



# North Level District IDB: Nene Washes Morton's Leam Aquatic Weed Control, August 2018

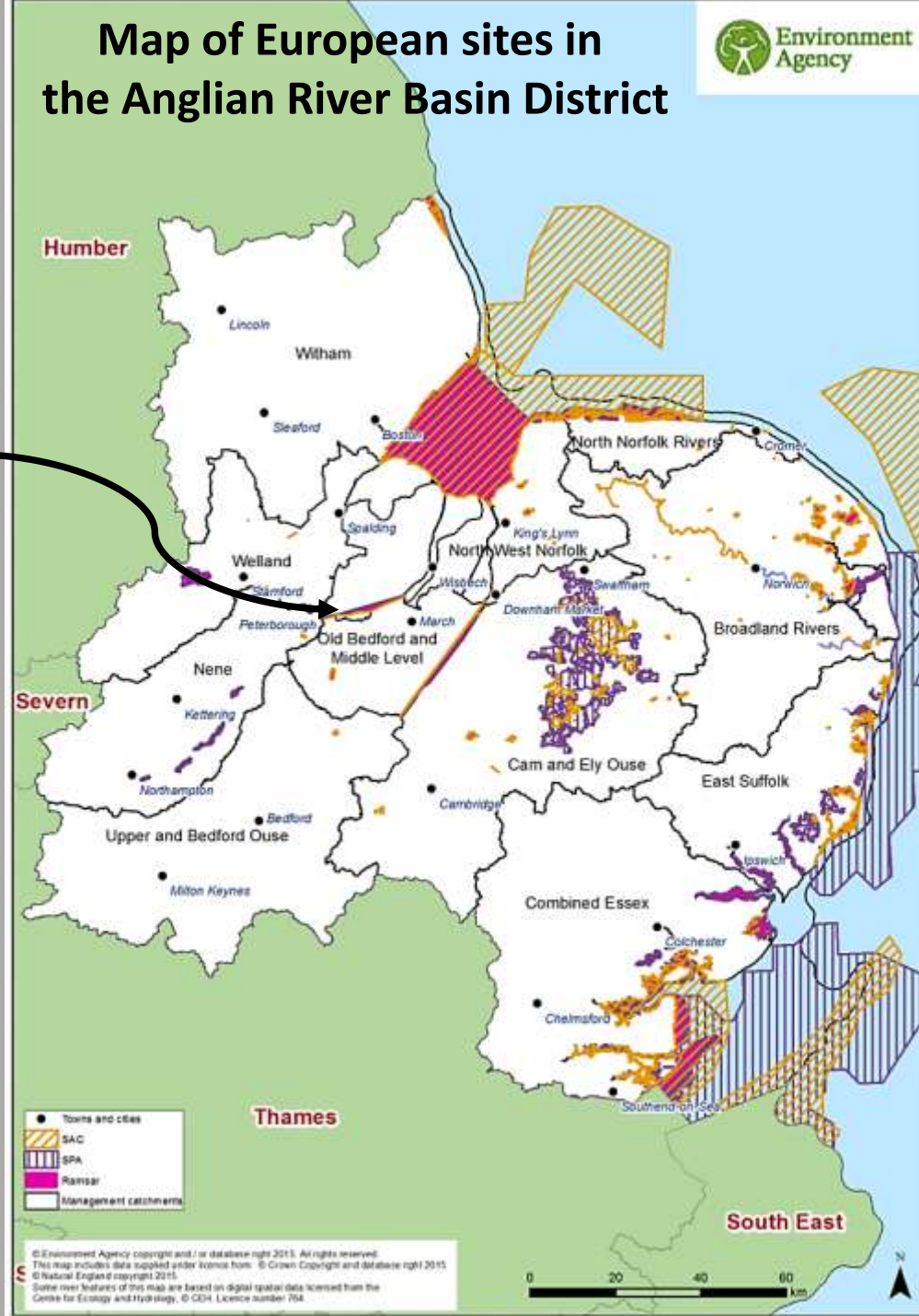


Martin Redding, Project Engineer, North Level IDB 15/03/2019



# Map of European sites in the Anglian River Basin District

Nene Washes











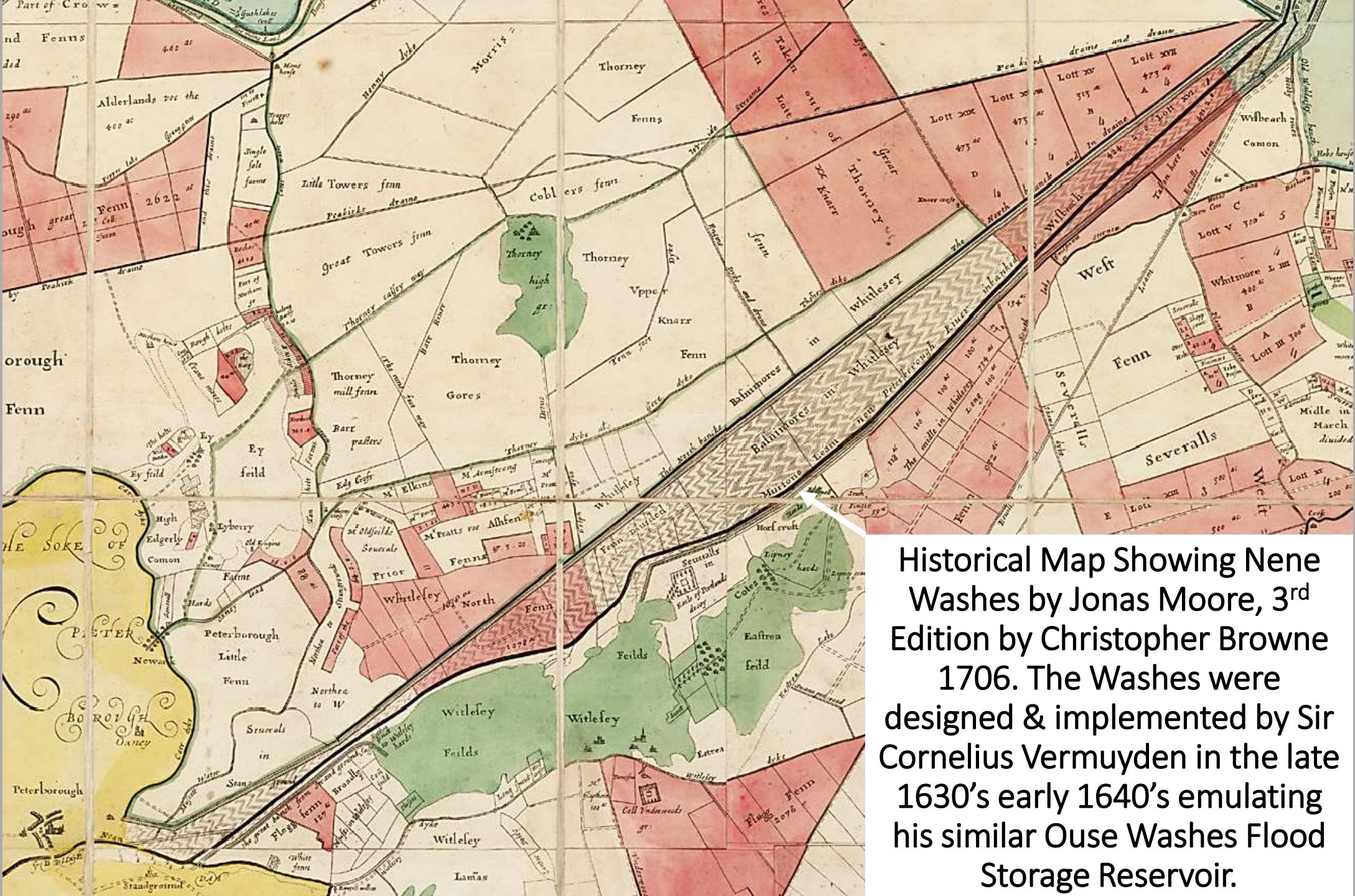
**Ouse Wash in flood winter 2012-13** © Neil Hubbard





