

1. BAT ASSESSMENT FOR FOOD, DRINK AND MILK INDUSTRIES

BAT 1	<i>In order to improve overall environmental performance, BAT is to elaborate and implement an EMS that incorporates the features in 17.1.1 i- xx.</i>	
	Considered Compliant?	Yes
	Description of Compliance	H Weston and Sons Ltd have and operate to an Integrated Management System for ISO 14001 and 9001. The requirements stipulated in BAT 1 are akin to the requirements of these ISO management systems. • They have a valid environmental policy, dated September 2023, which endorsed and supported by the Company Director, Helen Thomas. • Organisation context and interested parties are considered, along with the environmental and human health risks of the operation within the Impacts and Aspects register. • Objectives are set as part of ISO 14001 for environmental matters. • Procedures and supporting documents are available for responsibilities, roles and resources, communication, procedures to control of significant environmental risks and aspects. • Emergency response plans to mitigate environmental pollution issues that may arise through operations. • Monitoring and Measurement of emissions arising from operations. • Internal auditing schedule and requirements for internal audits. • Non-conformity and corrective actions procedures. • Management reviews of the EMS performance. • Odour Management Plan. An overview of the IMS is included in K499.02~09~ 0301
BAT 2	<i>In order to increase resource efficiency and reduce emissions, BAT is to establish, maintain and regularly review (including when significant change occurs) an inventory of water, energy and raw materials consumption as well as wastewater and waste gas streams as part of the EMS.</i>	
	Considered Compliant	Yes

	Description of Compliance	These have been developed by the operator. Monitoring of Raw Materials is completed by Weston's Internal systems. Raw material orders are stored in Microsoft NAV and monitored monthly in KPI/Leadership Team meetings.					
BAT 3	For relevant emissions to water as identified by the inventory of waste water streams (see BAT 2), BAT is to monitor key process parameters (i.e continuous monitoring of waste water flows, pH, temperature) at key locations (inlet and or outlet of pre-treatment, at the inlet of the final treatment, at the point it leaves the installation)						
	Considered Compliant	Yes					
	Description	Currently the site has a discharge consent (EPR/FP3429GD) to discharge treated effluent to the nearby watercourse as there is no mains sewer in the area. This will be amalgamated into the EPR installations permit. The site currently monitors key process parameters at the following locations for wastewater K499.2~09~0606.					
			Area		Monitoring		
			Following Buffer Tanks to DAF		Flow, COD.		
		Prior to DAF		Temperature, flow, pH, Total Suspended Solids.			
		Membrane Bioreactor		Flow, dissolved Oxygen, Temperature, Mixed Liquor Suspended Solids, pressure (membranes only), permeate flow			
		Outlet at V-Notch Weir before watercourse		Flow			
		SSVI, Aerated Sludge loading (kgCOD/kgMLSS/day), loading to biological treatment (kgCOD/Day) are not currently monitored.					
BAT 4	BAT is to monitor emissions to water with at least the frequency given below and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.						
	Considered Compliant	Yes					
	Description	Current Monitoring Parameter	Frequency	Current Standard	Currently BAT compliant	Measures to take to ensure BAT Compliance ready for permit issue	

		COD	Daily	ISO 6060, DIN 38409- H41-H44	No standard specified.	To ensure BAT Compliance, daily testing of the following will commence as of: 05/01/2026. COD (No EN standard) Total Nitrogen (EN 12260, EN ISO11905-1) TOC (EN1484) Total Phosphorus (EN ISO 6878 or other EN ISO standards as described). TSS (EN872) Monthly samples of the following will be taken for the following: Chloride (Various EN standard)
		Phosphate		ISO 6878_2004	Yes	
		Ammonium (as N) (in place of Total N)		ISO 7150-1, DIN 38406 E5-1, UNI 11669:2017, ISO 23695	N/A	
		Nitrate (as N)		ISO 23696-1, DIN 38405 D9-2	N/A	
		Total Suspended Solids (TSS)	Continuous (sensors)			Total Suspended Solids: EN 872
		BOD	Sporadic	(EN 1899-1)	6-monthly external samples analysed by UKAS lab. Frequency needs to be increased for BAT compliance.	Biochemical Oxygen Demand (BOD)- (EN 1899-1)
BAT 5	BAT is to monitor channelled emissions to air with at least the frequency given below and in accordance with EN standards.					
	Considered Compliant	Not Applicable				
	Description	As advised during pre-application, sector specific BAT for the brewing sector will apply for BAT determination, however on review of BAT 5 and BAT 20, the cider manufacturing process does not use malt or other adjuncts like grains within the fermentation process.				

