

Glasshouse development on land west of Sesswick Way, Wrexham

Planning, Design & Access Statement



Low Carbon Farming 2 Ltd

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Contents

1	Introduction	4
2	The site and surroundings	5
3	Introduction to the proposed project	8
4	Design of the proposed development.....	10
4.1	<i>Use</i>	<i>10</i>
4.2	<i>Amount, fabrication and scale</i>	<i>10</i>
4.3	<i>Layout</i>	<i>14</i>
4.4	<i>Landscaping</i>	<i>15</i>
5	Transport and access.....	17
5.1	<i>Site access.....</i>	<i>17</i>
5.2	<i>Parking.....</i>	<i>18</i>
5.3	<i>Forecast trip generation</i>	<i>18</i>
6	Landscape and visual effects	19
6.1	<i>Landscape effects.....</i>	<i>19</i>
6.2	<i>Visual effects.....</i>	<i>20</i>
6.3	<i>Summary.....</i>	<i>20</i>
7	Ecology.....	22
7.1	<i>Protected sites</i>	<i>22</i>
7.2	<i>Habitats</i>	<i>22</i>
7.3	<i>Protected species</i>	<i>22</i>
8	Flood consequences and drainage	25
8.1	<i>Existing drainage and flood history</i>	<i>25</i>
8.2	<i>Flooding potential.....</i>	<i>25</i>
8.3	<i>Drainage strategy.....</i>	<i>26</i>
8.4	<i>Foul water.....</i>	<i>26</i>
8.5	<i>Conclusions</i>	<i>26</i>
9	Planning Policy Assessment.....	27
9.1	<i>National planning policy</i>	<i>27</i>
9.1.1	<i>Planning Policy Wales (Edition 10, December 2018)</i>	<i>27</i>
9.2	<i>Local planning policy.....</i>	<i>28</i>
9.3	<i>Planning policy summary.....</i>	<i>29</i>
10	Summary and conclusion.....	30
	Appendices	31

A.	Plans and elevations.....	31
B.	Transport Statement	31
C.	Landscape and Visual Impact Assessment & Planting Scheme	31
D.	Ecological Impact Assessment	31
E.	Flood Consequences Assessment.....	31

1 Introduction

Low Carbon Farming 2 Ltd (the applicant) is submitting a planning application for the development of a commercial glasshouse, packing facility and energy centre on approximately 44 hectares of land west of Sesswick Way, Marchwiel, Wrexham LL13 0TF.

This Planning Statement is submitted in support of the application and incorporates a Design and Access Statement within the document.

The planning application is also accompanied by a number of documents and assessments in order that the Local Planning Authority has sufficient information to make a decision on the planning application.

This document describes the development followed by an assessment of the potential effects of the proposal with specific regard to:

- Transport and Access
- Landscape and Visual Impact
- Ecology
- Flood Consequences.

An assessment of how the proposed development accords with national and local planning policy is provided at the end of the document.

2 The site and surroundings

The site of the proposed glasshouse and packing facility is located approximately 3 km to the southeast of Wrexham, close to the Five Fords wastewater treatment works and SecAnim abattoir. The location of the site is shown overleaf in Figure 1. The development site will be accessed from the north, via an existing entrance on Cefn Road, 200 m to the north of the site.

The two proposed glasshouses would occupy approximately 15 ha of a 44 ha site, which is currently in agricultural use. The site is generally flat at approximately 40 m AOD (above ordnance datum). The closest unconnected residential dwellings are located approximately 200 m to the south along the A525.

The immediate surroundings are as follows:

- To the north – agricultural fields and Cefn Road
- To the east – agricultural fields and SecAnim abattoir
- To the south – agricultural fields with the A525 lying beyond
- To the west – Five Fords wastewater treatment works (WwTW).

The site was selected in consideration of having the following:

- Proximity to sewage treatment works (from which low grade heat and carbon dioxide will be collected)
- Appropriate site access
- Appropriate topography
- Proximity to the gas and electricity network
- Low potential impact on local residents and public receptors.

There are no designated sites, such as National Parks, Areas of Outstanding Natural Beauty (AONB), Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation, National Parks, World Heritage Sites or Scheduled Monuments within or adjacent to the proposed development area. The closest designated site to the proposed development is the Sontley Marsh SSSI which is located approximately 2.6 km to the west.

There are a number of listed buildings located within the wider area, the closest being the Grade II Pum-Rhyd approximately 310 m to the east. Figure 2 overleaf shows the location of designated sites and listed buildings within 2 km of the project.

A desktop review has determined that the area proposed for the glasshouse facility lies primarily within Flood Zone 1/A. Flood risk calculations for the proposed development demonstrate that surface water drainage can be attenuated on site without any increased flood risk elsewhere; the proposed development is concluded to be safe and suitable at this location in terms of flood risk planning (see section 8 and Appendix E).

Sensitive sites

Special Protection Areas (SPA)



Special Areas of Conservation (SAC)



Sites of Special Scientific Interest (SSSI)



Scheduled Monuments



Ramsar



National Nature Reserves (NNR)



