




# CLIMATE CHANGE RISK ASSESSMENT

Environmental and sustainability solutions provided to  
**WELSH WATER ORGANIC ENERGY (CARDIFF) LTD**

[WRM-LTD.CO.UK](http://WRM-LTD.CO.UK)



This report was prepared by **Walker Resource Management Ltd (WRM)** within the terms of its engagement and in direct response to a scope of services. This report is strictly limited to the purpose and the facts and matters stated in it and does not apply directly or indirectly and must not be used for any other application, purpose, use or matter. In preparing the report, WRM may have relied upon information provided to it at the time by other parties. WRM accepts no responsibility as to the accuracy or completeness of information provided by those parties at the time of preparing the report. The report does not take into account any changes in information that may have occurred since the publication of the report. If the information relied upon is subsequently determined to be false, inaccurate, or incomplete then it is possible that the observations and conclusions expressed in the report may have changed. WRM does not warrant the contents of this report and shall not assume any responsibility or liability for loss whatsoever to any third party caused by, related to, or arising out of any use or reliance on the report howsoever. No part of this report, its attachments or appendices may be reproduced by any process without the written consent of WRM. All enquiries should be directed to WRM.

Document Title	Climate Change Risk Assessment	
Client	Welsh Water Organic Energy (Cardiff) Ltd	
Revision	1.0	
Date	08/10/2024	
Document Reference	Climate Change Risk Assessment	
Project Reference	1354_J05	
Author:		Reviewer:
		

### Copyright ©

All material on these pages, including without limitation text, logos, icons and photographs, is copyright material of Walker Resource Management Ltd (WRM). Use of this material may only be made with the express, prior, written permission of WRM. This document was produced solely for use by the named client to whom the document refers. The methodology (if any) contained in this report is provided to you in confidence and must not be disclosed or copied to third parties without the prior written agreement of WRM. Disclosure of that information may constitute an actionable breach of confidence or may otherwise prejudice our commercial interests.

## REVISION LOG

Revision	Details	Date
0.1	Initial Draft	18/06/2024
0.2	Internal Review	31/07/2024
0.3	Amendments with comments	20/09/2024
1.0	First Issue	08/10/2024

## CONTENTS

<b>1.0</b>	<b>INTRODUCTION .....</b>	<b>1</b>
1.1	Site location .....	1
1.2	Operational location .....	1
1.3	Assessment Process .....	1
<b>2.0</b>	<b>CLIMATE CHANGE MANAGEMENT .....</b>	<b>3</b>
2.1	Summer Daily Maximum Temperature .....	4
2.2	Winter daily temperature.....	8
2.3	Daily Extreme Rainfall and Average Winter Rainfall .....	10
2.4	Drier summers .....	15
2.5	River flow .....	17
2.6	Storms.....	19

## 1.0 INTRODUCTION

Walker Resource Management Limited (WRM) are acting consultants for Welsh Water Organic Energy (Cardiff) Ltd (hereon referred to as WWOE) who have commissioned WRM to produce a Climate Change Risk Assessment (CCRA) for their Cardiff site. This document is a new requirement of environmental permit holders as set out by the Environment Agency in their guidance document titled: *Develop a management system: environmental permits*<sup>1</sup>. This document is written in accordance with this guidance and sets out the considerations and operational details that are relevant to the operation of WWOE's anaerobic digestion (AD) facility at Trefamora Industrial Estate, Cardiff (hereon referred to as the 'Site'). This CCRA looks to set out the nature of different climate change risks, their relevant impacts as well as mitigation measures at the Site.

### 1.1 Site location

Welsh Water Organic Energy (Cardiff) Ltd  
Tide Fields Road  
Tremorfa  
Cardiff  
CF24 5SB

### 1.2 Operational location

Site Grid Reference: 321154, 175980

### 1.3 Assessment Process

Climate change means that extreme weather incidents are becoming more common and more severe. This CCRA will identify key elements of climate change that could have an impact on the Site, and then identify the impacts, risks, and mitigation methods of these impacts of climate change. These elements include:

- Summer daily maximum temperature;
- Winter daily temperature;
- Daily Extreme Rainfall and Average Winter Rainfall;
- Drier summers;
- River flow; and
- Storms.