**Nene Washes in flood winter 2012-13** © Martin Redding

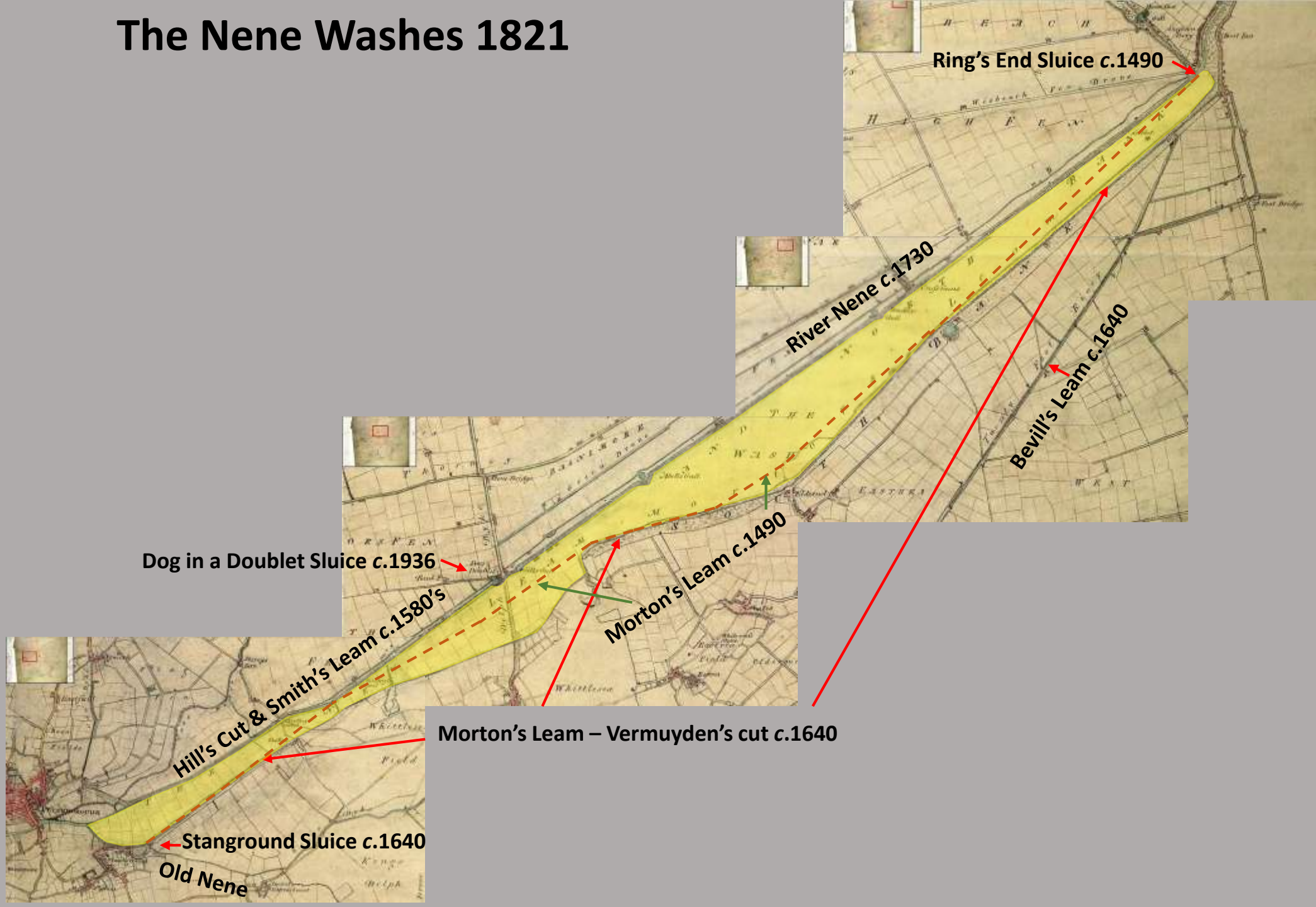




Historical Map Showing Nene Washes by Jonas Moore, 3<sup>rd</sup> Edition by Christopher Browne 1706. The Washes were designed & implemented by Sir Cornelius Vermuyden in the late 1630's early 1640's emulating his similar Ouse Washes Flood Storage Reservoir.