National Parks



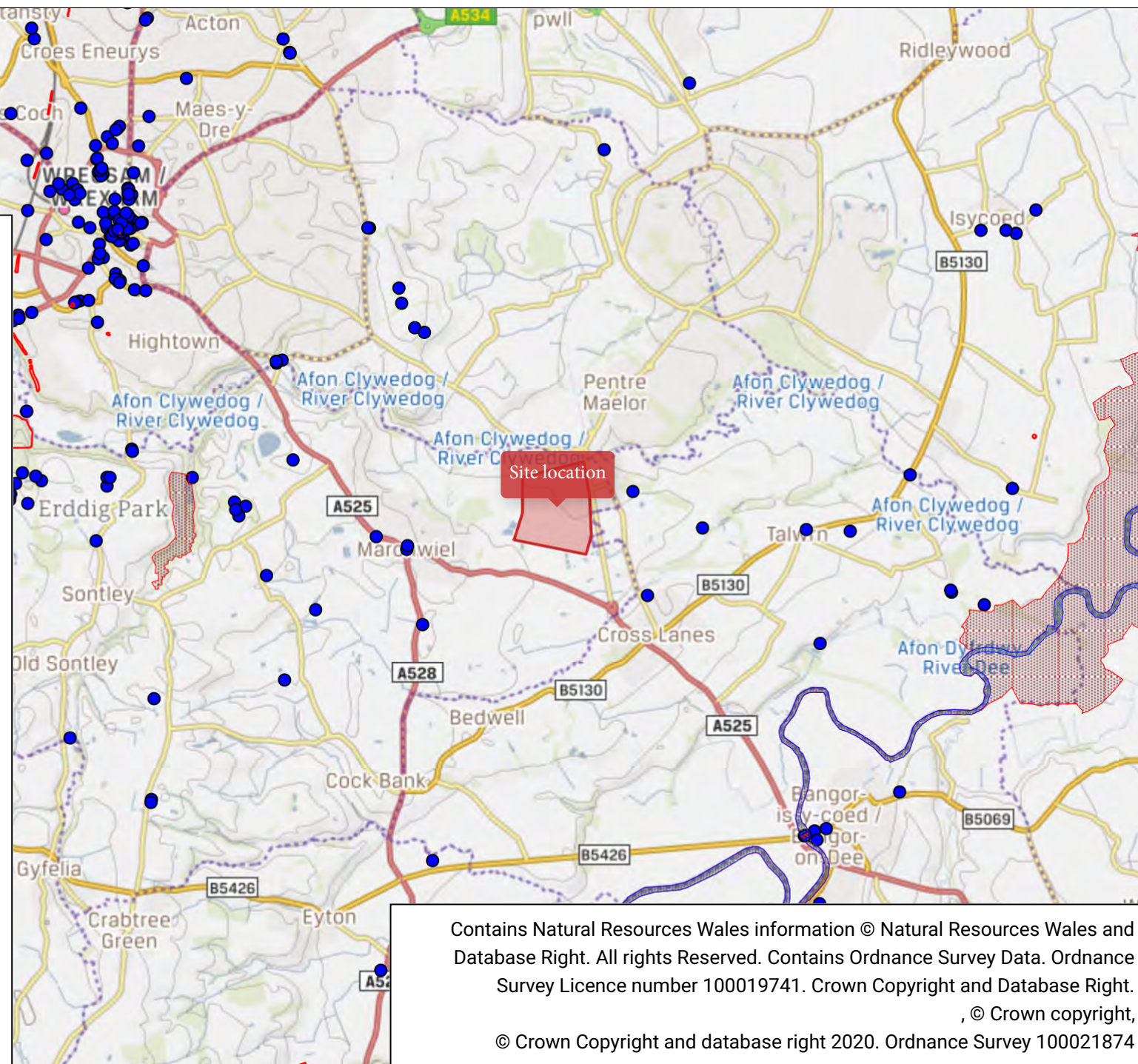
Local Nature Reserves (LNR)



Listed Buildings



Area of Outstanding Natural Beauty (AONB)



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3 Introduction to the proposed project

High specification commercial glasshouses provide an optimal growing environment for the production of fruit and vegetables, regulating ambient conditions to allow year-round cultivation. Glasshouse structures provide a naturally warmer internal microclimate due to the incident solar radiation that passes through the transparent surfaces being absorbed by the floor and contents of the structure; the resultant warmed air is unable to escape via convection so the temperature inside the glasshouse is raised.

When additional heating of the glasshouse is required, this has traditionally been through the use of natural gas boilers. The proposed development incorporates a new approach to glasshouse heating, dramatically reducing carbon emissions. Heat pumps, which are an electric form of heating, will utilise low grade heat from clean, treated water which is being discharged from the nearby WwTW.

Heat exchangers are installed to extract the heat from the treated water, known as 'final effluent'. The heat is transferred to the glasshouse heat pumps by way of a closed loop circulation system, and the final effluent follows its normal path into the nearby watercourse, albeit with the temperature slightly reduced.

In addition to the heat pumps, gas combined heat and power (CHP) units will be installed to provide supplementary high temperature water for heating, carbon dioxide for the plants and electricity. Conventional gas boilers will be installed purely for redundancy purposes.

It is now commonplace on high specification UK glasshouses to have LED lighting systems installed. These are switched on during the winter to increase the number of light hours and allow for growers to supply retailers with UK grown produce all year round. Where lights are used, blackout blinds are installed to prevent light spill to the surrounding environment during evening and night-time hours.

Plant growth in glasshouse cultivation is also enhanced by carbon dioxide enrichment, whereby CO₂ is fed to the growing gutters in the glasshouse through pipes connected to CO₂ storage tanks. CO₂ will be sourced directly from the nearby WwTW, from exhaust flue gases and from liquified CO₂ stored in tanks.

Semi-closed water irrigation system technology is employed in commercial glasshouses to minimise the overall water demand, the discharge of used water and the use of chemicals. The proposed facility will comprise rainwater collection reservoirs for storage of water from the glasshouse and packhouse roof as well as the collection, treatment and reuse of water from internal growing gutters. This collection and recycling of water aims to avoid, where possible, the use of other water sources, and is estimated to use ten times less water than when compared to the irrigation of open fields.

Large scale glasshouse developments of this type make a major contribution towards the production of UK grown food, national food security and at the same time significantly reduce carbon dioxide levels associated with food miles. The socio-economic benefits of such projects to the local communities can also be substantial; the proposed facility is expected to

create approximately 150 additional full-time jobs once operational, and significantly enhance the local economy.

4 Design of the proposed development

This chapter describes the project and sets out the particular elements relating to design, namely:

- Use
- Amount
- Scale
- Layout
- Landscaping.

