

Item:

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Report to Partnership Meeting 13 November 2020

RESEARCH AND STRATEGY DELIVERY

Train For The Future

Purpose of the report

To appraise members of the potential for future rolling stock options in the HITRANS area.

HML electrification

As reported to the Board in September Scottish Ministers propose to electrify the Highland Main Line with overhead wires by 2035. With a likely end date of the current HST fleet in 2030, we will be keen to ensure that there is no delay in the start of electrification planning, with the danger that a fleet of bi-mode trains will be introduced as a thirty year stop gap.

Other routes

Tain-Inverness-Inverurie will be operated by alternative traction - transition solution (e.g. partial electrification and/or the use of alternative technology) by 2035 prior to electrification by 2045. The hydrogen transport cluster in Aberdeen is a key factor in this.

Glasgow-Oban-Mallaig and Dingwall-Kyle Tain-Wick will be operated by alternative traction - permanent solution - i.e. the use of battery or an alternative by 2035.

Battery technology

Battery trains were researched in our Wick Thurso Feasibility (WTF) study. The Vivarail 230 can cover 40-60 miles between charges which makes the route an ideal test bed. Power can be supplied during an 8 minute charge from a power bank of batteries that could be charged from constrained wind. The current train is limited to 60 mph making it unsuitable for the Far North but perhaps suitable for Dingwall-Kyle, and West Highland services.

There may be opportunities for a battery train to receive a 45 second zap while stopping at a station.

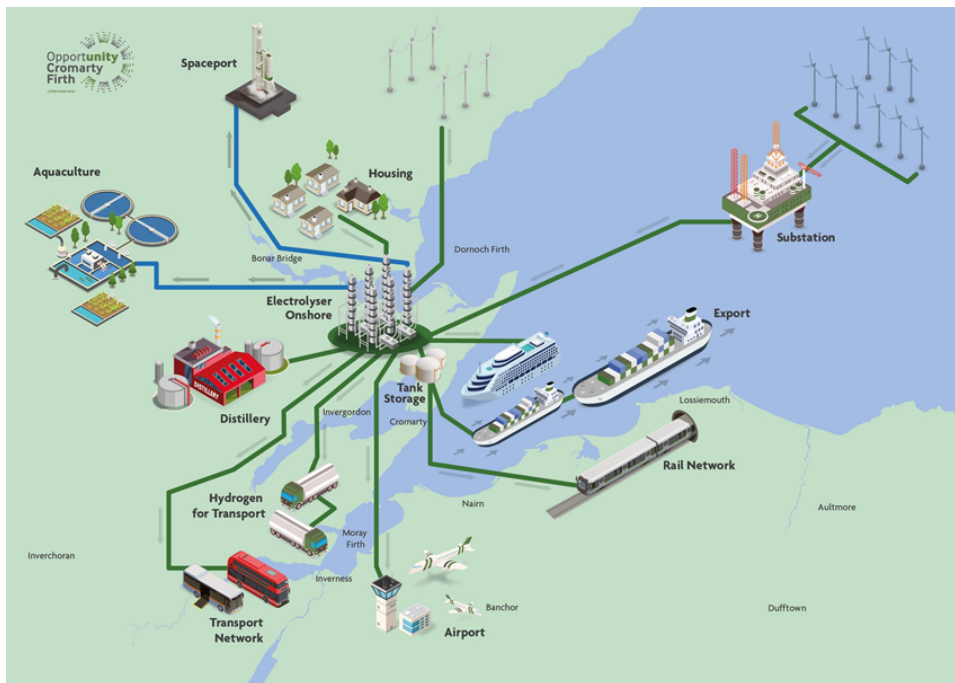
Hydrogen

A number of rolling stock owners and train builders are developing new or refurbished hydrogen trains. A hydrogen fuel cell is used to create electricity to drive traction motors/charge batteries. To date hydrogen is stored within the rail vehicles taking up passenger capacity but underbody solutions are under development.

As more hydrogen is required per mile than polluting diesel, infrastructure may be required at termini for fuelling (currently fuelling for rural routes is carried out in city depots). This may lead to sharing of facilities with the hydrogen fuelled ferries of the future.

Hydrogen supply is key to this. Hydrogen created from natural gas reforming is not carbon free. Hydrogen created by electrolysis of off shore wind power offers a green possibility, and the renewable energy cluster around Caithness/Orkney may be well placed to assist.

Equally, Opportunity Cromarty Firth's proposals for floating off shore wind also offers a hydrogen supply, with distilleries, the gas grid, aquaculture and other industrial processes creating demand.



A further hydrogen source could come from the combustion of Refuse Derived Fuel created at the Longman waste facility in Inverness. There are examples from Germany of municipal bus and tram fleets being powered in this way.

RISK REGISTER

RTS Delivery

Impact –Future proofing

Policy

Impact –Decarbonisation, localism

Financial

Impact –Nil

Equality

Impact – Nil

Recommendation

1. Members are asked to note the report

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