

# **Project Dragon – Sustainable Aviation Fuel (SAF) Production Facility**

Sustainability & Energy Statement – LANT3006 – Rev F August 2023



# Contents

Executive Summary	2
1. Introduction	3
2. Policy Context	7
3. Sustainability and Energy Performance at Project Dragon	15

# Executive Summary

This report sets out the sustainability strategy and benefits of the proposed development at Land at Crown Wharf, Port Talbot Docks, which will comprise a new facility for the production of sustainable aviation fuel (SAF). The development is supported by strong policy drivers and the overarching UK commitment to reach net zero by 2050. More specifically, the ambition to decarbonise the aviation industry set out in the Industrial Decarbonisation Strategy and Aviation 2050, which sets out Government ambition to encourage innovation and new technology within the aviation sector.

The design of the proposed development responds positively to the site-specific constraints to create a well-designed development in line with sustainability principles set out in the Neath Port Talbot Local Plan, in particular the requirements of **Policies SP1, SP16, SP18, W3, SP19, RE2** and **BE1**, as well as wider ambitions set out in Welsh Planning Policy and Net Zero Wales.

The site process will play a crucial role producing an expected 100m litres of SAF annually, contributing significantly to the UK Government sustainable aviation fuel 2030 target. Promoting the use of SAFs is seen as critical in the aviation sector's efforts to mitigate climate change and reduce its environmental impact, to achieve carbon neutrality or net zero emissions in aviation. The SAF production is expected to make significant GHG emission savings, representing over 70% for SAF when compared to fossil jet fuel. This will make a significant contribution the Wales and UK decarbonisation targets.

Beyond production, the sustainability measures incorporated into the proposed development include the use of Air Source Heat Pumps (ASHP) as part of an all-electric energy strategy for occupied buildings.

The development will also encourage sustainable transport, providing Electric Vehicle (EV) charging to around 25% of parking spaces, and ducting for the future extension of EV charging points as utilisation and demand increases. Cycle parking and a shuttle from the site boundary is proposed.

Flood risk management will be in accordance with best practice, using Sustainable Drainage Systems (SuDS) to manage surface water runoff, including rain gardens, gravel-based swales and permeable paving. Water efficient fittings will be used to reduce potable water use.

Additionally, it is proposed for roofs, subject to health and safety reviews, to include bio-solar roofs or green/brown roofs, specifically:

- A combined solar power and brown roof (bio-solar) on the administration building; and
- Green/brown roofs on Gatehouse 1, cycling shelter & amenity shelter.

The proposed development has been designed to respond positively to national and local planning policy, incorporating measures to deliver social and economic benefits, whilst also protecting and enhancing the environment where possible, and addressing the climate emergency.

# 1. Introduction

This Sustainability and Energy Statement has been prepared to demonstrate how the proposed development addresses the Sustainability Planning policy requirements and Applicant ambitions at Project Dragon, Sustainable Aviation Fuel (SAF) Production Facility.

## 1.1 Introduction

This Sustainability and Energy Statement has been prepared by Turley Sustainability, on behalf of LanzaTech UK Limited (referred to hereafter as 'the Applicant'), to support a full planning application to Neath Port Talbot County Borough Council (NPTCBC) on land adjacent to Crown Wharf (Port Talbot).

LanzaTech's focus is on the delivery of a new sustainable jet fuel production facility in Port Talbot. This converts ethanol to SAF through the LanzaJet™ Alcohol-to-Jet (ATJ) Process. The neat SAF produced in the process contains essentially zero aromatic compounds, producing a much cleaner burn and causing far fewer soot particles and contrails that heat the atmosphere. The

SAF produced also saves over 70% Greenhouse Gas (GHG) savings as compared to the fossil jet fuel equivalent.

The LanzaJet™ ATJ process has been developed by LanzaTech and the US Department of Energy's Pacific Northwest National Laboratory (PNNL). It can use any source of sustainable ethanol, such as ethanol from recycled industrial emissions, that are otherwise unavoidable.

The proposed SAF development is the first of its kind in the UK. Project Dragon is LanzaTech's flagship project in the UK. LanzaTech will both build and operate this first UK deployment of the LanzaJet ATJ technology and has future ambitions (with spin-out company LanzaJet) to develop multiple follow-on projects in the UK and globally as the SAF market develops.

This report provides a summary of the sustainable design measures incorporated into the proposals to ensure high levels of sustainability performance in accordance with local and national planning policy. It also addresses the requirements of Policy RE2 in that a review of connection to feasible sources of renewable energy has been undertaken as part of the Energy Assessment.

## 1.2 Background

### Sustainable Aviation Fuels

This Sustainability and Energy Statement is in support of a full planning application to Neath Port Talbot Council regarding the development of an Alcohol-to-Jet (ATJ) facility, which would transform sustainably sourced ethanol into SAF. SAFs can significantly reduce carbon dioxide emissions in comparison to conventional jet fuels and have the potential to reduce other harmful emissions such as sulphur oxides, nitrogen oxides and particulate matter. Promoting the use of SAFs is seen as an important element in the aviation sector's efforts to mitigate climate change and reduce its environmental impact, to achieve carbon neutrality or net zero emissions in aviation. At the proposed development, SAF will be created through the LanzaJet ATJ process, which comprises of 2 stages; the E2E section which converts Ethanol into Ethylene (intermediate product), and the E2J section which converts Ethylene to Sustainable Jet/Diesel Fuel. During the ATJ process, heat input is minimised through recycling using a feed-effluent heat exchange, and water will be re-used within the process, minimising the amount of water required from outside the plant.

Aviation is an increasing contributor to climate change and recognised as a challenging sector to decarbonise. When compared with conventional fossil fuel jet fuel, SAF made by the ATJ facility is expected to reduce greenhouse gas emissions by around 70% on a lifecycle basis. The facility could produce approximately 100 million litres of SAF a year, making up around 10% of the UK Government's sustainable aviation fuel 2030 target. The process will also yield sustainable diesel fuel. To accelerate the project, LanzaTech has secured £25 million of funding from the Department for Transport's Advanced Fuels Fund, highlighting that this is a critically important project to meet the UK's climate goals.

### Decarbonisation of the Aviation Industry

The aviation industry has been under pressure to reduce its contribution to climate change, given it is one of the most carbon-intensive forms of transport and one of the most difficult to decarbonise, due to the lack of alternatives to liquid fossil fuels. To be on track for net zero by 2050, the decarbonisation of the aviation industry is crucial.

Significant greenhouse gas savings could be delivered through biofuels derived from wastes and residues, fuels made from renewable or nuclear electricity, and waste-based fossil fuels such as SAFs. These conversion routes are yet to be commercialised and face high upfront capital costs and investment barriers which, without government intervention, are challenging to overcome. There are several initiatives and Government support mechanisms to encourage investment in the decarbonisation of aviation which are set out in **Section 2.2** of this report.

## 1.3 The Development

### 1.3.1 Site Description

The site description is:

*“Demolition of existing structures and erection of a Sustainable Aviation Fuel (SAF) production facility, including enclosed ground flare, storage tanks, installation of pipework and electrical, processing and utility equipment, administration, warehouse and laboratory buildings, new access, car parking and transport infrastructure including a truck loading area and associated works, hard and soft landscaping, areas for temporary construction laydown, and associated development.”*

### 1.3.2 Site Context

The site (referred to hereafter as 'Project Dragon') is located at Land at Crown Wharf, Port Talbot Docks, immediately to the north of Port Talbot Steelworks.

The site forms part of the wider harbour and dock facilities of Port Talbot operated by Associated British Ports (ABP), which operates 21 ports in the UK covering transport, haulage and terminal operations, ship's agency, dredging and marine consultancy.

### 1.3.3 Proposed Development

The proposed development would convert sustainably sourced ethanol into sustainable aviation fuel. The ethanol that LanzaTech uses to produce SAF will comply with the requirements of the proposed UK SAF Mandate which is currently being finalised. This requires that ethanol be made from wastes or residues (biomass or Recycled Carbon Fuels) or low carbon electricity (renewable or nuclear). The SAF produced must also meet strict sustainability requirements. The proposed development has been developed to meet both these requirements.

The proposed development will be fed by ethanol from industrial waste gases at other sites at which LanzaTech has established its gas fermentation technology around the world. These could include sites in Belgium, China, India, the US or other locations. Alternatively, LanzaTech may purchase sustainably sourced ethanol on the open market, such as ethanol made from waste starch. The greenhouse gas emissions associated with the production and transport of the ethanol have been taken into account in the LCA of the carbon intensity of the SAF produced by LanzaTech in Port Talbot.