4.1 Use

The proposed development is a commercial glasshouse and packing facility occupying a 44 ha site, which would allow the opportunity to grow high value crops and significantly increase the agricultural output of the development site. The proposed development aims to reduce and potentially eliminate carbon emissions from the growing process through the use of heat sourced from the nearby WwTW.

There would be no conflict between the proposed development and the key policies in the following Wrexham development plan documents:

- Wrexham Unitary Development Plan (2005): PS2, PS12, GDP1, EC4, EC6, EC13

These are discussed in greater detail in Section 9 in this document.

4.2 Amount, fabrication and scale

It should be noted that final equipment suppliers and contractors for the project have yet to be selected. Whilst some variation in the equipment may be necessary, significant variation in the presented elevations and footprints is not envisaged.

The proposed project involves the installation of the following components:

Glasshouse buildings

The development will consist of 2no. 7.6 ha glasshouses, comprised of structural steelwork and high specification glass designed for maximum light transmission and covering a total of 15.2 ha of land, each having a maximum gutter height of 7 m and gable apex height of 8 m, inclusive of the 30 cm high concrete perimeter foundations. Internally, the buildings will contain a steel support post mounted on pre-cast concrete pile and a 5 m wide reinforced concrete path running centrally along the length of the glasshouse. With the exception of the concrete path and foundation posts, the internal glasshouse floor remains soil. Other features of the glasshouse buildings include matte aluminium growing gutters hung from the roof, installed at approximately 4 m intervals across the width of the buildings and elevated from the soil floor. Around the outside perimeter of the glasshouse a 4 m wide stone access

road is used for construction purposes and is retained during operations for maintenance. Elevations are provided in Figure 300, Appendix A.

Packing and welfare building

The packing and welfare building, located to the north of the glasshouse building, will cover an area of approximately 0.6 ha and comprise elements including the packing area, canteen/toilets, irrigation, storage rooms and site offices. The building will be 8 m high and clad externally with a mix of profiled and flat panel coated steel cladding, with an architectural grey finish to blend into the existing skyline when viewed from distance. The floor will be concrete slab and the packing area will include 10 loading docks. Elevations are provided in Figure 300, Appendix A.

Energy centre / heating system

Ground source heat pumps will be located in the energy centre, connected to the nearby WwTW through underground closed-loop high-density polyethylene (HDPE) pipes. In addition to the heat pumps, gas combined heat and power (CHP) units will be installed to provide supplementary high temperature water for heating, carbon dioxide and electricity, with air inlet and outlets located on the roof to provide air flow for the CHP. Conventional gas boilers will be installed purely for redundancy purposes. Building elevations are provided in Figure 301, Appendix A.

For maintenance and safety purposes, 6no. electrical transformers surrounded by palisade fencing and 8no. dry air coolers will be located outside the energy centre building. Elevations are provided in Figure 303, Appendix A.

Two insulated vertical heat store tanks will be located adjacent to the energy centre building, mounted on reinforced concrete base. These tanks will have an above ground side height of 10 m, a 12.5 m apex height and a 25 m diameter. Elevations are provided in Figure 304, Appendix A.

Five water silos will also be installed adjacent to the energy centre and be mounted on concrete tiles. The silos will have an 11 m diameter and be 6 m high with a flat roof. Elevations are provided in Figure 304, Appendix A.

CO₂ storage tanks

Currently the adjacent WwTW is venting CO₂ into the atmosphere as a waste product. This CO₂ will be captured, cleaned and transferred via an HDPE pipe buried underground to the glasshouse. It is estimated this captured CO₂ will amount to approximately 5,000 tonnes per annum.

Three stainless steel vacuum CO₂ tanks, 14 m length and 2.5 m diameter, will be installed externally near the energy centre building, with buried mains pipes supplying CO₂ to growing gutters within the glasshouses. Elevations are provided in Figure 305, Appendix A.

Customer substation

An on-site substation for the supply of electricity to the project, approximately 3 m in height, 10 m in length and 3 m in width, will be installed externally near the energy centre building. Elevations are provided in Figure 302, Appendix A.

DNO substation

The Distribution Network Operator (DNO) will install an on-site substation for the supply of electricity to the project. The substation design will be dependent on the specific requirements of the DNO, but will typically be dark green GRP construction, approximately 3.5 m in height, 7.5 m in length and 3 m in width. Indicative elevations are provided in Figure 302, Appendix A.

Access and parking

All areas on site to be used by HGVs will be concrete, including the access road, turning area and 10no. HGV loading bays adjacent to the packhouse. A staff and visitor parking area will be surfaced with compacted stone hardstanding.

Access to the site will be required for vehicles during the indicative daily operational hours of 0600 to 1800 on weekdays and weekend work 0600 to 1500.

Approximately 150 members of staff will be employed at the facility, of which around 125 will be employed in the glasshouse and 25 in the packhouse and offices; all staff will travel to and from work daily from the local area and no on-site living accommodation will be required in relation to the development.

Closed irrigation system

Irrigation of crops in the glasshouse will comprise a closed system, requiring external supply of mains water only as emergency back-up when the normal working system is off-line. The system comprises two main elements, described as follows:

Rainwater Reservoir: Fall pipes will be attached to the gutters at each gable end (north and south), channelling rainwater from the glasshouse roof to buried drainage pipes. This water will supply lined storage reservoirs adjacent to the glasshouse and is then pumped back to the irrigation room upon demand. The reservoirs will be sized to meet not only the glasshouse irrigation requirements but also have adequate spare attenuation capacity at all times to meet a 1 in 100 storm event. Depending on the local water table, the reservoirs may be raised up to approximately 1 m in height.

