

An abstract graphic in the top right corner consisting of several overlapping, curved, leaf-like shapes in various shades of green, ranging from light to dark.

Climate Change Adaptation Risk Assessment

H Weston & Sons Ltd



Helping clients prosper through compliance

SITE DETAILS

H Weston and Sons Ltd

The Bounds

Much Marcle

Ledbury

HR8 2NQ

OPERATOR DETAILS

H Weston and Sons Ltd

The Bounds

Much Marcle

Ledbury

HR8 2NQ

PERMIT REFERENCE

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1. INTRODUCTION

This document is the Climate Change Risk Assessment (CCRA) for H Weston & Sons Ltd to identify risks, threats and hazards arising from their activities and the impact these activities have on climate change. H Weston and Sons Ltd ('Westons Cider') are applying for an installation permit for the first time as apple pressing and fermentation activities are permissible activities that are over the threshold of 300 t/day capacity.

Wiser Environment prepared this CCRA on behalf of H Weston & Son Ltd (the operator and applicant) in line with current Environment Agency guidance, 'Climate change: risk assessment and adaptation planning in your management system'¹ and 'Develop a management system: environmental permits – A changing climate' available on gov.uk website² which requires the integration of climate change adaptation planning into management systems where the permit was issued on or before 1st April 2023. This risk assessment is to support the operator's management of the risk climate change poses to operations and is to accompany the management system.

1.1. Scope

This CCRA is applicable to H Weston and Sons Ltd at The Bounds, Much Marcle, Ledbury, HR8 2NQ and identifies potential hazards and risks from activities carried out on the site and how the activities will impact or be affected by climate change. The pathways through which risks and hazards can affect sensitive receptors and methods for mitigating these risks as well as screening tools to quantify the intensity of potential risks and hazards have been highlighted in this CCRA.

1.2. Aim

This Climate Change Risk Assessment aims to:

- Identify the impact the activity has on climate change.
- Identify how the activities will be affected by climate change.

¹ [Climate change: risk assessment and adaptation planning in your management system - GOV.UK \(www.gov.uk\)](https://www.gov.uk/guidance/climate-change-risk-assessment-and-adaptation-planning-in-your-management-system) Last Updated 3 April 2023

² [Develop a management system: environmental permits - GOV.UK \(www.gov.uk\)](https://www.gov.uk/guidance/develop-a-management-system-environmental-permits-a-changing-climate) Last Updated 3 April 2023

- Determine the influence management practices and controls have on reducing risk as well as to draw out adaptive solutions.

1.3. Site Activities

The site processes apples to extract juice, from September to November. The juice is mixed with yeasts and enzymes and fermented to convert the sugars to alcohols. Fermentation lasts up to 3 weeks. It is not necessary to temperature control fermentation for cider, unlike traditional brewing. Once fermentation is complete, yeasts and sediments are removed from the cider and base cider is matured/stored for up to 18 months in stainless steel tanks or oak vats, depending on the desired product. Once the base cider is required in onward production, it is filtered, blended with flavourings or other additives, carbonated and packaged. Table 1 lists the activities on site.

Table 1: Installation Activities and Directly Associated Activities

Activity Reference	Activity listed in Schedule 1 of the Regulations	Description of the specified activity	Limits of activity
AR1	Schedule 1, Section 6.8, Part A (1) D (ii)	Apple Pressing during season. Fermentation and Maturation of Base Cider.	From receipt of raw materials through production of matured cider prior to blending and bottling.
AR2	Schedule 1, Section 5.4 Part A1 (a)i	Treatment of Wastewater derived from manufacturing operations on site.	Collection and treatment of process effluent to discharge of treated effluent to surface water.
AR3	DAA 1	Initial filtration, blending, final filtration and pasteurisation of	From cider matured on site in AR1 to production of final finished product.

Activity Reference	Activity listed in Schedule 1 of the Regulations	Description of the specified activity	Limits of activity
		Cider as a final finished product.	
AR4	DAA 2	Heat and Steam Generation	
AR 5	DAA3	Power Generation	Diesel Generator used to power the new tank farm until improved grid connection established.
AR6	DAA 4	Raw Materials Handling and Storage	Includes receipt of Raw Materials, storage in bulk for processing.
AR7	DAA 5	Waste Storage	The generation, temporary storage and handling of liquid and solid wastes to their removal from the site.
AR7	DAA 5	Clean in Place	Wet Cleaning of equipment and tanks.
AR8	DAA 7	Refrigerant Usage	From receipt of refrigerant to use in refrigeration and air conditioning processes.

