

HABITATS RISK ASSESSMENT FOR EMISSIONS TO WATER

What you do that can harm and what could be harmed?			Manging the Risk	Assessing the Risk		
Hazard	Receptor	Pathway	Risk Management Techniques	Probability of Exposure	Consequence (what harm could be caused?)	What is the overall risk?
Treated effluent not meeting permit ELVs	Macrophytes and phytobenthos (diatoms)	Site discharge via W2	<p>Effluent to be discharged will comply with the Emission Limit Values (ELV) determined by the Environment Agency (EA) and included in the environmental permit.</p> <p>Relevant legislation should be followed, in particular;</p> <ul style="list-style-type: none"> The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 <p>Environmental best practice protection measures will be implemented at the Water Processing Facility (WPF) in order to minimise the risk of disturbance and pollution of the river.</p> <p>Any potential impact to the river will be reported to the EA in accordance with the requirements of the environmental permit.</p> <p>A water quality monitoring programme will be implemented to ensure adherence to the ELVs in the environmental permit. In addition to the permit's monitoring requirements at the point of discharge, Dairy Crest has undertaken additional monitoring upstream and downstream of the discharge location in order to provide information on water quality in the receiving watercourse.</p>	Low – if management practices and permit conditions are adhered to	<p>Macrophytes and phytobenthos, potentially including those of conservation importance, could be adversely affected by both chronic water quality degradation and via accidental spills and pollution events.</p> <p>Treated effluent has the potential to degrade and alter the macrophyte and bank vegetation community via alterations in the physico-chemical parameters of the water if the permit standards are not met. Similarly, modification of the diatom community can be caused by nutrient enrichment (in particular P) or other parameters in the effluent (e.g. inorganics).</p> <p>Habitat loss as a result of effects on the macrophyte community has the potential to pose secondary risk to aquatic macroinvertebrate and fish communities present within the watercourse who may rely on this habitat during multiple life cycle stages, which in turn could alter the current composition of the aquatic ecosystem of the watercourse.</p>	Not significant if management practices are adhered to

			<p>In the event of chronic water quality or habitat degradation associated with Dairy Crest's activities, additional mitigation measures will be considered, such as further improvements to processes on site to minimise the potential for regular permit breaches.</p> <p>The treated effluent has the potential to breach permit conditions via events such as operational failures at the WPF or accidental spills. However, comprehensive operating procedures and an Accident Management Plan are in place and implemented on site and a spill response plan is also in place. This includes immediate intervention measures, contacts for emergency response to a pollution incident and a remediation plan post clean-up.</p> <p>Successful implementation and adherence to the risk management plan for land and groundwater contamination will minimise the risk of pollution incidents to the watercourse and therefore the potential impact on macrophytes.</p>			
Treated effluent not meeting permit ELVs	Aquatic macroinvertebrates	Site discharge via W2	<p>Effluent to be discharged will comply with the ELVs determined by the EA and included in the environmental permit.</p> <p>Relevant legislation should be followed, in particular;</p> <ul style="list-style-type: none"> ▪ The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 ▪ The Wildlife and Countryside Act 1981 	Low – if management practices and permit conditions are adhered to	Aquatic macroinvertebrates, potentially including those of conservation importance, could be adversely affected by both chronic water quality degradation and via accidental spills and pollution events. This could include Red Data Book species and those protected under the Wildlife and Countryside Act 1981, if present.	Not significant if management practices are adhered to