Recycled irrigation water: Internal condensation will be captured via internal gutters on the roof and side walls. In addition, water not absorbed by the plant will be collected at either end of the growing gutters and pumped to “brown” water silos, before being fed to the irrigation room for filtration and UV treatment. The treated water will be blended with reservoir water and stored in clean water silos. Upon irrigation demand the plant nutrients are added in the irrigation room before being gifted back to the plants via the growing gutters; the process is repeated in a loop. A maximum of 5no. water storage silos with approximately 6 m height and 11 m diameter will be installed adjacent to the energy centre buildings.

A small amount of external mains water supply is used for the washing of produce prior to packing.

Utilities trench

The utilities trench will run underground for approximately 465 m from the glasshouse development to the Five Fords WwTW. The underground closed-loop HDPE pipes will connect the ground source heat pumps located in the energy centre to the proposed heat exchanger building (see below). Cross section details of the trenches are provided in Figure 308, Appendix A.

The utilities trench will incorporate the following elements:

- Trench 2 m depth, 4.2 m width
- 2no. 630 mm HDPE pipes with 500 mm between them to prevent thermal transfer
- 1no. 33 kV 300 mm private electricity cable from energy centre to heat exchanger building transformer
- 1no. 150 mm ducted private fibre communications cable

Branching off to the north, the trench includes:

- 1 no. 33 kV 300 mm ducted mains electricity connection from the electricity network to the DNO substation.
- 1 no. 300 mm steel gas pipe from intermediate gas pipeline to site.

Manholes will be installed along the route (subject to detailed design) to enable access to the pipeline should maintenance be required. Small (knee height) concrete markers will be installed at the side of fields to show the route once installed.

The National Joint Utilities Group (NJUG) code of practice will be employed throughout the entirety of the route, ensuring farming practices can continue, including deep ploughing over the pipeline once installed.

Heat exchanger building

The proposed heat exchanger building will be located within the Five Fords WwTW site.

The mono pitch steel framed building will be 19.4 m in length, 14.4 m in width, with eaves height 6 m on the low side and 8 m on the high side, with a mono pitch of 7.5°. The eaves will have galvanised steel box gutters with PVC downpipes. A roller shutter door will be located on the long side, with an adjacent steel personnel door. Elevations are provided in Figure 306, Appendix A.

Adjacent to the heat exchanger building will be a small outdoor electrical transformer and an underground septic tank to collect any water used in cleaning the heat exchangers. Transformer elevations are provided in Figure 303, Appendix A

The building would allow for the extraction of heat only from final effluent; the final effluent is not altered or transported from site but passes through the heat exchangers and out the other side. Heat transfer fluid, which is food safe and approved by the Environment Agency,

is hydraulically separated from the final effluent by the heat exchanger. The heat transfer fluid is circulated between the heat exchanger and the glasshouse site, where it will be used to heat the glasshouses.

Within the WwTW site, a concrete chamber will be constructed to facilitate the extraction of water from the final effluent pipe. Water will flow from the final water effluent pipe via an underground 700 mm pipe and into the new circular concrete offtake chamber. It will then be pumped out of the chamber via 5no. overground 500 mm steel pipes before entering the heat exchangers housed within the heat exchanger building. Once the heat has been transferred via the heat exchangers into the closed-loop heat water circuit (going back to the glasshouse) the same final effluent water (now colder in temperature) will then flow through 1no. steel 700 mm underground return pipe and back into the final water effluent pipe, downstream from where it was originally extracted. Isolation valves will be installed on both the underground offtake pipe leading to the offtake chamber and underground return pipe. These isolation valves enable Welsh Water to turn off/bypass the heat exchanger system should it be required.

The offtake connection to the final water effluent pipe will occur within one circular concrete chamber of approximately 6500 mm diameter that will be raised to approximately 1500 mm above ground level. The return connection will be an underground pipe connected to the existing final effluent pipe.

Details of the concrete chambers are provided in Figure 307, Appendix A.

CO₂ recovery plant

Situated to the southeast of the Welsh Water WwTW facility will be:

- A CO₂ recovery plant measuring 6 m x 12 m and 6.35 m in height.
- 2no. air coolers situated at ground level either side of the recovery plant measuring 8.8m in length, 1.47m in width and 1.32m in height.
- A small gas booster of 1.4 x 2 x 1.6 m in height

Indicative elevations are provided in Figures 309 and 310, Appendix A.

The CO₂ recovery plant harvests all waste CO₂ emissions from the Five Fords WwTW anaerobic digester facility. The cleaning process inside the recovery plant upgrades the CO₂ to food grade standard. This clean CO₂ is then transported via an underground pipe to the glasshouse for enhancing the growing environment.

4.3 Layout

In proposing the general layout of development, great consideration has been given to the relationship with topography; surrounding trees and hedgerows; and existing buildings. This will help ensure that the development sits comfortably within, and is well contained by, its natural surroundings whilst not having a detrimental effect on the surrounding environmental characteristics.

The ground within the glasshouse, external maintenance path, energy centre, packhouse and heat storage tanks will be laser levelled before construction to prepare for the laying of ground cover and heating pipes.

The general layout of the project is illustrated overleaf as Figure 3 and in Figure 101, Appendix A.

4.4 Landscaping

The proposed glasshouse site is contained within one large arable field with an irregular boundary to the north. A further pasture field lies to the west immediately adjacent the sewage works. To the northwest, accessed from the Cefn Road entrance, is an irregularly shaped field that follows the northern edge of the WwTW and the edge of the tree line along the course of the River Clywedog. The fields are enclosed by hedgerows, with tree groups and copse to the northern and southern boundaries.

There is a Public Right of Way (PRoW) that crosses the site from the north eastern corner to the south western corner, with numerous other PRoWs found within the surrounding landscape.

The site has some intervisibility with a number of residential properties, however these are limited due to the well vegetated boundaries to field margins and properties and the number of well wooded coverts. Visibility of the development will be further reduced by the proposed mitigation planting.