# The Nene Washes 1821



Ring's End Sluice c.1490

River Nene c.1730

Bevill's Leam c.1640

Dog in a Doublet Sluice c.1936

Morton's Leam c.1490

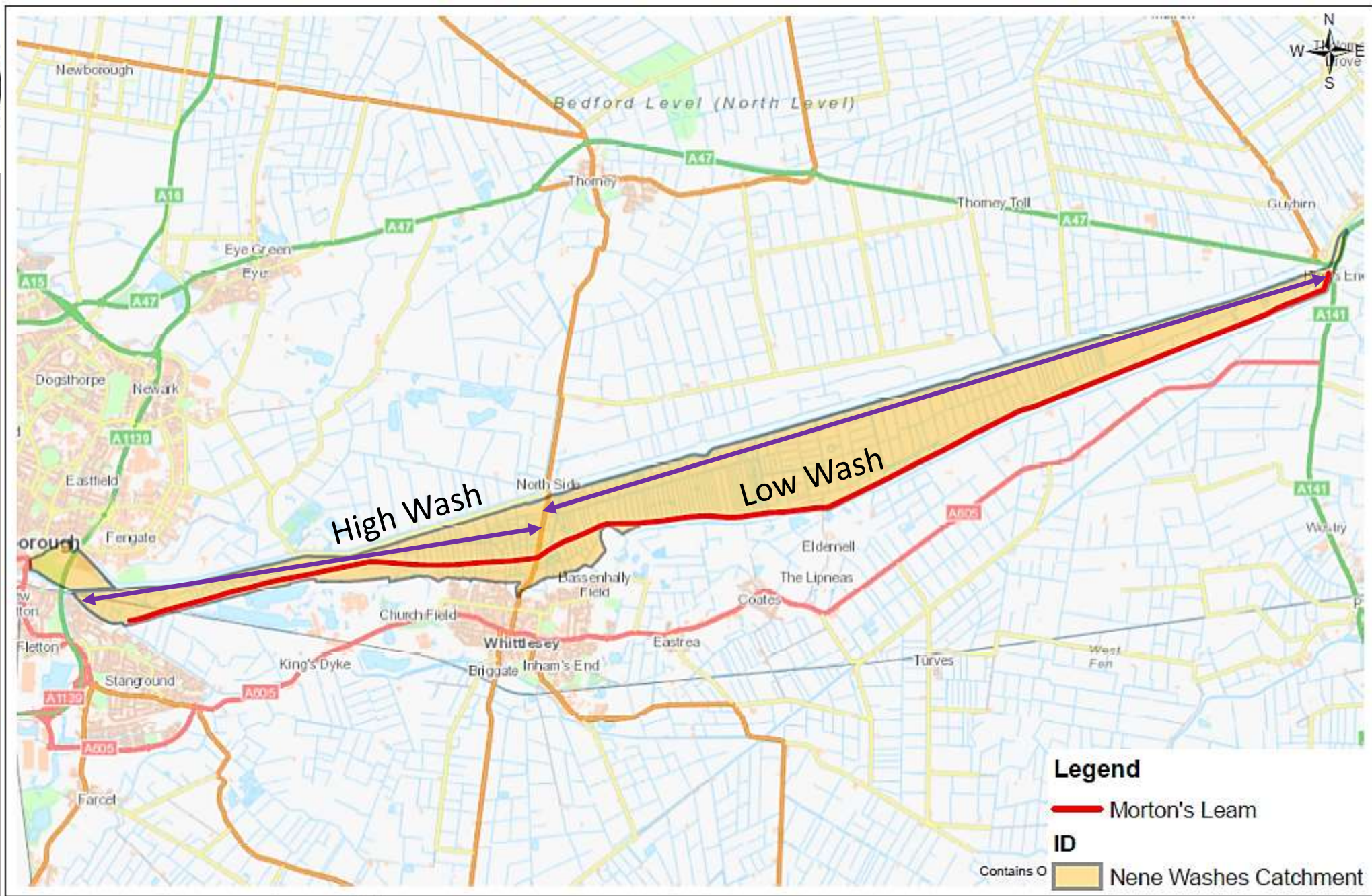
Hill's Cut & Smith's Leam c.1580's

Morton's Leam - Vermuyden's cut c.1640

Stanground Sluice c.1640

Old Nene







# Cross Guns Pumping Station & River Nene North Bank



Easter Bank Holiday heavy rainfall event still sitting on the Low Wash in June  
Blue-green algae = toxic swamp & dissolved oxygen level crashed

Nene Washes @ March Farmers 535235/300967 04/06/2018





Rotting spring grass growth exacerbated the dissolved oxygen level crashing it





Morton's Leam  
@ 538355/302080



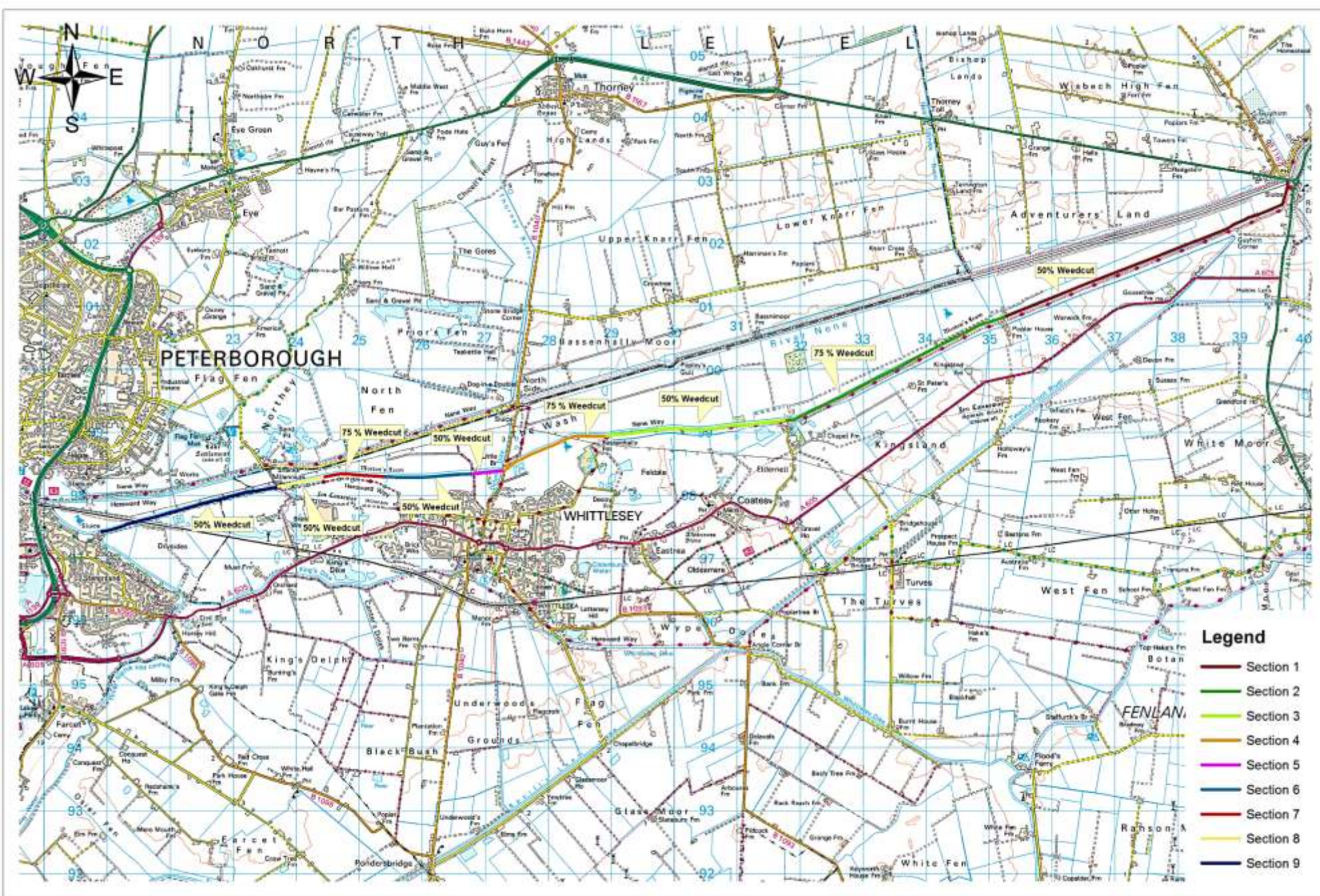
# North Level District IDB: Morton's Leam Aquatic Weed Control between Stanground Sluice & Little Bridge August 15-17<sup>th</sup> 2018