2. SITE SETTING

2.1. Location

Westons Cider operates from The Bounds, Much Marcle, Ledbury, HR8 2NQ. The site is located at National Grid Reference SO 6433 8714 and is shown on the Site Layout Plan (K499.1~20~002). The site is situated in a rural area, surrounded largely by agricultural land. The Bounds is located approximately 7.5 kilometres to the southwest of Ledbury.

The main site entrance is from How Caple Road. The site is bounded by agricultural fields and Westons's own orchards to the immediate north, south, east and west. Much Marcle village is located to the southeast of the site.

3. METHODOLOGY

The methods for this Climate Change Risk Assessment (CCRA) are in accordance with the Environment Agency's guidance, 'Climate change: risk assessment and adaptation planning in your management system'³. The Impacts and mitigation measures considered in preparing this assessment were adapted from the Environment Agency Guidance regarding non-hazardous and inert waste climate change risk assessment⁴.

The CCRA applies to bespoke waste and installation permits that are expected to operate for more than 5 years, even if operations such as commissioning processes and after care may cease before 2050. The predicted climate changes may come into effect prior to 2050.

This CCRA focuses on risk and impact in relation to the variables below.

- Location
- Seasonal variations
- Temperature changes
- Dust emissions
- Drier summers
- Rainfall and flooding
- Sea level rises
- River flow
- Storms

³ [Climate change: risk assessment and adaptation planning in your management system - GOV.UK \(www.gov.uk\)](https://www.gov.uk/guidance/climate-change-risk-assessment-and-adaptation-planning-in-your-management-system), Last Updated 3 April 2023

⁴ [Non-hazardous and inert waste treatment: examples for your adapting to climate change risk assessment - GOV.UK \(www.gov.uk\)](https://www.gov.uk/guidance/non-hazardous-and-inert-waste-treatment-examples-for-your-adapting-to-climate-change-risk-assessment) Last Updated 17 May 2023

4. CLIMATE IMPACT TOOLS

The Climate Impact Tool is a high-level risk screening and communication tool which pulls together national level information on climate change impacts. The tool is applicable to review risks within the management systems, activities carried out at H Weston & Sons Ltd and their climate impacts with regards to the objectives of the company. This can include statutory requirements, projects, or permit applications. The risks and opportunities climate change poses towards achieving these objectives and requirements are assessed using the screening tool. After the climate opportunities, risks and impacts are identified using the climate impact tool, further assessment, using project specific and local information, will be required to understand the level of opportunity or risk. If the outcome of the activities on site is identified as risky; it is important to specify how the climate risks will be addressed now or in the future. The climate impact screening tool was obtained from the climate impacts tool on the Government Website⁵.

The climate impact tool has 2 parts which focus on:

1. The present-day physical impacts (the new normal and new extremes) and potential future changes (by 2100) based on +2°C and +4°C pathways.
2. Potential climate impacts for future change.

4.1. Identification of Site-Specific Risks based on Activities on Site, Sensitive Receptors Affected and the Impact on Climate Change.

A list of activities taking place on the site that have the potential to cause harm are listed in **Table 2**. In the event of a hazard, these activities may put sensitive receptors at risk of harm, compromising health and safety while also having long and short-term impacts on the environment.

⁵ [Climate impacts tool - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/publications/climate-impacts-tool) Last Updated 31 October 2023

Table 2: Outline of Risks and their Impacts on Climate Change.

S/No	Risk	Who or what could be impacted?	Potential Impacts on Operations under 2050 scenario.	Potential Impacts on Operations under 2100 scenario(s).
Raw Materials				
1	Apple availability, flavour or quality	Manufacturing- early/late harvest, spoiled crop, harvest size or quantity, flavour impacts of base cider.	Earlier harvests (storage requirements) if warm, dry weather occurs for the spring/summer. Pressing season start/end date changes. Smaller fruits, but possibly more fruit. Pomace production may increase. Cooler, wetter springs may impact pollination. Extreme wet winters could lead to root rot, impacting future orchard growth.	Potential for higher extreme temperatures in summer and drier spring summer- similar impacts to 2050 but this may be exacerbated. Winter rainfall may increase in volume and intensity; therefore, by 2100, root rot could become more prevalent.

