MERCURY RENEWABLES NEWSLETTER

NOVEMBER 2022

Mercury

Dear Stakeholder / Resident, As you know, Mercury Renewables hosted two public information days in September 2022 for members of the public to engage with us and our expert consultants in the context of the proposed Firlough Wind Farm and Green Hydrogen Project.

Further to these events, we wanted to share our responses to a number of questions which local stakeholders and residents have put to us in recent weeks – hence the publication of this update. We have also followed up with individuals who had requested further information on specific matters which were raised during the public information days.

We also wish to inform you that, on November 3rd 2022, our planning consultants, Jennings O'Donovan received a notice from An Bord Pleanála, who have determined that the proposed Firlough Wind Farm and associated infrastructure (including the proposed green hydrogen production site) is to be jointly considered as strategic infrastructure. Any application for planning permission for the proposed development must therefore be made directly to An Bord Pleanála. If you would like more information, please visit www.pleanala.ie and search for case number 307264–20.

During the information days, it was requested that we delay submission of planning until after the Christmas holiday period to ensure community members have sufficient time to review the application, outside of what is a busy time of the year for most families. We have taken that feedback onboard and decided to file our application for planning permission during the first quarter of 2023.

Should you wish to discuss the proposed development, have any further queries or would like additional information, please do not hesitate to reach out to us at your leisure and we will respond as soon as possible.

As always, you can visit our website www.mercuryrenewables.ie for further updates.

Yours sincerely

John Duffy,
CEO, Mercury Renewables

QUESTIONS AND ANSWERS

What developments (specifically wind farms and hydrogen plants) have Mercury worked on?

The Principals of Mercury Renewables have been involved in development, financing, construction and operational management of renewable energy developments including:

- Caherciveen Wind Farm, Ireland
- 33MW Negrete Cuel Wind Farm, Chile
- 133MW Sarco Wind Farm, Chile
- 250MW West Bakr Wind Farm, Egypt
- Infrastructure works carried out for three wind farms in north-west Scotland with a total of 52 wind turbines.

Have Mercury looked at solar power, wave power, offshore power instead of hydrogen?

Solar, wave and offshore power produce electricity that must be transported from the point of production to the point of use in the same way as the Firlough Wind Farm will. These technologies represent an alternative source of electricity production that could be used to power the hydrogen electrolyzer. We have considered each of these technologies and have selected onshore wind as a preferred power source due to:

i. Solar: solar resource in the West of Ireland is not as efficient as onshore wind and requires a considerably larger land take to produce the same electricity as the Firlough Wind Farm.

ii. Wave: wave or tidal technology is not as established as onshore wind and cannot be as readily financed or funded. This means the cost of producing electricity using wave power is considerably higher than onshore wind.

iii. Offshore wind: offshore wind has been widely deployed across Europe in water depths up to 100m. Deeper waters such as those off the coast of the West of Ireland, require floating wind turbines which are beginning to be deployed at commercial scale across the world where port infrastructure is suitable for the construction, operation and maintenance of floating offshore wind turbines. The West coast of Ireland requires considerable investment in its port infrastructure to enable the deployment of floating offshore wind. Onshore wind has been successfully deployed in the West of Ireland without the need to upgrade ports for the delivery of wind turbine components.

The hydrogen produced using the electricity produced by the onshore Firlough Wind Farm is a fuel that can decarbonize sectors of the economy such as agriculture and heavy transport where electrification using solar power, wave power and offshore wind is unsuitable.

Will Mercury Renewables scale this project up after they get planning permission?

The proposed plans for the Firlough Wind Farm and Hydrogen Project set out maximum sizes for each of the sites. Should planning permission be granted the size of the wind farm and the hydrogen project will be fixed and cannot be amended without a further application. We have no intention of scaling up either the wind farm beyond the 13 wind turbine locations or the hydrogen project beyond the land take shown in the design presented at the public information days, contained within the September newsletter and shown on the banners on the Mercury Renewables website.

Is what is being promised actually what we will get?

Conditions contained with planning applications regarding health and safety, hours of operations. and commitments made within legal documents will bind the project or owners of the project to satisfy conditions or honour commitments.

Who is on the board of Mercury Renewables?

John Duffy is the CEO of Mercury Renewables. Tim Bills-Everett is Director of Mercury Renewables.

Will Mercury flip the development?