- Morton's Leam is designated an SAC on account of the scarce spined loach *Cobitis taenia*, a small fish protected under the EC Habitat and Species Directive. It is confined to a few drains in Eastern England, mostly in the Fens, & a few feeder channels on the River Trent. Special consideration is therefore required to protect existing populations.



- Work was undertaken using a long reach 360° excavator fitted with 5m wide weed basket. Only excessive vegetation in the central channel was targeted leaving both margins untouched. The bed was also left untouched with the basket going c.0.70m deep below the waters surface. Works were completed without incident & on schedule.
- Only partial sections of linear reaches or 'spot' clumps with excessive macrophyte growth were targeted & not the whole length between the two above bridges, as per the Morton's Leam aquatic weed management agreement guidance drawn up by the Environment Agency & Natural England. Removed macrophytes & other detritus were left adjacent to the Leam.
- Weather conditions during the above dates was cooler than experienced in the recent heatwave & water transfer from the River Nene into the Leam was being conducted throughout these works & in days after. Dissolved oxygen (DO) was routinely monitored before, during, & after works with no negative impacts.





**Legend**

- Section 1
- Section 2
- Section 3
- Section 4
- Section 5
- Section 6
- Section 7
- Section 8
- Section 9





D/S Stanground Sluice TL 209 974 15/08/2018



D/S Stanground Sluice TL 209 974 15/08/2018



D/S Stanground Sluice to Railway Bridge at TL 214 975 15/08/2018



D/S Stanground Sluice to Railway Bridge at TL 214 975 15/08/2018





U/S Ball Bridge TL 215/975 9/8/18



15/08/2018



9/8/2018



15/08/2018





Tracking under Railway Bridge D/S at TL 214 975 with residual water fern (*azolla filiculoides*) being introduced via water transfer off the River Nene 15/08/2018