---

<sup>1</sup> [Develop a management system: environmental permits](#)

Each one of these climate change risks may have a significant impact on the Site's operational and daily management, affect upstream and downstream supply chains, and have negative effects for customers as well as end-markets.

Producing this CCRA supports WWOE to:

- Be compliant with the requirements of their environmental permit.
- Reduce impact on the environment during an extreme weather event. Including the event's impact on operations, either through accidental release or abnormal operation.
- Improve resilience and business continuity by avoiding unplanned start-ups, shutdowns and other business interruptions.

## 2.0 CLIMATE CHANGE MANAGEMENT

The potential impacts to the Site from climate change and extreme weather are assessed below and have been assigned an initial Risk Rating, and a residual Risk Rating when considered in the context of current on-Site measures. This score is determined by the likelihood and the magnitude/severity of the impact as presented in Table 1 below.

**Table 1 - Risk Rating**

Risk Rating		Magnitude / Severity (1 – Lowest, 5 – Highest)				
		1	2	3	4	5
Likelihood (1 – Lowest, 5 – Highest)	1	1	2	3	4	5
	2	2	4	6	8	10
	3	3	6	9	12	15
	4	4	8	12	16	20
	5	5	10	15	20	25
Risk Rating Legend						
Risk Rating	Very Low	Low	Medium	High	Very High	
Likelihood & Magnitude/Severity Legend						
	Likelihood to Occur			Magnitude/Severity of the Impact		
1	Highly Unlikely			Negligible		
2	Unlikely			Minor		
3	Probable			Significant		
4	Likely			Major		
5	Highly Likely			Severe		

## 2.1 Summer Daily Maximum Temperature

This may be around 7°C higher compared to current average summer temperatures, with the potential to reach extreme temperatures as high as over 40°C with increasing frequency based on today's values.

Climate Change Impacts	Judgement		Action		
Impact	Initial Risk	Justification of Magnitude	Current Measures on Site	Residual Risk	Potential Mitigation Opportunities
<b>Summer Daily Maximum Temperature</b>					
Overheating of vessels and pipework, requiring increased insulation and cooling. The potential increase in surface temperature of infrastructure may result in expansion and stress of plant, pipework, and fittings.	<b>Medium</b>	The magnitude for this impact is medium due to the amount of exposed pipework and vessels on this site. This impact is expected to cause a disruption to the Site.	<ul style="list-style-type: none"> <li>The site operates a strict maintenance regime and equipment on-Site is of sufficient capacity to allow for down time to undertake routine maintenance and servicing as recommended by the manufacturer.</li> <li>Key equipment is located within a sealed and bunded area to prevent the loss of material.</li> <li>Routine maintenance is recorded, and operator pre-use checks are completed. All tasks are completed on a daily, weekly, monthly basis for pre-start and maintenance.</li> <li>Temperature probes at the pasteurisers and digesters are</li> </ul>	<b>Low</b>	<ul style="list-style-type: none"> <li>Increased process monitoring above trigger ambient temperature.</li> <li>Test pressure relief valves frequently to ensure they function effectively.</li> </ul>