The bulk of the facility will comprise processing plant/ equipment with multiple modules arranged in sequence for the overall chemical process required in the production of the SAF and sustainable diesel. Alongside this will be other process infrastructure including storage vessels/ tanks for various input and output products (e.g. ethanol, SAF, sustainable diesel); process utilities (e.g. cooling water, hydrogen generation package); internal road system; industrial grade pipe and racking system; and enclosed ground flare.

The proposed site key plan is shown in **Figure 1** overleaf.

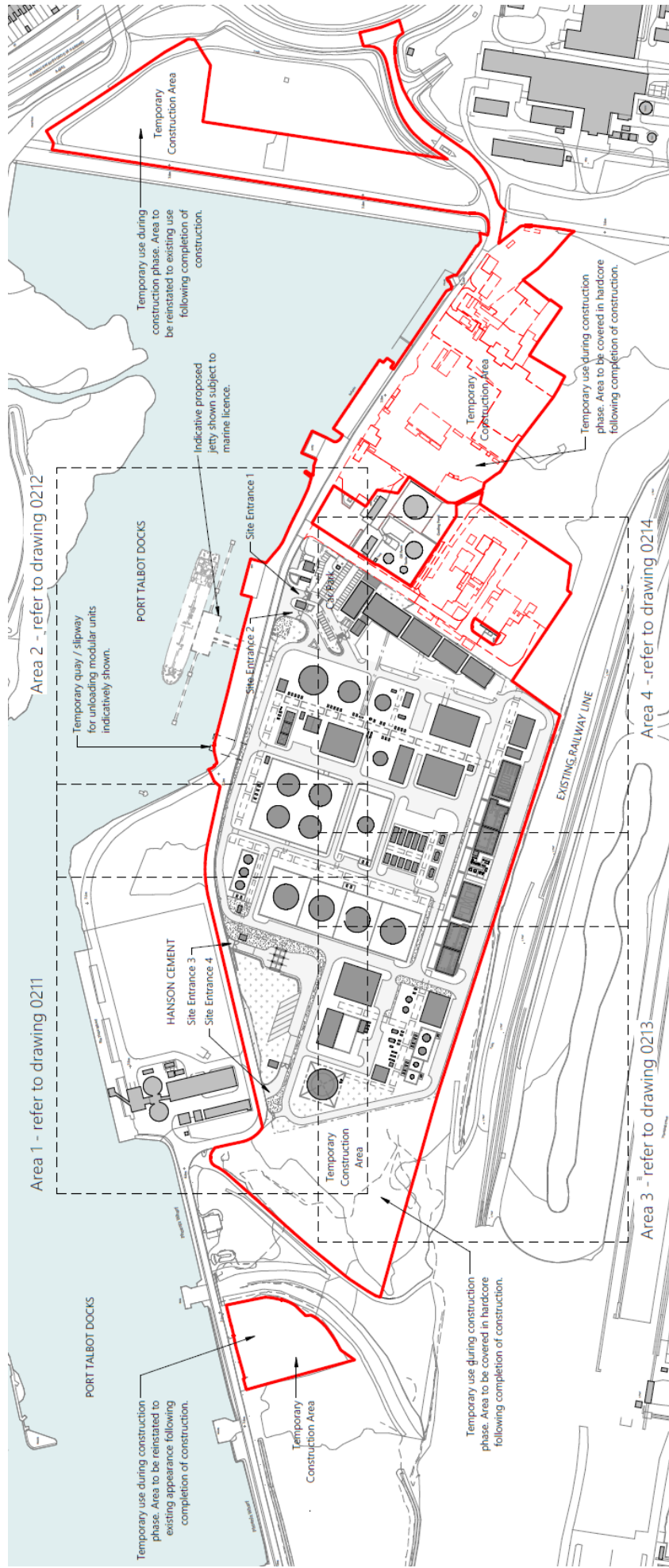
## 1.4 Document Structure

**Chapter 2** of this Statement sets out the planning policy context for the proposals in relation to sustainable development at national and local level.

**Chapter 3** provides details of the sustainability and energy performance of the proposed development and how this accords with planning policy.

This Sustainability and Energy Statement should be read in conjunction with other documents submitted in support of the planning application, particularly the Planning Statement, and Design & Access Statement.

Figure 1: Proposed Site Key Plan (Source: Inspire Architects)



## 2. Policy Context

This chapter provides an overview of the relevant sustainability planning policy and guidance from a national and local perspective.

### 2.1 Legislation and National Policy

This section sets out a summary of current national legislation and policy in relation to sustainable development.

#### 2.1.1 Climate Change Act (2008)

The *Climate Change Act (2008)* as amended<sup>1</sup> sets a legally binding target for the UK to reduce CO<sub>2</sub> emissions by 100% (“net zero”) by 2050.

The Act requires Government to set legally binding carbon budgets to act as stepping stones towards the 2050 target, establishing a cap on the amount of greenhouse gases emitted over a five-year period. Six carbon budgets have been put into law to date and run up to 2037, aiming to reduce GHG emissions 78% by 2035.

While the Climate Change Act requirement to be net zero by 2050 does not explicitly cover aviation emissions, these emissions have been considered by

<sup>1</sup> <https://www.legislation.gov.uk/ukdsi/2019/9780111187654>

<sup>2</sup> [Aviation, decarbonisation and climate change - House of Commons Library \(parliament.uk\)](https://www.parliament.uk/commons-library/aviation-decarbonisation-and-climate-change)

allocating ‘headroom’ within the carbon budgets and the Committee on Climate Change has recommended that emissions from the UK’s international aviation to be formally included in the net zero target<sup>2</sup>. In 2021, the Government set the sixth carbon budget (covering the period 2033-2037). This budget includes international aviation and shipping emissions for the first time.

#### 2.1.2 Planning Policy Wales

Planning Policy Wales (PPW)<sup>3</sup> sets out the land use planning policies of the Welsh Government, with the primary objective to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales. PPW is supplemented by a series of supporting Technical Advice Notes (TANs), which set out the policy issues with which the planning system manages.

#### 2.1.3 Well-being of Future Generations (Wales) Act<sup>4</sup>

This document gives a legally-binding common purpose- the seven well-being goals – for national government, local government, local health boards and other specified public bodies. It details the ways in which these bodies must work, and work together, to improve the well-being of Wales. It is through the Act that Wales will make its contribution to the achievement of the 17 United

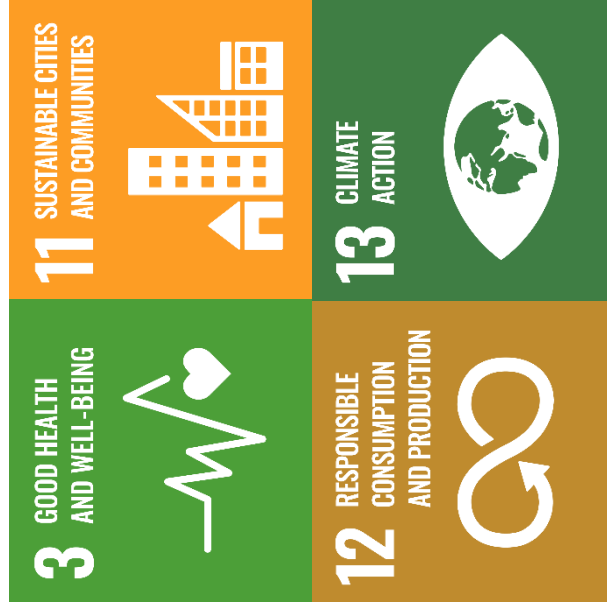
<sup>3</sup> [https://www.gov.wales/sites/default/files/publications/2021-02/planning-policy-wales-edition-1.1\\_0.pdf](https://www.gov.wales/sites/default/files/publications/2021-02/planning-policy-wales-edition-1.1_0.pdf)

<sup>4</sup> [Well-being of Future Generations \(Wales\) Act 2015: the essentials \[HTML\] | GOV.WALES](https://www.gov.wales/sites/default/files/publications/2015-02/well-being-of-future-generations-wales-act-2015-the-essentials-html-gov-wales)



Nations Sustainable Development Goals<sup>5</sup> (UNSDGs) which address social progress, economic wellbeing and environmental protection. Example UNSDGs are presented in **Figure 2**.

