

Objection to the Appeal

Dr Paul Farrell (Marine Ecologist)

Nitrate budget/guidance is unreliable.

Drainage plan is not proven.

Legal liability if future studies show nitrate emissions too high (Dutch Case).

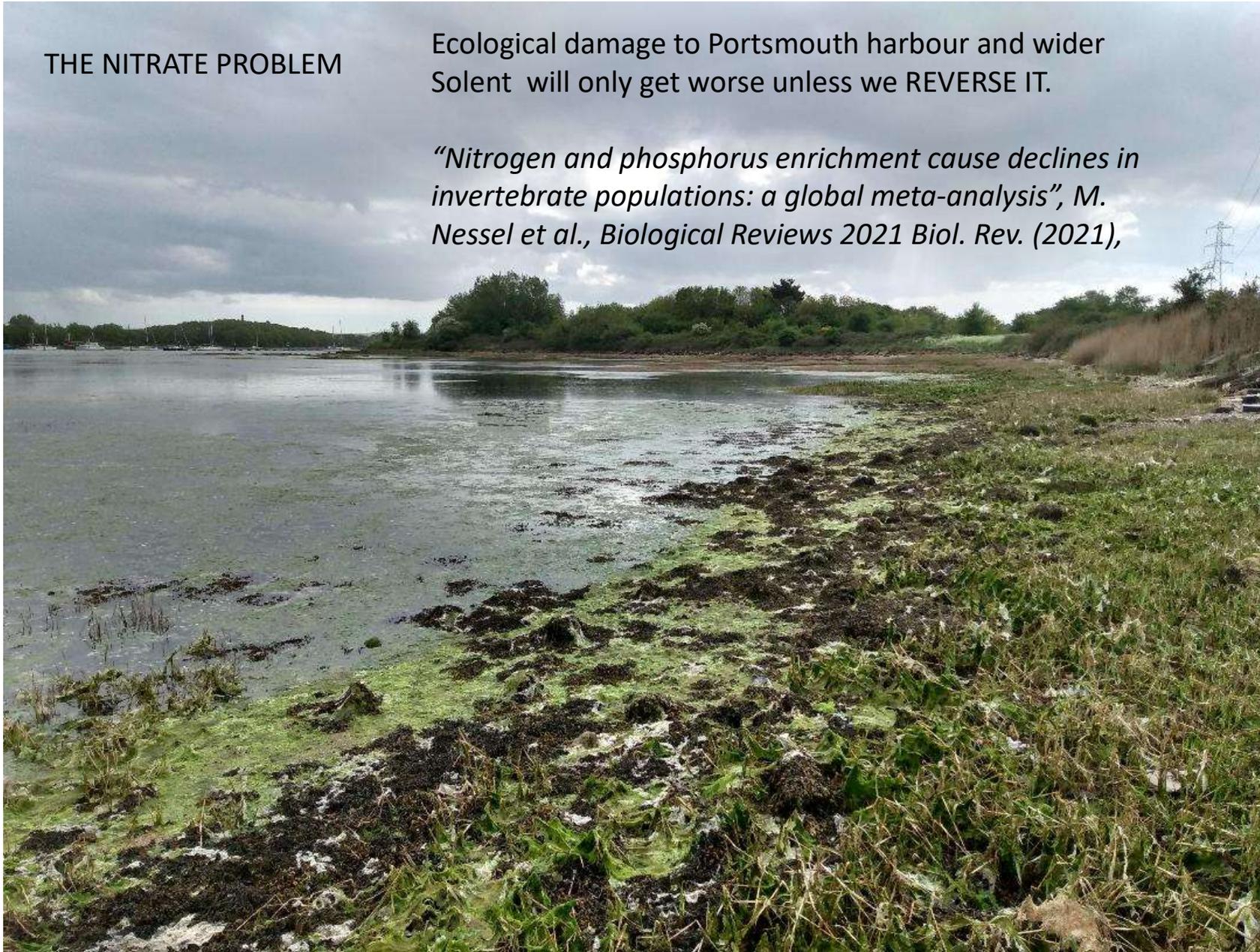
Even if development could be nitrate neutral, we urgently need to reduce nitrates, not simply remain static. Once lost, the field cannot be used for required future mitigation.

