

Supplementary Data

Table 1. Numbered list of estuaries in mainland England and Wales

1	Hayle Estuary	30	Duddon Estuary	58	Rother Estuary
2	Gannel Estuary	31	Esk Northumberland	59	Cuckmere Estuary
3	Camel Estuary	32	Inner Solway Firth	60	Ouse Estuary
4	Taw-Torridge Estuary	33	Tweed Estuary	61	Adur Estuary
5	Bridgewater Bay	34	Alnmouth	62	Arun Estuary
6	Severn Estuary	35	Coquet/Warkworth Harbour	63	Pagham Harbour
7	Thaw Estuary	36	Wansbeck Estuary	64	Chichester Harbour
8	Ogmore Estuary	37	Blyth Estuary (N'umberland)	65	Langstone Harbour
9	Afan Estuary	38	Tyne Estuary	66	Portsmouth Harbour
10	Neath Estuary	39	Wear Estuary	67	Southampton Water
11	Swansea Bay & Tawe Est.	40	Tees Estuary	68	Beaulieu River
12	Loughour Estuary	41	Esk Estuary (Yorkshire)	69	Lymington Estuary
13	Camarthen Bay	42	Humber Estuary	70	Christchurch Harbour
14	Milford Haven	43	The Wash	71	Poole Harbour
15	Nyfer Estuary	44	Breydon Water	72	Axe Estuary
16	Teifi Estuary	45	Oulton Broad	73	Otter Estuary
17	Aberystwyth	46	Blyth Estuary (Suffolk)	74	Exe Estuary
18	Dyfi Estuary	47	Ore-Alde-Butley	75	Teign Estuary
19	Dysynni Estuary	48	Deben Estuary	76	Dart Estuary
20	Mawddach Estuary	49	Orwell Estuary	77	Salcombe & Kingsbridge Est.
21	Artro Estuary	50	Stour Estuary	78	Avon Estuary
22	Traeth Bach	51	Colne Estuary	79	Erme Estuary
23	Conwy Estuary	52	Blackwater Estuary	80	Yealm Estuary
24	Clwyd Estuary	53	Crouch-Roach Estuary	81	Plymouth Sound
25	Dee Estuary	54	Thames Estuary	82	Looe Estuary
26	Mersey Estuary	55	Medway Estuary	83	Fowey Estuary
27	Alt Estuary	56	Swale Estuary	84	Falmouth
28	Ribble Estuary	57	Stour Pegwell Bay	85	Helford Estuary
29	Morecambe Bay				

Table 2. List of estuaries and associated tidal rivers in England and Wales classified as either ‘bound’ (all NTL’s defined by an in-stream man-made engineering structure), ‘partially bound’ (one of more NTL defined by an in-stream engineering structure) or ‘unbound’ (no in-stream engineering structure present at NTL). The type of structure present is listed for each bound and partially bound estuary.

