Environmental and Climate Change Risk Assessment

Anaerobic Digestion Facility – Talgarth

25th July 2025

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Environmental and Climate Change Risk Assessment

Anaerobic Digestion Facility – Talgarth

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Acronyms and Abbreviations

Name	Description
ABP	Animal By-Product
CHP	Combined Heat and Power
NRW	Natural Resources Wales

1. INTRODUCTION

As part of an application for an environmental permit, operators must assess the risk to the environment and human health from the activities they seek to permit. There is also a requirement to consider the affects a changing climate may have on the environment and human health in relation to their activities.

This Environmental and Climate Change Risk Assessment has been undertaken in accordance with the online NRW Guidance for undertaking environmental risk assessments, and sector-specific climate change risk assessments.

Environmental risks relevant to the site activities are:

- Points source emissions to air, water and land/ground
- Noise;
- Odour
- Dust;
- Litter;
- Pests;
- Vandalism;
- Fire;
- Incompatible Feedstock; and
- Spillages and Leakages.

For each of the above environmental criteria the approach to the assessment has followed the following four stage process:

- Identify the risks;
- Assess the risks (assuming those control measures proposed are in place);
- Choose appropriate further measures to control these (if required); and
- Present the assessment.

Climate change hazards relevant to the site activities are:

- Increased Summer Temperatures;
- Decreased Summer Rainfall;
- Increased/Decreased Winter Temperature;
- Increased Winter Rainfall;
- Increased likelihood of storms; and
- Wildfires.

For each of the above environmental criteria the approach to the assessment has followed the following five stage process:

- Identify the hazards;
- Identify the risks;
- Evaluate the vulnerability of the site to the risk;
- Outline appropriate risk management and adaption measures to control these (if required); and
- Present the assessment.

In all cases, the overall risk assessment associated with the site concludes that the site presents a low risk.

2. SITE DETAILS

2.1 Site Location

The site is located at the GP Biotec, Great Porthamel, Talgarth, Brecon, Powys, LD3 0DL.

2.2 Infrastructure and Design

2.2.1 Site Boundary

The proposed Installation Boundary is provided overleaf in **Figure 2.1**

2.2.2 Drainage

All operational aspects of the site are constructed on a sealed concrete hardstanding as described in the original application.

The drainage system ensures that all surface water falling on to the ABP reception area is routed to the Anaerobic Digestion Tanks for use within the process.

Drainage for the lagoon area to be included within the permit boundary is already interlinked to the existing site drainage systems, with surface water run-off from clean areas of site discharged to the River Llynfi via permitted discharge points W1 and W2.

This drainage system can be seen on Figure 3.5 below.

The Standard Rules permitted waste storage area to be included within the permit boundary is housed on a concrete base surrounded by concrete panels and earth/clay bunding, with a sealed drainage system with a gradual sloping gradient into an effluent capture pit.

All liquids and rainwater are captured and pumped directly into a liquid storage tank and/or directly up to the installation AD site to aid dry matter control. Please see Figure 3.6 for the drainage plan of this additional area.

Hardstanding

All internal and external processing areas, including the proposed areas of land to be incorporated as part of this variation application, are constructed with impermeable concrete hardstanding which has been designed in accordance with the load bearing requirements of the processing equipment and vehicles used at the facility. Typically, all non-structural concrete areas comprise of a reinforced concrete hardstanding of at least 200 - 250mm thickness.

Tanks and Bunds

All tanks have been installed with secondary containment and designed to comply with the following standards and guidance requirements:

- HSE Bulk LPG Storage Tank: Safety of your LPG Storage Tank;
- CIRIA C598: Chemical Storage Tank Systems – Good Practice; and
- CIRIA 736: Design of Containment Systems for the Prevention of Pollution.

2.3 Additional Areas

2.3.1 Digestate Lagoon

The site currently manages a digestate lagoon for the storage of PAS110—accredited digestate to the west of the main permitted boundary. As part of this proposed variation, the applicant wishes to include this digestate lagoon and surrounding area within the permitted site boundary. This area will therefore also includes buildings and storage areas that do not inherently require a permit, namely a grain store, machine store, separator building and additional red diesel and AdBlue storage.

2.3.2 Standard Rules Area

The area currently operated under the Standard Rules permit is located approximately 380m to the west of the AD plant and currently comprises a waste storage area including a concrete bunded area with sealed drainage system and a 30,000 litre steel panelled storage tank for liquid waste. Incoming waste is stored in this area and it is proposed to utilise the area for pre-treatment blending of solid and liquid waste prior to being fed to the AD facility. The area has been permitted since operations began and under regulation of NRW. Surrender of this SR permit will be undertaken and it is understood that NRW have agreed a low risk surrender due to the low potential for pollution to have arisen from the onsite activities.

On the basis that new land is to be included in the boundary (including the land covered by the current SR2010 No.17), the site's H5 Site Condition Report has been updated and included in this application.

A summary of the changes can be seen below:

- Since the land currently operated under the SR2010 No.17 permit, and new area of land to be included in the permit boundary housing the digestate lagoon and ancillary buildings, will continue to be utilised by the same operator and for the same purpose, no ground investigation data has been obtained to establish a new baseline. The site will accept the ground in as-is condition and undertake ground investigation work at the point of permit surrender.
- The database review undertaken as part of the updated SCR details no pollution incidents for concern that are deemed relevant for the site or its operations.
- The proposed permitted areas have been designed to ensure that there will be no fugitive emissions to soil, groundwater, or surface water from the site. The waste storage site concrete panel bunding walls and concrete pad area are existing and upon inspection are in very good condition with no visible damage or weak areas, therefore no posing a risk of pollution through seepage or damage to the infrastructure.
- The digestate lagoon has been built to EA/NRW Appropriate Measures standards and the digestate stored within meets PAS110 accreditation. There have been no recorded pollution incidents arising from the storage of digestate historically.
- The Site Condition Report will be updated throughout the lifespan of the permit.

