

PETER KEITH-LUCAS

WRITTEN REPRESENTATION

TIDAL LAGOON SWANSEA BAY'S COMMENTS

1. *At the meeting at the Dylan Thomas Centre, I spoke to suggest that the Panel needed to examine critically the claims by the applicant for the recreational amenity which the lagoon would provide. Specifically, I said that I had been unable to discover, and the applicant had been unable to provide, the tide pattern within the lagoon, which would determine how much waterspace, and what quality of waterspace, would be available for recreational use. I also questioned whether the applicant could provide good quality public vehicular access to the western side of the lagoon.*
2. *My contention is that the waterspace of the lagoon will be almost as tidal as the external sea area, such that the lagoon will all but drain twice a day, and the profile of the foreshore means that the area of useable waterspace will be that furthest from the shore, and so least accessible. For it to be useable at all, ramped vehicular access suitable for launching and recovering dinghies will be required at virtually all stages of the tide, and for the bottom half of the tide, the lagoon will be effectively useless for recreational sailing.*
3. *It is then necessary to compare that with conditions at Knab Rock, where the western slipway provides access for launching and recovery of dinghies for 3/4 of the ordinary tides, coupled with a large car park and dinghy parking area, and access directly to deep water. So that, even if you launch at 1/4 tide, you can sail out into deeper water and remain sailing for 3 or 4 hours, returning when the tide has returned sufficiently to access the slipway. Within the lagoon, once the tide has reached something like 1/2 tide height, you would just have to leave the water.*
4. *I did not see this sort of analysis in the EIS, and you will therefore understand my disappointment that the preliminary list of questions does not appear to address this issue.*
5. *I would ask you to accept this as a request that the Panel define some additional questions to address this issue, or, if no further information is forthcoming, as a written submission and a (belated) request to be permitted to give verbal evidence at an oral hearing.*

TLSB's Comment(s)

1. Regarding recreational use of the lagoon “waterspace”, please see the Environmental Statement (ES - doc ref 6.2), Chapter 4, figure 4.2, which shows a circular boating area; paragraph 4.2.0.8 refers to “dredging to create boating area”. Figure 4.7a shows the dredging plan in further detail, including “Dredging area for leisure access at -2mCD”. Figures 4.8 and 4.9 show alternative dredging plans, each including the leisure access dredging. This dredging will ensure boating is possible (for suitable vessels) within the boating area at all states of the tide inside the Lagoon. Conditions at Knab Rock are not comparable because access to sailable water is dependent on the tides there, unlike the situation outlined within the Lagoon.
2. So far as public vehicular access to the western side of the Lagoon is concerned, a safe and high quality access will be provided. Please see the Design & Access Statement (doc ref 8.1), section 5.3B, ‘Access and movement’, and section 6.8, ‘Transport’.
3. In terms of access to the water for recreational use, please see ES Volume 1, Chapter 4, paragraph 4.2.0.9 which shows inclusion of slipways in the onshore works. Paragraph 4.3.5.27 of the same document also includes, as part of the description of facilities at the

Western Landfall Building: “slipway access to the lagoon, having a gradient of 1:10 with a vertical sheet pile wall to the west to create a sheltered harbour with pontoons”.

4. Mr Keith-Lucas should be reassured that TLSB is committed to recreational use of the Lagoon. It may also be of interest that the architect of the proposed Western Landfall Building and facilities (Faulkner Brown) was also responsible for the 2012 Olympic Sailing Centre at Weymouth and other highly-regarded watersports facilities.