Climate Change Impacts	Judgement		Action		
Impact	Initial Risk	Justification of Magnitude	Current Measures on Site	Residual Risk	Potential Mitigation Opportunities
<b>Summer Daily Maximum Temperature</b>					
			<ul style="list-style-type: none"> <li>calibrated every year by an external certified contractor.</li> <li>Most external pipework is insulated and covered by cladding.</li> </ul>		
Increased changes in feedstock, low nitrogen waste and slower processing times.	Low	This impact would be low in magnitude due to the limited impact of changes in feedstock as the temperature increases in summer. While not of significant magnitude, these impacts may occur due to temperature variations and may have an impact on business operations.	<ul style="list-style-type: none"> <li>Regular monitoring of moisture and temperature of waste materials is undertaken to limit the risk of uncontrolled combustion.</li> <li>WWOE plan Site operations so no material is ever stored on the floor under normal circumstances, preventing large stockpiles of material building up.</li> <li>Regular monitoring of critical pH levels for the primary digestion steps are recorded and evaluated.</li> </ul>	Very Low	<ul style="list-style-type: none"> <li>Increased temperature and moisture monitoring and adjustment.</li> <li>Monitoring the carbon and nitrogen mix and make adjustments to reduce the likelihood of emissions.</li> </ul>
Potential increased dust, odour, and bioaerosol emissions.	Medium	This risk would be increased as it would result in more dry and dusty days on-Site. The AD process is fully covered and include	<ul style="list-style-type: none"> <li>Dust generation attributable to vehicle movements will be controlled by the maintenance and sweeping of the Site access road.</li> </ul>	Low	<ul style="list-style-type: none"> <li>Spraying of the roads using a water bowser may be undertaken on a more regular basis or</li> </ul>

Climate Change Impacts	Judgement		Action		
Impact	Initial Risk	Justification of Magnitude	Current Measures on Site	Residual Risk	Potential Mitigation Opportunities
<b>Summer Daily Maximum Temperature</b>					
		access doors that have specific fitments and seals to minimise the escape of odour.	<ul style="list-style-type: none"> <li>An Odour Management Plan is in place on the Site.</li> <li>Emissions from reception hall are controlled by a dedicated air extraction system.</li> <li>The reception building is kept at negative pressure and air is extracted at a rate of at least 3 air changes per hour.</li> <li>All extracted air is treated within the Orgus Biofilter odour abatement plant, which consists of a quencher and enclosed biofilter.</li> <li>Bioaerosols are monitored by external consultants quarterly as required by the permit.</li> <li>Dampening down and sweeping of operational areas occurs on a regular basis, using harvested clean water.</li> </ul>		<p>when temperatures reach a trigger level.</p> <ul style="list-style-type: none"> <li>The Site should consider increased process monitoring of biofilter to determine whether it needs to be refreshed or replaced more frequently.</li> </ul>

Climate Change Impacts	Judgement		Action		
Impact	Initial Risk	Justification of Magnitude	Current Measures on Site	Residual Risk	Potential Mitigation Opportunities
<b>Summer Daily Maximum Temperature</b>					
			<ul style="list-style-type: none"> <li>Covers are on the Waste Reception Area, including rolling shutter doors as required by BAT to provide mitigation against dust emissions and bioaerosols.</li> <li>Monitoring of wind direction in the Site diary when wind is towards a sensitive receptor.</li> </ul>		
Increase in the potential for pest related issues such as fly and rodent infestations.	<b>Medium</b>	Pests such as flies, rats and scavenging birds may be attracted to Site by the storage of raw materials and wastes and can cause considerable nuisance to people in the locality. During hotter summers this impact will be increased.	<ul style="list-style-type: none"> <li>Measures are implemented and maintained throughout the operational life of the Site to control and monitor the presence of pests on the site.</li> <li>Rejection of odorous and pest infected waste.</li> <li>Inspections of the facility for pest infestations are carried out at regular intervals by a pest control contractor.</li> </ul>	<b>Low</b>	Continue to prevent infestations through good management practices, including improved sanitation, access exclusion, eliminating harbourage and the use of bait boxes. Ensure ducts, drains and pipe work are cleaned, and site housekeeping is of high standards.

## 2.2 Winter daily temperature

This could be 4°C more than the current average with the potential for more extreme temperatures, both warmer and colder than present.