		Yeasts are added, along with other enzymes, to ferment the base cider to the correct ABV. These are added to a rehydration tank that is located within a building. There is no LEV extraction within this building or emission points.
BAT 6	In order to increase energy efficiency, BAT is to use BAT 6a and an appropriate combination of the common techniques listed in technique b below.	
	Considered Compliant	Yes
	Description	Techniques adopted on the site to increase energy efficiency are: • Burner regulation and control within the boilers on site. • Energy Efficient motors and Variable speed drives [where/on what] • Minimisation of boiler blow down. • Pre-heating of boiler feedwater via economisers. • Insulated lines to prevent heat losses where steam is carried in the line. • Condensate recovery • Solar Array on site • Compressed Air Leak PPMs & recent purchase of air leak camera. • Annual Steam Trap surveys. • Compressed air repair surveys and PPM An energy Efficiency Plan has been completed by Westons, complete with Baselines for the sector (from various sources and site. KPIs have been introduced. This plan is included within (K499.2~09~0202). A project to install sub-metering within specific areas of the manufacturing environment is to be rolled out mid- 2025 and fully adopted if proven successful.
BAT 7	In order to reduce water consumption and the volume of wastewater discharged, BAT is to use BAT 7a and one or a combination of the techniques b to k given in BAT C.	
	Considered Compliant	Yes
	Description	Westons are considered compliant with applicable techniques described in BAT 7 as indicated below:

		Technique Reference	Demonstration
		Water Recycling	Water is partially recycled during pressing season for the transport and cleaning of apples prior to pressing. A turbidity meter monitors sediment/solids build up. This is screened and pressed out of the water stream before it is then recycled. Water is refreshed once turbidity reaches undesirable levels.
		Optimisation of water nozzles/ Hoses	All hoses for wash down are on trigger spray nozzles. Leaks are regularly checked for.
		Segregation of water streams	Clean, uncontaminated rainwater systems are separate from effluent systems on site. The site does have the ability to divert the surface water system to the WWTP via a series of valves in the event of an incident to ensure containment, or if work is being completed in an area where there is a risk of an incident occurring as a precautionary measure. However, this diverts valve is routinely close to prevent rainwater being treated at the effluent plant.
		Dry Cleaning	Dry cleaning (sweeping, solids removal) is utilised in the press house area if pomace is spilt on the floors. The solid material is put into bins, skips or trailers on site.
		Optimisation of chemical dosing in CIP	CIP uses the following for optimisation: • Water recovery of final rinse waters. • Use of conductivity meters across all CIP applications. • Automatic caustic recovery. • Temperature monitoring. • Rotary spray balls used in new tank farm. • Static spray balls currently on all other tanks. • Caustic diluted to 1-1.5% from bulk stores and verified using lab sampling. •
		Low pressure	Low pressure foam cleaning only is used in cleaning the press house floor and for filling machines only. The filling machines are an enclosed process.