Mercury Renewables intends to play a long-term role in the continued development, construction and operation of the proposed development. We see the project as being an enabler of economic and social growth and prosperity in the region and want to play an active role in delivering that potential. We may seek partners to join us in supporting the delivery of a safe, efficient and successful project. Due to the multi-million Euro cost of construction, we will be seeking funding from Irish, European and other International funders.

COMMUNITY BENEFITS

Who will benefit from profits generated?

Mercury Renewables has invested considerable time and money in the development of the Firlough Wind Farm and Hydrogen Project. It is a private development and the profits generated will be to the benefit of the shareholders of the development. These profits will only be earned AFTER payment of the annual community fund, AFTER payment of council rates to both Mayo and Sligo County Councils and AFTER payment of service contracts which we hope to award largely to companies in the region, provided they are suitably qualified and experienced to provide the services required during operations.

What percentage of profits will the community fund be?

Mercury Renewables is committed to establishing an annual community fund of €500,000, which will be made available to businesses and charity groups within the local community.

This will be administered by an independent governance board to ensure that it is fairly distributed to various projects, groups and interests within the community.

Funding will be made available for those looking to pursue higher education in fields related to sustainability, climate change and renewable energy.

How many people will be employed during all stages?

Mercury Renewables expects that 100-150 jobs will be created during the construction phases of the development.

Between 10 and 20 full-time and part-time jobs are expected to be created upon completion of the project.

LOCAL IMPACTS

Can oxygen molecules form O3 (ozone) during this process?

The electrolysis process involves the passing of electricity through water to produce hydrogen and oxygen. The electrolysis process does not form ozone. Ozone is naturally formed in the Earth's stratosphere. It can also be formed at ground level when sunlight reacts with nitrogen oxides and volatile organic compounds – such as pollutants emitted from car exhausts or refinery plants. Oxygen produced in the electrolysis process will be vented directly into the atmosphere and will immediately dissipate, aided by the high and consistent wind speeds witnessed in the West of Ireland.

How will the development impact the environment?

We have conducted detailed surveys and analysis into the environmental impact due to the construction and operation of the Firlough Wind Farm and Hydrogen Project including the carbon savings the project will ultimately deliver, helping reduce the impact of Climate Change and its impact on the environment.

Further detail will be contained within the Environmental Impact Assessment Report to be submitted to An Bord Pleanála and publicly available at www.pleanala.ie

Will the development affect house prices?

We have carefully selected our preferred proposed site. We have also carefully designed the buildings and examined the operation of the facilities to ensure that local house prices will not be adversely affected. We believe that any house using our local green hydrogen as it's fuel source will have an enhanced value.

Will the development affect house insurance premiums?

No – insurance premiums for local houses will not be adversely affected.

Will local salmon breeding be affected by any stage of this development?

We have considered all potential impacts on flora and fauna as part of our environmental impact. Our investigations indicate that there will be no impact on salmon breeding as a result of the water abstraction for hydrogen production. During construction, we will implement a comprehensive water attenuation system on both sites to appropriately manage the run off of water.

Will aquifer digging cause soil damage/landslides?

No, the drilling for water to be carried out on-site is similar to that for a farm well, albeit on a larger scale. Drilling for water and the associated infrastructure has been successfully deployed at scale in many rural areas across Ireland.

HEALTH & SAFETY

How can hydrogen leaks be detected if it is colourless and odourless?

Established technology exists to identify pressure changes in equipment that will identify leaks and result in immediate and controlled shut down of the production facility.

Is oxygen a fire-risk?

The oxygen produced at the proposed plant will not be stored and will dissipate immediately into the atmosphere. As it is not being captured and stored it does not represent a fire-risk.

How flammable is Hydrogen?

Hydrogen can be flammable if it is not handled properly. Mercury's health and safety risk assessment has identified areas that require robust operational management plans to ensure the safety of those working in and around the Green Hydrogen Project as well as the protection of the wider environment. Hydrogen is already handled and used around the world in a wide range of industries including the production of micro chips here in Ireland. Safety standards, training regulation exist to ensure the risk of hazard is kept as low as possible. Our planning application will include a hazard assessment and mitigations that will be required to be carried out as part of the planning approval. We have been engaging with the Health and Safety Authority as well as the Fire Department of Sligo County Council and will continue to do so through development, construction and operations. Health and safety is our top priority and we will establish world class practices to ensure the safe delivery of the project and production of hydrogen.