Climate Change Impacts	Judgement		Action		
Impact	Initial Risk	Justification of Magnitude	Current Measures on Site	Residual Risk	Potential Mitigation Opportunities
<b>Winter daily temperature</b>					
Decreases in winter temperatures resulting in restricted access to the site, due to frozen access roads causing disruption to deliveries and site operator attendance.	<b>Medium</b>	A fall in winter daily temperatures could increase periods of ice on surrounding road networks impacting access to the Site.	<ul style="list-style-type: none"> <li>Regular gritting/salting of Site owned road and hardstanding is undertaken in anticipation of and during subzero temperatures.</li> <li>Mobile plant can be used to clear accumulation of snow on site access roads.</li> <li>Monitoring of weather reports to anticipate subzero temperatures or snow.</li> </ul>	<b>Low</b>	<ul style="list-style-type: none"> <li>Liaise with the local authority to ensure maintenance of the primary public access route to the site.</li> <li>Consider the impact of frozen access road within the <i>Emergency Response Procedure</i>, and development of a contingency plan in case operators and deliveries cannot access site on a given day.</li> <li>Establish procedures to monitor weather conditions and enact</li> </ul>

Climate Change Impacts	Judgement		Action		
Impact	Initial Risk	Justification of Magnitude	Current Measures on Site	Residual Risk	Potential Mitigation Opportunities
<b>Winter daily temperature</b>					
					pre-emptive mitigation actions.
Poor crop yields and feedstock scarcity for anaerobic digestion could lead to reduced digester performance.	<b>Low</b>	A lower winter temperature may affect the level of feedstock available to the plant for AD processes and could cause a reduced feedstock quantity and reduced facility performance.	<ul style="list-style-type: none"> <li>AD plant does not currently rely on crop yields as feedstock.</li> </ul>	<b>Very Low</b>	<ul style="list-style-type: none"> <li>Prepare to adapt the AD plant design to ensure a wide range of feedstock can be processed.</li> <li>Increase monitoring of feedstocks to ensure digester stability.</li> </ul>
An increased risk of pipework freezing.	<b>Low</b>	A lower winter temperature may cause pipework and vessels to freeze, contract and expand, which may cause damaged to the Site's infrastructure.	<ul style="list-style-type: none"> <li>Where there is a risk of frost or potential loss of heat on piping, insulation has been installed. Insulation has also been installed for the reception and the fermenter tanks but not the digestate storage tank, as it is not required.</li> </ul>	<b>Very Low</b>	<ul style="list-style-type: none"> <li>Regularly check and maintain existing cladding and insulation.</li> </ul>

### 2.3 Daily Extreme Rainfall and Average Winter Rainfall

Daily rainfall intensity could increase by up to 20% on today’s values and average winter rainfall may increase by over 40% on today’s averages. These two weather incidents have been considered together and are presented together in the Risk Assessment given the similar impacts, risks and mitigation methods.

Climate Change Impacts	Judgement		Action		
Impact	Initial Risk	Justification of Magnitude	Current Measures on Site	Residual Risk	Potential Mitigation Opportunities
<b>Daily Extreme Rainfall and Average Winter Rainfall</b>					
Unstable process conditions for anaerobic digestion may cause temperature fluctuations and increased odours.	<b>Low</b>	The magnitude of this concern lies in potential process instability, which may lead to temperature fluctuations and increased odour generation. This Risk is low as the AD process occurs inside a closed system which isn't affected by heavy rainfall.	<ul style="list-style-type: none"> <li>• Site operatives will use weather reports to record weather conditions on monitoring forms.</li> <li>• The AD process is a closed system with no free venting. Liquid waste feedstock arrives in sealed containers and is unlikely to be released.</li> <li>• An Odour Management Plan is in place on the Site.</li> <li>• Emissions from reception hall are controlled by a dedicated air extraction system.</li> <li>• The reception building is kept at negative pressure and air is</li> </ul>	<b>Very Low</b>	<ul style="list-style-type: none"> <li>• Process monitoring at increased frequency once trigger rainfall volumes are met.</li> <li>• Additional sampling points in open processes once trigger rainfall volumes are met.</li> <li>• Consider increased process monitoring of biofilter to determine it needs to be refreshed or replaced more frequently.</li> </ul>

