	30	41.4	July 2017 – March 2020	FAIL 28% reduction needed
Caldew Confluence to Estuary	236	River Eden at Sheepmount NW-88006427	40	25.5	Feb 2019 – Jan 2022	PASS
		Eden at Beaumont	40	48.1	April	FAIL

		(new site) NW-88021071			2017 – March 2020	17% reduction needed

Table 2 – Water quality of the lake units

Unit name	SSSI Unit	Monitoring point ID	WQ Target		WQ Monitoring Data[2]			Meeting Target – Pass or Fail	
			TP (µg/l)*	TN (µg/l)*	TP (µg/l)*	TN (µg/l)*	Timeframe	TP	TN
Ullswater	219	Ullswater WFD – NW - 8801023	11	0.46	8.9	0.37	2019	PASS	PASS
***annual mean**									

Water quality data is reported against the relevant Site of Special Scientific Interest (SSSI) units within the SAC.

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 or lake.

Recent water quality monitoring data shows that the site is failing its water quality targets at a number of river units within the catchment although Ullswater lake is passing its nutrient 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. For the River Eden, although not all units within the catchment are exceeding the phosphorus targets, as the most downstream unit (unit 236)

[2] Water Quality Monitoring data from EA WIMS database. TP is Total Phosphorus, TN is Total Nitrogen. Any sample results below the level of detectionwere excluded from the calculation of the mean. Following the standing waters common standards monitoring guidance one year of data was used to calculate the mean

is failing then any phosphorus added within the whole Eden catchment upstream will contribute to this. Hence the catchment map for the River Eden includes the entire catchment.

4. Additional Information

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

- Aggregations of breeding birds - Sand martin, *Riparia*
- Aggregations of non-breeding birds - Whooper swan, *Cygnus cygnus*
- Assemblages of breeding birds - Upland waters and their margins
- Atlantic salmon, *Salmo salar*
- Breeding population of nationally rare fish species - Whitefish, *Coregonus lavaretus*
- Brook lamprey, *Lampetra planeri*
- Bullhead, *Cottus gobio*
- EW - Non-Marine Permian Triassic (Red Beds)
- Floodplain fen (lowland)
- Invert. assemblage W111 shingle bank
- Invert. assemblage W114 stream & river margin
- Mire grasslands and rush pastures (upland)
- Otter, *Lutra lutra*
- River lamprey, *Lampetra fluviatilis*
- River supporting habitat
- Rivers and Streams
- Sea lamprey, *Petromyzon marinus*
- Wet woodland
- White-clawed (or Atlantic stream) crayfish, *Austropotamobius pallipes*

Appendix

Component SSSIs of River Eden SAC

Map of component SSSIs of River Eden SAC

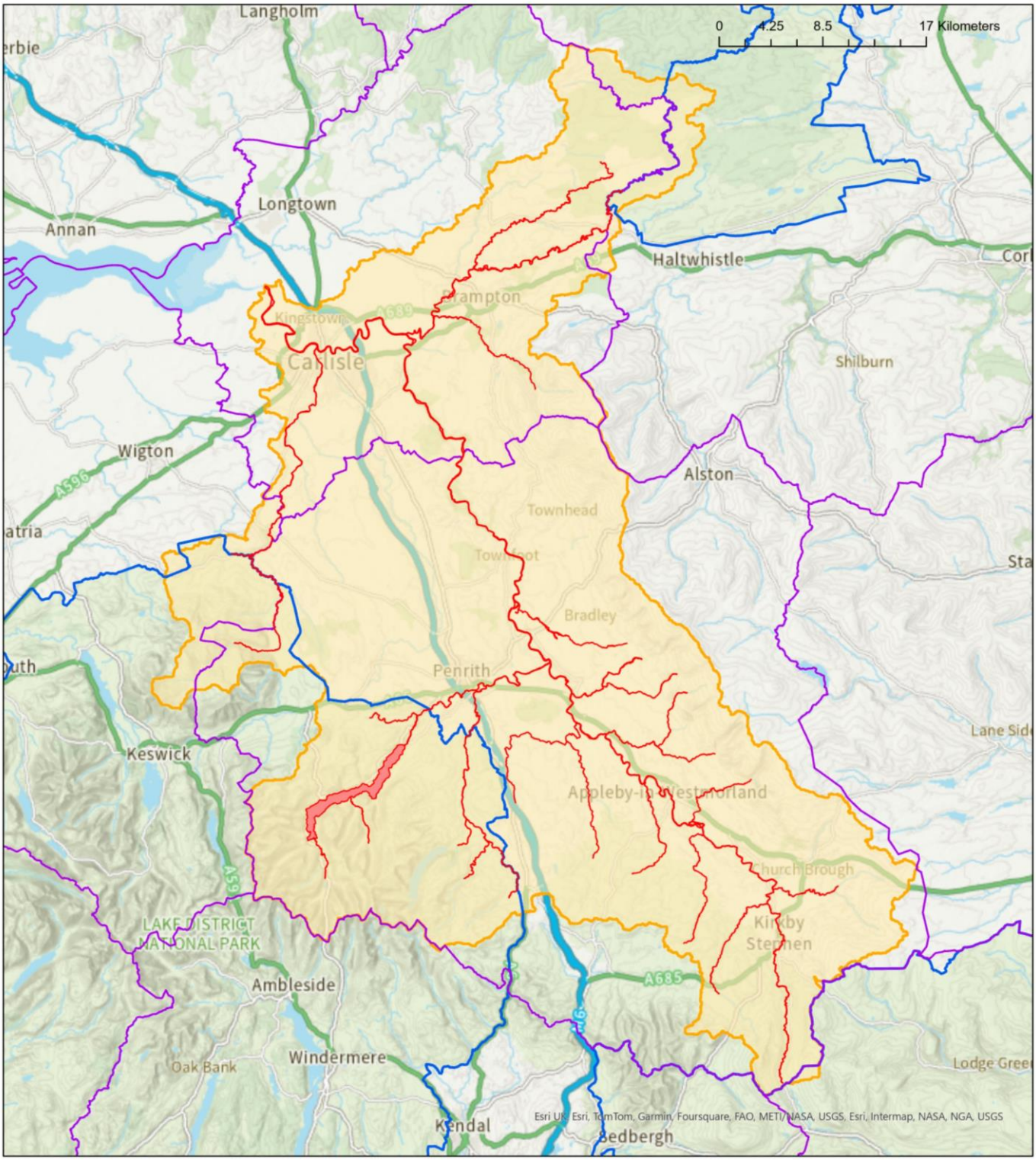
Catchment Area Update (2024)

Natural England has undertaken a review of all the Nutrient Neutrality catchment areas. This review has considered updated surface water catchment data and evidence held by both Natural England and the Environment Agency. Consideration has also been given to data and evidence provided by other parties such as Local Planning Authorities. The information below summarises changes.

This catchment remains unchanged following review.

Publishing of catchment area data

The Geographic Information Systems (GIS) data is available on Defra Data Services Platform.



Area where Natural England's Nutrient Neutrality advice applies for River Eden SAC

European protected sites requiring nutrient neutrality strategic solutions

- Local Authorities
- National Parks
- Surface water catchment area of relevant designated site due to nutrient pollution
- Component SSSIs of impacted designated site

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List of abbreviations

OP – Orthophosphate

SAC – Special Area of Conservation

SRP – Soluble Reaction Phosphorus

SSSI – Site of Special Scientific Interest

TN – Total Nitrogen

TP – Total Phosphate

WQ – Water Quality

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