Railway Bridge U/S at TL 214 975 17/08/2018



Railway Bridge D/S at TL 214 975 17/08/2018





U/S Ball Bridge TL 215/975 9/8/18



17/08/2018



Macrophyte encroachment U/S Ball Bridge TL 224/978 9/8/18



U/S Ball Bridge TL 220/977 9/8/18









D/S Ball Bridge TL 237/981 9/8/18



20/08/2018



U/S Ball Bridge TL 237/981 9/8/18



20/08/2018





Between Ball & Bathing Bridges at Gravel Dike TL 254 982 16/08/2018



17/08/2018



Between Ball & Bathing Bridges at Gravel Dike TL 254 982 16/08/2018



17/08/2018





D/S Bathing Bridge TL 267/983 9/8/18



20/08/2018



U/S Bathing Bridge TL 267/983 9/8/18



20/08/2018





D/S Little Bridge TL 273/984 9/8/18



20/08/2018



U/S Little Bridge TL 273/984 9/8/18

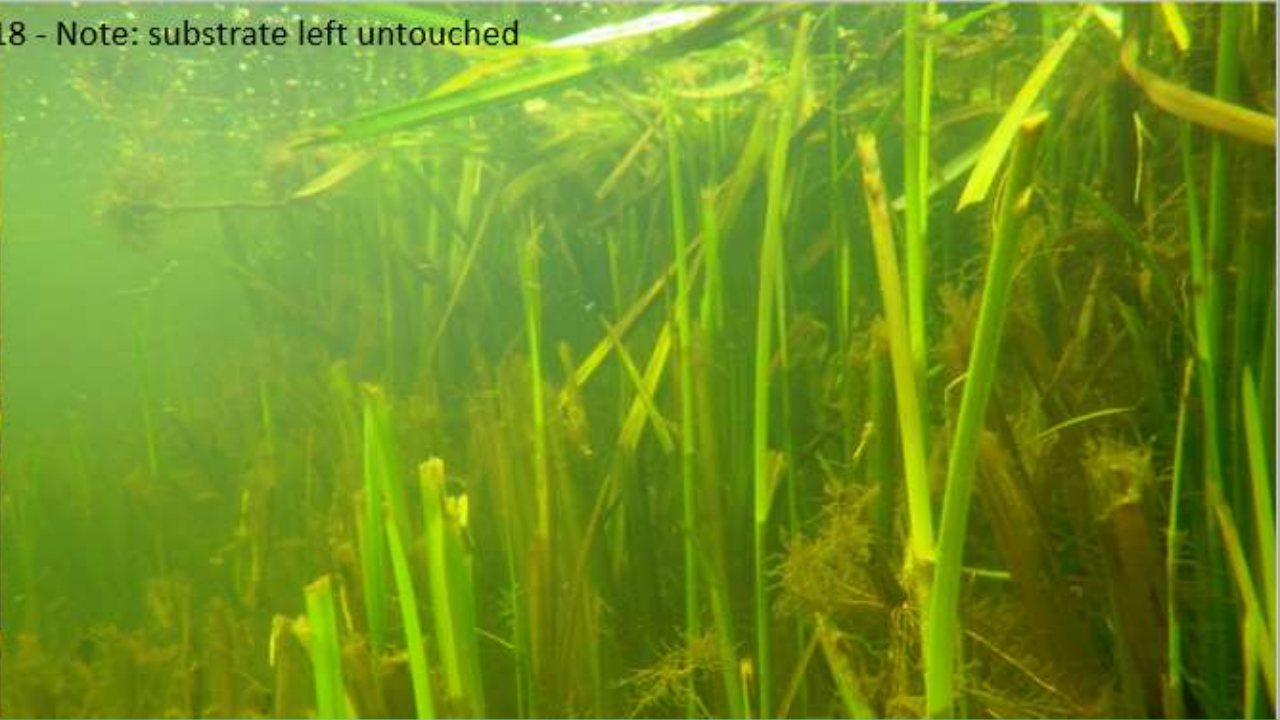


20/08/2018





Marginal aquatic macrophytes 20/08/2018 - Note: substrate left untouched





Juvenile course fish enjoying the clean gravel bed 20/08/2018 - Note: substrate left untouched





Aquatic macrophytes mid channel 20/08/2018 - Note: severed lily (*nuphar lutea*) & branched bur-reed (*sparaganium erectum*) stems







Duckweed (*Lemna spp.*) & lily (*nuphar lutea*) darkening the water column D/S of Little Bridge TL 273 984 20/08/2018