The site's drainage plan is provided overleaf in **Figure 2.2.**

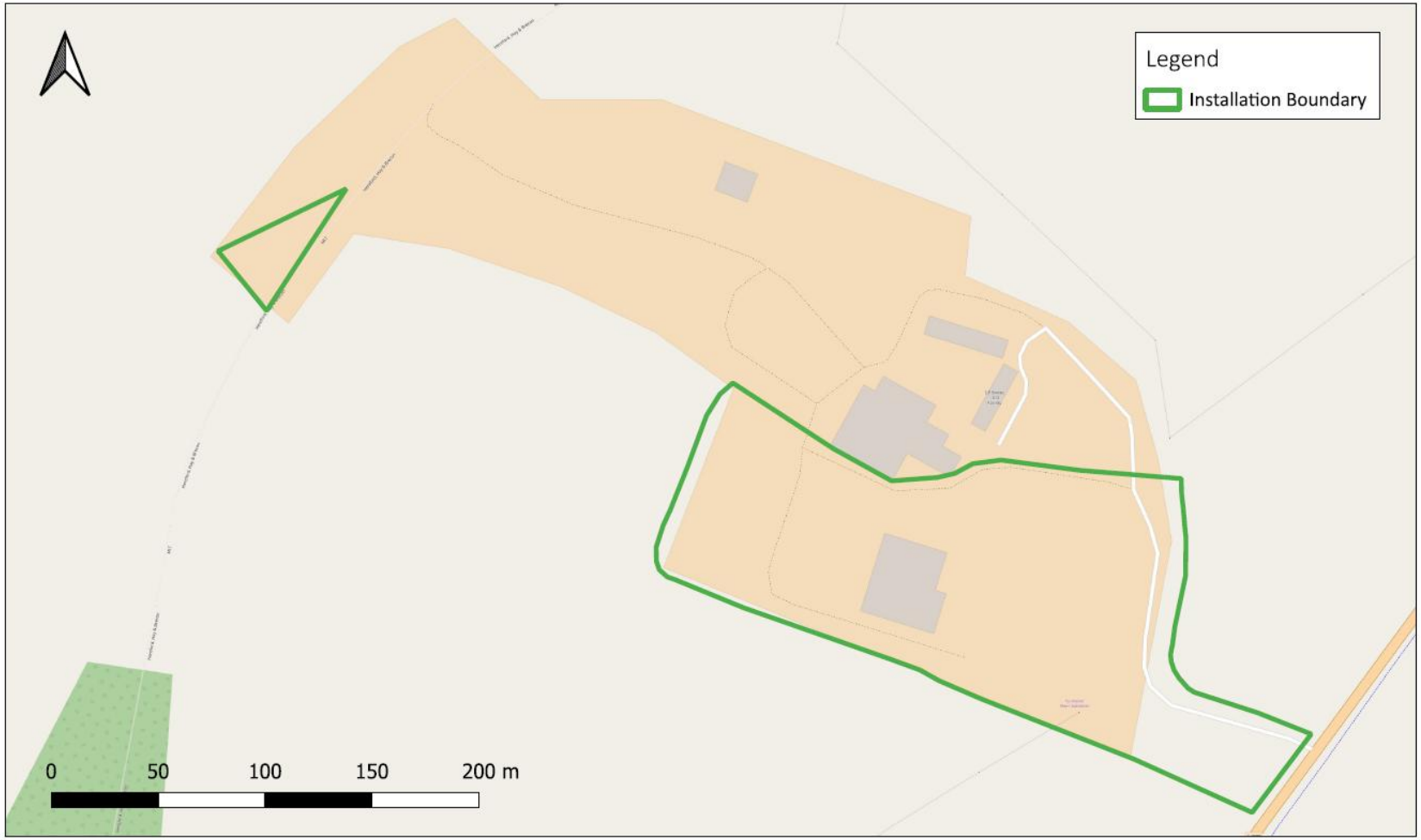


Figure 2.1 Proposed Installation Boundary

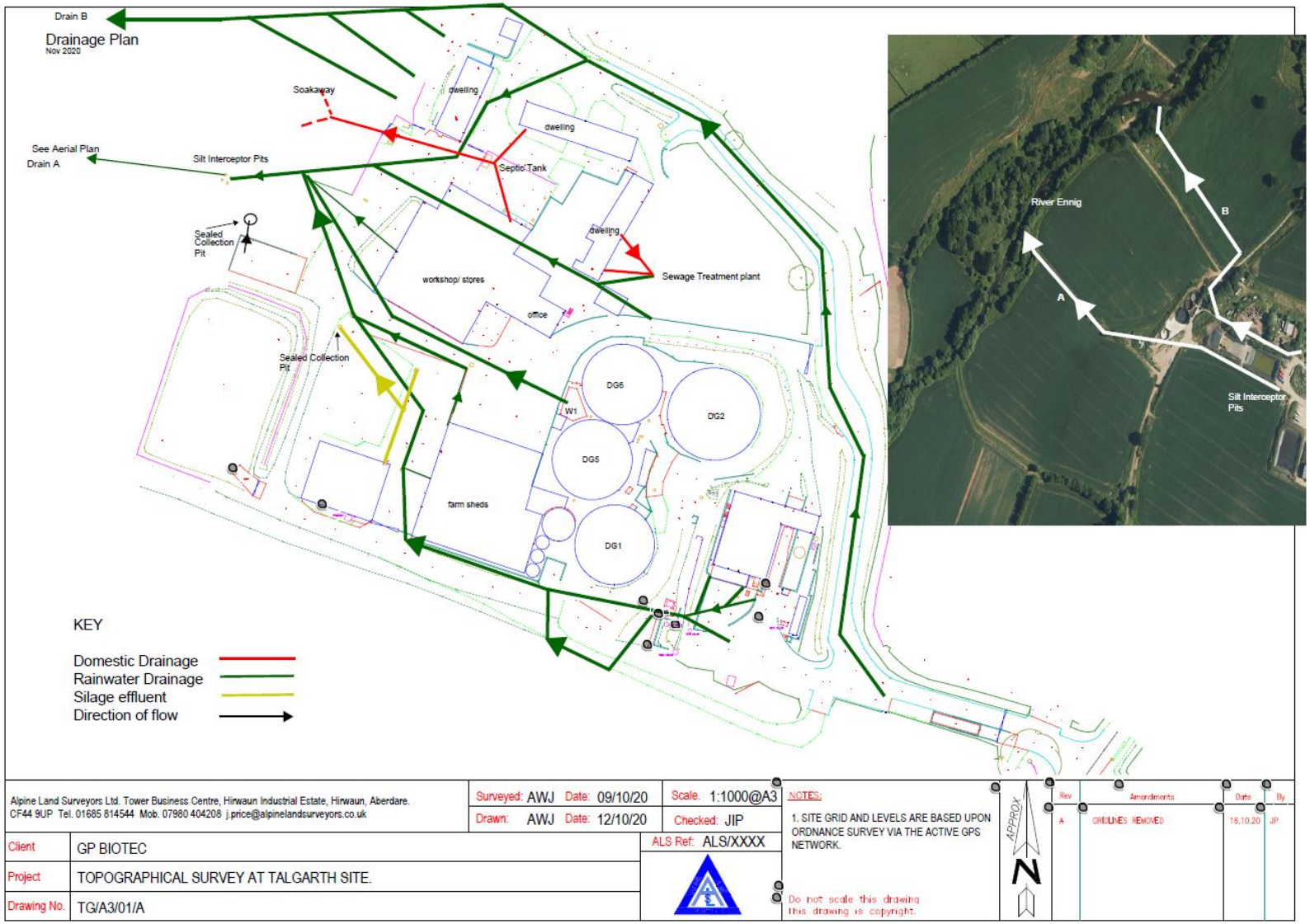


Figure 2.2 Drainage Plan

2.4 Site Context

The following sections outline the site context, including the proposed Installation Boundary, site layout, surrounding site setting and any nearby sensitive receptors.

