20 Farringdon Street
EC4A 4AB
T +44 1273 546 800

Our ref: JER9740

Date: 7th August 2024

Natural Resources Wales

HYBONT GREEN HYDROGEN PROJECT – DEMONSTRATION OF LOW IMPACT INSTALLATION CRITERIA

Marubeni Europower Ltd are looking to install a Green Hydrogen Production Facility on land south of Attlee Street, Brynmenyn Industrial Estate, Brynmenyn, Bridgend CF32 9TQ.

The hydrogen production facility will comprise electrolysers to generate hydrogen, hydrogen storage, and a hydrogen refuelling station. The proposed green hydrogen production facility will have a rated capacity of circa 7.5 MWe, consisting of 3 x 2.5Mwe electrolyser units producing circa 700 tonnes per annum of hydrogen. There will be a demand for other equipment, such as compressors, which will use an additional 500 kW, increasing the average electrical use to circa 8 MWe total. Storage for up to 4.99 tonnes of hydrogen will be provided. The power supply for the hydrogen production is intended to be supplied from renewable wind and solar generation; wind power via the grid, and solar power through directly connected Solar PV Array.

The production process has been assessed against the following criteria (as demonstrated in Table-1 below):

- **Management techniques:** All the criteria described below must be met without having to rely on significant management effort. In other words, the installation intrinsically must have only a low environmental impact, including under start up, shut down, or abnormal operating conditions.
- **Aqueous waste**: The installation must not release more than 50 m³ per day of water from process activities conducted at the installation giving rise to effluent. No account need be taken of the volume of water exported from the installation as product. Characterise and quantify any aqueous effluents released from the installation on a daily basis and provide justification that the installation releases no more than 50 m³ per day of water from process activities.
- **Abatement systems/releases to air**: The installation must comply with the criteria in this guidance without having to rely on active abatement for releases to the environment outside of any buildings. Releases must not be dependent on continuing or correct operation of equipment, where failure of active pollution prevention systems could result in an unacceptable external release. For example, if the installation depends on active abatement in the form of scrubbers, filters or electrostatic precipitators to achieve the releases to the environment set out in this guidance, it is unlikely that it can be treated as having only a low potential for impact. However, abatement systems installed solely for the protection of workers (where abatement is not to attenuate external environmental releases) need not be included in this assessment.

- **Groundwater regulations**: There must be no planned or fugitive emission from the permitted installation into the ground, or any soakaway. This does not preclude the discharge of clean rainwater run-off into soakaways.
- **Waste production:** The installation must not give rise to more than one tonne of Directive waste or 10 kg of hazardous waste per day, averaged over a year, with not more than 20 tonnes of Directive waste or 200 kg of hazardous waste being released in any one day. For the purpose of this application, no information is required on the proposed recovery and disposal of waste streams arising from the installation.
- **Energy consumption:** The installation must not consume energy at a rate greater than 3 MW or, if the installation uses a combined heat and power installation to supply any internal process heat, 10MW. These limits apply to the sum of energy imported as electricity and produced on site through the combustion of fuels.
- **Accident prevention:** You must have in place satisfactory containment measures to prevent fugitive emissions to surface water, sewer or land and ensure that these are adequately maintained at all times. This requirement applies to all substances present on site and in any quantity.
- **Noise:** There must be only a low potential for causing offence due to noise. An installation will not be considered as a low impact installation if it may give rise to noise noticeable outside the installation boundary. This requires the exercise of judgement, taking account of any history of noise complaint arising from the installation and consideration of the likely offsite noise levels and proximity of sensitive receptors. Describe the main sources of noise from the installation, the nearest noise sensitive locations and any relevant noise measurement surveys which have been undertaken, and the proposed techniques and measures for the control of noise. Provide justification that there is only a low potential for offence due to noise.
- **Emissions of polluting substances:** Justify that there will be no likelihood of a release to the environment of any particular substance from the whole installation at a rate greater than that determined as insignificant as set out in our guidance note