# NORTH LEVEL DISTRICT I.D.B. WATER QUALITY TEST RESULTS



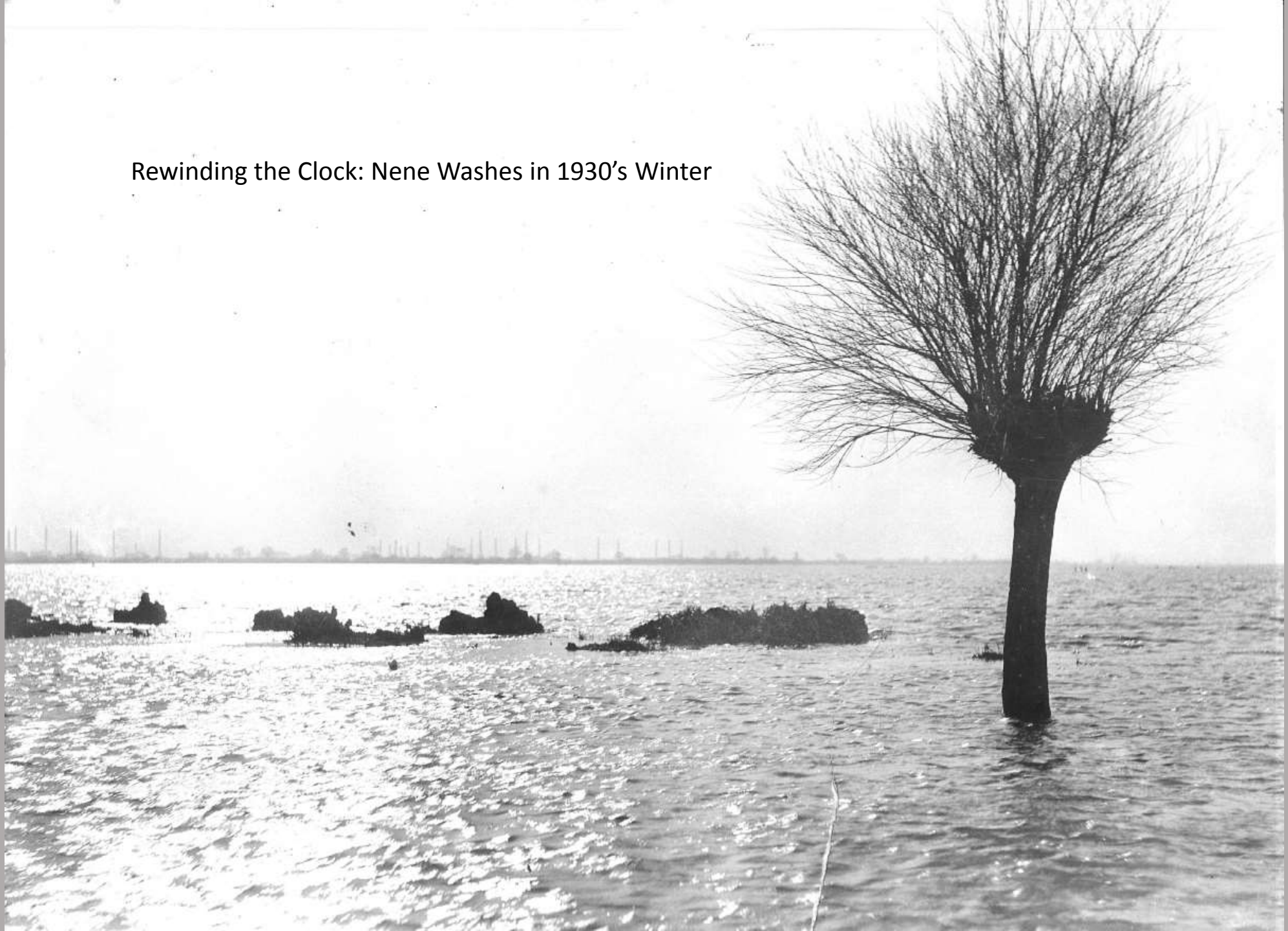
SITE	SURFACE RECORDING				BED RECORDING				COMMENTS	
	TEMP (°C)	D.O. (%)	NaCl (ppt)	TIME	TEMP (°C)	D.O. (%)	NaCl (ppt)	TIME		
Morton's Leam	21.4	24.9	0.3	11:15	21.5	8.9	0.5	11:20	Little Bridge	9th ↓
Morton's Leam	21.3	15.8	0	11:30	21.3	9.8	0.5	11:35	Bathing Bridge	
Morton's Leam	21.5	16	0.5	11:50	22	15.1	0.4	11:55	Gravel Dyke	
Morton's Leam	20.1	13.2	0.5	12:25	20.5	12	0.5	12:30	Ball Bridge	
Morton's Leam	20.5	11.4	0.5	12:45	20.8	7.9	0.5	12:50	Halfway ↑↓	
Morton's Leam	20.9	21.1	0.5	13:10	21.3	18	0.5	13:15	Railway Bridge	
Between Stanground Sluice & Rail Bridge	19.8	48.9	0.5	14:30	19.8	35.9	0.5	14:30	Sun/Cloud	14th ↓
Between Rail + Ball Bridge	20.2	36.4	0.5	14:45	20.1	52.1	0.5	14:45	Sun/Cloud	
D/S Stanground Sluice	19.3	48.5	0.5	09:15	19.3	23	0.5	09:15	Overcast	15th ↓
U/S of Rail Bridge	19.4	41.5	0.5	10:45	19.6	20.5	0.5	10:45	Overcast	
U/S of 360 + Rail Bridge	19.4	37	0.5	11:00	19.5	27.5	0.5	11:00	Overcast	
D/S Stanground Sluice	19	48.5	0.5	11:40	19.5	10.1	0.5	11:40	Overcast	
Under Rail Bridge	19.9	45.4	0.5	12:45	19.9	38.4	0.5	14:45	Sunny with a bit of cloud	
800m D/S of Rail Bridge	20.6	52	0.5	16:00	20.8	46	0.5	16:00	Sunny with a bit of cloud	
1500m D/S of Rail Bridge + Colin	20.8	46	0.5	16:30	20.3	48.4	0.5	16:30	Sunny with a bit of cloud	



SITE	SURFACE RECORDING				BED RECORDING				COMMENTS	
	TEMP (°C)	D.O. (%)	NaCl (ppt)	TIME	TEMP (°C)	D.O. (%)	NaCl (ppt)	TIME		