	Estuary	Tidal River	Fully bound	Partially bound	Unbound	Barrier type
1	Hayle	Hayle	✓	-	-	Sluice
2	Gannel	Gannel	-	-	✓	-
3	Camel	Camel	-	-	✓	-
		Polmarla	-	-	✓	-
		Allen	-	-	✓	-
		Amble	-	✓	-	Tidal barrage
4	Taw-Torridge	Taw	-	✓	-	Sluice; weir
		Torridge	-	-	✓	-
5	Bridgewater Bay	Parrett	✓	-	-	Sluice
		Tone	✓	-	-	Sluice
6	Severn	Bristol Avon	✓	-	-	Weir
		Rhymney	✓	-	-	Weir
		Severn	✓	-	-	Weir
		Usk	-	-	✓	-
		Wye	-	-	✓	-
7	Thaw	Thaw	-	-	✓	-
8	Ogmore	Ogmore	-	-	✓	-
9	Afan/Port Talbot	Afan	✓	-	-	Weir
10	Neath/Nedd	Neath	-	-	✓	-
11	Swansea Bay and Tawe		✓	-	-	Tidal barrage
12	Loughour/Burry inlet	Loughour	-	✓	-	Sluice
13	Camarthen Bay		-	-	✓	-
14	Milford Haven/Cleddau	Cleddau	-	✓	-	Weir
		Cresswell	-	-	✓	-
		Carew	-	-	✓	-
		Coshosten Pill	-	-	✓	-
15	Nyfer	Nyfer	-	-	✓	-
16	Teifi	Teifi	-	-	✓	-
17	Aberystwyth		-	-	✓	-
18	Dyfi	Dyfi	-	-	✓	-
19	Dysynni/Tywyn Broadwater	Dysynni	-	-	✓	-
20	Mawddach		-	-	✓	-
21	Artro	Artro	-	-	✓	-
22	Traeth Bach/Glaslyn/Dwryrd		-	-	✓	-
23	Conwy	Conwy	-	-	✓	-
24	Clwyd	Clwyd	-	-	✓	-
25	Dee and North Wirral	Dee	✓	-	-	Tidal sluice
26	Mersey	Mersey	-	✓	-	Weir
27	Alt	Alt	✓	-	-	Floodgates

28	Ribble	Douglas	✓	-	-	Weir
		Ribble	-	-	✓	-
29	Morecambe Bay	Kent	-	-	✓	-
		Levern	-	-	✓	-
		Lune	✓	-	-	Weir
		Wyre	-	-	✓	-
30	Duddon	Duddon	-	-	✓	-
31	Esk (Northumberland)		-	-	✓	-
32	Inner Solway Firth		-	-	✓	-
33	Tweed	Tweed	-	-	✓	-
34	Alnmouth	Aln	-	-	✓	-
35	Coquet/Warkworth Harbour	Coquet	-	✓	-	Weir; sluice
36	Wansbeck	Wansbeck	✓	-	-	Weir
37	Blyth Northumberland	Blyth Northumberland	-	-	✓	-
38	Tyne	Tyne	-	✓	-	Weir
39	Wear	Wear	-	-	✓	-
40	Tees	Tees	-	✓	-	Tidal barrage
41	Esk (Yorkshire)	Esk Yorkshire	-	✓	-	Weir
42	Humber	Aire	✓	-	-	Weir
		Don	-	✓	-	Lock
		Hull	-	✓	-	Lock; sluice
		Ouse	✓	-	-	Weir; lock
		Trent	✓	-	-	Lock
		Wharfe	-	-	✓	-
43	The Wash	Great Ouse	✓	-	-	Sluice; tidal sluice
		Nene	✓	-	-	Sluice; tidal sluice
		The Haven	✓	-	-	Sluice
		Welland	✓	-	-	Lock
44	Breydon Water	Ant	-	-	✓	-
		Bure	-	-	✓	-
		Chet	✓	-	-	Weir
		Thurne	-	-	✓	-
		Waveney	✓	-	-	Sluice; mill
		Yare	✓	-	-	Sluice; mill
45	Oulton Broad		✓	-	-	Lock
46	Blyth Suffolk	Blyth Suffolk	✓	-	-	Weir
47	Ore / Alde / Butley		✓	-	-	Sluice
48	Deben	Deben	✓	-	-	Sluice; sluice; sluice
49	Orwell	Orwell	✓	-	-	Sluice
50	Stour	Stour	✓	-	-	Sluice; tidal barrage
51	Colne	Colne	✓	-	-	Sluice; mill;
52	Blackwater		✓	-	-	Sluice; weir
53	Crouch-Roach		-	✓	-	Sluice
54	Thames (Inner)		-	✓	-	Weir; lock; sluice