  Describe the nature, quantities and sources of foreseeable emissions from the installation.
- **Odour:** There must be only a low potential for giving offence due to odour. An installation will not be considered as a low impact installation if it may give rise to an offensive smell noticeable outside the installation boundary. This requires the exercise of judgement, taking account of any history of odour complaint from the installation and whether this class of activity is known by experience to give rise to smells. A significant possibility or actual history of excursions or fugitive emissions, for example from stored materials, would suggest that the installation could not be treated as having a low impact. Provide details of potential sources of odour from the installation, for example from stored materials, and justify that there is only a low potential for offence due to odour.
- **Compliance history:** If any of the following enforcement actions have taken place at the same installation under the same management (and where appropriate, have not been overturned on appeal), then it will not normally be considered further as a low impact installation:
  - prosecution*
  - formal caution*
  - suspension notice*
  - enforcement notice relating to an actual or potential environment incident*

    * (All under EPR or the equivalent under previous environmental regimes)

The hydrogen plant is considered to meet the criteria for a low impact installation permit as demonstrated in Table-1 below:

MAKING COMPLEX EASY
A TETRA TECH COMPANY

6-7 Lovers Walk
Brighton, East Sussex BN1 6AH
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Table-1: Evidence of Low Impact Installation

Low Impact Installation Criteria	Operator Demonstration of Compliance
Management techniques	The site will be operated following management system procedures, however these do not specifically require a large effort in order to maintain compliance. The site will be operated by suitably trained staff and will be autonomous for most operations.
Aqueous waste	The only waste produced on site will be aqueous waste from the onsite water treatment process. This aqueous waste stream has up to 4x concentrated mineral content and will be discharged to sewer under a Trade Effluent Consent without further treatment. The maximum daily water consumption for 100% operation for 24 hours is approximately 27.82 m^3/d for all three electrolysers.
Abatement systems/releases to air	No abatement equipment is required to manage emissions to the environment. Emissions to air will only comprise oxygen and periodically hydrogen may be released. Neither of these gases is an air quality pollutant and consequently there are no AQ limits which require abatement.
Groundwater regulations	There will be no discharges of process effluent or surface water to groundwater.
Waste production	The only routine waste produced will be aqueous waste which is subject to the criteria above. Non-routine waste periodically produced will include maintenance waste and spent catalysts. The site will not produce more than 10 kg hazardous waste per day, averaged over a year. The plant will not produce more than 200 kg hazardous waste in any one day.
Energy consumption	The proposed hydrogen production facility will have a rated capacity of circa 7.5 MWe. There will be a demand for other equipment, such as compressors, which will use an additional 500 kW, increasing the rated capacity to circa 8 MWe total. We note that this exceeds the low impact criteria, however all the energy used in the hydrogen production facility comes from a renewable source. There are no combustion sources associated with the energy consumption. We assume that the energy consumption criteria have been set for energy from fossil fuel combustion and not renewables. On the basis that this site uses

	energy entirely sourced from renewables we consider that energy consumption meets the low impact criteria. Details on the solar and wind renewable energy source are outlined below. Electricity source modelling has been carried out based on the principles: 1. Power from the private wire solar PV will be consumed as a priority. 100% of the generated output of the solar will be consumed. 2. Remaining power will be sourced via a wind sleeved PPA on a Pay as Produced contract. The HyBont site will consume power from the wind site where there is demand or there is available storage capacity to produce hydrogen. Where there is no demand or storage capacity, then surplus wind power will be traded to the market through our supply agreement with our supply business, Smartest Energy. 3. Any additional power required on top of the above electricity sources will be provided by Smartest Energy under our supply agreement. Power will be sourced from their existing portfolio of renewable assets and will be REGO backed with temporal correlation and directly contracted with the generator. The split of electricity sources has been modelled with the principles set out above. Supply split and status is summarised below: Solar PV – 13 % of total electricity demand with annual yield of 5,457 MWh per annum Wind Sleeved PPA - 61% of total electricity demand with annual yield of 25,183,000 MWh per annum Smartest Energy - top up power – 26% of total electricity demand with annual yield of 10,765 MWh per annum Total electricity demand 41,500 MWh per annum <u>Wind Sleeved PPA Source</u> Upper Ogmore Wind Farm – 25.2 MW with planning consent and grid offer accepted. Marubeni are owners of the Upper Ogmore Wind Farm site and plan to use a percentage of the generated output to supply the described power to HyBont. HyBont will have access to Upper Ogmore meter data in order to confirm that generation and hydrogen production are matched (Temporal Correlation) and associated REGOs will be supplied with power. **No combustion sources are involved in this wind energy usage.**
Accident prevention	The facility is intended to operate within a compound with controlled access. The components include the electrolyser, compression, and hydrogen re-fuelling station units which are intended to be ‘modularised’ in typically 30ft or 40ft ISO containers, with hydrogen storage as above-ground cylindrical tanks, and electrical equipment housed in a substation.