S/No	Risk	Who or what could be impacted?	Potential Impacts on Operations under 2050 scenario.	Potential Impacts on Operations under 2100 scenario(s).
2	Wildfire risk for Site Orchards	Supply of raw materials.	Temperature increases in summer, and lack of rainfall may increase the likelihood of wildfire in the orchards if ignition sources present (i.e. harvest equipment, neighbouring fields not under the control of Westons Cider).	Potentially higher risk of this happening via predicted warmer temperatures by 2100.
3	Changes in water availability or increased usage	Potable towns water supply shortages or abstraction affected due to low groundwater levels (Note- there is a hands-off flow (HOF) threshold for surface water abstraction of 69 m3 if water levels are triggered. This threshold is not surpassed, even outside HOF conditions, as a precaution) Additional water consumption may be required for cooling fermentation tanks.	Site holds two abstraction licences- one which contains a flow limit condition until 2027. Following this, it reverts to a lower abstraction volume. If groundwater levels are impacted by increased temperatures and lack of rain, there may be insufficient volumes available for abstraction. Water Company Drought Management plans or emergency drought order may	With drier summers and less rain in summer by 20100 it is possible that groundwater reserves may lower without sufficient winter recharge. This may become problematic for any surface waters that are in continuity with groundwater and are receive some groundwater feed.

S/No	Risk	Who or what could be impacted?	Potential Impacts on Operations under 2050 scenario.	Potential Impacts on Operations under 2100 scenario(s).
			enact reduced mains pressure or other supply measures.	Emergency drought orders may become a more likely possibility.
4	Orchard irrigation	Orchards- evaporation may be greatly exceeded, leaving less wetlands water available or quicker evaporation when irrigation complete. Or it may be too wet to irrigate, meaning that wetlands effluents to be removed by tanker.	Orchard trees under stress during prolonged dry weather, despite irrigation. Smaller fruit during summers with hot, dry weather and little rain. Additional business cost for tankering of wetlands effluent to avoid overtopping and pollution.	Hotter, drier summers predicted by 2100 could magnify the 2050 impacts. Wetter, warmer winters predicted could make it very difficult to irrigate as ground conditions may not allow.
5	Off-site flooding/extreme snowfall impacting deliveries of key raw materials and chemicals to site	Manufacturing, haulage or wastewater treatment could be impacted. Critical supplies may not reach the site when planned or required.	Winter rainfall volume and intensity could spark fluvial or surface water flooding, impacting deliveries.	Under greater warming predictions, rainfall intensity may increase further, increasing the likelihood of flooding and disruption.

S/No	Risk	Who or what could be impacted?	Potential Impacts on Operations under 2050 scenario.	Potential Impacts on Operations under 2100 scenario(s).
Process & Manufacturing				
6	Extreme temperatures causing challenges for fermentation	Fermentation process. Critical temperatures that will require additional actions to be taken are >30°C and <10°C. Odours may arise or additional requirements on water for cooling tanks.	Fermentation tanks may require water cooling or fermentation if heatwave conditions arise. Delays in starting fermentation may arise. It is less likely that temperatures are to fall to extreme lows by 2050, but if so, it may cause delays to starting fermentation.	As 2100, but potentially a higher risk or more occurrences.
7	Potential odour risk from onsite processes could be higher	Warmer temperatures are known to increase the release of VOCs which may cause odours from the WWTP, waste storage and process.	Warmer atmospheric temperatures, particularly if still conditions persist could mean any odours arising from the processes do not disperse well. Higher temperatures may mean receptors could smell odours off-site through windows and doors being open	Similar to 2100, but higher risk and potentially more frequent occurrences.