2.4.1 Site Setting

The site is located in a mixed-use landscape, comprising of a blend of commercial, residential and recreational assets, as well as prominent ecological features. The facility is situated to the west of the A4078 road in an area of predominantly agricultural land. The wider surroundings primarily comprise agricultural land, with the village of Talgarth located approximately 1.9km south of the site. Table 2.1 below outlines the surrounding feature of the site.

Table 2.1 Surrounding Site Setting

Direction	Description
North	Immediate Vicinity: Farmland Within 500m: Farmland, Afon Llynffi (River Wye), Private Residential Dwelling Beyond 500m: Farmland, Lower Porthamel Campsite, Afon Llynffi
East	Immediate Vicinity: Farmland, A4078 Within 500m: Farmland, Forest edge Beyond 500m: Farmland, Residential dwellings, Forest
South	Immediate Vicinity: Farmland Within 500m: Farmland, fragmented woodland, A4078 Beyond 500m: Farmland, Talgarth village (inc residential and commercial properties)
West	Immediate Vicinity: Farmland Within 500m: Farmland, fragmented woodland, Afon Llynffi (River Wye) Beyond 500m: Farmland, Talgarth Welsh Water, corridor woodland fragments, Castell Bronllys

2.4.2 Nearby Sensitive Receptors

The nearest residential receptor to the site is a single residential property to the north along an unnamed road, located approximately 370m northeast of the site boundary.

Table 2.2 - Human Receptors

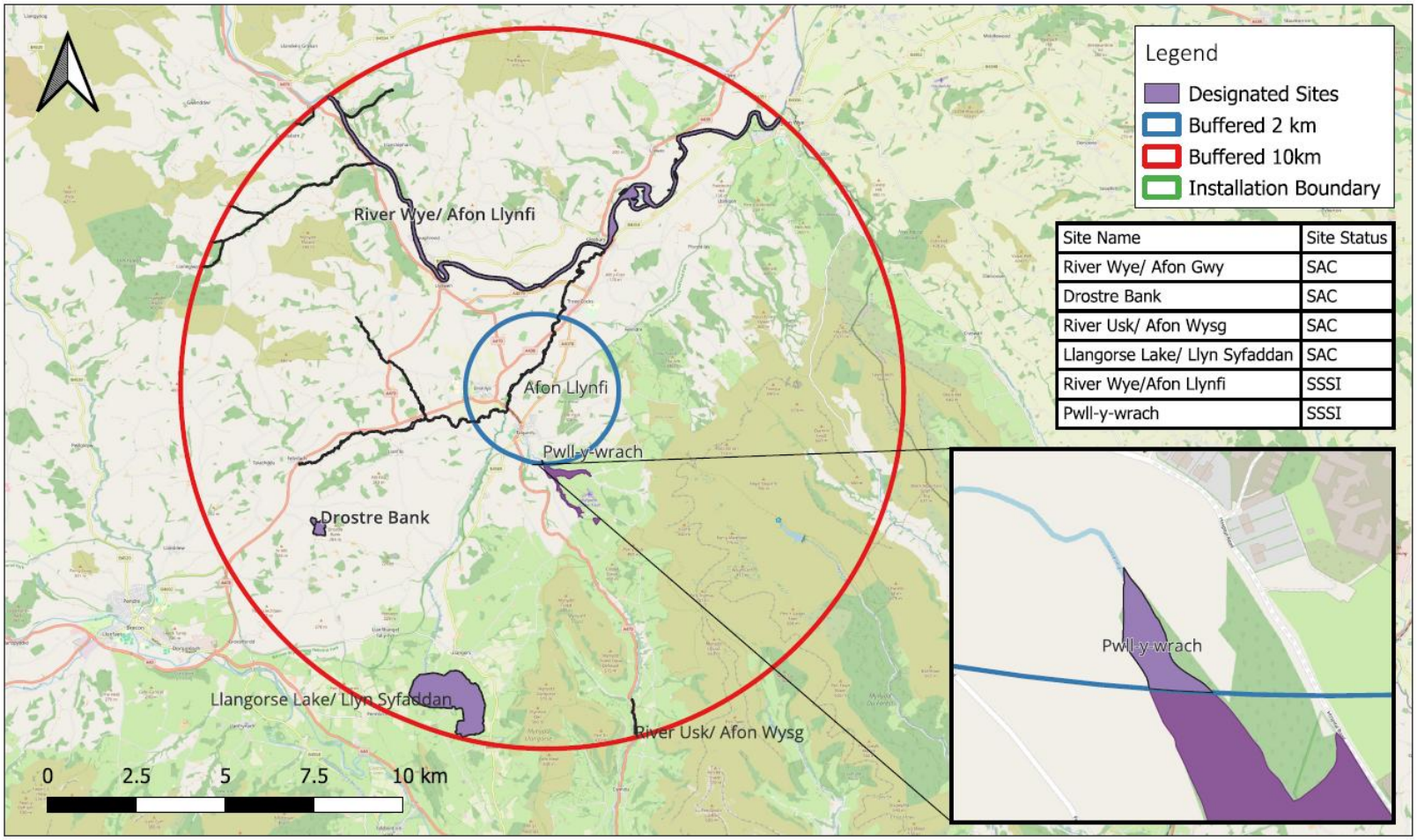
Receptor Name	Distance from Site
Unnamed Road, Residential Property	370m NE
Lower Porthamel	630m N
Unnamed Road, Farmhouse	990m E
Unnamed Road	660m S
Bryn Derwen	720m S
Park Ave	770m S
Woodland's Avenue	850m S
Kings Drive	910m S
Queens Ave	1km S
Bronllys Road	1km SW

Riverside International Caravan Park	980m SW
Unnamed Road, off A479	890m SW
Hay Road	980m W
A479	780m NW
A438	690m NW
A479	890m NW

Due to the proximity of the nearest residents, the site could be considered to be of a low sensitivity as there are no other residential properties within 500m of the site. Nearby, approximately 740m south, there is the village of Talgarth, and approximately 1.3km to the west is the village of Bronllys, which are the two most populated areas in closest to the site.