What gas is given off when hydrogen burns?

The vehicles we are targeting to fuel with our hydrogen do not burn the fuel, instead the hydrogen fuel is used in a fuel cell, reversing the electrolysis and producing electricity. In this process the only by-product of powering the vehicle is water. There are no other by-products produced in this process.

If hydrogen is burned it will also produce water as a by-product and due to the presence of nitrogen in the air around us, a small amount of nitrogen oxide. A small number of vehicle manufacturers are developing combustion engines where hydrogen is burned. Similar to combustion engines in today's cars, these hydrogen combustion engines contain "scrubbers" or "catalytic converters" that trap emissions before they reach the tail pipe. This means the nitrogen oxide will not be omitted into the atmosphere through the combustion of hydrogen in these vehicles.

In the unlikely event of an accident on-site, what fire brigade will respond?

We have engaged with the Sligo Fire Department who have advised that they will coordinate a response at the hydrogen site or on the N59. Units from Enniscrone, Ballina, Killala and Sligo will attend as required.

What qualifications will firefighters be expected to have, should they be required to respond to an accident?

As hydrogen is already produced, stored, transported and used in industry in Ireland, the regional fire services in Mayo and Sligo will benefit from the knowledge and training already available in other counties around Ireland.

Is the EPA engaging in this?

The EPA is a key consultee in the planning process and we have engaged with them as part of our scoping process for the environmental impact assessment. We will continue to engage with the EPA throughout development to ensure our design processes comply with the necessary regulation, in particular in regard to the management of surface and underground water courses.

WATER

Kittybrewster uses 9,000 litres of water a day – whereas the Mercury electrolyser will use 181,000 a day. Is this sustainable?

During our extensive testing, a sustainable yield of water was established at the proposed location of the electrolyser. There was no impact from these pumping tests on the neighbouring wells. We have commissioned a detailed report from Irish hydrology expert Minerex to establish the extent of the underground acquifer using data from Geological Survey Ireland, a division of the Department of the Environment, Climate and Communications.

What is the temperature of the electrolysis process and equipment?

Alkaline water electrolysers typically operate in a temperature range of 60°C to 80°C. A cooling system will help regulate the electrolyser temperature to ensure the optimum process temperature range is maintained.

Will catalysts be added to the water to aid electrolysis?

Our planning application is based on alkaline electrolysis technology. This requires the use of a water based electrolyte containing 25% potassium hydroxide in order to improve the electric conductivity of the water.

Will the water in the locality be polluted?

No, hydrogen and oxygen leaks will dissipate and will have no environmental impact. The electrolyte to be used as part of our planned alkaline electrolysis, will be handled according to a defined operational management plan to eliminate spillages. Furthermore, we have designed a robust attenuation system as a back-up in the unlikely event of a spillage to ensure no environmental impact in the local water course

Is the level of water sustainable?

During our extensive testing, a sustainable yield of water was established at the proposed location of the electrolyser. There was no impact from these pumping tests on the neighbouring wells. A recent report prepared by our hydrogeological experts, using information provided by the Geological Survey Ireland shows that the mapped areal extent of the aquifer is 102km2. Based on a conservative estimate of 200mm rainfall, the sites of the wind farm and the hydrogen electrolyser alone, would be sufficient to recharge the aquifer.

As a benchmark, Met Eirann has the following publicly available data regarding rain fall:

- Met Éireann's 30-year average rainfall for region during 1971 – 2000 was 710mm – 722mm
- Knock Airport recorded 1,364mm rainfall in 2021

What percentage of water used comes back out as waste water?

Based on our initial design, 20-30% of the untreated groundwater will be mixed with harvested rainwater The impurities taken from the water are naturally occurring compounds and will be disposed of either back into the watercourse from which they have been extracted or taken offsite. This process will be part of our engagement with the EPA following successful planning and during more detailed design works.

Where will Mercury go to after the local water supply is drained? Mains?

The survey of the underground acquifer indicates that there is that there is an abundant supply of water that is regularly recharged. We intend to install water measurement instruments in surrounding local wells to track the draw of water on neighbouring wells and provide accurate data in combination with rainwater measurements at site and in the vicinity of the recharge area of the aquifer.

What effects will waste water have on animals and local residents?