Legal commitment to improve ecological status of waterbodies.
(Nitrates used as indicator of ecological status).

THE NITRATE PROBLEM

Ecological damage to Portsmouth harbour and wider Solent will only get worse unless we REVERSE IT.

“Nitrogen and phosphorus enrichment cause declines in invertebrate populations: a global meta-analysis”, M. Nessel et al., Biological Reviews 2021 Biol. Rev. (2021),



Algal mats smothering salt marsh, sea grass and perennial macroalgae; **which are important carbon sinks and ecosystem foundations, habitats, nurseries, roosts and nesting sites.**

Current Extinction rate 10 times the normal level. Ecosystem function depends on biodiversity. Nitrates are currently the most serious threat to world ecosystem, and drives a lot of the other threats, biodiversity loss (genetic diversity) climate change, (carbon sink of perennial seaweeds, salt marsh and seagrass etc.)

Wasson, Kerstin et al. (2017). Eutrophication decreases salt marsh resilience through proliferation of algal mats. *Biological Conservation*. 212. 1-11.



Why the nitrate budget is unreliable.

EA admits (clause 1.4) itself its guidance on calculations has been rushed and likely lacking, so advise local authorities a worst case, “precautionary approach” should be taken.

They have completely omitted to consider N emissions from the construction phase, which can be **significant**. Wakida, F.T. and Lerner, D.N. (2006), Potential nitrate leaching to groundwater from house building. Hydrol. Process., 20: 2077-2081. <https://doi.org/10.1002/hyp.6143>

Is the value for current N leaching used accurate? (higher figure for cereal crops used vs general cropping). Future N applications allowed will only reduce going forward. (INMAP 2021). **Individual field assessment is required** (Dybowski, Dawid et al. 2020) **This paper measured actual leaching rates from cereal crops and found an average of 20 kg/ha. The Nitrogen budget value used here was 'Cereals' at 31.2 kg/ha, whereas 'General Cropping' is 25.4 kg/ha. (the field has beans currently)**

Figure used for urban development N emissions is unreliable (EA advice largely based on US studies). Wastewater emissions into Solent from WWT, huge amounts of consented discharges extra unconsented discharges, leaks, failures. (Southern Water history of failure). (See next slide for figures I quoted in my presentation, these discharges will be far higher than 10mg/l used in the N budget)

“offsetting” in IOW not proven.

“precautionary approach”

In short, unless a development can be **proven** to be nitrate neutral, can planning permission legally be granted? (Existing and future legal challenges)

Last month, 150 storm overflow hours in **Summer!** <https://www.southernwater.co.uk/water-for-life/our-bathing-waters/beachbuoy>

(Stokes bay is storm outfall storm water and untreated sewage), peel common is long outfall (partially treated)