Due to the odorous nature of the site's activities, particular attention has been paid in ensuring the risk of odour nuisance and complaints are minimised. Full details of emission prevention and mitigation measures can be found in the relevant sections below, and the associated annexes. As a result of this permit variation there are no changes in the risk associated with odour emissions from site.

The closest designated ecological receptor to the site is the River Wye SAC, located approximately 280m northwest of the site. There are two UK designated protected sites within 2km of the site. There are four European designated protected sites within 10km of the site, these are provided overleaf in **Figure 2.3.**



Site Name	Site Status
River Wye/ Afon Gwy	SAC
Drostre Bank	SAC
River Usk/ Afon Wysg	SAC
Llangorse Lake/ Llyn Syfaddan	SAC
River Wye/Afon Llynfi	SSSI
Pwll-y-wrach	SSSI

Project Number: SOL_24_P060_GPB Doc Ref: Annex B_Site Plans Map Title: Sensitive Ecological Receptors Date: 15/01/2025 Drawn by: RM Checked by: SR	Site Address: GP Biotec Ltd - Anaerobic Digestion Facility Great Porthamel Brecon LD3 0DL	1. Do not scale off this drawing 2. All dimensions to be confirmed on site 3. This drawing is copyright of Sol Environment Ltd 4. This drawing is to be read in conjunction with relevant consultant drawings and specifications 5. QMS Reference: QMS_7.5.39_TEM - Template - GIS Drawing - Horizontal v1

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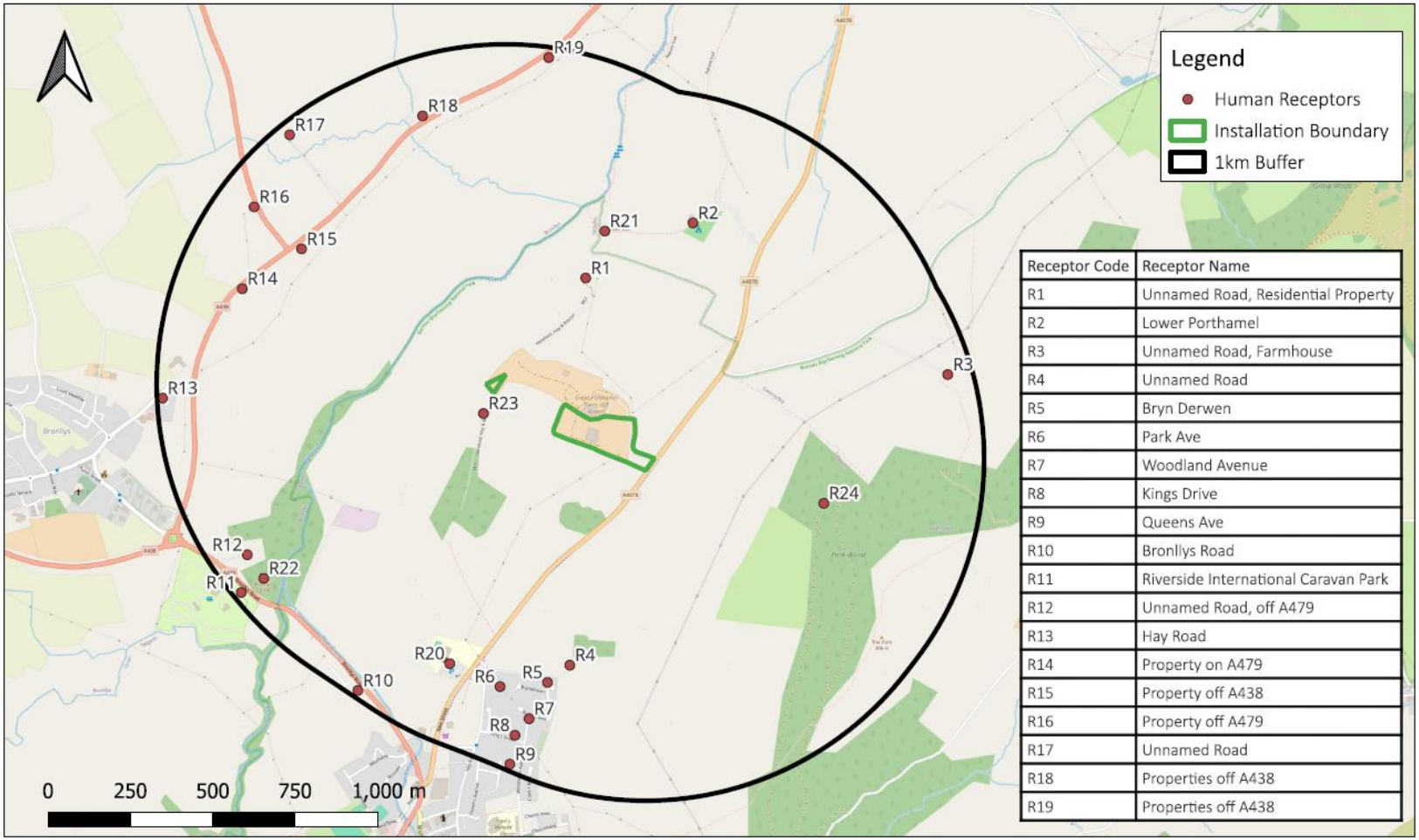
Figure 2.3 Sensitive Ecological Receptors within 10km



Receptor Code	Receptor Name
R1	Unnamed Road, Residential Property
R2	Lower Porthamel
R3	Unnamed Road, Farmhouse
R4	Unnamed Road
R5	Bryn Derwen
R6	Park Ave
R7	Woodland Avenue
R8	Kings Drive
R9	Queens Ave
R10	Bronllys Road
R11	Riverside International Caravan Park
R12	Unnamed Road, off A479
R13	Hay Road
R14	Property on A479
R15	Property off A438
R16	Property off A479
R17	Unnamed Road
R18	Properties off A438
R19	Properties off A438

Figure 2.4 Sensitive Human Receptors within 1km

2.4.3 Wind Direction

The estimated wind direction for the proposed site comes from a predominantly south-southeast direction based on the previous 5-year annual average from Talgarth station.