The impurities taken from the water are naturally occurring compounds and will be disposed of either back into the watercourse from which they have been extracted or taken offsite. If required we will blend the waste water with harvested rainwater from the site to replicate the composition of the water taken from the ground, before it is reintroduced to the local water course.

Who owns the water being used?

The water resource under the site of the Green Hydrogen Project is treated in the same way as the wind resource above the site of the Firlough Wind Farm.

THE HYDROGEN ELECTROLYSER

Why are there so many coolers?

The cooling fans will provide system cooling to various pieces of equipment which generate heat. This will primarily be the electrolyser stacks and the compressors. Modelling has been conducted to assess the cooling capacity required for the process equipment and also to ensure redundancy is built into the process.

Why have you selected the site in Sligo?

As part of the hydrogen alternative site selection process, several other sites in Mayo and Sligo have been considered. The site at Carruan was determined to be the most suitable as explained at the public information day and within the September newsletter, both available on our website. Further detail will be provided in our Environmental Impact Assessment Report to be submitted to An Bord Pleanala and publicly available at www.pleanala.ie

GREEN HYDROGEN

Where will the final hydrogen product go?

We intend to supply our green hydrogen to fuel local heavy goods vehicles, agricultural machinery, buses and provide green heating fuel for local homes to help the West of Ireland remain green.

Our transportation trucks will run on the green hydrogen we produce, making them quieter than traditional diesel trucks and running with zero emissions.

WIND FARM

What happens when sun hits the blades of windfarm – does it cause shadows?

Shadow flicker is a well understood occurrence in the operation of a wind farm. Recent wind farms commissioned in the area will contain software and processes to reduce the impact of shadow flicker on local residents. The Firlough Wind Farm will also have similar operating procedures.

Why has the revised wind turbine number decreased from 21 to 13?

Since the original granting of planning permission to the Firlough Wind Farm, wind-powered technology has dramatically evolved. Modern turbines are much more efficient at producing the necessary power – and as a result of these technological developments, Mercury Renewables has revised its number of wind turbines down to 13.

Where will the electricity wire go? Overhead? Underground?

The proposed Firlough Wind Farm will be connected to the existing Éirgrid Carrowleagh – Kilbride 110kV Overhead Line via a 6.7km underground line. The underground connection will follow the local road network. This is the way most wind farms in Ireland connect to the electricity network. It is an established technology that does not spoil agricultural land and is widely accepted by local Councils as a suitable method of transporting electricity.

The cable location will take into consideration relevant stakeholders' requirements. It will also comply with all environmental protection measures detailed in the planning application for the proposed development.

LOCAL ENGAGEMENT

Have the Mayo and Sligo County Councils carried out an impact assessment report?

We have engaged with the Mayo and Sligo County Councils as key stakeholders in the project. Both will be asked to submit an assessment of the project as part of the review process carried out by An Bord Pleanála.

How will the development affect Mayo/Sligo County Development Plans?

The development is in line with Mayo and Sligo County Council Development Plans.

What engagement have both Councils held with An Bord Pleanála to date?

Mercury is not privy to the detail of engagement of the local Councils with An Bord Pleanála.

Are politicians aware of this?

Yes, we have provided local TDs and County Councillors with regular updates about the proposed development. We have also made ourselves available to answer questions which they have asked since we first launched our plans to produce green hydrogen.

THE DEVELOPMENT

How loud will the development/ production stages be?

Noise levels during construction will not be any different than that of a standard construction project.

The main source of noise from the Preferred Proposed Hydrogen Plant Site comes from compressor equipment and cooling fans. The electrolyzer will be housed within a suitably soundproofed building to ensure the equipment cannot be heard from public spaces. We will ensure the production of hydrogen cannot be heard at the closest residences.

At close proximity, i.e. 5 metres, the electrolyzer is expected to produce around 60-75 dB, which falls in between the noise level of normal conversation and a functioning dishwasher or washing machine. This will naturally reduce in noise-level the further away an individual is from the electrolyzer.

MISCELLANEOUS

Has Mercury approached Government for funding?

We have not yet approached the government.

Is this an excuse to commence fracking in the area?

No. Fracking has been illegal in the Republic of Ireland since 2017 as provided for in the Petroleum and Other Minerals Development (Prohibition of Onshore Hydraulic Fracturing) Act 2017.

Mercury

www.mercuryrenewables.ie