S/No	Risk	Who or what could be impacted?	Potential Impacts on Operations under 2050 scenario.	Potential Impacts on Operations under 2100 scenario(s).
			more frequently (if these were generated).	
8	Energy efficiency could be negatively impacted	Refrigeration, chillers or A/C units.	Refrigeration/Chillers/AC units operate on downstream activities. Higher or extreme ambient air temperatures may mean energy efficiency is impacted by the additional use of chillers or additional equipment to maintain heat resilience.	As 2050, with potentially higher risk and likelihood.
9	Process Electrical Units or components may overheat	Impact to processing operations and downtime.	Summertime extremes are predicted to increase by 2050; therefore, greater resilience of equipment may be needed (i.e. cooling system installation to vulnerable plant).	Like 2050, although any cooling systems installed may need to consider a higher ambient operating temperature to remain effective.
10	Chemical storage	Certain chemicals may require temperature-controlled storage to prevent	Review of storage facilities, including internal and external sources to ensure sufficient ventilation, cooling and	As 2050, with a higher risk of instances occurring of warmer temperatures.

S/No	Risk	Who or what could be impacted?	Potential Impacts on Operations under 2050 scenario.	Potential Impacts on Operations under 2100 scenario(s).
		unwanted reaction during extreme temperatures. Certain chemicals, such as caustic and substances such as diesel can start to gel in lower ambient temperatures which may impact site operations.	extraction to ensure there is minimal build-up of temperature. Review of lagging and insulation for cooling temperatures to prevent pipes freezing.	
11	Onsite flooding	Surface water from intense or extreme rainfall could cause site surface water flooding on downslope areas if drainage cannot keep up.	Critical areas at low points, such as the main tank farm or wastewater treatment plant may be more vulnerable to flood after high-intensity rainfall.	More intense rainfall in summer months is predicted, although drier periods during this time are likely. Short, intense downpours are possible which could bring exacerbated effects from potential 2050 impacts.
12	Infrastructure integrity & maintenance challenges	Extreme heat may cause pipework, joint expansion and contraction. Over time, this may weaken the infrastructure and reduce system integrity.	Repeated heat stress may cause pipework failures or movement leading to loss of containment.	Like 2050 although potentially a higher risk.

S/No	Risk	Who or what could be impacted?	Potential Impacts on Operations under 2050 scenario.	Potential Impacts on Operations under 2100 scenario(s).
			More preventative maintenance checks may be needed to ensure the integrity of infrastructure from heat stress.	
13	Pipework expansion or freezing due to extreme ambient temperature	Plant, equipment and bulk storage.	Lower temperature extremes may be limited by 2050; however, the following impacts could occur: Loss of containment, in operation of plant and equipment. Poorly performing wastewater plant if caustic or acid dosing fails due to frozen pipes. Transfer of materials at risk.	Like 2100 although less likely as average temperatures are predicted to be warmer than present day. Extreme lows are predicted to be less likely.

S/No	Risk	Who or what could be impacted?	Potential Impacts on Operations under 2050 scenario.	Potential Impacts on Operations under 2100 scenario(s).
14	Storm damage to vulnerable equipment, buildings, tanks or emissions stacks	Buildings External receptors Bulk containment.	Building infrastructure damage may mean the facility has to stop operating at capacity temporarily. Noise/odour potential as all processes are enclosed in a building. Effect of wind shear or strong winds may impact tank integrity or tank anchoring.	Storm intensity is not given any UKCP18 projections, however windstorms could become more frequent. Similar impacts to 2050 could arise.
Waste Water Treatment Activities & treated effluent discharge				
15	Extreme temperatures may impact effectiveness wastewater treatment plant. Microbial activity may be slowed with the most effective treatment	Wastewater Treatment performance Trade Effluent Discharge	Microbial activity may be slowed with the most effective treatment occurring within 20-35°C. Other non-desirable bacteria could colonise. May mean that effluents cannot be discharged if they do not meet quality.	Extremes could be around the 40°C in summer by 2100 within the local area, with instances of heatwaves rising up to 17 days, when compared with 1991-2019 averages in the local area (BBC, 2022).