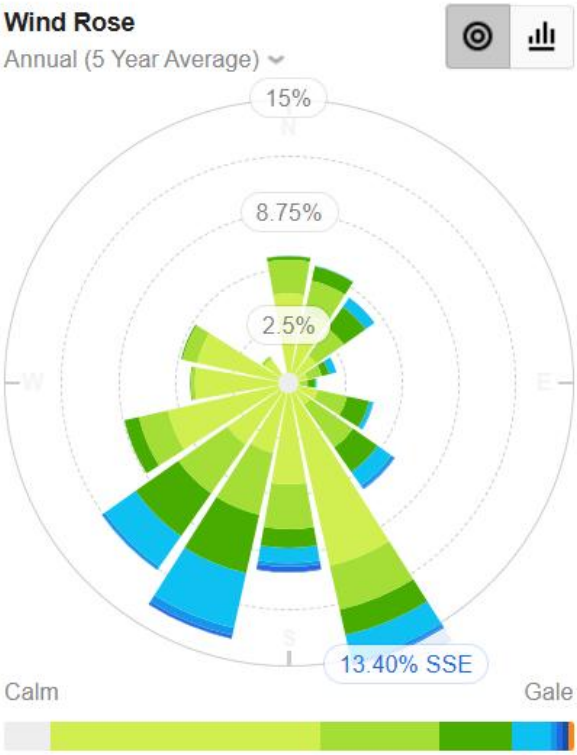


Figure 2.5 Wind Rose for Talgarth

2.4.4 Flood Risk

The site is main process area of the site is located within Flood Zone 1 and is considered to be a low-risk area for flooding from surface waters and small watercourses. The new addition of the Standard Rules area suggests parts reside in Flood Zone 3, the highest risk of surface water flooding. Anecdotal evidence from the Applicant suggests, during periods of heavy or prolonged rain, parts of the site are prone to flooding, mostly due to uneven ground creating pools of water, but this flooding is rarely significant.

The extent of flooding from rivers and surface water is shown in Figure 2.6 below.

Figure 2.6 Flood Risk of the Proposed Site

3. ENVIRONMENTAL AND CLIMATE CHANGE RISK ASSESSMENT

3.1 Environmental Risk Assessment

Table 3.1 Environmental Risk Assessment

Hazard	Receptor	Pathway	Risk Management Techniques	Probability of Exposure	Consequence	Overall Risk (following Mitigation)
Point Source \ Releases to Air	Atmosphere	Airborne	▪ The facility combusts cleaned and conditioned biogas only. ▪ The facility has several existing point source emissions: from the CHP units (CHP1 - A1) and (CHP2 - A2), emergency flare (A3), liquid waste tank carbon filter outlet (A6), standby biogas boiler (A7) and biomethane upgrading plant stack (A8). This permit variation will add one additional point source emission from a new CHP unit, CHP3 (A9). ▪ Activated carbon which has an extremely high efficiency will be used to filter the raw biogas to remove contaminants prior to biomethane upgrading. ▪ The new standby biogas boiler will only be operated to supplement heat to the digestion process when one of the main CHPs is off. ▪ The site is not located within an AQMA. ▪ All emission concentrations from the plant will be in line with those ELV's specified in the permit. ▪ Analysis of the raw biogas (prior to activated carbon filtration and biogas upgrading) has not indicated the presence of ammonia. ▪ The digestate lagoon will be covered to prevent large-scale releases to air. ▪ The digestate lagoon meets SSAFO compliance.	Low: offsite receptor impacts	Air Pollution	VERY LOW due to the proposed processes on site

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Emissions to Water	Groundwater / Geology / Surface Water	Waterborne	▪ There are no process emissions to controlled waters. ▪ All surface water collected from the ABP waste reception areas (existing anaerobic digestion part of site) is currently collected and transferred into the digesters. ▪ All uncontaminated surface water that collects in the bunded area (digesters) is tested and where suitable, released from emissions point W1,where surface water enters the River Wye/Afon Llynfi. ▪ Any surface water not suitable for release at W1 is contained, collected and returned to the digestion process. ▪ W2 discharges clean, uncontaminated surface water from the parking and turning area. Discharge must be visibly clear and free of oil contamination. Monitoring is undertaken weekly to ensure this is the case. ▪ The new CHP plant (A9) and additional liquid waste pre-storage tanks will not produce any liquid process emissions. ▪ The surface water lagoon that will be included within the permitted Installation Boundary will not result in any emissions to water. The lagoon is fully lined and sealed with no discharge outlet. ▪ Clean surface water from the biomethane upgrading plant area will drain to land. This will be clean surface water as the process is fully enclosed with no potential to become contaminated. ▪ A sealed drainage and containment system for all tanks containing potentially polluting liquids has been constructed so that any leaks / spills will be contained. ▪ Tanks are inspected visually on a daily basis by site staff to ensure continued integrity of tanks, and identify any necessary remedial action required.	Low: all runoff is controlled on site; therefore, the probability of exposure is low.	Contamination	VERY LOW due to the proposed management techniques and drainage arrangements

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			▪ Spill kits are strategically located around site. ▪ Minor spills are cleaned up immediately, using spill kits. Resultant materials will be placed in a container for off-site disposal to an appropriate facility, if necessary. ▪ Immediate action will be taken in event of any major spills. Any spillage will be cleared immediately and placed in containers for offsite disposal. ▪ NRW will be informed immediately of any major spill event.			
Emissions to Land	Groundwater / Geology	Spills / Leaks	▪ The only emissions to land will be clean surface water runoff. ▪ All tanks, including the two liquid waste pre-storage tanks, have been constructed in line with the relevant standards. ▪ All storage of solid feedstock is located on hardstanding in appropriately constructed containment (clamps). ▪ Storage of liquid digestate and blackwater is within a sealed and lined lagoon. Clean surface water from the biomethane upgrading plant area will drain to land. This will be clean surface water as the process is fully enclosed with no potential to become contaminated. ▪ The surface water lagoon that will be included within the permitted Installation Boundary will not result in any emissions to land. The lagoon is fully lined and sealed with no discharge outlet. ▪ Spill kits will be strategically located around site. ▪ Minor spills to be cleaned up immediately, using spill kits. Resultant materials will be placed in a container for off-site disposal to appropriate facility, if necessary. ▪ Immediate action will be taken in event of any major spills. Any spillage will be cleared	Low: spills / leaks could potentially contaminate the ground / groundwater underneath the site.	Contamination	LOW due to the proposed risk management techniques

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			immediately and placed in containers for offsite disposal. ▪ NRW will be informed immediately of any major spill event.			
Noise	Local Residents	Airborne	▪ Vehicle deliveries will only take place during daytime. ▪ Plant and equipment will only be operated by trained staff to ensure that no excessive noise emissions are produced by the mis- or improper use of plant or equipment. ▪ Appropriate preventative maintenance will be provided for all plant and equipment on site. This will ensure no deterioration of plant or equipment that would give rise to noise emissions. ▪ The processing plant and associated equipment has been designed in accordance with best practice ensuring that internal noise does not present an issue to the employees,(Control of Noise at Work Regulations) or sensitive and human receptors as a nuisance. ▪ The facility will not give rise to reasonable cause for annoyance. In the unlikely event that complaints are received measures described in the integrated management system will be put in place. ▪ A noise assessment was undertaken in 2021, and an updated assessment is not deemed necessary as part of this permit variation.	Low: due to the nature of the activities	Nuisance	LOW due to the proposed risk management techniques
Odour	Local Residents	Airborne	▪ The site is managed in accordance with an Odour Management Plan, which is provided in Annex E. ▪ Daily odour monitoring is carried out as part of daily site checks. ▪ Under normal circumstances the main permitted process (anaerobic digestion) takes place in an oxygen depleted environment and is an enclosed system,	Medium: the occurrence of odour emissions from the site is possible	Nuisance	LOW due to the proposed risk management techniques