1. *At the meeting at the Dylan Thomas Centre, I raised this issue of silt deposition and requested that it be extended beyond merely the construction period to cover deposition across the Bay throughout the life of the lagoon.*
2. *I am therefore disappointed that the preliminary list of questions should only address the issue of siltation either side of the lagoon.*
3. *My concern is that Swansea Bay is already very shallow, and so a small change in siltation, over the 200 or so year life of the lagoon, could make a very significant impact on the Bay.*
4. *At present, a very considerable volume of silt is carried out of the River Tawe. This is evidenced both by visual observation of the silty water entering the Bay and by the fact that the Tawe Barrage was originally built with some 30 foot of water either side, but the City Council has for the past 5-10 years had to dredge annually under the SYSAC moorings, as the silt level has risen some 25 foot over the period since the Barrage was built, and boats with 6-foot keels are now regularly hitting the bottom.*
5. *That silt is currently carried westward around the Bay, and kept in suspension by a combination of wave turbidity and the consistent anti-clockwise current around the Bay. I am disappointed that you have chosen to ask only the applicant about this as interested parties such as the Mumbles Yacht Club and Town Council could evidence that this current runs at all states of the tide, and at up to 2-3 knots. From Clyne Golf Club, I can regularly see the band of brown silt-bearing river water running along the shoreline in a band about 200 metres wide, right round and out at Mumbles Head.*
6. *If the Barrage were constructed to current plans –*
 - 1) *It would mean that the western half of the Bay was now enclosed on 3 sides, significantly reducing wave turbidity in this area; and*
 - 2) *Inevitably it would cut off the anti-clockwise current. I have seen no evidence as to whether the current would re-establish itself, albeit at lower speeds. I have seen no evidence that this has been modelled.*
7. *The end result must be a significant reduction in the extent to which the Western part of the Bay can keep such silt in suspension. Rather than being carried round and the dispersed beyond Mumbles Head, it would emerge into a calm Bay, and basically deposit its silt there.*
8. *I have sailed into the Bay by Mumbles Pier an hour after low tide and, once past the Pier, found less than a metre of water under my keel. Turning across the Bay towards the Tawe entrance, I have had to go at least a mile before I have got more than 2 metres under my keel. That is how shallow the Bay now is.*
9. *At West Cross there is visible evidence of additional sand deposit, and the development of islands of sea grass outside the seawall and normal high tide line.*
10. *Once in place, the lagoon will be there for at least 200 years. Unlike a wind turbine, there is no prospect of removing it if adverse consequences materialise.*
11. *For that reason, I would be seeking a binding undertaking from the applicant that he will meet the cost of dredging throughout the life of the lagoon to maintain the bed levels in the Bay at their present levels and, to ensure that this is achieved, a lien for the City Council against the lagoon tariff incomes to pay for the cost of such dredging in the event that the applicant is unwilling or unable to meet this obligation.*

12. *I am therefore very disappointed that the Preliminary List of Questions does not appear to address this issue. I would like the list to require the applicant to provide further evidence and physical modelling to assess the risk. I would like the Panel to ask other interested parties for information on the anti-clockwise current. And I would like the Panel to ask the applicant whether he is prepared for such a binding funding undertaking to be included as a condition on any development order.*

TLSB's Comment(s)

1. The effect on sediment transport within the Bay has been modelled and is assessed in Chapter 6 of the ES. Figures 6.50 – 6.52 show predicted changes in mud deposition across the Bay, and a summary of overall predicted effects on receptors is presented in Table 6.22.
2. Siltation upstream of the barrage is most likely to be caused from silts being carried down in the flows of the River Tawe and the barrage restricting the sediment leaving the system. The Project will not have an effect on this siltation. Modelling of muds has been undertaken for the Project under a range of weather conditions (Figures 6.50 – 6.52 for 10 in 1 year event, calm conditions and 1 in 20 year storm). The results show no increased sediment deposition as a result of the Project below the Tawe barrage, although siltation is predicted in some areas within the main Tawe Channel. Any additional dredging requirements as a result of the Project will be in protected through provisions in the DCO in agreement with the Ports.
3. As summarised in Table 6.22, there will be a general slight reduction in mean flow speeds over the western part of the Bay as a result of the constriction of the Bay between Mumbles headland and the outer extent of the Lagoon seawall in that vicinity. The assessment of potential changes to mud transport during smaller (10 in 1 year) storm conditions shows no predicted increased deposition of mud material across the intertidal part of the western part of the Bay, with any changes predicted to occur in the subtidal part of the Bay.
4. Where potential increased mud deposition is predicted, it should be noted that the system will reach an equilibrium condition whereby the increased deposition will result in shallower depths, such that the flows over the bed will be increased to the point that further deposition will be less likely. Additionally, calmer periods (which have less potential to mobilise sediment from the bed) and larger storm events (which have the potential to increase erosion), have been shown to result in lower levels of deposition, and over a reduced spatial extent.
5. The potential intermittent transport of sand material from the eastern part of the Bay to the western part of the Bay (during larger storm events) will be blocked by the Lagoon, leaving direct transport from offshore during SW and SE storms as the primary source of sand to the western part of the bay. Analysis of the Swansea and Carmarthen Bay Coastal Engineering Group (SCBCEG) annual beach profiles for this region show an initial reduction in beach and intertidal levels between 1998 and 2005, but a more stable elevation between 2005 and 2013. A slight general seaward movement of Highest Astronomical Tide (HAT) and mean high water springs (MHWS) indicates a general trend for slight accretion since 2005. As a result of this, and the reduction in intermittent sand transport, it is considered that this slight accretion is likely to reduce following construction of the Lagoon, leading to a more stable profile in the future.
6. Where disposition is predicted in the Western extent of the Bay it is not expected to affect navigation, and navigation channels will continue to be dredged to existing required depths for safety of vessels. Any additional dredging required will be included in protected measures with the relevant port authorities and secured by requirement of the DCO.