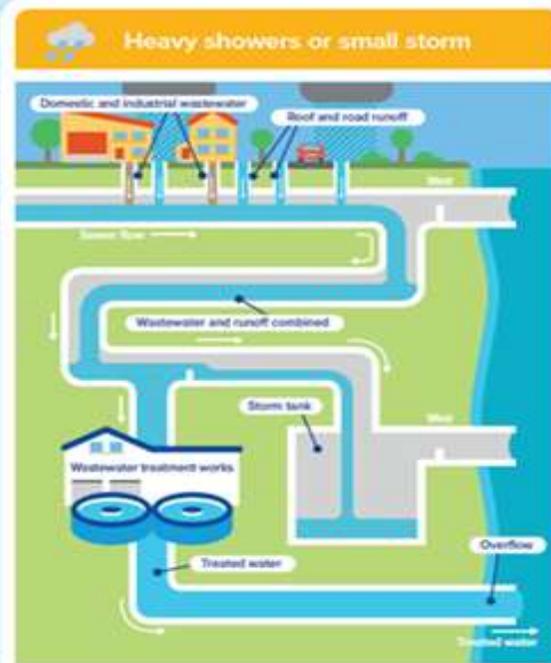
Event ID	Site Number	Bathing Site	Outfall	Last Activation Start	Last Activation End	Duration (hrs)	Activity
477294	12606	LEE-ON-SOLENT	PEEL COMMON	09/08/2021 05:04 AM	09/08/2021 23:00 PM	17.92	Not Reviewed
477294	12605	STOKES BAY	PEEL COMMON	09/08/2021 05:04 AM	09/08/2021 23:00 PM	17.92	Not Reviewed
475746	12605	STOKES BAY	PEEL COMMON	07/08/2021 09:45 AM	07/08/2021 21:15 PM	11.50	Not Reviewed
475746	12606	LEE-ON-SOLENT	PEEL COMMON	07/08/2021 09:45 AM	07/08/2021 21:15 PM	11.50	Not Reviewed
475618	12605	STOKES BAY	PEEL COMMON	07/08/2021 08:38 AM	07/08/2021 09:09 AM	0.50	Not Reviewed
475618	12606	LEE-ON-SOLENT	PEEL COMMON	07/08/2021 08:38 AM	07/08/2021 09:09 AM	0.50	Not Reviewed
472182	12606	LEE-ON-SOLENT	PEEL COMMON	02/08/2021 10:16 AM	02/08/2021 13:02 PM	2.77	Reviewed
472182	12605	STOKES BAY	PEEL COMMON	02/08/2021 10:16 AM	02/08/2021 13:02 PM	2.77	Reviewed
460103	12605	STOKES BAY	PEEL COMMON	14/07/2021 09:28 AM	14/07/2021 10:46 AM	1.30	Reviewed
460103	12606	LEE-ON-SOLENT	PEEL COMMON	14/07/2021 09:28 AM	14/07/2021 10:46 AM	1.30	Reviewed
461841	12605	STOKES BAY	PEEL COMMON	12/07/2021 07:45 AM	14/07/2021 00:36 AM	40.85	Reviewed
461841	12606	LEE-ON-SOLENT	PEEL COMMON	12/07/2021 07:45 AM	14/07/2021 00:36 AM	40.85	Reviewed
457610	12606	LEE-ON-SOLENT	PEEL COMMON	06/07/2021 04:30 AM	06/07/2021 14:40 PM	10.17	Reviewed
457610	12605	STOKES BAY	PEEL COMMON	06/07/2021 04:30 AM	06/07/2021 14:40 PM	10.17	Reviewed

How do combined sewers and overflows work?

Using storm tanks and combined sewer overflows in different weather conditions to reduce the risk of our customers' properties from flooding



During dry weather the flow of wastewater from domestic and industrial properties is treated at the wastewater treatment works and then released into rivers or the sea.



In wet weather, when rain runoff is combined with wastewater in the sewer, our storm tanks can be used to hold any excess ready to be treated after the high flows.



For sustained storm conditions, and once the storm tanks are full, overflows are used to prevent the flooding of homes, businesses, hospitals and schools.

Overflows also referred to as outfalls in other documents.

Drainage plan

Surface water- **Nitrate in groundwater infiltration and runoff.** Over- reliance on infiltration, there is no storage or exceedance overflow.

The retention/infiltration ponds located at the SW corner of the site have been sized only to cope with 3/4 of the estimated storm run off, the remainder must be accommodated by soakaways constructed at each property or group of properties. The calculations for the size of the retention ponds are based, in part, on the assumed infiltration rate of 1.797×10^{-5} m/s. This is overly optimistic according to drainage experts I consulted on the original plans. **The revised drainage plan adopts a rate of 9.44×10^{-5} m/s for the new soakaway, which is even more overly optimistic, and based on the test pit result closest too it.**

“The trial pits and infiltration tests were done in summer and the BRE 365 calculation method does not require factors of safety to be used (these are considered to be sufficient in the other parts of the method). It is reasonable to believe that infiltration rates would be greatly reduced or eliminated if the water table was close to the surface. **Common sense indicates that a total reliance upon soakaways on land known to remain saturated over the winter months is unsound, as the water table is likely to be close to the surface rendering the soakaways inoperable. My view hasn't changed, I believe the Drainage Plan remains unsound.”**

If there was a pond and an outfall this would need to demonstrate N removal, I believe, developers have gone down this route to avoid questions of N in runoff.



West field flooding



Main field flooding



Above image, proposed development site flooded. This surface water must have been here for at least two weeks, as that is the minimum time needed to develop the mature and substantial algal and microbial mats (known as water felt) that I have observed in situ, and can clearly be seen as the green layers, in tractor tyre marks, bottom of image.