		foam/gel cleaning	
		Optimised design and construction of equipment and process areas.	Best manufacturing practice has been followed to design the layout of equipment and processes. Equipment, where not possible to clean manually, has CIP designed into the system to facilitate effective cleaning. Where not possible to CIP, manual cleaning is assisted by gantry platforms for safe working where equipment needs to be placed at higher levels for operational reasons. All other equipment is at ground level. Hoses and water sources are supplied with trigger sprays. Equipment is maintained via PPM to ensure optimal working conditions.
		Cleaning of equipment as soon as possible	Cleaning is completed following a hygiene schedule as dictated by Westons. Cleaning is completed very frequently to comply with food hygiene and quality requirements. For example: • Pressing equipment: cleaned for 4 hours per day following use. • Fermentation/ storage tanks: 1.5-hour clean following emptying. • Downstream DAAs: also cleaned daily following use.
BAT 8	In order to prevent or reduce the use of harmful substances, e.g. in cleaning and disinfection, BAT is to use one or a combination of the techniques given below: a) Proper selection of cleaning chemicals and/or disinfectants. b) Reuse of cleaning chemicals in cleaning -in-place (CIP). c) Dry cleaning d) Optimised design and construction of equipment and process areas.		
	Considered Compliant	Yes	
	Description	See the table below for BAT 8 Compliance	
		Technique	Assessment

		A	Proper Selection of Cleaning Chemicals and/or disinfectants	Following a review of the cleaning chemicals used in cleaning and CIP processes as outlined in the RHS assessment, no products contain any priority substances as specified in the Water Framework Directive 2000/60/EC. Some cleaning materials are H411 & H412 in neat form (see RHS assessment). However, they are largely diluted in water and are closely monitored in application. CIP chemicals are recovered and re-used. Monitoring via conductivity meters prevents overdosing.
		B	Reuse of cleaning chemicals in Clean In Place (CIP)	Caustic and Acid recovery systems are present in CIP systems. Materials are not single use.
		C	Dry Cleaning	This is completed where appropriate to do so in the press house (this is the only area producing solids). See BAT 7.
		D	Optimised design and construction of equipment and process areas	Yes, see BAT 7.
BAT 9	In order to prevent emissions of ozone-depleting substances and of substances with a high global warming potential from cooling and freezing, BAT is to use refrigerants without ozone depletion potential and with a low global warming potential.			
	Considered Compliant	Yes		
	Description	As part of the listed activities on site (Pressing, fermentation, maturation), F gases are not used in this part of the process. F-gases are used within the downstream processes of packaging and blending (Directly Associated Activities) to the above process. We understand that the 'scope' of the FDM bref covers the activities listed in the Industrial Emissions Directive. However, F-gases used in downstream processes have been included out of caution. F-gases used in the DAAs areas follows:		

		IdentifierRefrigerant GasCharge (kg)GWP of F-Gas									
		Blending Chiller	R410a	43	2088						
		Bottling No 1	R410a	30	2088						
		Bottling No 2	R410a	56	2088						
		Evaporator	R407c	45	1774						
		Kegging Chiller	R410a	40	2088						
		Six Ways	R407c	43	1774						
		The above are not considered Ozone Depleting Substances but are considered HFCs. Plans for replacing R410a are to be discussed with the maintenance contractors for the downstream F-gas equipment as R410a phase out begins.									
BAT 10	In order to increase resource efficiency, BAT is to use one or a combination of the techniques given below: - Anaerobic Digestion - Use of Residues - Separation of Residues - Recovery and reuse of residues from the pasteuriser. - Phosphorus recovery as struvite - Use of waste water for land spreading.										
	Considered Compliant	Yes									
	Description	The current operations undertake the following techniques that are applicable from the table above: <table><tr><th>Technique Used</th><th>Demonstration of BAT</th></tr><tr><td>Anaerobic Digestion</td><td>Pomace is sent to anaerobic digestion to produce biogas for power production. Digestate is spread to land. Wastewater sludges are also sent to AD.</td></tr><tr><td>Separation of Residues</td><td>Solids collection traps are present prior to the balance tanks at the WWTP. Pomace from the pressing process is able to be separated efficiently due to the equipment design- pomace is segregated and conveyed to a trailer for removal to an off-site AD plant.</td></tr></table>					Technique Used	Demonstration of BAT	Anaerobic Digestion	Pomace is sent to anaerobic digestion to produce biogas for power production. Digestate is spread to land. Wastewater sludges are also sent to AD.	Separation of Residues
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Separation of Residues	Solids collection traps are present prior to the balance tanks at the WWTP. Pomace from the pressing process is able to be separated efficiently due to the equipment design- pomace is segregated and conveyed to a trailer for removal to an off-site AD plant.										