Proposed mitigation measures to screen the facility are the planting of new tree lines and infill hedgerow to the west and east of the glasshouse field whilst avoiding shading, and tree group planting to the north of the glasshouse field.

Please see Section 6 for a more detailed assessment of the project's impact on the surrounding landscape.

5 Transport and access

This section of the Planning, Design and Access Statement considers the transport issues arising from the operation of the glasshouse facility, including the suitability of access arrangements and of the local highway network to accommodate trips arising from the development proposals.

No provision has been made for the public to access the site. For reasons of health and safety, as well as those of crime prevention, a security system is required to be installed surrounding the site preventing access by the general public.

Cotswold Transport Planning was commissioned to undertake a Transport Statement (TS) for the proposed development in order to address any potential transport issues associated with the construction and operation of the proposed development. The full report is presented in Appendix B and is summarised below.

5.1 Site access

The site will be accessed from the existing vehicle access located on the north western boundary of the site, which currently serves Five Fords WwTW and is accessed from Cefn Road, shown in Figure 4.

The existing access is in regular use by large HGVs associated with the WwTW; the size and weight of vehicles associated with the application site will be similar to those associated with the WwTW and therefore it is considered suitable to use this route for access/egress.

Figure 4: Site access



Source: Cotswold Transport Planning

Swept path analysis undertaken for a maximum legal 16.5 m articulated HGV demonstrates that the largest vehicle likely to be associated with the development can adequately and safely access and egress the site in forward gear.

An independent traffic survey was carried out on Cefn Road and Sesswick Way from 15th to 21st May 2020. Speed survey data is included as Appendix F to the TS (Appendix B).

Appropriate junction visibility within the extent of the adopted public highway is achievable in both directions from the site access based on recorded vehicle speeds.

5.2 Parking

On the basis of 2011 Travel to Work census data, 145 car parking spaces are proposed to be provided to serve the 150 members of staff which will be employed at the glasshouse. The number of parking spaces proposed allows for additional capacity to accommodate visitors arriving by car. No vehicles will be forced to park and/or manoeuvre in close proximity to the public highway.

5.3 Forecast trip generation

The number of HGV trips to and from the facility depends partly on the type of crop grown, as each will have a different maximum yield and different packing requirement and volume. It also depends on the time of the year as the number of vehicle trips will vary, particularly in peak growing season. As a guide, there will typically be 8 HGVs associated with the development per day rising to 45 HGVs per day for the peak growing season, which equates to between 16 and 90 two-way HGV movements per day.

The facility will employ around 150 members of staff. Based on analysis of the census data described above, in combination with a worst-case peak season forecast, this equates to 268 daily two-way car trips undertaken by employees of the facility. Considering the proposed operating hours provided, the impact of these trips on the safe and efficient operation of the local highway network will not be severe as they will occur outside of the network peak hours.

In summary, the facility is likely to be associated with around 328 two-way vehicular trips by staff and visitors on a typical day. This is considered a worst-case scenario as the applicant has confirmed from discussions with commercial glasshouse operators elsewhere, a large number of car sharing takes place between employees.

The TS (Appendix B) concludes that the site can be suitably accessed and can be accommodated without detriment to the operational safety or capacity of the local highway network, stating that there are no valid highway or transportation reasons which should prevent the proposed development of the site.

6 Landscape and visual effects

Greenlight Environmental Consultancy was commissioned to carry out an independent Landscape and Visual Impact Assessment (LVIA) of the proposed glasshouse site.

The LVIA process involved a desktop assessment of published data to identify potential landscape and visual receptors that could be affected by the proposals, including a field survey carried out on 25th May 2020. The full report of the LVIA is presented in Appendix C and summarised below.

6.1 Landscape effects

Based on an assessment of the landscape character area of the application site and its surroundings, the area is judged as able to accommodate the proposed change. The area is judged as having medium sensitivity to change, due to its intact landscape condition and there being no local or national designations.

The landscape effects of the proposed development on the wider character area are limited by the existing mature and frequent vegetation and landform. These factors limit the effects of the proposals, maintaining the varied character of the area. However, there would be some change and the glasshouses would introduce new elements into the landscape, resulting in a change in land cover and land use.

It is therefore judged that there would be a medium magnitude of change to the receiving landscape character under a 1 km radius from the site boundaries. This judgement is based on the change in land cover and the boundary vegetation that will be retained and enhanced. The introduction of notable elements into the landscape will not alter the balance of the wider landscape character that already exhibits light industrial nature; the magnitude of change will be medium. The result is therefore considered to be a moderate effect on the landscape character in the long-term.

The landscape elements considered affected by the proposed development are limited to the change in land cover and use from arable field to horticultural built elements, with little loss of hedgerows or trees. Given the condition of the landscape elements identified, these landscape receptors are judged as having a medium sensitivity to change. The overall magnitude of change as a result of the development at the site scale is considered to be medium. Therefore, for these landscape receptors the effect is moderate.

The proposed tree lines and new hedgerow planting will provide a beneficial effect for biodiversity and wildlife.

Currently there are no other proposals within the vicinity of the site, however due to the cumulative effective in addition to the sewage works it is judged that there would be low cumulative landscape effects caused by the proposal.

6.2 Visual effects

The greatest effect on visual amenity is likely to be experienced immediately adjacent to the site. Any more distant views of the proposals beyond this are likely to be limited, and if experienced would be assimilated into the wider landscape. It is therefore considered that there is little potential for the development to result in any significant effects on visual receptors at distances of over 1 km from the site of the surrounding area. Figure 5, Figure 6 and Figure 7 overleaf provide a view of the site in the context of the wider environment.

The proposed mitigation planting is designed to mitigate the visual effects of the proposals, with a secondary benefit of strengthening the biodiversity of the area. New tree lines will be created to the west and east and along the northern boundary, and an eastern hedgerow will be introduced with a tree line of locally occurring native species to reduce the visual effect on PRow users.

