



To: Mersey Tidal Power team.

From: Wirral Wildlife committee.

We are the committee of Wirral Wildlife, the Wirral Group of Cheshire Wildlife Trust. We were awarded the Queens Award for Voluntary Service in 2017 for 'inspiring, informing, educating and encouraging people to protect wildlife in Wirral' since 1971.

We are only too well aware of the linked climate and nature crises, and the need for people to change their ways. Part of this is generating our electricity in renewable ways. All renewable energy projects have impacts on the natural and human worlds. The assessment of any renewable energy scheme has to be '**how and where do we get most useful energy for the least impacts on nature and ecosystem services?**' We therefore ask that you thoroughly address all the questions below. We have read your literature and attended the public exhibitions, so these are questions that we did not feel were answered by those.

1) The cost of building and operation must be evaluated in Carbon emissions as well as in money. How long would it take to repay the carbon debt of building it? A barrage would require a lot of carbon-intensive concrete and steel. Also to be factored in are increased dredging requirements for operation and maintenance of the barrage throughout its life.

2) We need clean power, but we also need nature's protection for food security, carbon storage, from flooding, droughts, and more. What good is renewable power if building it destroys a carbon storing habitat like protected marine habitats? The Blue-Carbon Mapping Project report recently produced by TWT, RSPB and WWF ([https://www.wildlifetrusts.org/sites/default/files/2024-09/2024 Blue%20carbon%2012pp A4 Landscape New Digital.pdf](https://www.wildlifetrusts.org/sites/default/files/2024-09/2024%20Blue%20carbon%2012pp%20A4%20Landscape%20New%20Digital.pdf))

shows the enormous carbon stores that would be released from marine dredging, seabed trawling or if energy infrastructure is built on a protected site. A true net-zero energy system has to take account of all this stored carbon.

We quote:

'244 million tonnes of organic carbon are stored in just the top 10cm of the UK's seabed sediments with 98% stored in seabed sediments such as mud and silt, the rest in vegetated habitats including saltmarshes and seagrass beds. Seabed disturbances, including offshore development, are identified as threats to blue carbon stores.'

Would the changed tidal regime due to a barrage lead to release of carbon from sediments, perhaps as the very damaging methane? Salt marshes fix carbon at high rates and permanently. If any salt marsh is lost, inside or outside the estuary, then that has to be factored into the carbon accounting. Is the carbon fixation of the sand, mud and saltmarsh on the Mersey being measured? Would the longer water dwell times generate methane from the sediments?

3) The last two barrage proposals were abandoned as uneconomic in money terms. In 2018, Liverpool City Region's Metro Mayor's Office commissioned an economic feasibility study for tidal energy production from the Mersey Estuary. This indicated that, although the economics were now more favourable, these still fell short by 20%. After HS2 and similar debacles, we expect large infrastructure projects to exceed their budgets by significant amounts, which the tax-payer ends up paying. Therefore please make your economic forecast as accurate and justifiable as possible. 700Mw-1Gw is not very big compared to the latest wind farms.

Would the resulting electricity be able to compete in money terms with wind, solar and storage?

4) Where would it be built? The longer it is, the greater the carbon and money cost. Neither we nor you can judge impacts on climate, nature and the shore till we know where.

5) Tidal energy is predictable but not controllable. What proportion of the year would it generate in the problematic peak energy demand slot (5-7pm)? What proportion would be 12am-5am when there is usually plenty of energy available? It is possible to delay generation slightly on a tidal cycle, but at greater environmental costs to the upstream habitats.

6) Sedimentation: La Rance is a low-sediment system, the Mersey has a high sediment load. What proportion of that sediment comes from the sea, how much from the river? How fast would the barrage silt up on either side, and therefore how soon would channels to all the turbines need dredging? Would it increase dredging requirements to QE2/Manchester Ship Canal and Garston Docks? Two ship locks are depicted – is that enough? They have to be large enough to accommodate the ships that go to QE2 dock at Eastham. All increases in dredging have to be counted in money and carbon terms against the barrage.

7) Any dredging on new areas, including to build the barrage, would risk disturbing deeper sediments that may well be contaminated with mercury, lead, arsenic, etc from the industrial past. Are these sediments being studied for contamination? How deep would the barrage footings need to go?

8) Effects on sedimentation patterns outside the barrage. If most of sediment comes from the sea, might it silt on the downstream side of the barrage? If sedimentation downstream increases, this might increase the dredging requirement for the shipping lanes into Liverpool and Wirral docks and to the ship locks in the barrage. All increases in dredging have to be counted in money and Carbon terms against the barrage.