55	Medway		✓	-	-	Weir; lock; sluice
56	Swale		-	✓	-	Sluice
57	Stour Pegwell Bay	Stour	✓	-	-	Mill
58	Rother	Rother	✓	-	-	Sluice
59	Cuckmere	Cuckmere	✓	-	-	Sluice
60	Ouse	Ouse	✓	-	-	Sluice; weir
61	Adur	Adur	-	✓	-	Sluice; weir
62	Arun	Arun	-	✓	-	Sluice; weir
63	Pagham Harbour		✓	-	-	Sluice
64	Chichester Harbour		✓	-	-	Sluice
65	Langstone Harbour		✓	-	-	Weir
66	Portsmouth Harbour		-	✓	-	Sluice; lock
67	Southampton Water		-	✓	-	Sluice
68	Beaulieu	Beaulieu	✓	-	-	Sluice; mill
69	Lymington	Lymington	✓	-	-	Sluice
70	Christchurch Harbour		-	✓	-	Weir
71	Poole Harbour		-	✓	-	Sluice
72	Axe	Axe	-	-	✓	-
73	Otter	Otter	-	-	✓	-
74	Exe	Exe	-	✓	-	Sluice; weir
75	Teign	Teign	-	✓	-	Weir
76	Dart	Dart	✓	-	-	Weir
		Hems	-	-	✓	-
77	Salcombe and Kingsbridge		-	-	✓	-
78	Avon (Devon)	Avon (Devon)	-	✓	-	Mill; weir
79	Erme	Erme	-	✓	-	Weir
80	Yealm	Yealm	-	✓	-	Weir
81	Plymouth Sound	Lynher	✓	-	-	Weir
		Plym	-	-	✓	-
		Tamar	✓	-	-	Weir
		Tavy	✓	-	-	Weir
82	Looe	Looe	-	-	✓	-
83	Fowey	Fowey	-	✓	-	-
84	Falmouth	Fal	-	✓	-	-
85	Helford	Helford	-	✓	-	Sluice; weir

Table 3. Total length and area of each mapped salinity zone (tidal fresh, oligohaline, brackish, and marine) in estuaries in mainland England and Wales along with the data source and sampling year(s) used to delineate the zones (EA = Environment Agency, NRW = Natural Resources Wales). Each zone was assigned a level of confidence (high, medium or low), depending on the data used to delineate the zone (Table 2). Estuaries and or tidal rivers that were identified as potentially containing tidal freshwater and oligohaline zones (but with Low Confidence) are marked with a *. These are not included in the tidal fresh and oligohaline zone extent values.