**Figure 2: Example UN Sustainable Development Goals**



### 2.1.4 Future Wales: The National Plan 2040<sup>6</sup>

This is a national development framework for Wales, setting the direction for development in Wales to 2040. It is a development plan with a strategy for addressing key national priorities through the planning system, including sustaining and developing a vibrant economy, achieving decarbonisation and climate resilience, developing strong ecosystems and improving the health and well-being of communities. The role of Future Wales plays a crucial role in

<sup>5</sup> <https://sdgs.un.org/goals>

<sup>6</sup> Update to Future Wales - The National Plan 2040 (gov.wales)

<sup>7</sup> Approved Document L - Conservation of fuel and power - Volume 2 (gov.wales)

driving sustainable growth and combating climate change by guiding strategic development over the next 20 years.

### 2.1.5 Building Regulations

Part L Conservation of Fuel and Power<sup>7</sup> - Whilst not Planning policy, the Building Regulations (and specifically Approved Document Part L:

Conservation of Fuel and Power) set out the minimum energy performance standards that buildings in Wales must meet, including requirements for the thermal performance of building elements, the energy efficiency of heating, ventilation, and lighting systems, and the control of CO<sub>2</sub> emissions.

On 23<sup>rd</sup> November 2022, the Welsh Building Regulations Part L were updated to include a target to reduce carbon emissions by 37% compared to 2014 Part L Wales Standards, to deliver buildings that are of a higher quality, with lower energy bills and reduced greenhouse gas emissions. The changes also include a new minimum energy efficiency standard introduced for new builds, set at a minimum Energy Performance Certificate (EPC) rating of B. Following the updates to the Building Regulations, the SAP 10.2 methodology has also been adopted.

### 2.1.6 Climate Emergency

In April 2019, the Welsh government also declared a climate emergency, committing themselves to achieving a carbon neutral public sector by 2030 and a net zero target for 2050<sup>8</sup>. The government committed to coordinate action to support the economy in moving away from fossil fuels, involving academia, industry, and the third sector. To showcase Wales' commitment to tackling climate change, the Welsh Government published 'Prosperity for All: A Low Carbon Wales'<sup>9</sup> which sets out 100 policies and proposals that directly reduce emissions and support the growth of the low carbon economy.

<sup>8</sup> [Welsh Government makes climate emergency declaration | GOV.WALES](https://gov.wales)

<sup>9</sup> [low-carbon-delivery-plan\\_1.pdf \(gov.wales\)](https://gov.wales)

### 2.1.7 Net Zero Wales

The Welsh government has produced *Net Zero Wales*, the emissions reduction plan for Carbon Budget 2, which runs from 2021 to 2025, and seeks to reduce carbon emissions by 37%<sup>10</sup>. The plan includes the following sustainability policies relevant to the development proposals:

- **Policy 25** – Innovation in new renewable energy technology to drive faster and deeper decarbonisation to support the green economy.
- **Proposal 22** – Develop new support mechanisms to encourage and support innovation in industrial decarbonisation.

### 2.1.8 All Wales Plan

The All Wales Plan<sup>11</sup>, published alongside *Net Zero Wales*, highlights the key action areas and Net Zero commitments for Wales between the years of 2021-2025 as part of its emissions reduction plan for Carbon Budget 2. As part of the 'Industry and Business' plan, the South Wales Industrial Cluster (SWIC)<sup>12</sup> has been developed. This is a partnership between Welsh industry, energy suppliers, infrastructure providers, academia, service providers, the legal sector, and public sector organisations, which aims to map and develop what is needed to support South Wales in becoming a Net Zero carbon region by 2050. The project not only seeks to achieve net zero but seeks to reverse the decline of heavy industry and create economic prosperity for Wales. The SWIC, including Liberty Steel, Neath Port Talbot Council, Shell, Siemens and Tata Steel, has been awarded over £21 million in grant funding that has been

<sup>10</sup> [42949 Second All Wales Low Carbon Delivery Plan \(2021-2025\)](https://gov.wales/sites/default/files/publications/2021-10/working-together-to-reach-net-zero-all-wales-plan.pdf) (gov.wales)

<sup>11</sup> [WG43508 Working together to reach Net Zero: All Wales Plan 2021-25](https://gov.wales/sites/default/files/publications/2021-06/low-carbon-delivery-plan_1.pdf) (gov.wales)

<sup>12</sup> [SWIC | South Wales Industrial Cluster](https://gov.wales/sites/default/files/publications/2021-10/working-together-to-reach-net-zero-all-wales-plan.pdf)

<sup>13</sup> Welsh Government, 2021. 'All Wales Plan 2021-25: Working Together to Reach Net Zero' Available from: <https://gov.wales/sites/default/files/publications/2021-10/working-together-to-reach-net-zero-all-wales-plan.pdf>

matched by industry to total over £40m, to help create the world's first net zero industrial zone by 2040<sup>13</sup>.

### 2.1.9 The Environment (Wales) Act 2016

This<sup>14</sup> requires the Welsh Government to reduce GHG emissions in Wales to net zero for the year 2050 and implement a system of interim emissions targets and carbon budgets. Under Section 39 of the Act, Welsh Ministers must prepare and publish a report for each budgetary period setting out their policies and proposals for meeting the carbon budget for that period.

### 2.1.10 Prosperity for All: A Low Carbon Wales

Published in 2019, this report<sup>15</sup> sets the foundations for Wales to transition to a low carbon nation to bring opportunities around clean growth for business, as well as wider benefits for people and the environment.

### 2.1.11 Net Zero Wales Carbon Budget 2 (2021-2025)

This document<sup>16</sup> represents the current phase in Wales' decarbonisation journey with a new net zero target alongside various policies, proposals and commitments for action across the economy. This report notes that aviation policy is not developed, and that UK Government must bring forward proposals to drive fuel efficiency, the development of new net zero emission

<sup>14</sup> [Environment \(Wales\) Act 2016](https://gov.wales/sites/default/files/publications/2019-06/low-carbon-delivery-plan_1.pdf) (legislation.gov.uk)

<sup>15</sup> [gov.wales/sites/default/files/publications/2019-06/low-carbon-delivery-plan\\_1.pdf](https://gov.wales/sites/default/files/publications/2019-06/low-carbon-delivery-plan_1.pdf)

<sup>16</sup> [42949 Second All Wales Low Carbon Delivery Plan \(2021-2025\)](https://gov.wales/sites/default/files/publications/2021-06/low-carbon-delivery-plan_1.pdf) (gov.wales)

aircraft and accelerating the supply and uptake of sustainable aviation fuels (SAF).

## 2.2 Guidance Documents and Supporting Strategies

The following Guidance Documents are considered relevant to the proposed development, including national strategies and initiatives to support the investment in the decarbonisation of aviation.

### 2.2.1 National Industrial Strategy (November 2017)

*The National Industrial Strategy - Building a Britain Fit for the Future*<sup>17</sup> aims to boost productivity by supporting businesses to create high quality and well-paid jobs and therefore increase the earning power of people throughout the UK with investment in skills, industries and infrastructure.

The Strategy notes the UK has the third largest aviation network in the world and that the Government will support investment in innovation focused on the development of clean technologies for the aviation and transport sectors.

### 2.2.2 Clean Growth Strategy (October 2017)

The *Clean Growth Strategy*<sup>18</sup> seeks to grow national income while cutting GHG emissions by supporting the modernisation of the aviation sector including support for sustainable alternative fuels, improved efficiency and new technologies.

<sup>17</sup>

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/664563/industrial-strategy-white-paper-web-ready-version.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/664563/industrial-strategy-white-paper-web-ready-version.pdf)

<sup>18</sup>

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/700496/clean-growth-strategy-correction-april-2018.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/700496/clean-growth-strategy-correction-april-2018.pdf)

### 2.2.3 Aviation 2050: The Future of UK Aviation (December 2018)

The Department for Transport (DfT) issued the *Aviation 2050 consultation*<sup>19</sup> regarding the future of UK aviation. It sets out Government ambition to encourage innovation and new technology within the aviation sector and commits to working closely with industry to maximise opportunities for the development of sustainable aviation fuels (SAFs).

### 2.2.4 Advanced Fuels Fund (July 2022)

The Advanced Fuels Fund (AFF) was launched in July 2022 by the Department for Transport, with the aim of supporting the UK's emerging advanced fuels sector in the development and commercial deployment of innovative fuel production technologies which could significantly reduce aviation emissions and broaden technology options. Subsequently, the UK Government has committed to have at least 5 commercial scale SAF plants under construction in the UK by 2025 through the allocation of up to £165 million in competitive grant funding. LanzaTech UK Ltd was awarded £25 million in December 2022 through this fund for the Proposed Scheme.