The cumulative visual effects were assessed in relation to the proposals and planning applications. Due to no local planning applications of substance there will be a medium cumulative visual effect.

6.3 Summary

The site is within a landscape that exerts a positive character and that is in good landscape condition. However, the landscape is a working rural landscape with large areas of industrial buildings and the sewage works that the proposals will sit comfortably in. The visual effect of changes on site are barely felt beyond 1 km to the west. Mitigation in the form of hedgerow and tree planting reinforcement will mitigate some changes to visual amenity. The proposals will provide horticultural opportunities in a rural location without having an impact on the wider rural landscape.

Figure 5: View towards the site from PRow entry point from Sesswick Way



Source: Greenlight Environmental Consultancy

Figure 6: View from PRow approaching from the west



Source: Greenlight Environmental Consultancy

Figure 7: View from roundabout to the southeast of the site on Sesswick Way



Source: Greenlight Environmental Consultancy

7 Ecology

Greenlight Environmental Consultancy was commissioned to undertake an ecological impact assessment (EclA) of the proposed glasshouse site. A field survey visit was undertaken on 20th May 2020 to confirm the findings of the desktop review of published data, and to record habitats and species located on site. The full ecology report is presented as Appendix D and is summarised here.

7.1 Protected sites

There are two statutory protected sites located within 2 km of the project site; the River Dee SSSI and the River Dee & Bala Lake SAC approximately 2 km to the southeast.

There are 5 non-statutory protected sites located within 2 km of the site, all of which are Wildlife Sites (WS), the closest being the Marchwiell Marsh, approximately 500 m west of the site.

The proposed development will have no effects on statutory or non-statutory protected sites, owing to its distance to protected sites and limited impacts beyond the area of works.

7.2 Habitats

The habitats on the site are of low ecological value, being mainly arable land, with peripheral hedgerows and mature trees. There are no priority habitats on the site, except for hedgerows (not classified as '*important*' under the Hedgerow Regulations 1997) and deciduous woodland and rivers adjacent to the site.

The proposed works will require the clearance of the vegetated habitats on site, including approximately 115 m of species-poor hedgerow and a small number of scattered mature trees.

Mitigation will be implemented to avoid the loss of habitats from the proposed works, including a soft landscaping scheme to include the planting of species-rich hedgerows and trees across and around the site to create a green buffer zone and compensate for those lost. The proposed reservoirs will create aquatic habitats for amphibians and other aquatic species.

7.3 Protected species

Badgers

The site provides suitable habitat for badger setts, foraging and commuting, although no setts were recorded during the site visit. The arable field and species-poor hedgerow lost under the proposed development is of suboptimal foraging value to badgers and adequate similar habitat is available in the local area.

Regular checks of the site will be made prior to development commencing; if a badger sett is discovered then the nature of planned works within 30 m of the sett will be assessed for potential impacts and will inform an appropriate mitigation strategy.

Following these precautionary mitigation measures, no impact on badgers or their setts is predicted as a result of the development plans.

Bats

Numerous mature trees located on site were assessed as having high roost suitability for bats. A small number of these trees will be removed as part of the proposed development. Foraging and commuting areas will be directly affected with the removal of ~115 m of species-poor hedgerow.

Further bat activity surveys are currently being conducted; the results will be reported in the final EcIA. The outcomes of the surveys will inform the detailed recommended mitigation for bats.

Birds

The site provides suitable nesting habitats for scrub, hedgerow, tree, building and certain ground nesting birds. Red listed house sparrow, linnet, skylark and yellowhammer, and amber listed dunnock and stock dove may nest in suitable habitats on site. Barn owls may nest in mature trees on site and forage over marginal habitats. The proposed works are expected to result in the loss of arable crop habitats, species-poor hedgerow and a small number of scattered mature trees.

A breeding bird survey is currently being conducted; the results will be reported in the final EcIA. upon completion of the survey. The outcomes of the surveys will inform the detailed recommended mitigation for birds.

Great crested newts (GCN)

Certain terrestrial habitats on site are considered suitable for GCN, comprising of a mosaic of ephemeral, scrub, tall herb/ruderal and grassland. A known population of GCN is present to the south of the proposed site. Clearance works involve a risk to individual GCN potentially present within the site.

There are 30 ponds within 250 m of the site, 26 of which have been assessed in detail. Where accessible, a GCN presence/absence eDNA survey is being undertaken of all ponds within 250 m.

A European Protected Species mitigation licence from Natural Resources Wales will be required for the proposed works. Mitigation options currently being pursued include on-site and off-site mitigation and a financial contribution towards GCN mitigation off-site in lieu of onsite provision in accordance with *Draft Supplementary Planning Guidance Note 35: Great Crested Newt Mitigation Requirements – Johnstown Newt Site SAC and the Wider Countryside*.

After the effects of the mitigation set out in the EcIA, a significant enhancement is predicted of the favourable conservation status of GCN on and near the site.

Reptiles

Certain habitats on site are considered suitable for reptiles, comprising of a mosaic of ephemeral, scrub, tall herb/ruderal and grassland. Grass snakes have been recorded locally within the vicinity of 3 nearby ponds, and it is possible individual reptiles may commute onto or across the site.

A reptile presence/absence survey will be conducted to determine an appropriate mitigation strategy, which will inform the detailed mitigation for reptiles. It is considered the development will be able to accommodate this in the form of habitat creation, hibernacula construction and translocations, if required.

Water voles and otters

The River Clywedog adjacent the northern boundary is considered suitable for both water voles and otters, although no burrows, holts or signs of use were observed during the site visit. The river will not be directly impacted by the proposed development. As a precautionary measure a 5 m no-work buffer zone will be applied from the top of the riverbank.

After the precautionary measures, no impacts are predicted on these species from the proposed development.

8 Flood consequences and drainage

The Civil Engineering Practice (CEP) were commissioned to undertake a Flood Consequences Assessment (FCA) with integrated Flood and Surface Water Drainage Report for the proposed development.