Estuary		Tidal River	Zone	Length (km)	Area (km ²)	Confidence	Reference(s) & notes
1	Hayle		Marine	9.87	1.87	High	Uncles <i>et al.</i> , 2015; EA, 2024a (2016-23 data)
2	Gannel		Tidal Fresh	0.24	0.01	High	EA, 2024a (2016-23 data)
			Brackish	6.02	0.47	High	
			Marine	0.64	0.58	High	
3	Camel*		Tidal Fresh	2.24	0.03	High	Uncles <i>et al.</i> , 2015; EA, 2024a (2000-09 & 2016-23 data); EA, 2012b (2008 data); EA, 2017. *Potential TFZ on the tidal river Allen (Low Confidence)
			Oligohaline	0.39	0.01	High	
			Brackish	34.12	6.09	Medium	
			Marine	2.71	4.54	High	
4	Taw-Torridge*		Tidal Fresh	4.16	0.11	High	EA, 2024a (2016-23 data); EA 2012b (2008 data); EA, 2017; Uncles <i>et al.</i> , 2015. *Potential TFZ on the tidal river Yeo (Low Confidence)
			Oligohaline	1.02	0.04	High	
			Brackish	47.33	12.90	High	
			Marine	1.03	1.32	Medium	
5	Bridgewater Bay		Tidal Fresh	10.37	0.13	High	EA, 2024a (2010-19 data); Uncles <i>et al.</i> , 2015
			Oligohaline	3.60	0.06	High	
			Brackish	45.92	70.57	Medium	
6	Severn	Bristol Avon	Oligohaline	0.50	0.02	High	EA, 2024a (2000-09; 2010-19; 2016-23 data); Uncles <i>et al.</i> 2015; NRW, 2023 (2016-21 data). *Potential TFZ's on the Usk & Wye (Low Confidence)
			Brackish	17.94	1.95	Medium	
		Rhymney	Brackish	5.47	0.50	High	
		Severn	Tidal Fresh	6.82	0.46	High	
			Oligohaline	15.55	1.73	High	
			Brackish	132.74	532.54	Medium	
		Usk*	Oligohaline	17.52	0.95	High	
			Brackish	19.79	3.14	High	
		Wye*	Brackish	24.24	2.47	Medium	
7	Thaw		Brackish	1.81	0.03	High	NRW, 2023 (2016-21 data)
8	Ogmore		Oligohaline	0.79	0.04	High	NRW, 2023 (2016-21 data)
			Brackish	1.86	0.13	High	
9	Afan		Brackish	1.85	0.12	High	NRW, 2023 (1996-2005 and 2016-21 data)
			Marine	0.67	0.21	High	
10	Neath*		Brackish	19.79	1.32	High	NRW, 2023 (1996-2005 and 2016-21 data). *Potential TFZ (Low Confidence)
11	Swansea Bay and Tawe		Marine	2.88	0.22	High	NRW, 2023 (1996-2005 and 2016-21 data)
12	Loughor*		Brackish	61.76	10.72	High	Pye & Blott, 2010; NRW, 2023 (1996-2005 and 2016-21 data). *Potential TFZ (Low Confidence)
13	Camarthen Bay*		Brackish	55.08	6.80	High	NRW, 2023 (1990-99; 1996-2005 & 2016-21 data); Pye & Blott, 2010. *Potential TFZ (Low Confidence)
			Marine	30.50	16.50	High	
14	Milford Haven*		Tidal Fresh	0.56	0.01	High	