Climate Change Impacts	Judgement		Action		
Impact	Initial Risk	Justification of Magnitude	Current Measures on Site	Residual Risk	Potential Mitigation Opportunities
<b>Daily Extreme Rainfall and Average Winter Rainfall</b>					
			extracted at a rate of at least 3 air changes per hour. <ul style="list-style-type: none"> <li>All extracted air is treated within the Orgus Biofilter odour abatement plant, which consists of a quencher and enclosed biofilter.</li> </ul>		
Land bank availability for spreading digestate may be reduced due to prolonged wet weather.	<b>Medium</b>	Excessively wet conditions can make it impractical to spread digestate on agricultural land, potentially causing delays and disrupting digestate disposal strategies.	<ul style="list-style-type: none"> <li>Pasteurised digestate is stored in a concrete storage tank. This digestate storage tank has a capacity of 7,688m<sup>3</sup>.</li> </ul>	<b>Low</b>	<ul style="list-style-type: none"> <li>Develop a digestate storage plan and review on an annual basis to identify contingency options.</li> </ul>
Digestate storage risk of overtopping.	<b>Low</b>	Where AD process tanks and vessels are open or fed by rainwater without a management system an increase in rainfall may cause the over topping of the storage tank.	<ul style="list-style-type: none"> <li>The AD process occurs on Site within a closed system and all tanks and vessels are sealed.</li> <li>Site capacity is restricted in line with the site capacity assessment.</li> <li>Given the above measures overtopping is considered to pose a very low risk</li> </ul>	<b>Very Low</b>	<ul style="list-style-type: none"> <li>Undertake inspections of integrity of primary and secondary containment systems.</li> <li>Ensure any loss of primary containment can be contained on-Site.</li> </ul>

Climate Change Impacts	Judgement		Action		
Impact	Initial Risk	Justification of Magnitude	Current Measures on Site	Residual Risk	Potential Mitigation Opportunities
<b>Daily Extreme Rainfall and Average Winter Rainfall</b>					
Surface water flooding of the Site	<b>Medium</b>	<p>Site is located immediately west of the Bristol Channel, at the Mouth of the River Severn. Despite this proximity, there is a medium flood risk from surface water and small watercourses representing a per annum chance of flooding of between 1% and 3.3%.</p> <p>Given the potential for a 50% increase in peak water flow within watercourses, there is considered to be a medium risk to the Site from flooding from surface water.</p>	<p>A Flood Consequence Assessment has been completed for the Site that details the following:</p> <ul style="list-style-type: none"> <li>• Ground levels within the site have been raised to accommodate new development.</li> <li>• There are no records of previous surface water flooding within the site.</li> <li>• WWOE sewer records show that there are no sewers situated within the vicinity of the site and there are no records of previous sewer or surface water flooding within the site.</li> </ul>	<b>Low</b>	<p>Update the flood action plan with reference to the guidance <i>Preparing for flooding</i><sup>2</sup> to include:</p> <ul style="list-style-type: none"> <li>• Risk assessment of all process equipment and services at risk from flooding; and</li> <li>• Protection of control and electrical systems.</li> </ul>

<sup>2</sup> [Preparing for flooding: a guide for regulated sites - GOV.UK](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/672222/Preparing_for_flooding_a_guide_for_regulated_sites.pdf)

Climate Change Impacts	Judgement		Action		
Impact	Initial Risk	Justification of Magnitude	Current Measures on Site	Residual Risk	Potential Mitigation Opportunities
<b>Daily Extreme Rainfall and Average Winter Rainfall</b>					
Access or egress from site could be affected. Impacting staff, suppliers, deliveries, removals of product, and emergency services.	<b>Medium</b>	Portions of the surrounding area and local road network, including access to the Site are indicated to be at risk of surface water flooding. This may impact and potentially prevent access to the Site by staff and vehicles.	<ul style="list-style-type: none"> <li>If a flood warning is given for the local area, the Site Manager will determine whether areas identified to be at risk need to be made safe.</li> </ul>	<b>Low</b>	<ul style="list-style-type: none"> <li>Liaising with the local authority to ensure maintenance of the primary public access route to the site.</li> <li>Review the Flood Consequence Assessment plan to ensure the potential impact to Site access is considered.</li> </ul>
Potential for drainage systems and interceptors to be overwhelmed.	<b>Medium</b>	An increase in rainfall may cause the existing drainage systems to be overwhelmed and unable to cope. Given the Site is considered to be a medium risk of surface water flooding it is likely that any	<ul style="list-style-type: none"> <li>Internal reception hall drains are cleaned daily.</li> <li>External surface water drains would, in the event of blocking, overflow to roadway and be collected by highway drainage.</li> </ul>	<b>Low</b>	Review the Flood Consequence Assessment to further consider the impact of drainage systems becoming overwhelmed.