### 2.2.5 10-Point Plan for a Green Industrial Revolution (November 2020)

The *10 Point Plan for a Green Industrial Revolution*<sup>20</sup> includes taking steps to drive the uptake of SAFs including the Green Fuels, Green Skies (GFGS) competition to support production of SAF and consulting on a SAF mandate.

<sup>19</sup>

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/769695/aviation-2050-web.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/769695/aviation-2050-web.pdf)

<sup>20</sup>

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/936567/10\\_POINT\\_PLAN\\_BOOKLET.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/936567/10_POINT_PLAN_BOOKLET.pdf)

### 2.2.6 Energy White Paper: Powering our Net Zero Future (December 2020)

The *Energy White Paper*<sup>21</sup> builds upon the 10-Point Plan and explores a range of issues relating to the achievement of a net zero UK by 2050 as well as reiterating Government support for the development of SAFs in the UK.

### 2.2.7 Industrial Decarbonisation Strategy (April 2021)

The *Industrial Decarbonisation Strategy*<sup>22</sup> identifies how the UK can continue to be a key competitor in the global economy whilst decarbonising its industry without pushing emissions abroad (known as “carbon leakage”). Key decarbonisation actions and objectives set out by the Strategy include Action 6.1 supporting innovation in fuel switching technologies and the development of waste-derived feedstocks.

### 2.2.8 Transport Decarbonisation Plan (July 2021)

The *Transport Decarbonisation Plan*<sup>23</sup> reports how Government intends to reduce carbon emissions from the transport sector to meet the UK’s 2050 net zero target. Decarbonisation of the aviation sector is recognised as a key challenge which requires consistent, long-term efforts from Government and industry. The Plan commits to kick-starting the commercialisation of SAFs, recognising the important role to be played by SAF in decarbonising aviation.

### 2.2.9 Jet Zero Consultation (July 2021)

Government has consulted on its vision for the aviation sector to reach net zero, or “jet zero”, by 2050. The *Jet Zero Consultation*<sup>24</sup> highlights the key role SAF can play in decarbonising aviation whilst also representing an industrial

<sup>21</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/945899/201216\\_BEIS\\_EWP\\_Command\\_Paper\\_Accessible.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/945899/201216_BEIS_EWP_Command_Paper_Accessible.pdf)

<sup>22</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/970229/Industrial\\_Decarbonisation\\_Strategy\\_March\\_2021.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/970229/Industrial_Decarbonisation_Strategy_March_2021.pdf)

<sup>23</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1009448/decarbonising-transport-a-better-greener-britain.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1009448/decarbonising-transport-a-better-greener-britain.pdf)

leadership opportunity for the UK, generating between £0.7-£1.6 billion GVA per year and creating between 5,000-11,000 green jobs.

### 2.2.10 Sustainable Aviation Fuels Mandate (July 2021)

The Department for Transport’s (DfT’s) *Sustainable Aviation Fuels Mandate (July 2021)*<sup>25</sup> is a consultation on reducing GHG emissions from aviation fuels in the UK. It proposes that the minimum GHG saving threshold that all SAF will need to meet to be eligible for certification under the SAF mandate should be at least 60% on a lifecycle basis against a fossil fuel comparator.

### 2.2.11 Net Zero Strategy: Build Back Greener (October 2021)

The *Net Zero Strategy*<sup>26</sup> provides Government’s long-term plan for the UK to reach net zero by 2050. It includes plans to accelerate the commercialisation of SAF production in the UK, setting a target of 10% SAF use by 2030 and providing £180 million of funding to support the development of SAF plants.

The Strategy also confirms Government is reviewing responses to the SAF mandate consultation which proposes the introduction of an obligation on fuel suppliers to reduce the carbon footprint of jet fuels in the UK through increased use of SAF, with further details to be published in 2022.

<sup>24</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1002716/jet-zero-consultation-a-consultation-on-our-strategy-for-net-zero-aviation.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1002716/jet-zero-consultation-a-consultation-on-our-strategy-for-net-zero-aviation.pdf)

<sup>25</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1005382/sustainable-aviation-fuels-mandate-consultation-on-reducing-the-greenhouse-gas-emissions-of-aviation-fuels-in-the-uk.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005382/sustainable-aviation-fuels-mandate-consultation-on-reducing-the-greenhouse-gas-emissions-of-aviation-fuels-in-the-uk.pdf)

<sup>26</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1033990/net-zero-strategy-beis.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1033990/net-zero-strategy-beis.pdf)

## 2.3 Local Policy

### 2.3.1 Neath Port Talbot County Borough Council Local Development Plan (2011-2026)

The Neath Port Talbot LDP<sup>27</sup> was adopted in January 2016 and is the primary planning policy document for the County Borough. Relevant Sustainability Policies are listed below:

**Policy SP1 Climate Change** – Provision will be made for the County Borough’s appropriate contribution to renewable and low carbon energy generation. This policy also considers likely increased flood risk by ensuring there is greater resilience by avoiding development on land that is at risk from flooding in the first instance. Additionally, habitat fragmentation will be minimised and opportunities should be made for habitat and species change and migration where possible.

**Policy SP15 Biodiversity and Geodiversity** – Important habitats, species and sites of geological interest will be protected, conserved, enhanced and managed.

**Policy SP16 Environmental Protection** – Air, water and ground quality and the environment generally will be protected and where feasible improved through the following measures:

1. Ensuring that proposals have no significant adverse effects on water, ground or air quality and do not significantly increase pollution levels;
2. Giving preference to the development of brownfield sites over greenfield sites where appropriate and deliverable; and
3. Ensuring that developments do not increase the number of people exposed to significant levels of pollution.

**Policy SP18 Renewable and Low Carbon Energy** – A proportionate contribution to meeting national renewable energy targets and energy efficiency targets will be made while balancing the impact of development on the environment and communities. This will be achieved by:

1. Encouraging where appropriate, all forms of renewable energy and low carbon technology development;
2. Encouraging energy conservation and efficiency measures in all new major development proposals; and
3. Ensuring that development will not have an unacceptable impact on the environment and amenity of residents.

**Policy SP19 Waste Management** – Provision will be made for the delivery of an integrated network of waste management facilities through the following measures:

1. Continuation of the treatment of waste arisings at the Materials Recovery and Energy Centre;
2. Identification of preferred sites for in-building waste treatment capacity;
3. Continuation of the disposal of residual non-hazardous waste and inert waste at Pwllfawtkin landfill site; and
4. Ensuring that provision is made for the sustainable management of waste in all new developments.

**Policy SP20 Transport Network** – The transport system and infrastructure will be developed in a safe, efficient and sustainable manner through the following measures:

1. Promoting connectivity and access to public transport through improving bus and rail facilities;
2. Supporting enhancements to the walking and cycling network;
3. Requiring appropriate parking provision; and

<sup>27</sup> [https://www.npt.gov.uk/media/7321/lbp\\_written\\_statement\\_ian16.pdf?v=20170727124344](https://www.npt.gov.uk/media/7321/lbp_written_statement_ian16.pdf?v=20170727124344)

4. Requiring development proposals to be designed to promote safe and efficient access and promote sustainable transport.

**Policy EN8 Pollution and Land Stability** – Proposals which would be likely to have an unacceptable adverse effect on health, biodiversity and/or local amenity or would expose people to unacceptable risk due to the following will not be permitted:

- Air pollution;
- Noise pollution;
- Light pollution;
- Contamination;
- Land instability; and
- Water (including groundwater) pollution.

#### **Policy RE2 Renewable and Low Carbon Energy in New Development** –

Schemes that connect to existing sources of renewable energy, district heating networks and incorporate on-site zero/low carbon technology (including microgeneration technologies) will be encouraged. Development which has a total floorspace of 1,000sqm or more is required to submit an Energy Assessment to determine the feasibility of incorporating such a scheme and where viable, would be required to implement the scheme.

**Policy W3 Waste Management in New Development** – Proposals for new built development will need to demonstrate that provision is made for the design, layout, storage and management of the waste generated by the development both during the construction phase and occupation. Industrial or commercial development that would generate more than 1,000 tonnes of waste per annum, and development that would generate hazardous waste, will be required to produce Site Waste Management Plans.