		Use of Wastewater for Land spreading	Dewatered soils and organics (twigs/leaves) are sent for composting. Compost is understood to be land spread. Sludges from the WWTP can also be send for land spreading if required.
		Use of residues, recovery from the pasteuriser and struvite recovery are not applicable to the operation.	
BAT 11	In order to prevent uncontrolled emissions to water, BAT is to provide an appropriate buffer storage capacity for wastewater.		
	Considered Compliant	Yes	
	Description	Buffer Capacity is provided by two balance tanks at present. The total capacity for the two buffer tanks is 685m ³ (470m ³ and 215m ³ respectively). Daily influent in pressing season is approximately 600m ³ /day, and outside of pressing season is 400m/day. Buffer tanks (known as Balance Tanks) on site are also aerated.	
BAT 12	In order to reduce emissions to water, BAT is to use an appropriate combination of the techniques given below. • Equalisation • Neutralisation • Physical separation • Aerobic or Anaerobic Treatment • Nitrogen Removal • Phosphorus Recovery • Final Solids Removal		
	Considered Compliant	Yes	
	Description	The site currently operates the following processes to treat Waste Water generated on site through cider manufacturing activities. The detailed process flow is available K499.2~09~0606. - Buffer Tanks x2 - equalisation - Screening-primary solids removal. - PH Adjustment- neutralisation - Dissolved Air Flotation - primary solids removal	

		- Membrane Bioreactor aerobic biological treatment for secondary treatment and final solids removal via Ultrafiltration (UF). - Reed Bed - Discharge to Watercourse. Phosphorus recovery: not applicable. BAT-AEL ranges associated with BAT 12 are the following: <table border="1"> <thead> <tr> <th>Parameter</th><th>BAT-AEL</th><th>Effluent analysis results (at reedbed inlet)</th></tr> </thead> <tbody> <tr> <td>COD</td><td>25–100 mg/l</td><td>compliant</td></tr> <tr> <td>TSS</td><td>4–50 mg/l</td><td>compliant</td></tr> <tr> <td>Total Nitrogen</td><td>2–20 mg/l</td><td>compliant</td></tr> <tr> <td>Total Phosphorus</td><td>0.2–2 mg/l</td><td>compliant</td></tr> </tbody> </table> Wastewater testing results presented in folder 2026 EnviroLab Effluent Results.	Parameter	BAT-AEL	Effluent analysis results (at reedbed inlet)	COD	25–100 mg/l	compliant	TSS	4–50 mg/l	compliant	Total Nitrogen	2–20 mg/l	compliant	Total Phosphorus	0.2–2 mg/l	compliant
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BAT 13	In order to prevent or, where that is not practicable, to reduce noise emissions, BAT is to set up, implement and regularly review a noise management plan, as part of the environmental management system (see BAT 1), that includes all of the following elements:																
	Considered Compliant	Not Considered Applicable – Noise Nuisance is not expected or substantiated at sensitive receptors as the process does not generate high or excessive levels of noise.															
	Description	The 6.8 process is completed within buildings, enclosed equipment within buildings, enclosed tanks, vessels and pipework. The wastewater process is not considered a risk for noise generation.															
BAT 14	In order to prevent or, where that is not practicable, to reduce noise emissions, BAT is to use one or a combination of the techniques given below. a) Appropriate location of equipment and buildings. b) Operational measures c) Low noise equipment																

