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Sent: 15 July 2026 15:40

To: Planning

Cc: Andrew Collins

Subject: FW: NPTCBC West Team Planning Consultation - P2026/0410 Abernant Colliery Pontardawe

Hi Please see our feedback below in relation to this development.

Feedback

This investment into the area and development of a hydrogen production facility and the recycling waste to produce (green) low carbon hydrogen would be welcomed and from an economic development perspective, we would be supportive of this development.

Proposed development: Hydrogen Production Facility at Abernant Colliery

To develop and operate a small-scale biomass gasification CHP plant for hydrogen production, on land at Abernant Colliery, Pontardawe. The gasification plant is highly specialist in its nature and uses the principles of advanced thermal conversion to chemically recover the energy from biomass and waste feedstocks and produce a clean syngas and hydrogen. The plant will operate using non-hazardous low-grade waste wood or readily available waste streams such as pelletised Solid Recovered Fuel (SRF).

The proposed development comprises the development of a waste-to-hydrogen generation facility utilising state-of-the-art technology to produce 175 kg of hydrogen per hour from 50,000 tonnes of waste per year. This would also support the reduction of waste going to landfill across Neath Port Talbot, Carmarthenshire, Swansea, Powys, and Pembrokeshire. As such, the proposal will seek to reduce the amount of household waste in these areas going to landfill.

The proposed development comprises the following;

- Hydrogen plant
- Recycling and segregation building
- 6no. hydrogen storage tanks
- Workshop
- Office
- Weighbridge
- 60 no. staff / visitor parking spaces.

Compact Syngas Solutions ((CSS) the scheme's partner) have developed **a modular gasification technology (Micro-Hub) for the production of syngas, power, heat, cooling, hydrogen and biochar**. Their latest product, MicroH2-Hub, has a small footprint (50m x 40m for a gasifier 1000 solution) that will **produce 175kg of hydrogen/hr from syngas produced, plus 600kW of power from 50,000 tonnes of Solid-Recovered-Fuel (SRF) or Waste Wood/Biomass (feedstock) per annum**. An integrated solution, from the production of syngas, power and hydrogen, to a storage and dispensing facility.

The power generated through a gas reciprocating engine is utilised firstly to support the parasitic site load and secondly through an electrolyser to increase the volume of

hydrogen production. Heat recovered via the CHP system will be converted to cooling through an absorption chiller which then reduces the parasitic load of the plant and maximises the H₂ production via the power available for electrolysis.

The MicroH₂-Hub uses downdraft gasification technology, one of the cleanest and most efficient methods of converting biomass and waste into valuable synthesis gas (syngas), capable of directly fuelling gas reciprocating engines to generate power. An additional output from the MicroH₂-Hub is **Biochar which can contribute to environmental restoration, carbon removal, soil regeneration, and the circularity of industrial and agricultural systems**. Volumes of Biochar equate to approximately 5 to 10 % of feedstock volume dependent on the ash content of feedstock. The by-product (i.e. Biochar) will be used within the tarmac production, cement production and rubber production if the carbon content does not reach the requirements for use as a soil improver.

The MicroH₂-Hub solution utilises a range of feedstocks and supports sustainability, decarbonisation and net zero goals for environmentally conscious organisations. Once the hydrogen has been produced, it will be stored in the 6no. storage tanks located north of the plant building. The product will then be collected and transported off-site to available storage centres across the forementioned regions to allow for the product to be used for electricity generation.

The applicant proposes to develop a small-scale biomass gasification Combined Heat and Power (CHP) facility for hydrogen production on land at the former Abernant Colliery, Pontardawe. The development will utilise advanced thermal conversion technology to recover energy from non-hazardous residual waste, producing clean syngas and hydrogen for beneficial use. The site comprises previously developed brownfield land associated with the former colliery and is located adjacent to existing industrial uses.

Once operational, the facility will represent a specialist energy recovery and hydrogen production process, incorporating modular gasification units, gas cleaning systems, CHP engines and associated ancillary infrastructure. The process has been specifically designed to operate within a controlled environment, with emissions, noise, drainage and waste management measures integrated into the development from the outset. Residual materials arising from the process will be minimised, with vitrified ash products capable of beneficial reuse, while wastewater and surface water will be managed through appropriately designed treatment and drainage systems.

Economic development feedback:

Yes we would be supportive of this development and the potential of its economic benefits resulting – jobs creation, green Hydrogen production, circularity, supply opportunities benefit for local businesses and its align with the wider strategic aims and focus of NPT, in developing Hydrogen vector, attracting investment into the area. It also brings forward re-development of a former un-used colliery site and diversification of our business economy, and the much needed jobs and investment into the NPT Valley area.

Investment into the local NPT Valley area and economy:

1. Investment into and development of an unused colliery site to create a renewable energy source
2. support waste circularity and reduce the burden of waste going to landfill.
3. Development of site with potential good access, bus stop located directly adjacent to the site – situated along the A474. The bus stops here are served by the X26 and
4. the site proximity to the A474 provides convenient access to nearby settlements and wide areas via A4067 and M4.