		<p>Environmental best practice protection measures will be implemented at the WPF in order to minimise the risk of disturbance and pollution to aquatic macroinvertebrates.</p> <p>Any potential impact to the river will be reported to the EA in accordance with the requirements of the environmental permit.</p> <p>A water quality monitoring programme will be implemented at the WPF to ensure adherence to the ELVs in the environmental permit. In addition to the permit's monitoring requirements at the point of discharge, Dairy Crest has undertaken additional monitoring upstream and downstream of the discharge location in order to provide information on water quality in the receiving watercourse. Dairy Crest also undertakes periodic aquatic macroinvertebrate assessments upstream and downstream of the point of discharge to indicate long term changes in water quality and potential siltation of the channel bed.</p> <p>In the event of chronic water quality or habitat degradation associated with Dairy Crest's activities, additional mitigation measures will be considered, such as further improvements to processes on site to minimise the potential for regular permit breaches.</p> <p>The treated effluent has the potential to breach permit conditions via events such as operational failures at the WPF or accidental spills. However, comprehensive operating procedures and an Accident Management Plan are in place and implemented on site and a spill response plan is also in place. This includes immediate intervention measures, contacts for emergency</p>		<p>populations; this includes both a potential increase in some taxa and the reduction or loss of others from affected sections of the watercourse, specifically those species which are classed as pollution intolerant (e.g. to Na, K, Cl etc.). Alterations in the current aquatic macroinvertebrate community may be caused by any degradation in water quality or habitat quality as a result of the discharge of treated effluent, which does not meet the required standards.</p> <p>An acute pollution incident caused by a spill or significant permit breach has the potential to result in aquatic macroinvertebrate mortality or other sub-lethal effects, depending on the extent and duration of any incident, and the volume and nature of the material which is lost.</p> <p>Aquatic macroinvertebrates act as a food source to multiple fish species and therefore any degradation of the aquatic macroinvertebrate community poses a subsequent threat to fish communities present within the watercourse.</p>	
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			<p>response to a pollution incident and a remediation plan post clean-up.</p> <p>Successful implementation and adherence to the risk management plan for land and groundwater contamination will minimise the risk of pollution incidents to the watercourse and therefore the potential impact on aquatic macroinvertebrates.</p>			
<p>Treated effluent not meeting permit ELVs</p>	<p>Salmonid species including:</p> <p>Brown trout <i>Salmo trutta</i> and Atlantic salmon <i>Salmo salar</i></p> <p>Recorded during 2015 Environment Agency surveys at multiple locations within the River Inny</p>	<p>Site discharge via W2</p>	<p>Effluent to be discharged will comply with the ELVs determined by the EA and included in the environmental permit.</p> <p>Relevant legislation should be followed, in particular;</p> <ul style="list-style-type: none"> ▪ Salmon and Freshwater Fisheries Act (SAFFA) 1975 which includes the regulation of introducing polluting effluents ▪ The Eels (England and Wales) Regulations 2009 ▪ The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 <p>Environmental best practice protection measures will be implemented at the WPF in order to minimise the risk of disturbance and pollution to fish.</p> <p>Any potential impact to the river will be reported to the EA in accordance with the requirements of the environmental permit.</p> <p>A water quality monitoring programme will be implemented at the WPF to ensure adherence to the ELVs in the environmental permit. Particular attention to</p>	<p>Low – if management practices and permit conditions are adhered to</p>	<p>Salmonids, including brown trout and Atlantic salmon, generally have low tolerance to poor water quality associated with typical effluent parameters (e.g. pH, ammonia, suspended solids etc.); their communities could be adversely affected by both chronic and acute water quality degradation which may be caused by the discharge of treated effluent that does not meet the required standards and/or by the accidental release of polluting materials from the site. This has the potential to create unfavourable habitat or water quality conditions, which may in turn lead to sub-lethal or lethal effects on all life stages of salmonid fish. However, the potential effects of the predominant parameters in Dairy Crest's treated effluent (Na, K, Cl etc.) are much less well understood and there is evidence to suggest that that osmo-regulation means that salmonids can acclimatise to such conditions. The impacts are also likely to be different for migratory / non-migratory salmonids, with the former being more tolerant as they typically have some exposure to saline environments.</p>	<p>Not significant if management practices are adhered to</p>