S/No	Risk	Who or what could be impacted?	Potential Impacts on Operations under 2050 scenario.	Potential Impacts on Operations under 2100 scenario(s).
	occurring within 20-35°C. Other non-desirable bacteria could colonise			This could mean that the WWTP performs poorly during the summer months due to increases in average daily temperatures but also increases in extreme conditions. This could mean effluent quality is impacted and cannot be discharged more frequently.
16	Less dilution of treated effluents within the receiving waterbody	Preston Brook Trade Effluent Discharge	Increased organic loading on the Preston Brook, algal blooms, fish and invertebrate may be impacted if water levels in the brook are not sustained at present day levels. This will become more of a concern in summer months as they are predicted to be drier in general.	Scalation of impacts from 2050 if regulatory compliance measures are not applied.

S/No	Risk	Who or what could be impacted?	Potential Impacts on Operations under 2050 scenario.	Potential Impacts on Operations under 2100 scenario(s).
			Eutrophication of the Preston Brook may occur.	
17	Wetlands can become hydraulically overloaded	Wastewater Treatment performance Trade Effluent Discharge	Shortened hydraulic retention time (hrt), poor settling of solids, reduced nutrient removal efficiency, risk of untreated bypass flows.	Like 2050 although potentially a higher risk.
Wastes				
18	Organic wastes are sent to AD plants, the capacity or availability of these plants may risk a decrease if there is waterlogging of the landbank to spread	Waste storage on site. Receptors if odours arise. Pest impacts.	Offsite plant may not be able to take waste stream(s) for digestion if there is no available land bank for spreading or storage capacity for the resultant digestate.	The risk could increase on 2050 impacts, due to the risk of wetter winters becoming potentially more prevalent.

S/No	Risk	Who or what could be impacted?	Potential Impacts on Operations under 2050 scenario.	Potential Impacts on Operations under 2100 scenario(s).
	digestate on, or lagoon capacity is not available.		Wastes may stay on site for longer-attracting pests and increasing odour potential.	

5. SCREENING TOOLS

Using the following categories (Length of site operation, flooding, and water use) from the screening tool in **Table 3**, if the total screening score is 5 or more, then a CCRA will be needed. If the site operations last for only 5 years or less, then no risk assessment will need to be submitted with the application, regardless of the screening score. A score for every category in **Table 3** is applied to specify whether a climate change risk assessment is required if operations exceed 5 years, or if 'Not Applicable'(N/A) is entered. After site specific screening using the categories in **Table 3**, a total score of 6 was obtained. This means that a CCRA is needed.

Table 3: Screening Tool for CCRA

Category	Screening Questions	Score	Your Score	Comments
1. Time Scales	How long will a permit be required for this site/activity? 5 years or less of operation. No need to fill in the rest of the screening. You do not need to fill in a risk assessment. Please go straight to question 7. Less than 20 years of operation Until between 2040 and 2060 (between 20 and 40 years from now) Until 2060 or beyond (more than 40 years from now)	0 1 3 5	5	Unknown length of operations. (Screened in to provide conservative scenarios.)
2. Flooding	What is your site's risk of flooding from rivers or the sea? Not in a flood-risk zone Very low or Low Medium	0 1	1	The area as a very low annual chance of flooding from rivers and the sea, both now and for the period 2036-2069.

Category	Screening Questions	Score	Your Score	Comments
	High	2 5		
3. Water Use	If you use water for your site operations or fire prevention, what is the source of your water? Water not required. Mains water Surface water or groundwater abstraction	0 1 5	1	The site relies on mains water for its activities. Groundwater and surface water abstraction accounted for 13.3% of total consumption in 2024. For fire prevention, there are fire hydrants located in the Middle Tank Farm and the Car Park.
Total Screening Score			7	Screened into requirement for CCRA.

6. CLIMATE CHANGE RISK ASSESSMENT

A climate change risk assessment must be carried out for any new bespoke waste and installations permit applications if you expect to operate for more than 5 years. The Flood risk assessments: Climate change allowances⁶ was used to measure the risk of flooding due to peak river flow, rainfall intensity and impacts on sea level rise.

6.1 Scoring matrix

The severity and likelihood of occurrence of a risk will be measured on a 5 × 5 scale (**Table 4** below).