	d) Noise control equipment e) Noise abatement.	
	Considered Compliant	Yes
	Description	Appropriate location of equipment and buildings: The site centre is located approximately 800m from Much Marcle Village and associated receptors. The process is not inherently noisy and is enclosed within operational buildings and tanks. Operational measures: - Preventative Maintenance Program on processing equipment to ensure they remain in an operational and low-noise state. - Roller doors/windows are closed during operations (i.e. Press house) to reduce noise emissions from plant being emitted externally. - Staff operating all fixed equipment associated with processing are familiar with the equipment, trained and experienced. - Maintenance activities (outside normal PPM, such as shut-downs) are discussed and planned across the senior team on site. Noise risk is assessed routinely, although excessive noise from these operations is unlikely. Measures are taken to reduce noise if there is a risk of it from these operations. - Vehicle speed limits are set at 5mph on site, road surface are kept in good condition to avoid fork excessive noise being generated. - Noise Control Equipment • All processes on site are enclosed within buildings or tanks and doors closed at all times for noise control, but also food hygiene requirements. Process is not audible outside of buildings. • Boilers are also enclosed within a building to contain noise. Doors are closed at all times and are under secure access to prevent them being left open.
BAT 15	In order to prevent or, where that is not practicable, to reduce odour emissions, BAT is to set up, implement and regularly review an odour management plan, as part of the environmental management system (see BAT 1), that includes all of the following elements:	
	Considered Compliant	Yes
	Description	The facility operates to an Odour Management Plan (K499.02~09~1001). The odour management plan identifies credible odour sources, odour monitoring, actions and timelines. It also explains how

		complaints are dealt with efficiently. Prevention and reduction measures are also explained within the document.						
BAT 18 – Brewing Sector Specific	In order to increase energy efficiency, BAT is to use an appropriate combination of the techniques specified in BAT 6 and of the techniques given below. a) Mashing-in at higher temperatures b) Decrease of evaporation rate during wort boiling. c) Increase of the degree of high gravity brewing. - Table 17.5: Indicative environmental performance level for specific energy consumption Unit Specific energy consumption (yearly average) MWh/hl of products 0.02–0.05 - Table 17.6: Indicative environmental performance level for specific waste water discharge Unit Specific waste water discharge (yearly average) m 3 /hl of products 0.15–0.50							
	Considered Compliant	Yes						
	Description	Energy: Total energy efficiency for 2024 is calculated at 0.0186MWh/hl and is considered compliant with sector specific BAT. Water Use: Water usage efficiency for 2024 is calculated at 0.0104 m3/hl produced (see K499.02~09~0901). Considered BAT compliant. An assessment against the table above is included below: <table><tr><th>Technique</th><th>Description</th><th>Applicability</th></tr><tr><td>Mashing-in at higher temperatures.</td><td>The mashing-in of the grain is carried out at temperatures of approximately 60°C which reduces the use of cold water.</td><td>Not Applicable, grain mashing-in is not used in Cider Fermentation and fermentation is not carried out under controlled temperature conditions. See NTS for process operation.</td></tr></table>		Technique	Description	Applicability	Mashing-in at higher temperatures.	The mashing-in of the grain is carried out at temperatures of approximately 60°C which reduces the use of cold water.
Technique	Description	Applicability						
Mashing-in at higher temperatures.	The mashing-in of the grain is carried out at temperatures of approximately 60°C which reduces the use of cold water.	Not Applicable, grain mashing-in is not used in Cider Fermentation and fermentation is not carried out under controlled temperature conditions. See NTS for process operation.						