Climate Change Impacts	Judgement		Action		
Impact	Initial Risk	Justification of Magnitude	Current Measures on Site	Residual Risk	Potential Mitigation Opportunities
<b>Daily Extreme Rainfall and Average Winter Rainfall</b>					
		significant surface water flooding may also overwhelm the drainage.			

## 2.4 Drier summers

Summers could see potentially up to 40% less rain than now.

Climate Change Impacts	Judgement		Action		
Impact	Initial Risk	Justification of Magnitude	Current Measures on Site	Residual Risk	Potential Mitigation Opportunities
<b>Drier summers</b>					
Poor crop harvest and reduced feedstock.	Low	Drier summers may lead to poor crop harvests and reduced feedstock availability due to supply chain shocks.	<ul style="list-style-type: none"> <li>The AD facility operates on food waste and is not directly impacted by changes in agricultural crop harvests.</li> </ul>	Very Low	<ul style="list-style-type: none"> <li>Ensure the facility can adapt to any changes in feedstock.</li> <li>Monitor the supply of waste for feedstock in the markets.</li> </ul>
Increased need for water for digesters	Medium	Drier summers may lead to a reduced containment of water due to higher levels of evaporation. This might increase water loss from the digesters and water storage tanks and therefore increase the demand for water within the AD process.	<ul style="list-style-type: none"> <li>The AD processing facility is a closed system and the evaporation of water from the AD system is considered unlikely.</li> <li>There are several channels and other individual drains across site which capture surface water on the operational area. This keeps water in the system and allows it to be recycled back across the Site and within the AD process.</li> </ul>	Low	<ul style="list-style-type: none"> <li>Ensure maintenance checks are routinely carried out to ensure the integrity of the AD system and prevent leaks and loss of water.</li> <li>Develop contingency plan for water for the AD process in the event of a lack of surface water due to reduced rainfall.</li> </ul>

Climate Change Impacts	Judgement		Action		
Impact	Initial Risk	Justification of Magnitude	Current Measures on Site	Residual Risk	Potential Mitigation Opportunities
<b>Drier summers</b>					
The site may be subject to cooling water restrictions.	<b>Medium</b>	Drier summers lead to a reduction in the availability of fresh water supply. Given the demand for water on-Site for use within the AD system and across the Site various activities, these restrictions may adversely impact the facilities operations.	<ul style="list-style-type: none"> <li>There are several channels and other individual drains across site which capture surface water on the operational area. This keeps water in the system and allows it to be recycled back across the Site and within the AD process. It is intended to collect all roof runoff and some surface water for rainwater harvesting.</li> </ul>	<b>Low</b>	<ul style="list-style-type: none"> <li>Implement and maintain a water efficiency management plan to minimise the water consumption of the Site, and harvest rainwater use on-Site.</li> <li>Investigate the potential to install a borehole on-Site to facilitate the abstraction of groundwater for use within the AD process.</li> </ul>

### 2.5 River flow

The flow in the watercourses could be 50% more than now at its peak, and 80% less than now at its lowest.