	Raw materials (towns water, nitrogen and fire water) will be stored in storage tanks. Lubricants and oils will be used periodically for the maintenance of air compressors and general pumps and may have associated holding tanks for recirculation. Only small volumes will be required. A procedure will be in place to ensure that any damaged or leaking tanks are dealt with and to allow regular inspections for any signs of deterioration. Staff will be aware of spill kit locations and will be trained in spillage response. An accident management plan will be included as part of the site environmental management system. Procedures are in place to ensure that all plant and infrastructure are maintained following manufacturers recommendations.
Noise	An environmental noise survey was undertaken from 4th to 11th October 2022 to establish typical external ambient and background sound levels at the nearest noise sensitive receptors. The prevailing acoustic climate was judged to be subjectively 'moderate', with the main sources of noise audible in this location noted as constant road traffic. The nearest noise sensitive receptor (NSR) locations are; • NSR A – Residential Dwellings to the east of the site, approximately 51 m from the proposed hydrogen facility. • NSR B – Residential dwellings south of the site, approximately 205 m from the proposed hydrogen facility. The key sources of noise from the proposed scheme are: • HGV movements; • 2 x Compressors; • HV Substation; • Fin fan Units; • Compressor; and • Oxygen Vent. All other elements of the development are not considered to produce noise levels high enough to cause a material impact. An assessment of potential noise impacts from the new hydrogen plant demonstrates that the noise associated with the proposed development, when adopting the limiting plant noise emissions levels, is expected to result in low impact in terms of BS4142 at all noise sensitive receptors at both daytime and night-time. The expected noise impact is below the levels at which adverse effects would be likely to occur. It is therefore concluded that there is only a low potential for noise impacts at offsite NSRs. The noise impact assessment provided in support of planning (ref. JAH03178-REPT-01-R2 dated 27 March 2023 and subsequent technical note dated 08 July 2024) provide a full BS 4142:2014+A1:2019 assessment of the proposed operation (incl. plant and operating hours).

	The initial assessment, which includes a correction for tonality, showed an exceedance of background sound levels of up to +4 dB during night-time. The local planning authority required the rating levels, including any character corrections, do not exceed the existing background sound level by greater than 5dB which is an indication of an adverse impact. Therefore, an additional mitigation strategy has been implemented on the proposed development to ensure that noise from the facility will have a low impact. With the identified limiting noise emission levels, the BS 4142:2014+A1:2019 assessment, including the correction for tonality, demonstrates that the predicted rating noise level does not result in an adverse noise impact at all identified noise sensitive receptors. Through planning, the proposed development is committed not to exceed the identified noise emission levels for the plant/equipment. BS 4142:2014+A1:2019 states that "*Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.*" Therefore, it is considered that the proposed development is unlikely to have an adverse impact, assuming that the identified noise emission limits are not exceeded.
Emissions of polluting substances	Emissions to air will only comprise oxygen and periodically hydrogen may be released. Neither of these gases is an air quality pollutant and consequently there are no AQ limits which require abatement.
Odour	The raw materials used on site are towns water, nitrogen and fire water which are not odourous. Accident prevention measures will be in place; in the event of a leak or a spillage accident management procedures would be followed (see accident prevention above). The potential for impacts at off-site receptor, the closest of which is 35 m from the facility is low.
Compliance history	There are no known enforcement actions taken against the operator at present.

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In summary, the operation meets low impact installation criteria in that all the low impact installation criteria are met without having to rely on significant management effort. The installation will not release more than 50 m³ per day of water from process activities or have to rely on active abatement. There will be no planned or fugitive emissions to ground. The installation will not give rise to more waste than the low impact thresholds. The installation will rely on renewable energy and will have satisfactory systems and containment in place to prevent accidents or emissions to the environment. There will be a low potential for causing offence due to noise and odour. All releases from the site have been screened as insignificant and there is no history of enforcement action at the site.

We trust the above information is sufficient to inform a view on the low impact status of the facility.

Yours sincerely,
for RPS Consulting Services Ltd

Joanna Bruce

Joanna Bruce
Environmental Consultant
joanna.bruce@rpsgroup.com
+44 1454 279650