Direct contribution to Economic growth:

5. The proposed development, will contribute towards increasing jobs growth and business growth, addressing and / or contributing to the following.
6. This development will support economic diversification and resilience through growing the business stock, increasing opportunities for business expansion and supporting the development of the foundational economy.
7. Resilient economy Neath Port Talbot is a great place in which to start and grow a business, and the county borough has a strong track record in attracting investment. But our business base is smaller than it ought to be: by growing our stock of enterprises across all sectors and by enabling enterprise to flourish in all parts of NPT, we aim to support a more diverse economy and a more resilient employment market.
8. the SME base in Neath Port Talbot is relatively small: enterprise density is only around half of the UK level, and total business stock growth and start-up rates are also relatively low.
9. It will also support and improve the current Business and Job Density Trends in the NPT area:
 1. **Active Business Stock:** In 2024, there were approximately **100,420** active enterprises in Wales, representing an **1.8% decrease** from 2023.
 2. Specific local data for NPT often mirrors this broader Welsh trend of a post-pandemic peak (2021) followed by a gradual decrease in active business stock.
 3. **Job Density Rate:** Jobs density (jobs per person of working age) increased from roughly **0.57 in 2003 to 0.62 in 2023**. Despite this growth, it remains but it remains significantly lower than compared to the 2023 average of 0.77 for Wales and 0.86 for Great Britain
 4. **Jobs Density:** Employment has grown over the long term, with roughly 6,000 more jobs in 2023 than twenty years prior, despite a relatively low jobs density of 0.62 in 2023 (compared to 0.77 for Wales).

Hydrogen development and circular economy factors and economic benefits include:

A small-scale biomass gasification CHP facility for hydrogen production offers localized energy security and a circular economy advantage.

10. **Lower Feedstock and Disposal Costs:** Gasification relies on inexpensive, locally sourced organic residues (e.g., forestry trimmings, agricultural waste).

This converts waste management from an operational expense into a profitable revenue stream while avoiding landfill fees.

1. It can also directly lower feedstock costs by valorizing local agricultural or urban waste, helping to support the marketplace
 2. creates multiple revenue streams through simultaneous heat, power, and hydrogen sales, and helps avoid high electricity transmission tariffs
 - i. Multiple Value Streams (Polygeneration): By operating as a CHP and hydrogen facility, the plant outputs three valuable commodities: high-value hydrogen for local transport or industrial use, electricity for the grid or facility operation, and thermal energy (hot water/steam) for district heating or nearby industrial processes.
11. Energy Independence and Price Cushioning: Producing power and heat on-site insulates the facility against volatile grid electricity prices and rising fossil fuel costs. It eliminates the transmission losses and fees associated with centralized energy grids.
12. Local -Based Economic Growth: Distributed, small-scale models stimulate the local economy by
1. creating jobs throughout the supply chain (collection, processing, and transportation) and
 2. keeping energy capital within the local region rather than sending it to large utility corporations.
 3. Provide potentially manufacturing supply chain opportunities which are key and vital given the economic impact NPT is facing resulting from Tata Steel reductions
 4. On going site maintenance and service supply chain opportunities for local companies
13. Cost-Competitive Hydrogen: In regions with high grid electricity costs, biomass gasification provides a more economical alternative to grid-dependent electrolysis for green hydrogen production

Extract information for reference from The IEA Bioenergy Technology Collaboration Programme (TCP):

Low emission hydrogen produced with non-fossil fuels is expected to be key in the efforts de-fossilizing hard-to-abate sectors. Water electrolysis based on fossil-free electricity is regarded as the most promising technology to fulfil the anticipated exponentially growing demand for low emissions hydrogen, however securing the power supply for production of electrolytic hydrogen could in many world-regions be challenging, mainly coupled to the required large expansion of power production and distribution.

Production of hydrogen via biomass gasification currently receives less attention but could be an important complement to electrolysis in many regions with available biomass resources. Biomass gasification possesses several beneficial characteristics such non-intermittent and fossil-free hydrogen production in a wide capacity range.

The technology leads to many process integration opportunities, for example with water electrolyzers since electrolyzers generate significant amounts of oxygen, which potentially can be used as gasification media. Also, low temperature excess heat from electrolyzers can be utilized for feedstock drying etc. This paves the way for more cost-efficient hydrogen production systems.

One of the most prominent technology features is that the CO₂ separation process is an integral part of the gasification system, which means that negative CO₂-emissions can be obtained if carbon storage (CCS) is applied. LCA-studies show that combined with CCS, the greenhouse gas emission for hydrogen produced via biomass gasification may be as low as in the range of -15 to -22 kg CO₂eq per kg produced hydrogen.

The main aim of this report is to describe different biomass gasification technologies suitable for hydrogen production and to provide information of on-going commercial initiatives. The report also aims at identifying potential techno-economic opportunities and challenges as well as knowledge gaps to better understand its potential future role and need of further development.

The hydrogen yield from biomass gasification varies depending on feedstock and process conditions, but an approximate value is about 100 kg of hydrogen per ton dry biomass. The energy efficiency also varies depending on process design but is normally in the range of 40-70% (based on the lower heating value).

SOURCE: The IEA Bioenergy Technology Collaboration Programme (TCP) is organised under the auspices of the International Energy Agency (IEA) but is functionally and legally autonomous.

Views, findings and publications of the IEA Bioenergy TCP do not necessarily represent the views or policies of the IEA Secretariat or its individual member countries

https://www.ieabioenergy.com/wp-content/uploads/2025/03/IEA-Bioenergy_T33_Bio-H2_Final_v2.pdf