**Policy BE1 Design** – All development proposals will be expected to demonstrate high-quality design which fully considers the natural, historic and built environmental context and contributes to the creation of attractive, sustainable places. Proposals will only be permitted where all the following criteria, where relevant, are satisfied:

1. Important local features (including buildings, amenity areas, green spaces and green infrastructure, biodiversity and ecological connectivity) are retained and enhanced as far as possible;
2. It plays a full role in achieving and enhancing an integrated transport and communications network promoting the interests of pedestrians, cyclists and public transport and ensures linkages with the existing surrounding community.
3. It uses resources, including land and energy, as efficiently as possible, where brownfield land is prioritised for development over greenfield land where possible, and where building exposure is minimised while solar gain is maximised; and
4. The development's drainage systems are designed to limit surface water run-off and flood risk and prevent pollution.

#### **2.3.2 Decarbonisation and Renewable Energy Strategy (DARE)**

The Neath Port Talbot Decarbonisation and Renewable Energy Strategy (DARE)<sup>28</sup> was adopted in 2020 and provides a roadmap for Neath Port Talbot to respond to the climate emergency. A key initiative for the Council is to support innovation and low carbon growth through a programme of seven inter-related projects which together are designed to deliver low carbon, sustainable and inclusive economic growth for the region. The vision for DARE is set out under three strategic themes; transport, buildings and spaces, and

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<sup>28</sup> [DARE The Neath Port Talbot Decarbonisation and Renewable Energy Strategy \(npt.gov.uk\)](https://www.npt.gov.uk/dare)

influencing behaviour. The ambitions set out in the strategy can be summarised below:

- Reducing the carbon emissions, resulting from delivering the council's work programme. Lessening energy consumption and switching to energy sources that are less harmful to the environment;
- Overcoming barriers to renewable energy and encouraging the use of sustainable and renewable resources;
- Managing our natural resources so that carbon sequestration is maximised, and carbon release is minimised;
- Working with partners and business, sharing good practice, assets and resources;
- Promoting the benefits of cleaner energy and emission reduction to council employees and the people of Neath Port Talbot; and
- Attracting additional funding from Welsh Government and other relevant sources.

## 2.4 Planning Policy Summary

Key sustainable development requirements from the national and local policy context set out above can be summarised as follows:

- Support the development of innovative technologies including SAF to drive GHG emission reductions in the hard to decarbonise aviation sector as a key contributor to the UK's 2050 net zero target;

- Support sustainable waste management including waste re-use and recovery;
- Provide new low carbon facilities on previously developed land and/or existing industrial areas;
- Avoid unacceptable environmental impacts including noise, air pollution, ecology and flood risk; and
- Promote resilience to future climate change effects such as flood risk in the design of new development.

Both local and national policy aims to ensure the delivery of sustainable and well-designed developments which mitigate and adapt to the increasingly urgent impacts of climate change.

The Neath Port Talbot LDP requires development to consider a range of sustainable design measures, including energy efficient and low carbon buildings, sustainable transport infrastructure, and the preservation of greenfield spaces and biodiversity. These measures demonstrate the Borough's commitment to the creation of sustainable new developments.

The following sections of this Sustainability and Energy Statement set out the sustainability measures incorporated into the design of the development to ensure the delivery of a sustainable development whilst addressing the requirements of local and national policy.

# 3. Sustainability and Energy Performance at Project Dragon

This chapter sets out the measures which have been incorporated into Project Dragon to address planning policy and the applicant's ambitions in sustainability.

## Introduction

This section of the report responds primarily to Future Wales and PPW in terms of sustainability, in particular the requirements of **Policies SP1, SP16, SP18** and **BE1** of the Neath Port Talbot LDP (NPT LDP).

## 3.1 Sustainable Design

The purpose of the proposed site will be to produce sustainable aviation fuel, in line with local and wider policy. The design of the proposed development responds positively to the site-specific constraints to create a well-designed development in line with sustainability principles set out in the NPT LDP. It will commit to:

- An all-electric energy strategy for occupied buildings using Air Source Heat Pumps;
- The provision of active Electric Vehicle (EV) charging to around 25% of parking spaces and ducting for the future extension of EV charging points

as utilisation and demand increases, encouraging sustainable transport methods;

- Best practice flood risk management, using Sustainable Drainage Systems (SuDS) to manage surface water runoff, including filter and channel drains, rain gardens and permeable paving; and
- Potable water efficiency for occupied buildings equivalent to a minimum of 2 credits under BREEM issue *Wat 01 Water Consumption* is targeted, which requires a 25% reduction on baseline water consumption.

And, subject to health and safety review:

- A combined solar power and brown roof on administration building
- Green/brown roofs on Gatehouse 1, cycling shelter & amenity shelter.

## 3.2 Economic Contribution

The proposed development will result in economic benefits supporting the aims of the national planning policy framework and the adopted local planning policy, set out in the Supply Chain Employment analysis prepared by Turley Economics. LanzaTech will aim to use specialist local contractors for maintenance and other work vital to the ongoing operation of the proposed scheme, strengthening the local economy and reducing costs and shipping risks.



Additionally, applying Business Population Estimates to the estimated annual capital expenditure spend of several tens of millions of pounds per annum, it is anticipated that approximately **215 jobs** will be supported on an annual basis and in the associated supply chain. This includes 85 permanent, skilled jobs on site and up to 130 FTE positions in the local supply chain. LanzaTech expects to use local firms involved in activities such as water treatment, waste management, chemical management and ship loading/unloading. ONS data indicates that there is a pool of firms and workers operating in these sectors who will be able to take advantage of the opportunity created by the proposed scheme.

ONS GVA multiplier data indicates that the economic activity taking place on-site will induce significant further economic activity elsewhere in the supply chain, and the wider region, helping to augment the economic benefits generated by the development. This has been estimated at around £6.63m in GVA per annum. The Welsh Government have stated their intention to attract key manufacturing companies in Wales and develop strong supply chains to support their operation.

The project would put Neath Port Talbot at the forefront of delivering innovative carbon reduction industries, creating invaluable experience with Port Talbot leading the way on sustainable aviation and sustainable diesel production.

### **3.3 Climate Change**

One of the main challenges facing Wales and new development is the need to mitigate and adapt to a changing climate. In April 2019, the Welsh government also declared a climate emergency, committing themselves to achieving a

carbon neutral public sector by 2030 and a net zero target for 2050<sup>29</sup>. Climate change will cause Wales to become warmer, winters will become wetter, and summers will become drier. Adapting to this changing climate will affect the design, construction, location, cost and operation of all new buildings in the next few decades. One of PPW's core planning principles is for development to ensure the causes and impacts of climate change will be fully considered through location, design, build, operation, decommissioning and restoration.

Responding to climate change can be considered in terms of:

- Climate Change Mitigation – reducing the extent of man-made climate change by reducing the release of greenhouse gas emissions; and
- Climate Change Adaptation – responding to the effects of climate change on the Proposed Scheme.

This section sets out the key climate change mitigation and adaptation measures incorporated into the proposed development.

#### **3.4.1 Climate Change Mitigation** *SAF Production*

The proposed development aims to manufacture SAF that itself will make a large contribution to mitigating climate change. The net result of the construction and operation of the development has been estimated as below, assuming construction 2024-2026 and operation from 2027 to 2046. There are two options for providing ethanol feedstock, with differing GHG emissions, both are shown below:

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<sup>29</sup> [Welsh Government makes climate emergency declaration | GOV.WALES](https://gov.wales/welsh-government-makes-climate-emergency-declaration)

Table 1: Project Dragon - Net GHG Emissions

	Construction Emissions	Lifetime Operational Emissions	1 <sup>st</sup> year Savings – (Steel mill off-gas Ethanol)	1 <sup>st</sup> year Savings (Waste Starch Ethanol)
<b>tCO<sub>2</sub>e</b>	<b>122,400</b>	<b>1,571,118</b>	<b>163,843</b>	<b>219,645</b>

Overall, on a worst case, using ethanol made from steel mill off-gas, the 20-year lifetime savings are estimated to be 1,583,336tCO<sub>2</sub>e.

The scale of CO<sub>2</sub> emissions from the operating the site otherwise will be much smaller, but developing energy efficient, low carbon buildings is a key objective of national policy and recent updates to Part L Building Regulations in Wales.

The following sections detail how the design of the proposed development will achieve the outline report targets in line with the principles of the Energy Hierarchy (Figure 3).