		Decrease of the evaporation rate during wort boiling	The evaporation rate can be reduced from 10% down to approximately 4% per hour (e.g. by two phase boiling systems, dynamic low-pressure boiling)	Not applicable in the cider manufacturing process. See NTS for process operation.					
		Increase of the degree of high gravity brewing	Production of concentrated wort, which reduces its volume and thereby saves energy.	Not applicable in the cider manufacturing process. See NTS for process operation.					
BAT 19	To reduce the quantity of waste sent for disposal, BAT is to use one or both of the techniques given below. a) Recovery and (re) use of yeast after fermentation b) Recovery and (re)use of natural filter material.								
	Considered Compliant	Yes							
	Description	The table below demonstrates how Weston's meet BAT compliance for BAT 19.							
		<table><tr><th>Technique</th><th>Description</th></tr><tr><td>Recovery and (re)use of yeast after fermentation</td><td>Spent Yeasts are sent to anaerobic digestion for biogas production.</td></tr><tr><td>Recovery and (re) use of natural filter material</td><td>The Lee's filter does not use natural filter material. It is a cross flow filter to remove high solid contents from the cider (i.e dead yeasts etc). The recovered yeast is sent to an AD plant off site for processing and biogas production.</td></tr></table>			Technique	Description	Recovery and (re)use of yeast after fermentation	Spent Yeasts are sent to anaerobic digestion for biogas production.	Recovery and (re) use of natural filter material
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Recovery and (re)use of yeast after fermentation	Spent Yeasts are sent to anaerobic digestion for biogas production.								
Recovery and (re) use of natural filter material	The Lee's filter does not use natural filter material. It is a cross flow filter to remove high solid contents from the cider (i.e dead yeasts etc). The recovered yeast is sent to an AD plant off site for processing and biogas production.								
	In order to reduce channelled dust emissions to air, BAT is to use a bag filter or both a cyclone and a bag filter.								

BAT 20	Table 17.7: BAT-associated emission levels (BAT-AELs) for channelled dust emissions to air from handling and processing of malt and adjuncts			
	Parameter	Unit	BAT-AEL (average over the sampling period)	
			New plants	Existing plants
	Dust	mg/Nm ³	< 2–5	< 2–10
	Considered Compliant	Not applicable		
	Description	There are no channelled emissions to air from the process extracting dust. Yeast and other fermentation materials are added to a rehydration tank manually and water added. The rehydration tank is contained within a process building and is fully enclosed, therefore dust emissions are unable to escape. There is no LEV within the building leading to an emission point.		

2. BAT ASSESSMENT FOR WASTE TREATMENT

BAT 15	<i>BAT is to use flaring only for safety reasons or for non-routine operating conditions (e.g. start-ups, shutdowns) by using both of the techniques given below.</i>	
	Considered Compliant?	Not Applicable
	Description of Compliance	Considered to be not applicable , as no flaring is undertaken or proposed at the installation.
BAT 16	In order to reduce emissions to air from flares when flaring is unavoidable, BAT is to use both of the techniques given below	
	Considered Compliant	Not Applicable
	Description of Compliance	Considered to be not applicable , as no flaring is undertaken or proposed at the installation.
BAT 21	In order to prevent or limit the environmental consequences of accidents and incidents, BAT is to use all of the techniques given below, as part of the accident management plan (see BAT 1).	
	Considered Compliant	Yes
	Description	The site operates under an environmental management system which includes procedure for environmental incidents and accidents prevention and response. The environmental management system includes the following: • Emergency response plans to mitigate environmental pollution issues that may arise through operations. • Monitoring and Measurement of emissions arising from operations. • Internal auditing schedule and requirements for internal audits. • Non-conformity and corrective actions procedures. • Management reviews of the EMS performance. • Odour Management Plan. An overview of the IMS is included in K499.02~09~ 0301.
<i>In order to reduce emissions to air and to improve the overall environmental performance, BAT is to</i>		

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BAT Assessment EPR/QP3420LA/
K499.2~09~0201

BAT 38	<i>monitor and/or control the key waste and process parameters.</i>	
	Considered Compliant	Not Applicable
	Description of Compliance	Currently not considered applicable due to no anaerobic digestion process on site.