		<p>those parameters which have direct impacts to fish will be noted, including temperature, biochemical oxygen demand, pH, suspended solids and ammoniacal nitrogen. In addition to the permit's monitoring requirements at the point of discharge, Dairy Crest has undertaken additional monitoring upstream and downstream of the discharge location in order to provide information on water quality in the receiving watercourse. Dairy Crest also undertakes periodic fish surveys upstream and downstream of the point of discharge to indicate the ecological (fish) health of the river.</p> <p>Noting that salmonid eggs and alevins are particularly sensitive to low pH, a review of monitoring data from the site shows that the emissions are well within the range of 6-9 specified in the environmental permit (average pH of 8.1 based on data from May 2020 - May 2021), therefore demonstrating that there is a low risk of acidification.</p> <p>Similarly, the average suspended solids (17.8 mg/l) and ammoniacal nitrogen (0.6 mg/l) concentrations over the same time period are within the limits of 20 mg/l and 5 mg/l specified in the environmental permit. Both salmonids and lamprey are particularly sensitive to suspended solids.</p> <p>It is noted that the EA intends to review the ELVs for emission point W2 during the permit variation determination process. Further information on the ELV review process, including commentary on the EA's indicative ELVs provided during pre-application discussions and consideration of BAT, is provided in the</p>		<p>The discharge of treated effluent which does not meet the required quality standards has the potential to result in the reduction or loss of salmonid species through direct changes in the physico-chemical parameters of the water. This may create unfavourable habitat for resident salmonid populations and spawning/egg development for these species. Degraded water quality has the potential to delay, prevent or otherwise interfere in the upstream migration of adult salmonids and downstream migration of juveniles.</p> <p>Salmonid eggs and alevins are highly sensitive to acidification and cannot tolerate pH of less than 4.5.</p> <p>An acute pollution incident caused by a spill or significant permit breach has the potential to result in fish mortality or other sub-lethal effects. The severity of the incident could adversely affect multiple life-stages of fish causing longer term impacts on recruitment and survival of the affected species.</p> <p>In the event of significant alterations to the flow regime of the watercourse, excessive discharges of suspended solids and / or nutrient enrichment leading to (filamentous) algal growth blinding spawning areas, vital habitat for juvenile salmonids and spawning, which includes riffles and gravel beds, could be adversely affected. Slow moving water with a silted or sandy channel bed is not suitable for</p>	
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	<p>Bullhead <i>Cottus gobio</i></p> <p>Recorded during 2015 Environment Agency surveys at multiple locations within the River Inny</p>	<p>The treated effluent has the potential to breach permit conditions via events such as operational failures at the WPF or accidental spills. However, comprehensive operational procedures and an Accident Management Plan are in place and implemented on site and a spill response plan is also in place. This includes immediate intervention measures, contacts for emergency response to a pollution incident and a remediation plan post clean-up. Where appropriate, plans for fish rescue would be implemented (in conjunction with the EA's Fisheries and Biodiversity Team) should there be a significant incident.</p> <p>Successful implementation and adherence to the risk management plan for land and groundwater</p>	<p>Low – if management practices and permit conditions are adhered to</p>	<p>Bullhead could be adversely affected by both chronic water quality degradation and via accidental spills and pollution events.</p> <p>The discharge of treated effluent which does not meet the required quality standards has the potential to affect the physico-chemical parameters of the water, which may affect the bullhead population. Bullhead and other fish species are highly sensitive to temperature changes. Significant fluctuations in temperature can directly result in reduced spawning and can lead to fish mortality if fluctuations are extreme.</p> <p>An acute pollution incident caused by a spill or significant permit breach has the potential to</p>	<p>Not significant if management practices are adhered to</p>

			<p>contamination will minimise the risk of pollution incidents to the watercourse and therefore the potential impact on fish.</p>		<p>result in a range of negative effects including sub-lethal effects and fish mortality. Bullhead are sedentary and territorial fish which are less likely to relocate, even in the event of changes to water quality, which could exacerbate any effects on the population in the affected reach.</p> <p>The discharge of treated effluent which does not meet the required quality standards has the potential to result in habitat degradation and a reduction in the abundance or diversity of aquatic macroinvertebrates which could reduce food availability and affect the bullhead population.</p> <p>Any significant loss of cover or habitat degradation caused by the discharge of effluent not meeting its quality standards, or acute loss of other material from the site, could lead to increased predation of bullhead, or other effects on recruitment or juvenile survival.</p>	
	<p>European eel <i>Anguilla anguilla</i></p> <p>Recorded during 2015 Environment Agency surveys at multiple locations</p>			<p>Low – if management practices and permit conditions are adhered to</p>	<p>European eel could be adversely affected by both chronic water quality degradation and via accidental spills and pollution events.</p> <p>Treated effluent which does not meet the required quality standards has the potential to result in the degradation or loss of eel populations should the habitat become unsuitable as a result of unfavourable changes in the physico-chemical parameters of the water. Macrophytes, submerged root systems, woody debris, undercut banks and channel</p>	<p>Not significant if management practices are adhered to</p>