A key aspect of current and future regulations (Future Buildings Standard) is related to the continuing decarbonisation of the national electricity system. The phasing out of coal fired power stations and increasing generation of energy from renewable sources is rapidly reducing the carbon intensity of the electricity network.

Through decarbonisation of the national electricity grid and introduction of SAP10.2 carbon factors within updated Building Regulations, electric heating systems are very low carbon compared to gas alternatives.

The Energy Strategy prepared by Turley Sustainability has been developed in accordance with **Policy SP18** of the Neath Port Talbot Local Plan and Building Regulations Part L (Wales).

Figure 3: The Energy Hierarchy



**Be Lean – Reducing Energy Use**

Reducing a building’s energy demand through energy efficient fabric and services is widely regarded as best practice and the first step to reducing carbon emissions.

This will be achieved at Project Dragon using high levels of insulation and air tightness in buildings, reducing energy gain and loss. Additionally, high efficiency lighting will be installed, with appropriate energy saving controls internally and externally.

**Be Clean - Energy Efficient Plant and Services**

The next stage of the Energy Hierarchy is the efficient supply of heat and energy by communal heating systems or energy efficient local plant.

District Heating Networks (DHN) comprise a centralised heat generator, typically a gas fired Combined Heat and Power (CHP) engine. CHP systems generate electricity and waste heat which can be fed into a network of insulated pipes which deliver low carbon heat to buildings to provide heating and hot water via individual heat transfer units. There are no known heat networks in the vicinity of the proposed development.

Furthermore, the continued decarbonisation of the national electricity network and changes to the Building Regulations mean that most existing heat networks are now so high carbon, there has had to be a tweak in the Regulations to allow their continued use. CHP or DHN are not proposed to be incorporated.

#### *Be Green - Low Carbon Renewable Energy*

As part of a highly efficient all-electric energy strategy, the proposed development will incorporate Air Source Heat Pumps to provide space heating and cooling to the office areas of the proposed units.

**Air Source Heat Pumps** extract low grade heat from the air and raise to a higher temperature for space heating and hot water. Ground source heat pumps are similar but use the ground as a source of heat / cooling. They require more space and are more expensive than air source heat pumps but can be more efficient.

Heat pumps reduce CO<sub>2</sub> emissions greatly compared to gas boilers and fossil fuel heat networks. They generate several units of heat for each unit of electricity powering them. This, combined with the fact that the electrical grid is now lower carbon than natural gas per kWh of energy, means they reduce

CO<sub>2</sub> emissions around 75% versus a gas boiler on day one and will continue to decarbonise with the electrical grid.

Unlike burning oil, gas, LPG or biomass, a heat pump produces no carbon emissions on site (and no carbon emissions at all, if a renewable source of electricity is used to power them). Heat pumps can provide cooling in summer, as well as heating in winter.

**Solar PV** systems generate zero carbon electricity from sunlight and are well-suited to buildings with a clear view of sky. Excess power is exported to the grid or can be stored using battery storage. Maintenance requirements are small.

There is an ambition to use solar PV on building roofs to reduce energy demand and CO<sub>2</sub> emissions. Some materials and components are not appropriate for the development; due to practicability, blast resistance and fire safety, and a need to consider the site's Upper Tier COMAH<sup>30</sup> rating.

The Applicant will deploy solar panels on the admin building subject to safety requirements. The exact amount of PV will be subject to discussions during the detailed engineering design phase of the project, and therefore modelling cannot be provided at this stage.

#### *Energy and Carbon Summary*

Most of the site will be taken up through industrial processes and associated equipment and therefore not occupied. Occupied buildings will have an all-electric energy strategy using Air Source Heat Pumps, reducing local air pollution and contributing to a zero-carbon ready development. These occupied buildings are set out below:

- Gatehouse 1 and 2;

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<sup>30</sup> [HSE: Control of Major Accident Hazards \(COMAH\)](#)

- Administration Building;
- Amenity 1 and 2; and
- Process Control Building.

The proposed energy strategy meets the requirements of local and national planning policy by utilising a range of measures. These include:

- The specification of materials with low u-values improving the fabric efficiency of buildings;
- Efficient lighting and small power;
- The use of ASHPs for space heating; and,
- Incorporation of solar PV where feasible, to meet a proportion of regulated energy demand.

### 3.4.2 Climate Change Adaptation

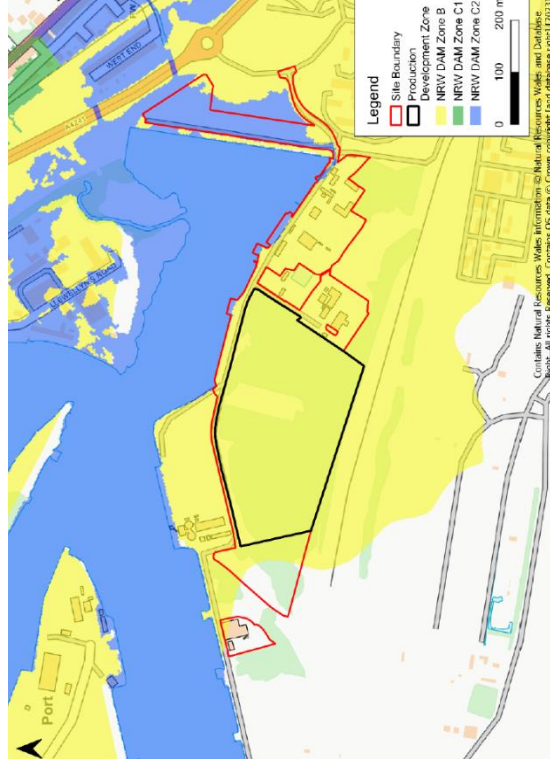
To ensure the development adapts to the effects of climate change, a range of measures are proposed to enhance the resilience of the development to climate change.

#### *Flood and Water Management*

A Flood Consequences Assessment (FCA) for the site has been undertaken by JBA Consulting ('JBA'). The proposed development site lies within the Flood Zones of the Flood Map for Planning (FMFP). The Proposed Development Zone (PDZ) is located within Flood Zone 2 of both the FMFP for rivers, and the FMFP for sea. The Temporary Construction Area (TCA) 1 is located within Flood Zone 3 of both the FMFP for rivers, and the FMFP for sea. TCA West is wholly located in Flood Zone 2 for flooding from sea, whilst TCA East is partially located in this zone.

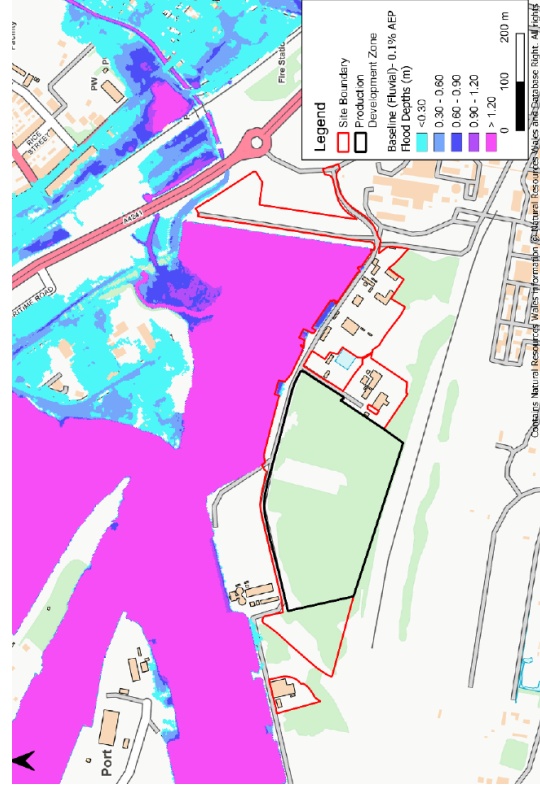
The proposed development site falls into Zone B and Zone C2 of the Development Advice Map (DAM), as set out in **Figure 4**. The PDZ is located in Zone B whilst the unnamed Port Road supporting infrastructure and temporary construction area are located in Zone B and Zone C2. Zone B indicates areas which are generally suitable for most forms of development and there is no requirement for the application of the Justification Test for any proposed development located within DAM Zone B. Zone B is used as part of a precautionary approach to indicate where site levels should be checked against the extreme (0.1%) flood level. Zone C2 is described as areas of the floodplain without significant flood defence infrastructure. Zone C2 is used to indicate that only less vulnerable development should be considered subject to application of justification test, including acceptability of consequences.