Flooding is a natural process which cannot entirely be prevented but it can be managed to reduce its social and economic consequences and to safeguard the continued functioning of services and infrastructure. Some locations are already susceptible to intermittent flooding and climate change is expected to worsen the situation. Inadequate drainage infrastructure also increases the risk of flooding.

The full report produced by CEP is presented as Appendix E, and is summarised below.

8.1 Existing drainage and flood history

The site is currently comprised of undeveloped agricultural land and has no positive surface water or foul water drainage infrastructure. Rainfall currently discharges overland as a greenfield runoff to the River Clywedog to the north of the site.

The operational area of the site is located in Flood Zone 1 (equivalent to Flood Zone A as defined by Planning Policy Wales and Technical Advice Note 15: Development and Flood Risk) and is not at risk from any source of flooding. The main site access from Cefn Road crosses the River Clywedog and is partially within an area designated as being within Flood Zones 2 and 3 (equivalent to Flood Zones B and C).

Records from Natural Resources Wales, the Environment Agency and Wrexham County Borough Council have not identified any historic flood events affecting the site or the immediate vicinity.

8.2 Flooding potential

The site is located 25 km from the coast in Flood Zone 1 and is not at risk of tidal or fluvial flooding from anything less extreme than a 1:1,000 year flood event. Groundwater was not encountered in the site investigation works which extended to a depth of 5.45 m below ground level, and there is no indication in locally prepared flood risk documents of groundwater flooding affecting the site.

The flood mapping contained within the Wrexham County Borough Local Flood Risk Management Strategy identifies areas of the site to be at risk of flooding from overland surface water. However, the locations identified are minimal and all are isolated, and appear to be areas of potential ponding with no apparent overland flow route.

The natural route for flood waters to dissipate, should any event occur on the site, is to the River Clywedog at the northern site boundary. There is no associated flood risk to the downstream catchment and there are no residual flood consequences.

8.3 Drainage strategy

All rainwater from roofs will be collected together with all treated surface water runoff from the hard paved areas of site and collected on site within reservoirs with 100% rainwater recycling for irrigation under normal circumstances.

The reservoirs will be sized with sufficient storage provided to accommodate a 1:100 year storm event, including an additional 40% to account for the predicted effects of future climate change beyond the normal irrigation requirement. Only in the event that the operational capacity of the reservoir is already full during a significant rainfall event will there be an associated restricted discharge from the site.

The reservoirs will be excavated from ground level such that there is no possibility of a breach occurring. Should an exceedance event occur, floodwater would be dissipated from reservoir 4 into the River Clywedog which flows adjacent to the northeast site boundary. There are no flood consequences to the downstream catchment associated with the development proposals.

None of the proposed reservoirs will individually hold more than 25,000m³ of escapable volume and do not therefore classify as large reservoirs where the services of a panel engineer would be required.

The drainage proposals will be further confirmed at detailed design stage.

8.4 Foul water

Foul drainage will be discharged to the existing 150 mm diameter public foul sewer located adjacent to Bedwell Road, to the east of the site.

8.5 Conclusions

The FCA preliminary calculations indicate that surface water runoff generated by the proposed development can be attenuated onsite for all rainfall events up to the 1:100 year event including an allowance for climate change.

In terms of flood risk planning the proposed development is considered to be safe and suitable at this location and will not increase flood risk elsewhere and will provide improvement to immediately adjacent sites by managing surface water from all rainfall events up to the 100 year plus climate change event.

9 Planning policy assessment

The studies previously described have examined various aspects of the proposed development site, the surrounding environment and the likely effect of the proposed glasshouse development on the environment. These studies allow a full assessment of the proposed development, in the context of the relevant national and local planning policies described in Section 4.1.

9.1 National planning policy

9.1.1 Planning Policy Wales (Edition 10, December 2018)

Planning Policy Wales (PPW) carries a presumption in favour of sustainable development and states that proposals that accord with the development plan should be approved unless material considerations indicate otherwise. PPW refers to *The Well-being of Future Generations (Wales) Act 2015*, which establishes a sustainable development principle.

In order to deliver sustainable places, PPW sets out 5 key principles to ensure that planning facilitates the right development in the right place. These include growing the economy in a sustainable manner, making the best use of resources, facilitating accessible and healthy environments, creating and sustaining communities and maximising environmental protection whilst limiting environmental impact. The proposed development will provide around 150 jobs, allowing for year-round production of fruit and vegetables to be integrated with renewable heat usage, reducing the carbon dioxide levels associated with food miles while contributing to national food security.

Planning for a strong rural economy is essential to support sustainable and vibrant rural communities, and *“planning authorities should adopt a constructive approach towards agricultural development proposals, especially those which are designed to meet the needs of changing farming practices...”* (paragraph 5.6.6).

PPW states that the Welsh Government *“aims to secure the strongest economic development policies, to underpin growth and prosperity in Wales, recognising the importance of decarbonisation and the sustainable use of natural resources, both as an economic driver and a commitment to sustainable development”* (Para 5.7.7). As stated above, this proposal will enable the use of a renewable heat source to heat the glasshouses, moving towards a low carbon economy, whilst the scheme would provide socio-economic benefits including the creation of around 150 jobs.

The potential effects of this proposed development on the receiving environment have been assessed by independent specialists and summarised throughout this document. These studies indicate that the limited effects of the proposed development on the receiving environment would not be significant. The potential benefits of the proposal in terms of security of food supply and action to combat climate change are notable.

9.2 Local planning policy

The development plan for the area is the Wrexham Unitary Development Plan (adopted 2005). The relevant policies identified in Section 4.1 are listed below and the extent to which the proposed development supports or conflicts with them is described.

Policy PS2

This policy states that development must not materially detrimentally affect countryside, landscape character, open space or the quality of the natural environment.