			Oligohaline	1.89	0.06	High	NRW, 2023 (1996-2005 & 2016-21 data); EA, 2012b (2008 data). *Potential TFZ (Low Confidence)
			Brackish	69.15	13.29	High	
			Marine	20.18	7.21	Medium	
15	Nyfer		Brackish	4.50	0.57	High	NRW, 2023 (2016-21 data); EA, 2012b (2011 data)
			Marine	0.04	0.08	Medium	
16	Teifi		Tidal Fresh	2.59	0.12	High	Grenfell <i>et al.</i> , 2016, verified by personal comms; NRW, 2023 (2016-21 data); EA, 2012b (2011 data)
			Brackish	9.55	1.57	High	
			Marine	2.88	4.39	Medium	
17	Aberystwyth		Oligohaline	2.63	0.09	High	NRW, 2023 (2016-21 data); EA, 2012b (2011 data)
			Brackish	0.81	0.15	High	
18	Dyfi		Tidal Fresh	6.37	0.24	Medium	Dausse <i>et al.</i> , 2002; EA 2012b; NRW, 2023 (2010-19 data)
			Brackish	17.76	1.72	Medium	
			Marine	28.46	13.03	Medium	
19	Dysynni		Tidal Fresh	2.36	0.17	High	NRW, 2023 (2016-21 data)
			Brackish	5.60	0.99	High	
			Marine	0.07	0.01	High	
20	Mawddach		Tidal Fresh	5.05	0.17	Medium	NRW, 2023 (2010-19 data)
			Brackish	35.31	8.86	Medium	
			Marine	0.61	0.40	Medium	
21	Artro		Oligohaline	0.42	0.02	High	NRW, 2023 (2016-21 data)
			Brackish	7.73	0.78	High	
22	Traeth Bach*		Brackish	36.67	12.89	High	NRW, 2023 (2016-21 data). *Potential TFZ (Low Confidence)
			Marine	0.52	2.79	High	
23	Conwy		Tidal Fresh	6.31	0.19	High	Tye <i>et al.</i> , 2022; EA, 2012b (2008 data)
			Oligohaline	4.09	0.20	High	
			Brackish	24.67	4.09	High	
			Marine	6.84	11.00	Medium	
24	Clwyd		Tidal Fresh	2.45	0.05	High	NRW, 2023 (2016-21 data); Tye <i>et al.</i> , 2022
			Oligohaline	1.99	0.09	High	
			Brackish	5.16	0.40	High	
25	Dee		Tidal Fresh	10.14	0.75	High	NRW, 2023 (2016-21 data); EA, 2012b (2007 data)
			Brackish	61.02	28.85	High	
			Marine	45.40	69.38	Medium	
26	Mersey		Brackish	89.89	77.92	High	EA, 2024a (2016-23 data); EA 2012b (2007 data)
			Tidal fresh	0.04	1.93	Medium	
27	Alt		Marine	2.55	0.32	High	EA, 2024a (2016-23 data)
28	Ribble	Ribble	Tidal Fresh	11.19	0.30	High	EA, 2024a (2016-23 data); EA 2012b
			Brackish	141.19	41.50	Medium	
29	Morecambe Bay	Kent	Brackish	89.13	102.62	High	EA, 2012b, EA, 2017; EA, 2024a (2010-19 & 2016-23 data)
		Levern	Tidal Fresh	1.91	0.02	Medium	
			Brackish	24.13	30.77	High	
		Lune	Brackish	39.08	3.31	Medium	
		Wyre	Tidal Fresh	2.68	0.05	High	
			Brackish	27.66	3.76	High	
			Marine	17.84	1.94	High	
30	Duddon		Brackish	48.29	12.66	High	EA, 2024a (2016-23 data)
31	Esk Northumberland		Tidal Fresh	0.66	0.01	Medium	EA report (2011); EA, 2024a (2010-19 data)
			Brackish	26.70	3.38	Medium	
32	Inner Solway Firth*		Brackish	135.43	128.00	Medium	EA, 2017; EA, 2024a (2000-09 & 2016-23 data). *Potential TFZ (Low Confidence)
33	Tweed		Tidal Fresh	8.09	0.72	Medium	EA, 2017; EA, 2024a (2016-23 data)
			Brackish	9.82	1.93	High	
34	Alnmouth		Marine	5.46	0.40	High	EA, 2024a (2016-23 data)