**Figure 4: Development Advice Map (Source: FCA)**



The detailed fluvial and tidal flood risk modelling data for Port Talbot is sourced from a flood model, which was updated for another location close to the proposed development. The baseline results for the 0.1% Annual Exceedance Probability (AEP) flood depths is shown in **Figure 5**. This indicates that the Temporary Construction Areas are flood free in all conditions.

**Figure 5: 0.1% AEP flood depths (Source: FCA)**



An Outline Drainage Strategy has been prepared by JBA to accompany the application. The proposals aim to control surface water runoff without increasing flood risk to other developments or impacting on water quality downstream. To align with **Policy SP1**, flood risk management will be in accordance with best practice, using Sustainable Drainage Systems (SuDS) to manage surface water runoff, including rain gardens, gravel-based swales and permeable paving. SuDS will support water quality, treat and convey flows, and mitigate against the risk of mobilising contaminants across the site, ensuring the development will have no significant adverse effects on water

quality. Rainfall will be managed across the site to ensure that the site does not flood during the 1 in 30-year event, and buildings will not flood during the 1 in 100-year event plus 40% for climate change. There is no requirement for the application of urban creep.

Further details on the FCA and drainage strategy are in the Flood Consequence Assessment and Outline Drainage Strategy undertaken by JBA.

### Water Efficiency

Water efficiency measures will be integrated into the alcohol to jet (ATJ) process, which comprises two sections, the E2E section that converts Ethanol into Ethylene (intermediate product), and the E2J section that converts Ethylene to Sustainable Jet/Diesel Fuel. In the E2E section, water is produced as by-product of the ethanol dehydration reaction. This water is subsequently cleaned from potential contaminants to be re-used within the process as boiler feed water for steam generation and cooling water make-up. This measure significantly minimises the amount of mains water that is required.

Additionally, the proposed development is targeting potable water efficiency in occupied buildings equivalent to a minimum of 2 credits under BREEAM issue *Wat 01 Water Consumption*, which requires a 25% reduction on baseline water consumption.

### Overheating Resilience

The proposed development will be designed in accordance with the cooling hierarchy, as shown in **Figure 6**, which aims to reduce any potential overheating in buildings. Incorporating the cooling hierarchy into the design process means buildings will be better equipped to manage their cooling needs and to adapt to and mitigate climate change.

Figure 6: Cooling Hierarchy



### Thermal Comfort

Following issue of the EIA Scoping Report, the Applicant has confirmed that dynamic modelling for thermal comfort will be undertaken for occupied buildings in accordance with BREEAM credit *Hea 04 Thermal Comfort*. The assessment will take account of building design and occupation and establish what, if any, mitigation measures are necessary to ensure suitable internal

thermal conditions through the year. Such measures may include glazing design and/or specification, internal / external shading, ventilation and passive / active cooling.

## 3.5 Green Infrastructure and Biodiversity

The creation of green infrastructure, and protection and enhancement of biodiversity provides benefits to a scheme and local area. This section discusses the green infrastructure and biodiversity measures incorporated into the proposed development.

The land is an extensive area of previously developed/disturbed ground that has naturally regenerated over the last 20 years to form a mosaic of regenerating scrub woodland (dominated by shrub willows). The floristic diversity is locally high, primarily associated with open grassland associated patches of ephemeral vegetation. The unnamed Port Road runs along the northern boundary, and a steep bank up to the disused railway line/sidings lies beyond the southern boundary. Operational industrial sites comprising buildings and hardstanding and the access roads are located to the east. An extensive reedbed (>1ha in extent) lies between the industrial operations. The railway embankment up to the disused railway sidings forms the southern boundary.

The Ecological Impact Assessment prepared by RPS proposes the mitigation and enhancement outcomes under each of the two (on and off-site) elements, which are set out in this section.

### 3.5.1 Green Infrastructure

To maximise the green infrastructure on the development site, discussions have taken place on the potential for hybrid roofs (bio-solar) whereby there

is a combined system of brown/green roofs with solar PV. A bio-solar roof is proposed for the administration building. It is considered that this would make a positive contribution to biodiversity due to shadowing of solar being a benefit for certain species. Other structures considered acceptable for a brown/green roof include Site Entrance 1 Gatehouse 1, as well as the cycle shelter near the entrance and the amenity entrance. Further detail on the proposed locations for brown/green roofs and a hybrid (bio-solar) option are presented in the Design and Access Statement prepared by Inspire and EDP. The final extent of this will be confirmed following detailed engineering design and review of all fire and safety requirements for the scheme.

### 3.5.2 Biodiversity

The proposed development seeks to maximise on-site biodiversity as far as possible within the operational, fire and safety requirements of the scheme. To support LanzaTech's commitment to the delivery of a net benefit for biodiversity (NBB), a commercial agreement is intended to be reached, confirming that the necessary off-site NBB works required for Project Dragon will be delivered on an off-site receptor for species and delivery of new and/or improved habitat. An Ecological Impact Assessment has been prepared by RPS, which sets out the findings of the desk study, Phase 1 Habitat Survey, and a preliminary protected species assessment. This section summarises the findings.

#### Proposed on-site mitigation and enhancement

The considerations for inclusion in the package are set out below, and will comply with **Policies BE1** and **SP1** in that on-site landscaping and biodiversity will create 'stepping stones' of connectivity for biodiversity to surrounding parcels of land and habitats. The following biodiversity

enhancement measures will be incorporated on-site as part of the Project Dragon development proposals:

- Flower-rich grassland;
- Pioneer vegetation;
- Modular biodiversity walls;
- Bio-solar roof on the administrative building (subject to H&S);
- Green and brown roofs on Site Entrance Gatehouse 1, Cycle Shelter and Amenity Shelters (subject to H&S);
- Removal of matting and gravel surface at the temporary construction laydown area at Margam Wharf (TCA 1 North); and
- Insect hotels in relevant soft and hard landscaping areas of the site.

Additionally, an environmentally sensitive lighting scheme will be designed for the construction and operational phases of the development to minimise artificial light spill outside the boundary of the application site. Construction lighting and the permanent lighting scheme will be developed with reference to the recommendations published by the Institution of Lighting Professions and Bat Conservation Trust.

The scheme will ensure that each part of the site is 'suitably and adequately lit' for essential operational reasons. LED lamps would be used, with 'warm white' selected as a preference on the site boundaries where compatible with minimum operational requirements. Lighting units will be selected to minimise upward and lateral light spill. Further detail can be found in the Lighting Assessment prepared by AECOM which accompanies the application.

These measures will help protect the context of existing habitats on the

boundary of the operational site. In the future a network of green / brown corridors is to be created as part of the port-wide biodiversity compensation strategy. It is possible that features will be retained/created in the vicinity of the development and environmentally sensitive lighting will maintain the potential for features around the site to be incorporated into this network.

### **Proposed off-site mitigation and enhancement**

The acquired off-site location is intended for the delivery of off-site mitigation and enhancement to off-set ecology and biodiversity impacts associated with development proposals at the port. The proposed mitigation and enhancement outcomes to address the assessed ecological and biodiversity effects of Project Dragon include:

- Enhancement of broadleaved woodland and scrub to mitigate loss of low-value self-sown willow scrub;
- Restoration of plantation on ancient woodland and other broadleaved woodland
- Enhancement of broadleaved woodland and scrub to mitigate the loss of mixed species scrub, gorse, and bramble;
- Creation of mixed species scrubby woodland edge; partial replacement of bramble with mixed species scrub
- Retention areas of bramble thicket as a component of more structurally diverse woodland edge.
- Open structured coastal grassland and dune slack vegetation and naturally regenerated grassland will be lost and cannot be compensated;
- Grassland restoration will be undertaken to re-establish high value grassland habitats that have degraded or been lost.
- Provision of bat boxes, and creation of standing deadwood aligned to

increasing in the number of oak trees.

- Grassland and woodland edge habitat enhancements to increase abundance of invertebrate species on which bats prey.
- Woodland habitat enhancements to create new habitats for breeding birds in the short and medium term.
- New nest sites including barn owl boxes to be installed on mature trees adjacent to potential foraging habitat.
- Mixed species scrub planting to broaden the resources available to birds in the breeding season and winter.
- Specific habitat creation for invertebrates including the provision of deadwood, purpose-built banks, and micro habitat diversity with grassland.

In summary, the proposals for Project Dragon will deliver a net benefit for biodiversity through the combination of:

- On-site mitigation and enhancement measures including the provision of small, multi-functional landscaped spaces; and
- Habitat restoration outcomes at the off-site biodiversity compensation site.