Climate Change Impacts	Judgement		Action		
Impact	Initial Risk	Justification of Magnitude	Current Measures on Site	Residual Risk	Mitigation Opportunities
<b>River flow</b>					
Flooding of the Bristol Channel to the east of the Site boundary.	<b>Medium</b>	Site is located immediately west of the Bristol Channel. Despite this proximity, the flood risk from rivers and sea is very low ( <a href="#">Flood Map</a> ) representing a per annum chance of flooding of below 1%. On the surrounding area of the site, there is a medium flood risk from surface water and small watercourses representing a per annum chance of flooding of between 1% and 3.3%.	<ul style="list-style-type: none"> <li>The ground level of the site has been risen to reduce the risk of the impact of the flooding.</li> <li>Containment system in place at the site.</li> <li>This area has no recorded flooding.</li> </ul>	<b>Low</b>	<ul style="list-style-type: none"> <li>Review the Flood Consequence Assessment to further consider the impact from rivers and the sea.</li> </ul>

Climate Change Impacts	Judgement		Action		
Impact	Initial Risk	Justification of Magnitude	Current Measures on Site	Residual Risk	Mitigation Opportunities
<b>River flow</b>					
		Given the potential for a 50% increase in peak water flow within watercourses, there is considered to be a medium risk to the Site from flooding from rivers.			

### 2.6 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.

Climate Change Impacts	Judgement		Action		
Impact	Initial Risk	Justification of Magnitude	Current Measures on Site	Residual Risk	Potential Mitigation Opportunities
<b>Storms</b>					
Storms and high winds could damage buildings and other structures e.g., tank covers, with the potential to increase fugitive emissions.	<b>Medium</b>	Structures present on-Site including the liquid storage tanks, waste reception hall and other structures may be vulnerable to adverse weather comprising increased wind speeds, increased rainfall and lightning events. In the event of storms and high winds, there's a risk of structural damage which could disrupt Site activities operations.	<ul style="list-style-type: none"> <li>• Visual inspections are undertaken by operatives and potential damages are captured as part of these planned maintenance checks.</li> <li>• In severe weather conditions, warnings and communications are issued depending on the risks.</li> </ul>	<b>Low</b>	<ul style="list-style-type: none"> <li>• Update the Emergency Response Procedure to consider the potential impact to the Site and its structures from storms and high winds.</li> <li>• Develop procedures to manage site operations and staff safety in storm events and to inspect and repair any potential damage.</li> <li>• Assess lightning protection to site buildings.</li> </ul>

Climate Change Impacts	Judgement		Action		
Impact	Initial Risk	Justification of Magnitude	Current Measures on Site	Residual Risk	Potential Mitigation Opportunities
<b>Storms</b>					
Storms could lead to a loss of power on site caused by a lightning strike.	<b>Medium</b>	The site is a large consumer of energy and therefore a loss of power caused by a lightning strike would lead to a halt in production/processing until the power returned.	<ul style="list-style-type: none"> <li>Lightning protection is in place on site.</li> <li>In severe weather conditions, warnings and communications are issued depending on the risks.</li> <li>In the event of sustained main power failure, a standby generator can be used to power the Site.</li> </ul>	<b>Low</b>	<ul style="list-style-type: none"> <li>Assess lightning protection to site buildings and tanks to ensure the protection covers the whole of the site.</li> </ul>

## 2.7 Sea level rise

Sea levels could rise by as much as 0.6m higher compared to today's level.

Climate Change Impacts	Judgement		Action		
Impact	Initial Risk	Justification of Magnitude	Current Measures on Site	Residual Risk	Potential Mitigation Opportunities
<b>Storms</b>					
As the site is situated near the coast, there is potential increased risk of flooding.	<b>Medium</b>	Whilst the Site is not located in an area currently identified as benefitting	<ul style="list-style-type: none"> <li>The ground level of the site has been risen to reduce the risk of the impact of the flooding.</li> </ul>	<b>Low</b>	<ul style="list-style-type: none"> <li>Review the Flood Consequence Assessment to further</li> </ul>

Climate Change Impacts	Judgement		Action		
Impact	Initial Risk	Justification of Magnitude	Current Measures on Site	Residual Risk	Potential Mitigation Opportunities
<b>Storms</b>					
		from flood defences from the sea, should sea levels risk substantially, the whole site could be at risk of flooding from the sea.	<ul style="list-style-type: none"> <li>• Containment system in place at the site.</li> <li>• This area has no recorded flooding.</li> </ul>		consider the impact from the sea. <ul style="list-style-type: none"> <li>• Investigate further the potential requirement and costs of installing sea flood defences in the future.</li> </ul>