Ball Bridge	19.2	26.5	0.5	08:30	19.2	19.5	0.5	08:30	Raining	16th ↓
30m U/S Gravel Dyke	19.6	39	0.5	13:00	19.4	10.5	0.5	13:00	Cool and breezy	
50m D/S Gravel Dyke	19.4	22	0.5	13:05	19.3	13.7	0.5	13:05	Cool and breezy	
50m D/S Gravel Dyke After Weed Basket	19.5	22.7	0.5	14:30	19.4	11.4	0.5	14:30	Cool and breezy	
500m D/S Gravel Dyke	19.5	23.8	0.5	15:00	19.5	22.9	0.5	15:00	Sunny with Breeze	
500m U/S Bathing Bridge	19.6	22.8	0.5	11:00	19.6	18.3	0.5	16:00	Sunny with S.W Breeze	
Bathing Bridge	17.8	23.5	0	08:30	17.9	10	0.5	08:30	Sunny and still	17th ↓
Midway Between Ball + Bathing Bridge	18.5	30	0.5	09:30	18.4	30	0.5	09:30	Sunny and still	
Ball Bridge	18.4	37	0.4	10:00	18.4	35.9	0.5	10:00	Sunny and still	
Midway Between Ball + Rail Bridge	18.6	42.3	0.5	10:20	18.7	38.5	0.5	10:20	Sunny and still	
Rail Bridge	19.3	38.8	0.5	10:45	19.2	9.3	0.5	10:45	Sunny and still	
Bridge 100m D/S Sluice	19.3	48.7	0.5	11:00	19.3	27	0.5	11:00	Sun/Cloud/Slight Breeze	
Bathing Bridge	18.8	31.1	0.5	13:15	19.2	30.1	0.5	13:15	Sun/Cloud/Slight Breeze	
Moreton's Leam	19.7	36.5	0	13:35	19.07	30.5	0.4	13:40	Ball Bridge	18th ↓
Morton's Leam	19.8	21.8	0.2	13:50	19.8	24.1	0.4	13:55	Halfway ↑↓	
Morton's Leam	19.8	31.1	0.5	14:00	19.8	36.2	0.5	14:05	Railway Bridge	
Ball Bridge	20.3	65.2	0.5	07:12	20.3	58.6	0.5	13:35	Sunny with slight breeze	20th ↓
Bathing Bridge	20.3	46.5	0.5	14:00	20.3	37.1	0.5	14:00	Sunny with slight breeze	
Little Bridge	20.1	39.3	0.5	14:15	20.1	33.1	0.5	14:15	Sunny with slight breeze	