35	Coquet		Brackish	7.17	0.71	Medium	EA, 2024a (2010-19 & 2016-23 data)
			Marine	0.00	0.71	Medium	
36	Wansbeck		Marine	1.26	0.15	Medium	EA, 2024a (2000-09 data); Wright, 2002
37	Blyth Northumberland		Brackish	10.25	1.71	Medium	EA, 2024a (2010-19 & 2016-23 data)
			Marine	0.54	1.71	High	
38	Tyne		Tidal Fresh	2.32	0.26	High	Tye <i>et al.</i> , 2022; EA, 2024a (2016-23 data)
			Oligohaline	0.78	0.09	High	
			Brackish	39.29	7.73	High	
39	Wear*		Oligohaline	5.76	0.24	High	EA, 2024a (2010-19 & 2016-23 data). *Potential TFZ (Low Confidence)
			Brackish	12.27	1.86	High	
40	Tees		Brackish	37.74	11.34	High	EA, 2017; EA, 2024a (2016-23 data)
41	Esk Yorkshire		Brackish	4.43	0.31	High	EA, 2017; EA, 2024a (2016-23 data)
42	Humber	Aire	Tidal Fresh	25.08	1.02	High	Tye <i>et al.</i> , 2022; EA, 2012b (2010 data); EA, 2024a (2016-23 data). *Potential TFZ on the Don (Low Confidence)
		Don*	Brackish	28.09	1.05	High	
		Hull	Tidal Fresh	20.77	0.35	High	
			Brackish	17.02	0.42	High	
		Humber Lower	Brackish	119.33	293.03	High	
			Marine	6.20	16.66	Medium	
		Ouse	Tidal Fresh	9.08	0.35	High	
			Brackish	56.24	8.69	High	
		Trent	Tidal Fresh	54.58	4.37	High	
			Brackish	29.09	5.62	High	
43	The Wash	Boston Haven	Oligohaline	0.94	0.03	High	Tye <i>et al.</i> , 2022; EA, 2024a (2010-2019 & 2016-23 data); EA 2012b (2011 data)
			Brackish	10.44	0.97	High	
		Great Ouse	Tidal Fresh	12.27	0.33	High	
			Brackish	61.96	6.25	High	
		Nene	Oligohaline	22.98	0.68	High	
			Brackish	18.95	1.75	High	
		The Wash	Brackish	19.23	127.23	High	
44	Breydon Water	Ant	Tidal Fresh	0.59	0.02	High	EA, 2017; EA, 2024a (2016-23 data)
			Oligohaline	6.84	0.15	High	
		Bure	Tidal Fresh	6.96	0.31	High	
			Oligohaline	8.38	0.30	High	
			Brackish	28.05	1.01	Medium	
		Chet	Brackish	5.79	7.75	Medium	
		Thurne	Oligohaline	1.84	0.03	High	
			Brackish	10.74	0.30	Medium	
		Waverney North	Brackish	21.10	6.24	High	
		Waverney South	Tidal Fresh	14.54	0.34	High	
			Brackish	10.34	0.38	High	
		Yare	Tidal Fresh	25.34	1.39	High	
			Brackish	33.77	9.24	Medium	
45	Oulton Broad		Brackish	7.45	1.07	High	EA, 2024a (2016-23 data)

46	Blyth Suffolk	Brackish	13.04	2.82	Medium	EA, 2024a (2010-19 & 2016-23 data); Brew, 1996
47	Ore	Brackish	37.02	11.00	High	EA, 2024a (2010-19 & 2016-23)
		Marine	8.92	1.59	High	
48	Deben	Brackish	37.31	8.67	High	EA, 2024a (2010-19 data), verified by personal comms
49	Orwell	Brackish	6.43	1.14	Medium	EA, 2024a (2000-09; 2010-19), EA, 2017
		Marine	21.56	11.09	Medium	
50	Stour	Brackish	12.01	6.49	Medium	EA 2012b, EA 2017 (2000-09 data)
		Marine	16.89	19.02	Medium	
51	Colne	Brackish	23.90	3.40	Medium	EA 2012b; EA, 2024a (2010-19 data); Robinson et al (1998)
		Marine	32.78	8.00	Medium	
52	Blackwater	Brackish	9.10	2.38	High	EA 2012b; EA, 2024a (2016-23)
		Marine	82.05	46.37	Medium	
53	Crouch-Roach	Brackish	47.89	8.56	High	EA, 2024a (2016-23 data), EA, 2012b
		Marine	50.46	30.58	High	
54	Thames Estuary	Tidal Fresh	24.40	1.97	High	EA, 2024a (2016-23); EA, 2017; EA, 2012b
		Oligohaline	36.96	7.59	High	
		Brackish	59.94	37.51	Medium	
	South Thames Marshes	Brackish	63.24	135.68	High	EA, 2024a (2016-23 data); EA, 2012b
		Marine	6.63	88.00	High	
55	Medway	Oligohaline	8.23	0.39	High	EA, 2024a (2016-23); EA, 2012b
		Brackish	61.42	64.81	Medium	
56	Swale	Brackish	45.50	78.33	High	EA, 2024a (2016-23 data); EA, 2012b
57	Stour Pegwell Bay	Tidal Fresh	21.12	0.58	High	EA, 2024a (2016-23 data)
		Oligohaline	8.28	1.76	High	
		Brackish	9.38	1.58	High	
		Marine	2.01	3.84	High	
58	Rother	Marine	9.08	0.40	High	EA, 2024a (2016-23 data)
59	Cuckmere*	Brackish	8.37	0.21	Medium	EA, 2024a (2010-19 data). *Potential TFZ (Low Confidence)
60	Ouse	Tidal Fresh	6.58	0.24	High	Little <i>et al.</i> , 2017a
		Oligohaline	3.49	0.41	High	
		Brackish	15.04	1.02	High	
61	Adur	Tidal Fresh	9.56	0.12	High	Little <i>et al.</i> , 2017a
		Oligohaline	5.91	0.12	High	
		Brackish	9.64	0.77	High	
		Marine	1.58	0.21	High	
62	Arun	Tidal Fresh	33.56	1.63	High	EA, 2024 (2016-23 data); Environment Agency, 2012a.
		Brackish	9.72	0.54	High	
63	Pagham Harbour	Brackish	5.27	0.90	High	EA, 2024a (2016-23 data); EA, 2012b
		Marine	3.03	1.61	Medium	
64	Chichester Harbour	Brackish	19.53	7.75	High	EA, 2024a (2016-23 data)
		Marine	37.00	28.59	High	
65	Langstone Harbour	Brackish	5.56	2.77	High	EA, 2024a (2016-23 data)
		Marine	16.10	20.37	High	