This planning application is accompanied by a Landscape and Visual Impact Assessment (Appendix C) that has taken account of the landscape character in the proposals. The landscape effects of the proposed development on the wider character area are limited by the existing mature and frequent vegetation and landform. As stated in Section 6, it is considered that the development would have a moderate effect on the landscape character in the long-term, with the varied character of the area being maintained.

Policy PS12

This policy sets out that proposals for the generation of energy from renewable sources will be supported provided that the wider environmental benefits are not outweighed by any detrimental impacts of the proposed development on the landscape and the local environment.

Although not a renewable energy generation scheme, the concept of the proposed development incorporates a new approach to glasshouse heating, with the aim of reducing and potentially eliminating carbon emissions from the growing process, through the use of heat pumps which would extract the low grade heat embedded within the treated wastewater from the nearby sewage treatment works.

Policy GDP1

This policy sets out the criteria which all new development should meet, including making use of the best design techniques, ensuring the development accords with the character of the site and does not result in flooding. The policy also requires that the development ensure the provision of sustainable communities, through the promotion of the economic, social and environmental wellbeing of the area.

The proposed glasshouse development includes innovative designs and techniques appropriate for a modern growing facility. This planning application is accompanied by a Landscape and Visual Impact Assessment (Appendix C) and Flood Consequences Assessment (Appendix E) that have taken account of the landscape character and the risk of flooding associated with the proposals. Large scale glasshouse developments of this type lead to many permanent jobs being created, including high value jobs such as operations and production management, marketing and sales teams, horticultural management, logistics and financial management. Additionally, many local ancillary businesses will benefit from the development, such as engineering, technical and professional services.

Policy EC4

This policy states that development proposals should provide for the conservation and management of hedgerows, trees, wildlife and other natural landscape features, and include new planting in order to enhance the character of the landscape.

As stated in Section 7 of this document and Appendix D, the hedgerows on site are not considered as 'important' under the regulations. The proposed works are expected to result in the loss of approximately 115 m of species-poor hedgerow and a small number of scattered trees. A soft landscaping scheme (Appendix C) will include the planting of native trees and infill hedgerow around the site boundaries, which will have a secondary benefit of strengthening the biodiversity of the area.

Policy EC6

This policy states that development within or close to sites of biodiversity interest will only be permitted where it can be clearly demonstrated that the need for the development outweighs the need to safeguard the intrinsic nature conservation value of the site. Measures to improve the biodiversity value of sites will be supported.

As stated in Section 7 of this document and Appendix D, important environmental assets have been evaluated in the preparation of this application. The proposed development is unlikely to have an effect on statutory or non-statutory protected sites, owing to its distance to protected sites and limited impacts beyond the area of works. Mitigation will be implemented to avoid the loss of habitats from the proposed works, including a soft landscaping scheme to include the planting of species-rich hedgerows and trees across and around the site to create a green buffer zone and compensate for those lost, with a secondary benefit of strengthening the biodiversity of the area. The proposed reservoirs will create aquatic habitats for amphibians and other aquatic species.

Policy EC13

This policy sets out that development which would result in an unacceptable adverse impact on the water environment due to additional surface water runoff will not be permitted.

As stated in Section 8 and Appendix E, the preliminary calculations indicate that surface water runoff generated by the proposed development can be attenuated on site for all rainfall events up to the 1:100 year event, including an allowance for climate change.

9.3 Planning policy summary

There would be no conflict between the proposed development and either local or national planning policies. Additionally, the opportunities for biodiversity enhancements, the increased agricultural production of the site and the heating of the glasshouses from a low carbon source means that the proposal would also support the implementation of a number of local and national policies.

10 Summary and conclusion

This planning application is for the development of a commercial glasshouse and packing facility on land west of Sesswick Way, Marchwiel, occupying a site of approximately 44 ha within Wrexham County Borough.

The site was selected in consideration of having the following:

- Proximity to sewage treatment works (from which sustainably sourced low grade heat and CO₂ will be collected)
- Appropriate site access
- Appropriate topography
- Proximity to the gas and electricity network
- Low potential impact on local residents and public receptors.

The development would consist of two glasshouses covering a total of 15.2 ha of land, with associated packing and energy buildings. Other elements of the development include a heat exchanger building, CO₂ recovery plant CO₂ storage tanks, vertical heat stores, DNO cabin, reservoirs and car parking.

The landscape effects of the proposed development on the wider character area are limited by the existing mature and frequent vegetation and landform. The greatest effect on visual amenity is likely to be experienced immediately adjacent to the site. Any more distant views of the proposals beyond this are likely to be limited, and if experienced would be assimilated into the wider landscape.

Planting of native species will be undertaken in the infill hedgerows and new tree lines on the site boundaries. The proposed mitigation planting is designed to mitigate the visual effects of the proposals, with a secondary benefit of strengthening the biodiversity of the area.

Overall the proposed development would contribute to the aims and objectives of national and local policies as set out in PPW and the Unitary Development Plan.

Large scale glasshouse developments of this type make a major contribution towards the production of UK grown food and thus national food security, whilst at the same time significantly reducing associated CO₂ levels and food miles. The socio-economic benefits of such projects to the local communities can also be substantial; the proposed facility is expected to create approximately 150 additional full-time jobs once operational, and where glasshouses are located they are seen to significantly enhance the local economy. This development represents an excellent opportunity for Wrexham County Borough Council to contribute to the Environment Act (Wales) 2016 legal obligations to reduce greenhouse gas emissions by 80% by 2050.

This proposal to develop glasshouses and packing facilities would contribute to these goals, and this site has been selected and carefully designed in order that any impacts on the surrounding amenity and environment are minimised.

Appendices

- A. Plans and elevations
- B. Transport Statement
- C. Landscape and Visual Impact Assessment & Planting Scheme
- D. Ecological Impact Assessment
- E. Flood Consequences Assessment