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			thereby minimising potential for odour release. ▪ Silage is stored in sealed sheeting and minimum surface area is exposed during delivery and digester loading, reducing the exposure to air. ▪ Liquid slurry is delivered in sealed tankers and pumped straight into the sites sealed system for input to the digester. ▪ Spillages during waste delivery or digestate export are immediately contained and cleared by trained site staff and the area appropriately washed down. ▪ Odorant for the biomethane will be stored in a suitable container with bunding, within the GUE kiosk.			
Litter	Local Residents	Airborne	▪ All incoming and exporting waste vehicles are covered. ▪ The site access and site services shall be swept as necessary. ▪ The site is inspected daily by the site manager and any litter or accumulated debris is dealt with immediately.	Low: the occurrence of litter on site is highly unlikely therefore the probability of exposure is very low.	Nuisance	VERY LOW due to the proposed risk management techniques
Pests	Local Residents	Airborne & migration	▪ As a result of this permit variation, the likelihood of pests and/or scavengers has not increased. ▪ If a problem does develop, reasonable measures will be taken to use commercially available products and appropriately qualified services to control pests. ▪ If a particular waste is determined to be the cause of a problem (i.e., in the main anaerobic digestion area) it shall be removed from site at the earliest available opportunity and consideration given to mitigation measures that may be implemented before any more waste from that source is accepted on site.	Low: the occurrence of pests on site is unlikely.	Nuisance	VERY LOW due to the proposed risk management techniques

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Vandalism	Operator	The site could be subject to intentional vandalism and damage by intruders / trespassers who could cause damage or harm to the site or cause fires.	▪ The site has a CCTV monitoring system in place. ▪ The site benefits from external online monitoring of the process from a remote location. ▪ The site is secured by a perimeter fence. ▪ Fencing is maintained and repaired to ensure its continued integrity. If damage is sustained, repair will be made within the same working day. If this is not possible, suitable measures will be taken to prevent unauthorised access to the site and permanent repairs will be affected as soon as is practicable. ▪ All visitors to the site are required to register in the visitor's book and sign out again on exit, thereby minimising the risk of unauthorised visitors on the site.	Low: the occurrence of vandalism taking place on site is highly unlikely.	Nuisance, Damage or Fire	VERY LOW due to the proposed risk management techniques
Fire / explosion on site.	Operator / Residential Properties	Windborne	▪ Arson by intruders is controlled via CCTV monitoring. ▪ The site is secured by a perimeter fence. ▪ The site has a regular inspection and maintenance programme which identifies any electrical or mechanical machinery faults which could result in a machinery fire. ▪ The existing anaerobic digestion process is inherently a 'wet' process and undertaken within enclosed systems minimising risk. ▪ Machinery is regularly cleaned to remove any build up of dust, etc. ▪ All relevant equipment on site is equipped with dedicated fire suppression. ▪ A number of fire extinguishers are placed at strategic locations around the plant. ▪ The potential for sparks is regularly monitored by site staff. ▪ The risk of damaged or exposed electrical cables is controlled via the regular inspection and maintenance programme.	Medium: the occurrence of a fire taking place on site is possible due to the gaseous nature of certain materials	Fire / explosion	LOW due to the proposed risk management techniques

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			▪ Staff and visitors are only permitted to smoke within the designated smoking area. ▪ There is no smoking permitted within the operational area of the site. ▪ Dampening of any excessive dry waste that is identified as high risk. ▪ Storage of wastes within the reception building, away from direct sunlight. ▪ Minimal storage time to reduce potential for self-combustion. ▪ Dry feedstock is not expected to be an issue as the AD process is inherently wet. ▪ Moisture control is implemented to ensure the process can run efficiently			
Incompatible Feedstock	Operator / Residential Properties	If incorrect waste is accepted on site it could result in adverse emissions	The following methods are implemented to ensure that incompatible feedstocks do not compromise the safe operation of the anaerobic digestion plant: ▪ All waste accepted onto site has been subject to 'pre-acceptance' in accordance with established procedures. ▪ All incoming wastes are accepted in accordance with established procedures. ▪ Any non-conforming wastes will be removed from site in accordance with established waste rejection procedures. ▪ Records of incidents involving incompatible wastes are kept on site together with a summary of the remedial action taken.	Low: offsite receptor impacts	Nuisance / Adverse Emissions	VERY LOW due to the proposed risk management techniques
Spillages and Leakages	Land, surface water, groundwater	Runoff and percolation	▪ There will be limited quantities of fuels and oils stored on site, and those stored are for the purpose of fuelling and maintain service vehicles. ▪ All tanks, including the two proposed liquid waste pre-storage tanks, have been constructed in line with the relevant standards. ▪ Bunding on site has been constructed in line with the relevant standards and to a capacity	Low: the occurrence of spillages and leakages is unlikely	Contamination of surface water and/or groundwater	LOW - due to the proposed measures

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			of a least 110% of the largest tank and 25% of the total capacity of all the tanks stored within it. ▪ Appropriate guidance for storage, such as Ciria 736, is followed and implemented on site. ▪ Tanks will be inspected visually on a daily basis by the site staff to ensure the continued integrity of the tanks and identify the requirement for any remedial action. The site manager will be ultimately responsible for ensuring monitoring, inspections and where applicable, maintenance, is carried out. ▪ Spill kits will be strategically located around site. ▪ Minor spills will be cleaned up immediately, using spill kits. Resultant materials will be placed in a container for off-site disposal to appropriate facility, if necessary. ▪ Immediate action to be taken in event of any major spills. Any spillage will be cleared immediately and placed in containers for offsite disposal. ▪ NRW will be informed immediately of any major spill event.			