Table 4: Likelihood of Occurrence and Impact Scale

		Impact				
Likelihood		Insignificant 1	Minor 2	Significant 3	Major 4	Severe 5
	5 (Almost Certain)					
	4 (Likely)					
	3 (Possible)					
	2 Unlikely					
	1 Rare					

Low	Medium	High	Extreme
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⁶ [Flood risk assessments: climate change allowances - GOV.UK \(www.gov.uk\)](https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances) Last Updated 27 May 2022

6.2 Considerations in carrying out a CCRA.

- Consider how your operations will be affected by the changes in weather and climate described in the **Table 5**.
- Consider any changes to average climate conditions that may impact on your operations, for example extreme rainfall.
- Critical thresholds - where a 'tipping point' is reached, for example a specific temperature where site processes cannot operate safely.
- Changes to averages - for example an entire summer of higher-than-expected rainfall causing waterlogging
- Where hazards may combine to cause more impacts

Even if site operations cease before 2050, you must still consider climate change risks for the time you intend to be in operation. Whilst the variables are predicted for the 2050s, this is an estimated date, and climate change conditions may be experienced before the estimated date.

The risk assessment worksheet must be included in the management system summary which will be submitted with the permit application.

Table 5: Climate Change Risk Assessment, Likelihood, Severity, and Mitigation Measures.

Potential changing climate variable	A Impact	B Likelihood	C Severity	D Risk (B x C)	E Mitigation (What will you do to mitigate this risk)	F Likelihood (After mitigation)	G Severity (After mitigation)	H Residual risk (F x G)
Summer daily maximum temperature may be around 6°C higher compared to average summer temperatures now.	Wildfire risk increased in orchards.	Possible	Major	High	Large expanse of orchards with natural 'fire breaks' within. Supply of water for firefighting from wetlands in an emergency. Machinery is serviced in line with manufacturers recommendations. No combustible materials stored on orchards. Smoking prohibited. Access is restricted for authorised personnel only.	Unlikely	Significant	Medium

Potential changing climate variable	A Impact	B Likelihood	C Severity	D Risk (B x C)	E Mitigation (What will you do to mitigate this risk)	F Likelihood (After mitigation)	G Severity (After mitigation)	H Residual risk (F x G)
	Higher evaporation/evapotranspiration in orchards- orchard stress affecting crop production for product.	Likely	Significant	High	Irrigation using non-abstracted or potable means where possible (i.e wetlands water use or rainwater harvesting/ recycled water (i.e treated effluents).	Unlikely	Minor	Low
	Fermentation may be delayed if temperature over 30°C and additional measures to take.	Possible	Significant	High	Holding of pressed juice in juice tanks/ tank farm for an additional time so that fermentation is started during cooler ambient temperatures. Tank cladding provides some protection of the internal tank temperature. Monitoring and sampling of fermentation.	Rare	Minor	Low

Potential changing climate variable	A Impact	B Likelihood	C Severity	D Risk (B x C)	E Mitigation (What will you do to mitigate this risk)	F Likelihood (After mitigation)	G Severity (After mitigation)	H Residual risk (F x G)
	Odours	Likely	Major	Extreme	Tanks are sealed. Pressing equipment enclosed and sealed and within a building. Fermentation and maturation occur in sealed tanks. Wastes removed promptly, particularly in hot weather. Wastewater treatment plant DO monitored and performance monitored and emergency plan in place in the event of failure.	Unlikely	Minor	Low

Potential changing climate variable	A Impact	B Likelihood	C Severity	D Risk (B x C)	E Mitigation (What will you do to mitigate this risk)	F Likelihood (After mitigation)	G Severity (After mitigation)	H Residual risk (F x G)
	Energy efficiency	Possible	Significant	High	Monitor energy usage for baselines, with particular attention to hot weather. Use of energy efficient chillers. Use of solar to support additional power demand.	Unlikely	Minor	Low
	Electrical panels overheating	Possible	Major	High	Critical electrical panels identified for key process controls where present. Cooling of cabinets/areas/ dedicated rooms to be reviewed to ensure they are robust in protecting equipment.	Unlikely	Minor	Low