9) What would be the effects on sedimentation in the Dee Estuary, North Wirral foreshore and Sefton coast including Alt estuary? All these are, like the Mersey, internationally important for wintering birds, and also nationally and internationally important for many other species including sand dune and salt marsh species. North Wirral Foreshore is currently accreting, forming valuable new saltmarsh and sand dune. What happens to that? The Office of Environmental Protection has recently ruled that Natural England and Wirral Borough Council may have acted unlawfully and failed to consider key elements of proposals related to SAC vegetation clearance at West Kirby. If the currently accreting Wirral shores start to erode, that removes internationally important habitat and increases the flooding risk to north Wirral. Similar considerations apply to the Dee Estuary SAC, SPA, Ramsar and SSSI, and to the Sefton coast. If the barrage led to erosion of these coastal habitats, the nature and carbon cost would be huge. Extremely thorough studies using best available technology and modelling are necessary.

10) What would the effects on the Mersey birds and all other estuarine life (invertebrates, fish, marine mammals):

In operation: Studies need to quantify

- \* Loss of feeding habitat
- \* Loss of loafing/resting habitat
- \* Decrease in populations of food items
- \* Disturbance by people
- \* For fish and marine mammals, physical harm from turbines. No fish pass is mentioned.
- \* Obstacle to migratory fish (e.g. eels, salmon)
- \* Obstacle to Otter, who are recently recolonising the Dibbin, coming along the estuary edge at low tide from the Gowy/Shropshire Canal population.
  
- \* Need to study night-time bird feeding and other behaviour (this is different to daytime).
  
- \* Need to track birds (tags) to see how much movement there is between estuaries by individual birds. Birds that stay largely on the Mersey all winter (as dunlin seem to) would suffer greater impacts than more mobile species.
- \* Need hydroacoustic monitoring of marine mammals and fish. Visibility to humans is not good enough in the Mersey's murky waters.

Are all the studies recommended by Natural England being carried out? If not, why not?

The Mersey is a SSSI, SPA and Ramsar site. Marine and estuarine life is just recovering from the effects of two centuries of industrial pollution, through the large sums of money spent during the Mersey Estuary Campaign and subsequent action. Would this gain to wildlife and people be lost?

11) What would be the cumulative effects on nature of the Liverpool Bay wind farms and a barrage?

12) Effects on Mersey birds and all other estuarine life during construction. La Rance was constructed using a coffer dam which prevented all salt water passing for 4 years, wiping out all brackish water life upstream. The ecology upstream took a decade to recover. Mersey Barrage says it will take 7-10 years to build, so what will be the effects? Some of the bad effects of the HVDC Western Link were due to unforeseen delays in construction. Are there contingency plans for such delays and are their effects on nature and carbon being assessed?

13) Effects of construction and operation on bird populations and other marine and estuarine life in Dee Estuary, Liverpool Bay, Sefton coast – all SSSI, SPA, Ramsar, and some are SAC. Also Marine Protected Area in Liverpool Bay. **We are in a nature as well as climate crisis.** The Dee, North Wirral Foreshore, Mersey, Alt, Sefton Coast and Morecombe Bay are all part of one inter-related system. How would it affect the whole bird flyway and international populations, for which we have a duty under the Ramsar agreement? We need studies using the best available modern technology.

Note: the citations for all these designated sites reflect bird populations in the 1980s-1990s and have not been updated. Studies must assess effects on the current bird populations, some of which have changed greatly e.g. increases in pink-footed geese on the Dee, and Shelduck on the Mersey.

14) If built, with inevitable effects on bird feeding habitat, then Compensatory Habitat must be provided because of the damage to internationally important sites. How would compensation for inter-tidal areas be provided? It would need to be in Liverpool Bay area so birds would not have to move far. Opportunities for managed retreat are very few on the Mersey, as it has a largely built-up shore, including major infrastructure such as Stanlow. Huge areas would be needed for impacts on the whole estuary. Even more if there are impacts on the Dee Estuary, North Wirral Foreshore and Sefton coast.

Compensatory habitat would need to be created before construction of the barrage started, to be effective. How and where could this be done? Compensatory habitat creation would need to start well in advance of the barrage construction, so in the next year or two.

In 2010, the Department of Energy and Climate Change published results of a feasibility study that investigated the impact of an ebb-only tidal energy barrage across the Severn Estuary. It concluded that “the scale and impact of a scheme would be unprecedented” (Department of Energy and Climate Change 2010). A computer model predicted between 36% and 63% loss of intertidal habitat for an ebb-only barrage.

15) Penny-pinching on the relevant studies would only show that Mersey Tidal do not really care about nature. We wrote to Mayor Steve Rotherham in 2018 about our concerns regarding effects of tidal energy, especially a barrage, on nature. On 2 March 2018 he replied:

*‘On the issue of environmental protection I can assure you I am fully committed to ensuring that any tidal infrastructure project meets the highest environmental standards to mitigate and manage any construction and operational impacts.*

*It is too early to say what, if any, effects the project will have on Estuary birdlife as we are literally at the start of the process.*

*I hope this information helps.*

*Yours sincerely*

**Steve Rotheram**

**Metro Mayor’**

16) What would happen at the end of the barrage’s 120-year life? What legacy would it leave in environmental terms? Concrete does not last for ever in sea water and saline winds. Sedimentation would have greatly changed.