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3.2 Climate Change Risk Assessment

Table 3.2 Climate Change Risk Assessment

Hazard	Risk	Vulnerability	Consequence(s)	Risk Management and Adaption Techniques	Likelihood of Occurrence after Adaption	Overall Risk (following Mitigation)
Summer Daily Maximum Temperature: EA state that this may be around 7°C higher compared to average summer temperatures now, with the potential to reach extreme temperatures as high as over 40°C with increasing frequency based on today's values.						
Impact 1 - *Potential increase in high temperature expansion and stress of plant, pipework and fittings.*	Medium The site is moderately sensitive to overheating of vessels and pipework. The process relies on ancillary equipment such as these to operate safely	Medium The site has sections of exposed pipework and several vessels that may be moderately vulnerable to increased temperatures	▪ Overheating of vessels and pipework requiring increased insulation and cooling ▪ Failure of plant/equipment	▪ Regular inspections and preventative measures undertaken of all site and plant equipment. ▪ Regular inspections and testing of pressure relief systems. ▪ Use of high-integrity equipment in across site	Low	Low
Impact 2 - *Potential increased in fires involving combustible waste streams*	Medium The site receives several waste streams of potentially combustible waste	Low The site receives largely "wet" wastes that are not prone to combustion. The AD process is also "wet" so further reduces likelihood of combustion	▪ Destruction of site buildings and infrastructure ▪ Downtime in processing ability ▪ Hinderance of ability to operate	▪ Dampening of any excessive dry waste that is identified as high risk ▪ Storage of wastes within the reception building, away from direct sunlight ▪ Minimal storage time to reduce potential for self-combustion ▪ Dry feedstock is not expected to be an issue as the AD process is inherently wet. ▪ Moisture control is implemented to ensure the process can run efficiently	Low	Low
Impact 3 - *Potential increased changes*	Low The site will unlikely see significant	Low: The site accepts a variety of wastes	▪ Slower processing time ▪ Increased buildup of feedstock	▪ Continual monitoring of carbon to nitrogen ratio, as part of ongoing process monitoring.	Low	Low

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in feedstock, low nitrogen waste (less grass) and slower processing times	changes in feedstock	so are not consider vulnerable to change in feedstocks	▪ Increased risk of emissions from excessive waste on site	▪ Increased temperature and moisture monitoring.		
Impact 4 – *Potential increase in dust emissions and bioaerosols*	Medium The site is at moderate risk of bioaerosol generation, as well as potential for bioaerosol-containing dust	Medium Given the nature of the waste accepted on site and the site operations, the site is vulnerable to risk of bioaerosols and dust	▪ Increased bioaerosol and dust emission ▪ Off-site impact of bioaerosols to human and environmental health	▪ Dampening down and site housekeeping activities will be undertaken daily. ▪ Monitoring bioaerosols will be undertaken in accordance with the permit ▪ Ongoing maintenance of bioaerosol abatement on site will be undertaken to ensure it continues to work at maximal efficiency. ▪ Recirculation of leachate for new feedstock.	Low	Low
Impact 5 - *Potential increased risk of pests and scavengers from stockpiled waste such as food and drink containers, food contaminated wastes and 'black bag' type wastes.*	High The site accepts many waste streams that may attract pests or scavengers	Medium The site stores all of its waste internally or little potential for access by pests and scavengers. The odour generated may still attract them	▪ Potential human-animal contact as pests and scavengers increases. ▪ Potential for disease introduction to the site ▪ Infestation of waste with fly larvae creating waste that is unsuitable for anaerobic digestion	▪ Daily checks are conducted to look for signs for pests or scavengers. ▪ Pest control to be called at first sign of pests or scavengers. ▪ Maintaining good housekeeping practices to reduce the likelihood of attracting pests. ▪ Waste will be stored internally where it's possible to minimise potential for contact with exclusively terrestrial animals (i.e. rats)	Low	Low
Impact 6 – *Lower gas uptake from National Grid. Power disruption from district network supply*	Low The site does not feel at risk from lower gas uptake from National Grid	Medium The site would be required to flare additional gas that either couldn't be used on site or	▪ Increased flaring or release to atmosphere	▪ Contingency plan to slow feedstock input rate to lower overall gas yield during low intake periods. ▪ Increased maintenance and testing of the onsite flare to	Low	Low

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		exported to the grid		ensure operation during low-intake periods.		
Winter Daily Maximum Temperature: EA state that this could be 4°C high than the current average with the potential for more extreme temperatures, both warmer and cooler than present						
Impact 1: *Longer growing seasons resulting in more garden waste and sites over capacity.*	Low The site does not consider itself to be at risk from longer growing seasons and excessive garden waste	Low The site stores waste for as little time as possible, meaning the potential for odour to be generated or pests attracted is low.	▪ Potential for human-animal contact as pests and scavengers increase. ▪ Damaged relationships with neighbouring residential dwellings.	▪ The site will review its intake from external sources should its own crop production increase and require treatment through AD. ▪ Contingency plans too be created if the site continually breaches capacity and requires external facilities to support its waste management responsibilities.	Low	Low
Impact 2 **-** Poor *crop yields and feedstock scarcity for anaerobic digestion could lead to reduced digester performance*	Low This risk is low as the site relies on various feedstocks for its operation, reducing reliance on any one given type	Low The site is well-located and is close to other nearby farms/facilities that provide different types of feedstocks year-round	▪ Lower digester efficiency ▪ Lower biogas yield ▪ Increased energy consumption	▪ The site is well-located near various sources of feedstock. ▪ The site grows many of its own crops and can consider crop diversification to combat poor crop yields and increase overall production. ▪ Additional EWC codes may be sought to allow for further diversification in allowed crop yields.	Low	Low
Daily Extreme Rainfall: EA state that rainfall intensity could increase by up to 20% on today's values						
Impact 1: Unstable process conditions for compost sites causing temperature fluctuations	**Not applicable** The site is an anaerobic digestion facility and does not undertake composting.					
Impact 2: *Land bank availability for spreading sludge, compost and digestate*	Medium The site relies on land bank availability to spread digestate	Medium Some of GP Biotec's fields currently become	▪ Build-up of digestate ▪ Potential contamination of land/rivers if digestate is forcibly spread to avoid overcapacity	▪ During prolonged periods of rainfall where the ground becomes waterlogged and fully saturated, the site will be unable to spread digestate	Low	Low