66	Portsmouth Harbour	Oligohaline	1.63	0.16	High	EA, 2024a (2016-23 data)
		Brackish	5.59	2.24	High	
		Marine	17.70	19.72	High	
67	Southampton Water	Oligohaline	6.69	0.13	High	EA, 2017; EA, 2012b (2007 data)
		Brackish	39.98	9.62	Medium	
		Marine	17.68	22.33	Medium	
68	Beaulieu River	Brackish	11.80	1.79	High	EA, 2024a (2016-23 data); EA 2012b (2011 data)
		Marine	4.67	1.65	Medium	
69	Lymington	Brackish	1.19	0.19	High	EA 2016-23; EA 2012b (2011 data)
		Marine	4.14	2.32	Medium	
70	Christchurch Harbour	Tidal Fresh	2.04	0.05	High	Tye <i>et al.</i> , 2022; Uncles <i>et al.</i> , 2015
		Oligohaline	7.21	0.41	High	
		Brackish	4.90	2.32	High	
71	Poole Harbour	Tidal Fresh	2.25	0.06	High	EA, 2024a (2016-23); Uncles <i>et al.</i> , 2015; EA 2012b (2011 data)
		Oligohaline	0.15	0.01	High	
		Brackish	35.23	11.88	Medium	
		Marine	34.62	23.18	High	
72	Axe*	Brackish	4.89	1.04	High	EA, 2024a (2016-23 data); Uncles <i>et al.</i> , 2015. *Potential TFZ (Low Confidence)
73	Otter	Tidal Fresh	0.69	0.02	High	Uncles <i>et al.</i> , 2015; EA 2012b (2012 data)
		Brackish	2.48	0.14	Medium	
74	Exe	Tidal Fresh	3.09	0.09	High	EA, 2024a (2016-23 data); Uncles <i>et al.</i> , 2015; EA, 2017
		Oligohaline	1.13	0.09	High	
		Brackish	29.30	13.90	Medium	
		Marine	2.49	4.18	High	
75	Teign	Tidal Fresh	2.69	0.03	High	EA, 2024a (2016-23 data); Uncles <i>et al.</i> , 2015
		Oligohaline	0.76	0.01	High	
		Brackish	13.59	2.96	High	
		Marine	2.10	0.72	High	
76	Dart	Tidal Fresh	0.25	0.004	High	EA, 2024a (2016-23 data); Tye <i>et al.</i> , 2022; Uncles <i>et al.</i> , 2015; EA, 2012b (2011 data)
		Oligohaline	4.03	0.08	High	
		Brackish	28.70	5.68	High	
		Marine	5.38	2.77	Medium	
77	Salcombe and Kingsbridge	Brackish	11.81	1.48	Medium	EA, 2012b
		Marine	20.22	8.79	Medium	
78	Avon (Devon)	Oligohaline	2.88	0.07	High	EA, 2024a (2016-23 data)
		Brackish	7.69	1.62	High	
		Marine	0.13	0.15	High	
79	Erme	Tidal Fresh	0.26	0.01	High	EA, 2024a (2016-23 data); Uncles <i>et al.</i> , 2015; EA, 2012b (2008 data)
		Oligohaline	0.21	0.01	High	
		Brackish	8.03	0.84	Medium	
		Marine	0.66	0.47	High	
80	Yealm	Brackish	13.22	1.74	High	EA, 2024a (2016-23 data)
		Marine	1.79	0.39	High	
81	Plymouth Sound*	Tidal Fresh	3.92	0.09	High	EA, 2024a (2016-23 data); Tye <i>et al.</i> , 2022; Uncles <i>et al.</i> , 2015; EA, 2012b (2011 data).
		Oligohaline	6.02	0.29	High	
		Brackish	125.33	27.32	High	