Potential changing climate variable	A Impact	B Likelihood	C Severity	D Risk (B x C)	E Mitigation (What will you do to mitigate this risk)	F Likelihood (After mitigation)	G Severity (After mitigation)	H Residual risk (F x G)
	Chemical storage	Possible	Significant	High	Chemicals stored within appropriately controlled storage areas that are bunded and well ventilated. Any flammable chemicals are segregated and flash point/auto ignition temperatures known with actions taken. Incompatible chemicals not stored together.	Rare	Minor	Low
	Heat stress on plant and infrastructure	Possible	Significant	High	Plant and equipment maintained under PPM.	Unlikely	Minor	Low

Potential changing climate variable	A Impact	B Likelihood	C Severity	D Risk (B x C)	E Mitigation (What will you do to mitigate this risk)	F Likelihood (After mitigation)	G Severity (After mitigation)	H Residual risk (F x G)
	WWTP efficiency and performance	Likely	Major	Extreme	Monitoring of Dissolved Oxygen within aerobic processes & alarms. Monitoring of key process parameters in plant and on discharge. Reed beds for additional polishing of effluents. Ability to tanker effluents quickly. Aeration on duty/standby system and is maintained.	Unlikely	Significant	Medium

Potential changing climate variable	A Impact	B Likelihood	C Severity	D Risk (B x C)	E Mitigation (What will you do to mitigate this risk)	F Likelihood (After mitigation)	G Severity (After mitigation)	H Residual risk (F x G)
	Power Failure impacting process and WWTP	Likely	Major	Extreme	Power failure is unlikely to cause significant issues off site from the cider manufacturing process, although may cause higher wastage. WWT requires blowers to operate via mains power	Unlikely	Significant	Medium

Potential changing climate variable	A Impact	B Likelihood	C Severity	D Risk (B x C)	E Mitigation (What will you do to mitigate this risk)	F Likelihood (After mitigation)	G Severity (After mitigation)	H Residual risk (F x G)
2. Winter daily maximum temperature could be 4°C more than the current average, with the potential for more extreme temperatures, both warmer and colder than present.	A) Impacts on WWTP performance	Likely	Major	Extreme	Monitoring of Dissolved Oxygen within aerobic processes & alarms. Monitoring of key process parameters in plant and on discharge. Reed beds for additional polishing of effluents. Ability to tanker effluents quickly. Aeration on duty/standby system and is maintained	Unlikely	Significant	Medium
	B) Key supplies to site (chemicals, raw materials) in snow and ice.	Possible	Significant	High	Minimum supply levels kept on site to ensure no significant disruption to operations.	Rare	Insignificant	Low

Potential changing climate variable	A Impact	B Likelihood	C Severity	D Risk (B x C)	E Mitigation (What will you do to mitigate this risk)	F Likelihood (After mitigation)	G Severity (After mitigation)	H Residual risk (F x G)
	c) Pipework freezing.	Possible	Significant	High	Key process pipework/ pumps which are vulnerable to freezing is insulated.	Possible	Insignificant	Low
3. The biggest rainfall events are up to 20% more intense than current extremes (peak rainfall intensity) *.	On or off-site flooding affecting infrastructure of raw material deliveries.	Possible	Significant	High	Minimum supply levels kept on site to ensure operations is possible without significant disruption to operations.	Rare	Insignificant	Low
	Building storm damage.	Possible	Severe	Extreme	Buildings are maintained and inspected to ensure they are structurally integral. Repairs are made quickly if defects found. Reporting of damage encouraged if found by operatives.	Rare	Significant	Medium

Potential changing climate variable	A Impact	B Likelihood	C Severity	D Risk (B x C)	E Mitigation (What will you do to mitigate this risk)	F Likelihood (After mitigation)	G Severity (After mitigation)	H Residual risk (F x G)
4. Average winter rainfall may increase by 29% on today's averages.	A) Site flooded/nearby roads flooded impacting deliveries and access.	Possible	Significant	High	Minimum supply levels kept on site to ensure running without significant disruption to operations.	Rare	Insignificant	Low
	B) Irrigation from wetlands not needed- cost to business to tanker away.	Possible	Major	High	Tanker away effluents from Wetlands if needed to prevent overflow. Monitoring of wetlands areas water levels. .	Unlikely	Minor	Low
5. Sea level could be as much as 0.6m higher compared to today's level *.	Not available as site is not affected by sea level rise.							