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may experience extreme difficulty due to prolonged wet weather		flooding with surface water	▪ Ceasing/slowing of production to reduce the quantity of digestate produced	▪ No digestate will be spread on saturated or waterlogged ground ▪ Offsite storage options will be considered for excess digestate that cannot be safely stored on site due to reaching capacity ▪ Additional digestate lagoons may be considered if the problems persist		
Impact 3 – *Leachate storage risk of overtopping*	Medium The risk is moderate given the likelihood of increased rainfall in mid-Wales, where the site is located	Medium The onsite lagoon is pre-existing so may not have been constructed with additional increasing capacity	▪ Leachate overtopping the lagoon ▪ High levels of pollution to ground and/or water	▪ Ensuring the SSAFO 750mm freeboard allowance is maintained at all times ▪ Lowering lagoon levels as much as possible prior to predicted high rainfall ▪ Harvesting clean, uncontaminated water to prevent the lagoon being overwhelmed ▪ Creation of an additional lagoon maybe considered if prolonged and persistent rainfall periods are observed		
Impact 4 – *Localised flood events*	Medium The site is largely in Flood Zone 1 – the lowest possible risk level for flooding and flood events. However, areas of the site previously covered by the Standard Rules permit	Medium There is potential for the flood risk to increase as daily extreme rainfall increases, increasing the vulnerability of the site	▪ Damage to site and plant ▪ Forced emergency shutdown of all operations ▪ Risk of failure of plant and equipment ▪ Pollution risk from contaminated floodwaters	▪ The site is located on a gradient that minimises the risk of river flooding from impacting core site infrastructure ▪ The site will be kept as clean and free of mud as reasonably practicable as to prevent surface water pooling and ensure water is able to runoff to nearby drains ▪ The drainage system will be inspected and maintained to ensure localised flooding is not caused as a result of poor drainage	Low	Low

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				▪ If blockages do occur, or the volume of water overwhelms the drainage system, excess water will be pumped and removed from site to ensure the drainage system remains operational ▪ Inspecting and testing of the lagoon will be undertaken as surrounding ground dries to ensure integrity remains ▪ Maintenance of secondary containment measures in case of failure of tanks during flood events ▪ If surface water flooding increases in frequency, a flood plan will be prepared to effectively manage these situations.		
Average winter rainfall: EA State that the Average winter rainfall may increase by over 40% on today's averages.						
Impact 1: Potential for increased site surface water and flooding.	Medium The site is largely in Flood Zone 1 – the lowest possible risk level for flooding and flood events. However, areas of the site previously covered by the Standard Rules permit	Medium There is potential for the flood risk to increase as daily extreme rainfall increases, increasing the vulnerability of the site	▪ Damage to site and plant ▪ Forced emergency shutdown of all operations ▪ Risk of failure of plant and equipment ▪ Pollution risk from contaminated floodwaters	▪ The site is located on a gradient that minimises the risk of river flooding from impacting core site infrastructure ▪ The site will be kept as clean and free of mud as reasonably practicable as to prevent surface water pooling and ensure water is able to runoff to nearby drains ▪ Inspecting and testing of the lagoon will be undertaken as surrounding ground dries to ensure integrity remains ▪ Maintenance of secondary containment measures in case of failure of tanks during flood events	Low	Low

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				▪ The drainage system will be inspected and maintained to ensure localised flood is not caused as a result of poor drainage ▪ If blockages do occur, or the volume of water overwhelms the drainage system, excess water will be pumped and removed from site to ensure the drainage system remains operational ▪ If surface water flooding increases in frequency flood plan will be prepared to effectively manage these situations.		
Impact 2: *There is potential for drainage systems and interceptors to be overwhelmed.*	Medium The site is considered at a medium risk of having its drainage system overwhelmed given its closeness to the River Avon	Medium The drainage system is well maintained; however, capacity may be overwhelmed under intense rainfall.	▪ Surface water flooding from an overwhelmed drainage system ▪ Pollution caused by contaminants in the interceptors being washed out in flood waters ▪ Ceasing or slowing of site operations, resulting in longer processing times and a build-up of waste	▪ See above	Low	Low
Impact 3 *– Access or egress from site could be affected, impacting staff, suppliers, deliveries, removals and emergency services*	Medium Parts of the access road leading to the site are considered to be in Flood Zone 3 – the highest possible risk of surface water flooding	Medium Increase in annual rainfall may exacerbate the current Flood Zone 3 designation and further sections of zone may be uplisting to this high-risk category	▪ Key site staff may be able to get to the site, preventing operations from taking place ▪ Emergency services may not have access if an emergency were to occur ▪ Deliveries of feedstock and removal of products may not occur resulting in a slow rate of processing	▪ A contingency plan will be created that considers the impacts of offsite access issues and suitable measures will be put in place to prevent disruption to the site's activities	Low	Low
Sea level rise: The EA state that sea level rise which could be as much as 0.6m higher compared to today's level.						

Impact 1: If located near the coast, a site could experience increased: risk of flooding and associated impacts corrosion due to increase in saltwater spray	**Not Applicable** The site is not located near a sea					
Drier Summers: The EA state that summers could see potentially up to 40% less rain than now.						
Impact 1 *Increased need for water for digesters*	Moderate The site may be at risk if additional water is required that is not available through drier summer months	Moderate: The site relies on wet material and water to operate the anaerobic digestion process	▪ Low digestion rates and reduced efficiencies of the AD process ▪ Ceasing operations if process parameters (i.e. water content) are not met ▪ Decreased ability to clean site using wet methods	▪ A contingency plan will be created for the importation of water and aqueous wastewater during drier periods ▪ Implement rainwater and clean surface water harvesting year-round to fulfil water requirements during drier periods	Low	Low
Impact 2 *– Poor crop harvest and reduced feedstocks*	Moderate The site may be at risk if additional water is required that is not available through drier summer months	Moderate: The site relies on water to grow plentiful crop harvests to feed the AD process	▪ Low feedstock stores limiting process operations ▪ Ceasing operations if process parameters (i.e. carbon to nitrogen ratio) are not met	▪ See above	Low	Low
River Flow: The EA state the flow in the watercourses could be 50% more than now at its peak, and 80% less than now at its lowest.						
Impact 1: River flows unable to accept discharge flow due to low dilution.	Low The site only discharges uncontaminated surface water	Low The site only discharges uncontaminated surface water	▪ Contamination of the river during low flow due to poor dilution	▪ Discharge is only permitted to be uncontaminated clean surface water runoff. ▪ All discharges are monitoring for oil and grease, ammonia and Ph, ensuring exceedances are not identified prior to discharge	Low	Low

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				▪ Release of tested and compliant surface water will have no negative impacts during low flow periods ▪ Wastewater that does not meet the requirements will either be used in the AD process or removed off site for disposal		
Storms: Storms could see a change in frequency and intensity. The unique combination of increased wind speeds, increased rainfall, and lightning during these events provides the potential for more extreme storm impacts.						
Impact 1 Potential for high winds to damage buildings and infrastructure and blow waste from the site	Low The site is of a fairly modern construction and does not contain any aged or dilapidated buildings. This improves confidence in the rigidity and strength of existing structures to resist damage in high winds	Low The site is considered well designed with well-constructed buildings and infrastructure	▪ Damage to waste reception building resulting in release of emissions to air ▪ Increased noise emissions through noise attenuation disruption	▪ Buildings will be inspected for signs of damage following storms and/or high winds ▪ Repairs will be undertaken as soon as possible to repair any damage identified following an inspection.	Low	Low