

Orkney Renewable Energy Forum, response to consultation on Orkney Harbours draft master plan.

Orkney Renewable Energy Forum has brought together interested parties in the renewable energy field within Orkney for the last 20 years and its membership ranges from large firms to many individual members.

In preparing this response not only the interests of its members, but also the targets set by United Kingdom and Scottish governments targets to achieve net zero greenhouse gas emissions by 2050 and 2045 respectively have been considered.

Just as Scotland has an earlier target than the rest of the UK due to its greater ability to harness renewable energy then Orkney with its abundant energy resources from wind and tide needs to set an earlier target than Scotland as a whole. We have not tried to fix an exact date but expect that it will certainly not be possible in less than three years after the electricity connections to Orkney are significantly reinforced. Currently it appears that this will not be before 2024. The amount of generation required to be committed in order to get the connection installed is 135MW. Given large wind turbines of 4MW and with load factors of 45% this generation propel Orkney close to net zero carbon emission's based on energy production and usage alone. However, Orkney also produces greenhouse gasses from other sources, and these will also need to be compensated for by the installation of additional renewable generation, giving an earliest realistic date for Orkney net zero as 2027. A latest date of 2035 might be sensible with a general target date of 2030 which can be firmed up once the electricity network reinforcement project has firm dates.

However, getting to net zero for Orkney is not the end of the story, for Scotland, and then the UK to reach net zero in 2045 and 2050 Orkney will need to move quickly to a net negative carbon dioxide position, offsetting carbon emissions in other parts of the country. In order to reach a substantial net negative position, large scale progress in the removal of fossil fuels from all aspects of Orkney life will be required, with the remaining fossil fuel use shrinking year by year. Remaining emissions from farming etc, covered by net exports of electrical energy and hydrogen produced from renewables to the rest of the UK and beyond.

In the longer-term Orkney will need to be a major exporter of both electricity and carbon free goods including hydrogen in order to pay for the goods we import.

With respect to harbours we expect the following to be vital elements of the plan, recognising that the current harbours master plan does not cover all the harbours infrastructure within Orkney.

All vessels when in port need to be connected to shore supplied renewable energy, or to be burning carbon free hydrogen or synthetic liquid fuels. In terms of efficiency shore connections are by far the most efficient, with hydrogen in the middle and synthetic liquid fuels being the worst and only expected to be used for vessels either already constructed or which will be constructed over the next two years at the most.

All vessels which require refuelling need to be supplied with either electricity to charge batteries, hydrogen or with synthetic liquid fuels. Orkney is well placed to supply the first two directly and may need to source the third from other sources in limited quantities. We do not see liquified natural gas as a long-term solution but welcome the plan to include ship based bunkering facilities

for LNG for those ships currently under construction and which might be constructed over the next 5 to 10 years before hydrogen takes over as the fuel of choice for large ships.

The master plan covers major port infrastructure, but it also ought to consider operations, including those vessels used directly or under contract to manage the harbours. Both pilot boats and tugs will over time need to be replaced and the master plan ought to include a commitment that these will be powered by batteries, or hydrogen, or a hybrid between the two sources of energy as appropriate for the duties the particular vessels need to carry out. This could most effectively be expressed as a commitment to not purchase any diesel-powered vessel in the future.

In terms of physical extensions to the piers suggested in the master plan, OREF is happy that each of them could potentially provide a sound basis for investment by Orkney Harbours, provided that the plans are modified to include the relevant electricity connections and hydrogen supply equipment required to fuel all vessels expected in a net negative greenhouse gas emissions future. From discussions at the public meetings it was clear that the need to build infrastructure to cope with increased sea levels was understood. However its not clear that the plans are integrated with flood defence planning for future sea level rises, particularly at Kirkwall and Stromness where access to current infrastructure could be cut off by future flood prevention schemes.

We support the plans to provide over the near to medium term liquified natural gas bunkering facilities where they make commercial sense to refuel the currently under construction fleet of LNG cruise ships as this will significantly reduce the particulate emissions from these important elements of Orkney Harbours operations. However, LNG does not provide a significant improvement in terms of greenhouse gas emissions, we believe that a target should be set to offer equivalent hydrogen fuelling options to encourage future cruise ships to operate with hydrogen rather than LNG at Hatston. This date should be no later than 2030 with fuelling for smaller vessels being available at a much earlier date at Hatston or Kirkwall, Stromness, Scapa and if constructed at the deep-water port on the east side of Scapa Flow.

In terms of priorities for the construction of additional infrastructure this will to a certain extent depend on there being a solid financial case for each investment as indicated in the draft master plan. There are two possible exceptions to this.

First if a request is made to extend Scapa pier to allow larger tankers to off load fuel this should be discouraged as liquid fuel use is expected to decline considerably as Orkney moves to a lower carbon future and the need for a larger pier for this purpose would soon disappear. The master plan at present suggests that this would be a non-optional decision based on a need to continue to supply liquid fuels by tanker. Synthetic liquid fuels for the use of older boats is potentially already catered for at Hatston and this could become a central hub for synthetic liquid fuel distribution to other locations both for marine use and for agriculture and road transport.

Secondly additional space at Hatston is needed in order to ensure enough space is available for future developments in renewables in and around the north of Orkney. Making the additional space available for these developments at Hatston, along with other uses could be considered as worth while and OREF would support this development on a more speculative basis than other developments, to enable and encourage the future development of marine energy in and around Orkneys northern isles. There is likely to be a surge in demand for space for marine renewables at the time the Orkney Grid reinforcement project comes to fruition. This is expected to be around 2024 and at least some of the additional space proposed at Hatston ought to be available by 2024 in order to allow these marine developments to go ahead.

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