		Marine	2.52	2.57	Medium	*Potential TFZ on the tidal river Lynher (High Confidence; Uncles <i>et al.</i> , 2018)
82	Looe	Tidal Fresh	0.45	0.005	High	EA, 2024a (2016-23 data); Uncles <i>et al.</i> , 2015
		Oligohaline	0.05	0.001	High	
		Brackish	9.50	0.58	High	
		Marine	0.14	0.05	High	
83	Fowey	Tidal Fresh	1.08	0.02	High	EA, 2024a (2016-23 data); EA, 2012b (2012 data); Uncles <i>et al.</i> , 2015
		Oligohaline	0.23	0.01	High	
		Brackish	23.17	2.75	High	
		Marine	0.67	0.28	Medium	
84	Falmouth	Brackish	50.42	6.20	High	EA, 2024a (2016-23 data); EA 2012b (2010 data); EA, 2017
		Marine	9.45	6.46	Medium	
85	Helford	Tidal Fresh	0.51	0.03	High	Uncles <i>et al.</i> , 2015
		Oligohaline	0.31	0.02	High	
		Marine	25.07	7.70	High	

Table 4. Data which informed the vulnerability rankings for the bound estuaries at risk of estuarine squeeze.

Estuary	Specific tidal rivers	Length (km) of bound tidal fresh & oligohaline zones	RSLR (m) at mouth by 2080	Change in summer river flow (m ³ /s) by 2080	Catchment water stress by 2040 (SDB)	Depth at mouth (m)
Severn	Severn and Bristol Avon	20.4	0.80	-11.29	-117	22
Helford		0.36	0.85	-0.21	34	12.2
Southampton Water	Test	4.75	0.82	-2.09	-163	11.5
The Wash	Ouse, Nene, Boston Haven	35.98	0.81	-4.46	-345	12.1
Thames	Thames	55.9	0.81	-5.68	-260	11
Plymouth Sound	Tamar	8.77	0.84	-1.67	34	8.8
Dart	Dart	1.51	0.83	-2.58	34	9.5
Erme		0.46	0.83	-0.73	34	8.2
Dee		10.14	0.74	-11.60	-236	8
Humber	Hull, Ouse, Aire, Trent	102.54	0.80	-5.14	-8.75	5.5
Ouse		10.07	0.81	-5.19	-163	6
Breydon Water	Yare and Waveney South	37.43	0.83	-0.50	-345	5
Avon (Devon)		2.5	0.83	-0.94	34	4.6
Exe		3.4	0.83	-2.30	34	4.9
Medway		8.23	0.82	-3.50	-163	4.6
Adur		13.02	0.82	-0.39	-67	4
Bridgewater Bay		13.97	0.81	-1.73	-37	4.4
Ribble	Yarrow and Lostock	4.33	0.73	-4.58	124	4.3
Pegwell Bay		29.03	0.82	-1.51	-163	3.1