Potential changing climate variable	A Impact	B Likelihood	C Severity	D Risk (B x C)	E Mitigation (What will you do to mitigate this risk)	F Likelihood (After mitigation)	G Severity (After mitigation)	H Residual risk (F x G)
6. Drier summers, potentially up to 34% less rain than now.	Orchard irrigation increase-meaning more potable water needed.	Possible	Significant	High	Use of treated effluents to irrigate orchards (from WWTP) with EA agreement. Potential use of potable waters. Opportunity to rainwater harvest in winter months.	Unlikely	Minor	Medium

Potential changing climate variable	A Impact	B Likelihood	C Severity	D Risk (B x C)	E Mitigation (What will you do to mitigate this risk)	F Likelihood (After mitigation)	G Severity (After mitigation)	H Residual risk (F x G)
	Abstraction and towns water availability- may be reduced meaning make up waters for process are limited.	Possible	Severe	Extreme	Water tanks x3 full of mains/abstracted water to keep process running No hands-off conditions within abstraction licence, but possible to tanker in water if necessary from other sources. Process can be temporarily shut down or scaled back due to water demands if required.	Unlikely	Significant	Medium

Potential changing climate variable	A Impact	B Likelihood	C Severity	D Risk (B x C)	E Mitigation (What will you do to mitigate this risk)	F Likelihood (After mitigation)	G Severity (After mitigation)	H Residual risk (F x G)
	Wildfire risk increases- could disrupt operations or orchards.	Possible	Major	High	Large expanse of orchards with natural 'fire breaks' within. Supply of water for fire fighting from wetlands in an emergency. Machinery is serviced in line with manufacturers recommendations. No combustible materials stored on orchards. Smoking prohibited. Access is restricted for authorised personnel only.	Unlikely	Significant	Medium

Potential changing climate variable	A Impact	B Likelihood	C Severity	D Risk (B x C)	E Mitigation (What will you do to mitigate this risk)	F Likelihood (After mitigation)	G Severity (After mitigation)	H Residual risk (F x G)
7. At its peak, the flow in watercourses could be 30% more than now, and at its lowest it could be 65% less than now.	Less dilution of treated effluents discharging into the Preston Brook- increased eutrophication or impact to fish/inverts.	Likely	Major	Extreme	WWTP treats effluent using BAT techniques, plus additional polishing in reed bed. BAT AELs are met at point of discharge. Review any advancements in treatment techniques to reduce nutrient loads that may emerge in future. Opportunities presented for water re-use on site, subject to hygiene and quality demands.	Unlikely	Significant	Medium

Potential changing climate variable	A Impact	B Likelihood	C Severity	D Risk (B x C)	E Mitigation (What will you do to mitigate this risk)	F Likelihood (After mitigation)	G Severity (After mitigation)	H Residual risk (F x G)
	Increase in offsite Flood Risk from additions of treated effluent into Preston Brook that is receiving upstream floodwaters.	Possible	Significant	High	WWTP treats effluent using BAT techniques, plus additional polishing in reed bed. BAT AELs are met at point of discharge. Opportunities presented for water re-use on site, subject to hygiene and quality demands. Overpumping of treated waste waters into wetlands if required.	Unlikely	Minor	Low

7. CONCLUSIONS

- Site specific screening was done using the screening tool in **Table 3**, and a total score of 7 was obtained. The CCRA was carried out in accordance with the Environment Agency's guidance, 'Climate change: risk assessment and adaptation planning in your management system'⁷.
- We considered the likelihood of occurrence of risks from all site activities and the results show that after mitigation measures are put in place, the maximum score for the likelihood that site activities will impact climate change is 2 (Unlikely) and the minimum score is 1 (Rare).
- The maximum severity that activities on site will Impact on climate change after mitigation measures was 2 (Minor) while the minimum was 1 (Insignificant).
- Most risks were reduced to Insignificant (1) or Minor (2) severity after mitigation.
- The highest potential impact on climate change from site activities is associated with summer daily maximum temperatures and drier summer events. After mitigation, there is a possibility that these variables may occur but with minor impact.

⁷ [Climate change: risk assessment and adaptation planning in your management system - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/672222/Climate_change_risk_assessment_and_adaptation_planning_in_your_management_system.pdf) Last Updated 3 April 2023



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