The proposed package of mitigation and enhancement will be delivered in collaboration with ABP and the Council.

### **3.6 Low Carbon Transport**

A Transport Assessment has been prepared by SCP Transport, to assess the impact of the development on the highways and transport infrastructure and set out measures for consideration to encourage the use of sustainable transportation.



### **3.6.1 Local Environment**

The site is located within an established industrial area and is allocated for employment use. The PDZ is bound to the north by Hanson Cement Works and Port Talbot Docks. The cement works is a predominant feature of Port Talbot Docks from all directions. A range of employment uses are located beyond the docks further to the north, with residential development approximately 1km to the north west of the PDZ.

The eastern boundary of the site (TCA east) is bound to the east by a private road and industrial development. Further to the east lies the operational Port Talbot Steelworks and Harbour Way. An unused section of railway line adjoins the site to the south. A vegetated bund separates the site from Port Talbot Steelworks to the south. The site is bound to the west by brownfield land and ABP operations. The main access road to the harbour and Steelworks runs along the north and south west of the site.

The employment area and employees may make use of existing transport infrastructure such as Port Talbot Parkway train station which has trains that travel both westbound to Swansea and Eastbound towards Cardiff, Newport, London and Manchester. Port Talbot is also part of the Cymru Clipper bus service, which provides long distance bus services in South and West Wales and to nearby centres such as Neath, Swansea and Bridgend.

### **3.6.2 Walking/Cycling Services**

Outside the private ownership boundary, the site is accessible via pedestrian and cycle links along Harbour Way, encouraging active travel to the site. Currently, direct cycle and pedestrian access are not possible to the site entrance due to potential Health and Safety restrictions across the wider

Associated British Ports (ABP) estate, within which the proposed development is situated.

The Applicant proposes to provide a free EV shuttle service with a cycle rack and a system will be implemented to allow staff to walk/cycle to the site, whereby they call to be picked up from in the vicinity of the ABP security gate and transported to the site. Staff will then be provided with/request a pickup time for transport back to the gate. Cycle storage has been provided within the car parking area in and around the administrative building.

There are longer-term ambitions to change the rules on cycling and walking, which will form part of ABP's Future Vision for Port Talbot.

### **3.6.3 Bus Services**

The development is well placed to encourage travel by bus with the closest bus stops located on both sides of the A48 Margam Road, 0.5 miles from the A4241 Harbour Way / North Road access. There are three main bus services, offering six services per hour.

### **3.6.4 Rail Services**

Port Talbot Parkway Railway Station is located approximately 0.6 miles north-west of the A4241 Harbour Way / North Road access. This location is within an acceptable walking and cycling distance to encourage perspective staff to travel by train. Port Talbot Parkway Railway Station offers regular direct services throughout the week to destinations including Llanelli, Swansea, Manchester Piccadilly, Milford Haven, Haverfordwest, London Paddington and Hereford, amongst others.

### 3.6.5 Sustainable Transport Measures

As part of the development proposals, measures to enhance and encourage sustainable transport include:

- A Transport Implementation Strategy (TIS) has been produced and is embedded within the Transport Assessment, setting out measures to encourage travel by sustainable modes, such as through car sharing using existing infrastructure; and
- Active EV charging to around 25% of parking spaces, and the provision of ducting for the future extension of EV charging points as utilisation and demand increases, supporting sustainable transport methods; and
- Secure cycle storage on-site is proposed and an EV shuttle service will have a bike rack at the pick-up point.

### 3.6.6 Sustainable Transport Summary

The site is situated in a sustainable location in an area surrounded by established employment and industrial uses. It is well suited to accommodate the proposals, as the site is already connected by existing pedestrian, cycle and public transport networks offering a choice of travel modes.

The proposed measures will support the pedestrian and cycle permeability of the wider development and will contribute to an increased modal shift to walking and cycling, reducing carbon emissions and air pollution. Full details of sustainable transport routes and active travel to the site is set out in the accompanying Transport Assessment prepared by SCP.

## 3.7 Waste Management

### Construction Waste Management

A Waste Management Plan (WMP) has been prepared by Stopford Limited, highlighting the main waste types produced by the installation and how they will be managed to prevent environmental harm. This section summarises the standard principles for waste management at the proposed development.

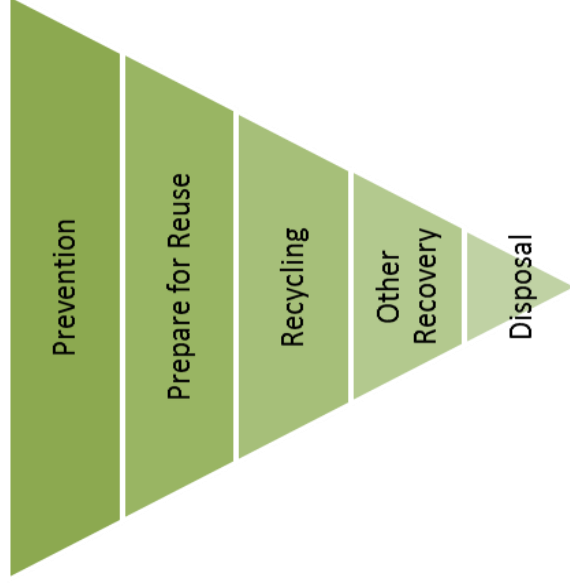
Waste will be managed in accordance with the Waste Hierarchy (shown in **Figure 7** overleaf), which requires avoidance of waste in the first instance, followed by reducing the volume that requires disposal after it has been generated. The waste strategy will align with WRAP Cymru<sup>31</sup> vision, which supports Wales' shift to a circular economy by reducing the demand for natural resources and encouraging recycling.

The WMP for Project Dragon will be updated on a regular basis by the principal contractor to provide the detail to meet the targets. These would include details of the forecast and actual tonnage of each waste stream and their recycling/disposal route.

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<sup>31</sup> [WRAP Cymru - Circular Economy & Resource Efficiency Experts](#)

Figure 7: Waste Hierarchy (Source: Revised Waste Framework Directive)



- Where useful secondary materials cannot be reclaimed, the energy content of the waste should be recovered and used as a substitute for non-renewable energy resources, and
- Only if waste cannot be prevented, reclaimed or recovered, should it be disposed of into the environment and this should only be undertaken in a controlled manner.

In addition, the development will be registered with the Considerate Constructors Scheme and achieve certification beyond basic compliance with the scheme.

**Operational Waste Management**

All buildings will have provision for the separate storage of non-recyclable and recyclable waste. Occupiers will be responsible for developing their own waste management procedures, the Applicant will provide the necessary space and infrastructure to recycle several waste streams which are typically associated with employment buildings. These include; glass, metal, cardboard, plastic and wood.

Waste storage will not give rise to secondary environmental impact such as odour or pollution of groundwater due to rainwater infiltration or site run-off. The site design and operation prevents cross-contamination of wastes or the mixing of incompatible materials. Storage areas for waste containers, such as Intermediate Bulk Containers (IBCs), drums and bags, is incorporated into the design. These are sited appropriately and operated to minimise the risk of releases to the environment. In particular:

- Waste storage areas are located away from any watercourses and sensitive boundaries, (e.g. those with public access);
- Waste storage areas have signs, notices and be clearly marked out for waste segregation, and all containers and packages clearly labelled;

The main principles of the waste hierarchy are:

- Waste should be prevented or reduced at source as far as possible;
- Where waste cannot be prevented, waste materials or products should be reused directly or refurbished and then reused;
- Waste materials should be recycled or reprocessed into a form that allows them to be reclaimed as a secondary raw material;

- Waste storage areas have appropriate kerbing and bunding and be lined;
- The maximum storage capacity of storage areas shall be defined and not exceeded, and the maximum storage period for containers shall be specified and adhered to;
- Appropriate storage facilities are provided for waste substances with specific requirements (e.g. hazardous, flammable, sensitive to heat or light);
- All waste containers are stored with lids, caps and valves secured and in place;
- All waste containers, drums and small packages are regularly inspected.
- Spill response procedures are in place to deal with damaged or leaking waste;
- Clinical waste is collected in special containers and treated separately in accordance with the relevant UK legislation; and
- Any food waste will be stored in sealed containers in a fenced area to prevent attracting any wildlife.

The Applicant will review and record at least every four years whether changes to these measures should be made and take any further appropriate measures identified by a review. More information on the waste strategy for the site can be found in the Waste Management Plan which accompanies the application.

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