



TIDAL ELECTRIC LIMITED

Issues with Swansea Bay Project

VERY difficult to pin down the facts

1. Andritz engaged to deliver 16# 20MW 7.35m diameter turbines) BUT power output estimated at 500GWh p.a. which gives a load factor of <18% which is lower than a barrage that only generates on the ebb tide???
2. When we were scoping Swansea Bay our plant covered 5.01kms and predicted to produce 187GWh p.a. (MWH letter July 15th 2004). TLSB is predicting 500GW from an area of 11.5 km². If we were correct power from the new design would be 429GWh p.a. (*power is related to area multiplied by the square of the range and since the site is the same the range is the same so the difference would be proportional to the area enclosed*).
3. Said to cost £913m^{#1} (or £2.85m/MW) (although more recently costs of £2.1-2.4m/MW^{#2} are being mentioned).
4. Levelised cost of power said to be £25.79/MWh ^{#3} (*if true begs the question why a subsidy is needed?*). Using the Carbon Trust model (using a 10% discount rate) the cost is £151.4/MWh.

Placing 7.35 diameter turbines in water 5-7 metres deep is problematic: excavating to allow the turbine hall to be underwater invites siltation.

Russell lagoons (the TLSB design) are expensive because

- a. Need a much bigger wall to accommodate the public access that has been embraced. It offers a tourist attraction but the potential tourism revenues cannot offset the costs entailed.
- b. The damage to the inter-tidal zone encompassed by the design will be very expensive to offset.
- c. Siltation increases exponentially with the shallowness of the water. Siltation maximises where the water meets the shore, where the depth is zero. The Russell lagoon always has a water-shore interface and so will suffer significantly more siltation than an offshore design that is always wet. Trying to generate on the flood tide will exacerbate this issue.

The effect of discounting at a reasonable discount rate negates the value of a long CfD. The CfD is (one of) the key issues that determine the build/don't-build decision, once planning consent has been achieved (as for TLSB). At a build- cost of £913m, a CfD of £96/MWh for 90 years delivers an equity IRR of 5.5% and drops to 4.1% if the contract reduced to 30 years. (*Note neither return would be enough to sanction equity investment for the construction in our view.*)

^{#1}: Poyrys report March 2015

^{#2}: Cardiff conference on Tidal Range Power July 2016

^{#3}: The New Power Cost League Table TLP July 2016