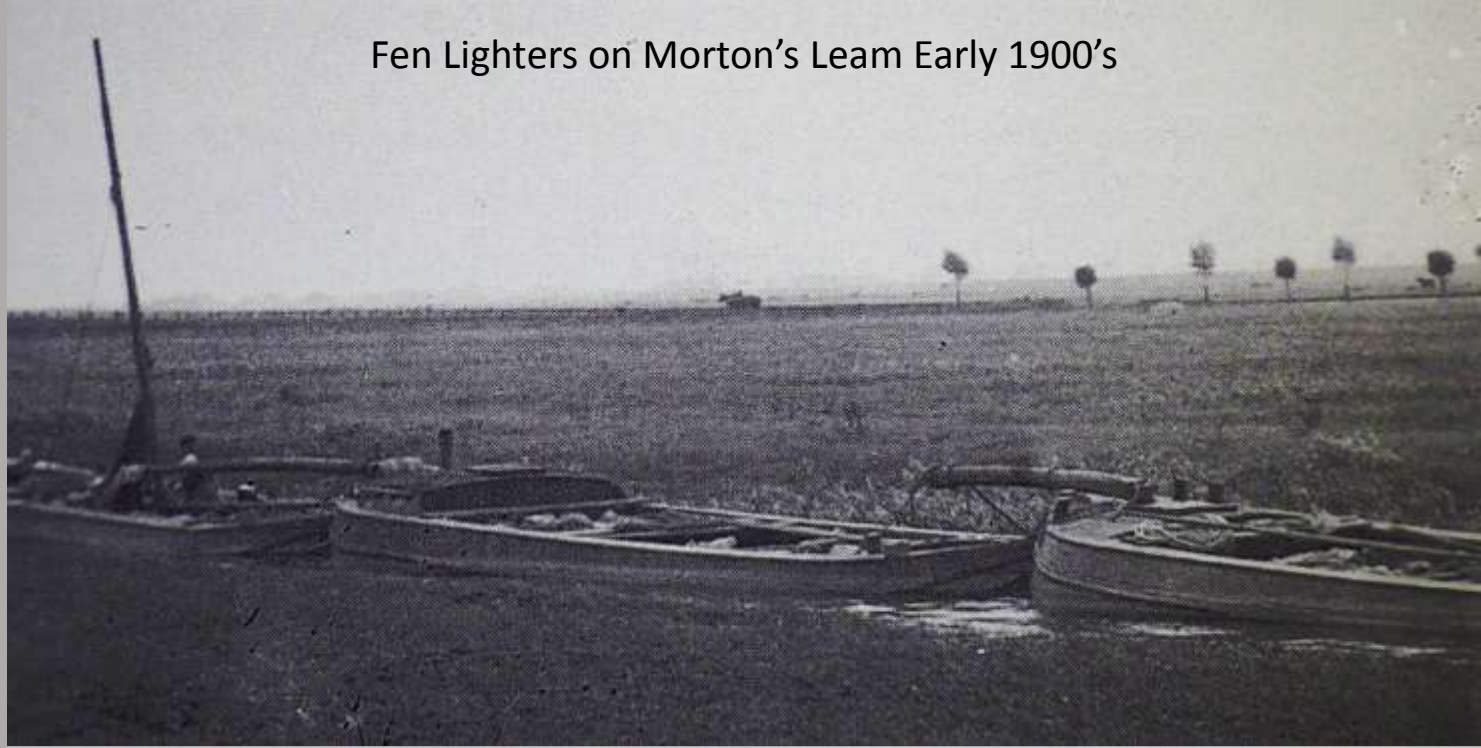


Rewinding the Clock: Nene Washes in 1930's Winter





Fen Lighters on Morton's Leam Early 1900's



Morton's Leam near Bassenhally 1920's





**THANK YOU!**