17) We are told there is no decision yet on whether generation would be on ebb only or both ways. Two-way generation has some advantages over ebb-only systems, since low water level is not increased as much, meaning that the area of intertidal habitat permanently submerged is reduced; modelling has estimated losses of between 6% and 30% across five estuaries in north west and south west England. More natural flushing would also occur, meaning fewer negative effects on water quality (Hooper and Austen 2013). Assessing impacts on nature are therefore impacted by this decision.

18) Electricity infrastructure. Where would it be put and how linked to the National Grid? We are concerned about Prenton and Capenhurst switching stations. Both would require a considerable cable underground. After the experience of the Western HVDC link, which took much longer to build and did much more ecological damage than we were assured would be the case, Wirral is wary of long underground cables. Will the Environmental Impact Assessment cover the new cables?

19) Where would the barrage come ashore? What would be the impacts on

\* Land take for infrastructure: Much of the brownfield along the Wirral shore is earmarked for new housing under Wirral’s Local Plan (in final stage at present). We cannot afford to lose housing land, especially if recent Government proposals are implemented, vastly increasing the housing target for Wirral.

\* If land is ‘reclaimed’ from the estuary is that more loss of bird habitat?

\* What would be the access for maintenance?

\* Effects on Port Sunlight River Park and its integrity? This is a bunded landfill site, disturbance of which or damage to its bund could lead to considerable pollution.

\* Oil pipelines run all along Wirral shore, including under the bund to PSVP. These might still be active at the time the barrage might be built. What would be the effects of construction and operation on these?

\* Existing rail and road tunnels – the former is very close to the sea-bed.

20) Construction impacts on-shore and off-shore. Would all materials be brought in by water, or would it mean lots of lorries through Wirral up A41? How would people get there to work, both during construction and in operation? There has to be road access from the Wirral shore somewhere – where?

21) Effects on water quality upstream of a barrage when Bromborough sewage works overflows, which as local residents we know it does regularly. United Utilities told us that the housing in this sewage works catchment is over 80% combined sewer, well above national average, which together with a hard urban catchment makes controlling storm flows very difficult. What other water quality issues are there?

22) Flooding: The Severn studies showed a risk of up-stream erosion, which might increase flood risk to communities and industry there, including Stanlow refinery. Can studies substantiate the claim that a barrage could reduce flood risk, both upstream and downstream and along all adjacent coasts?

23) Sea level is rising and major storms increasing in frequency. What would the effects of the barrage be on flooding, sediment, shoreline damage? What happens if major sea level rise occurs within the lifetime of the barrage e.g. 2-3m, as is predicted if the Antarctic ice sheets seriously diminish.

24) What would be the effects on the tidal River Dibbin? Any risk of erosion to bund of tipping on which a housing estate now stands? Any increased flooding risk on very high tides?

25) Would there be any lights at night? Artificial light at night is already a major pollutant on Merseyside, with effects on insects, bats and other nocturnal wildlife. What are the effects of the Mersey Gateway Bridge lights on bird feeding behaviour?

26) What are the likely effects on recreation on Mersey shore, including Port Sunlight River Park and Eastham CP. People avoiding the barrage might go to other coasts, increasing the already-unsustainable pressures on the North Wirral Foreshore and parts of the Dee (Mersey Recreation Mitigation Strategy, in prep)

27) Assess the pleasantness and safety of cycling/walking across if the wind is anything above a breeze. Its importance as a cycle/walking route would be limited by weather and light – of little use after dark, in winter or rain. Much cheaper ways of facilitating cycling across the Mersey could be done.

28) Would removal of the old oil jetty by Rock Ferry slipway be done? Currently a pollution hazard and eyesore.

29) Please employ a graphic designer who knows something about trees and estuaries! Few trees would grow in planters along the barrage, exposed to salt winds, and if they did they could not be

nice circular blobs but wind-pruned! The picture does not inspire confidence that nature is being adequately considered.

In conclusion:

All renewable energy projects have impacts on the natural and human worlds. The assessment has to be 'where do we get most useful energy for the least impacts on nature and ecosystem services?' A barrage is inevitably very damaging to nature. There are risks of serious damage to natural carbon storage.

We need rapid action on climate change. Large-scale building insulation, construction of wind, solar, and energy storage could all be done much faster, to greater climate benefit, for the same or lower economic cost. Might Tidal Stream produce less energy, but cost a lot less and do a lot less damage to nature? Might the UK investing in grid-scale energy storage be cheaper and have less nature impact? Might the same money (or even somewhat less) invested in insulating our lamentable housing stock be more effective? We need fast action on climate change – this is a medium-term project not generating till possibly 2038 (or later if it over-runs as most large-scale construction projects do).

A barrage is fairly clean energy, but it is not 'green'.

Is a barrage worth it???

Yours sincerely, on behalf of Wirral Wildlife committee

Hilary Ash MA,PhD,MCIEEM(rtd)  
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[www.wirralwildlife.org.uk](http://www.wirralwildlife.org.uk)