	within the River Inny				<p>substrate all provide suitable eel habitat. A degradation of habitat variety has the potential to affect the colonisation and survival of European eels in the receiving watercourse.</p> <p>Water quality issues have the potential to delay, prevent or otherwise interfere in the upstream migration of juvenile eels, which are more sensitive to pollutants, and downstream migration of adult eels for spawning. The migration window for European eels is short and therefore, poor water quality which has the potential to prevent their migration could result in reduced recruitment or colonisation of the wider catchment.</p> <p>An acute pollution incident caused by a spill or significant permit breach has the potential to result in eel mortality or other sub-lethal effects.</p>	
	Lamprey species including: Brook lamprey <i>Lampetra planeri</i> and River and sea lamprey			Low – if management practices and permit conditions are adhered to	<p>Lamprey could be adversely affected by both chronic water quality degradation and via accidental spills and pollution events.</p> <p>The discharge of treated effluent which does not meet the required quality standards has the potential to result in the degradation of brook lamprey populations through direct changes in the physico-chemical parameters of the water, however lamprey larvae are able to tolerate low oxygen concentrations.</p> <p>An acute pollution incident caused by a spill or significant permit breach has the potential to</p>	Not significant if management practices are adhered to

	Recorded during 2015 Environment Agency surveys at multiple locations within the River Inny				<p>result in lamprey mortality or other sub-lethal effects.</p> <p>Water quality issues have the potential to delay, prevent or otherwise interfere in the migration patterns of sea and river lamprey for spawning and the survival of eggs and juveniles has the potential to be reduced.</p> <p>Alterations in flow regime caused by the frequency and volume of the effluent discharge are a potential threat to lamprey, through the potential erosion of silt beds which are a preferred habitat for juveniles and adult brook lamprey. Excessive sedimentation and siltation have the potential to smother spawning gravels.</p>	
Treated effluent not meeting permit ELVs	<p>Designated sites:</p> <p>Greenscombe Wood SSSI</p> <p>Tamar-Tavy Estuary SSSI</p> <p>Plymouth Sound and Estuaries</p>	Site discharge via W2	<p>Effluent to be discharged will comply with the ELVs determined by the EA and included in the environmental permit.</p> <p>Relevant legislation should be followed, in particular;</p> <ul style="list-style-type: none"> ▪ The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 <p>Environmental best practice protection measures will be implemented at the WPF in order to minimise the risk of disturbance and pollution of the receiving watercourse and downstream designated sites.</p> <p>Dairy Crest has consulted with the relevant authority (EA) with regard to the requirements for a Habitats Regulations screening assessment and/or Water</p>	Low – if management practices and permit conditions are adhered to	<p>The aquatic qualifying features of downstream designated sites could be adversely affected by both chronic water quality degradation and via accidental spills and pollution events.</p> <p>The discharge of treated effluent not meeting the required standards has low level potential to result in water quality degradation in the receiving watercourse and downstream designated sites, potentially affecting protected aquatic habitats and/or species.</p> <p>An acute pollution incident caused by a spill or significant permit breach has the potential to result in disturbance or pollution in the receiving watercourse and designated sites hydrologically connected to the discharge point</p>	Not significant if management practices are adhered to

		<p>Framework Directive (WFD) assessment. At this stage the EA has advised that a basic qualitative habitats risk assessment is required, which comprises this report. However, should further information be required following consultation with the EA's Fisheries and Biodiversity Team, this will be requested during the permit variation determination process.</p> <p>Any potential impact to the river will be reported to the EA in accordance with the requirements of the environmental permit.</p> <p>A water quality monitoring programme will be implemented to ensure adherence to the ELVs in the environmental permit. In addition to the permit's monitoring requirements at the point of discharge, Dairy Crest has undertaken additional monitoring upstream and downstream of the discharge location in order to provide information on water quality in the receiving watercourse.</p> <p>In the event of chronic water quality or habitat degradation associated with Dairy Crest's activities, additional mitigation measures will be considered, such as further improvements to processes on site to minimise the potential for regular permit breaches.</p> <p>The treated effluent has the potential to breach permit conditions via events such as operational failures at the WPF or accidental spills. However, comprehensive operating procedures and an Accident Management Plan are in place and implemented on site and a spill response plan is also in place. This includes immediate intervention measures, contacts for emergency</p>		<p>affecting protected aquatic habitats and/or species.</p>	
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		<p>response to a pollution incident and a remediation plan post clean-up.</p> <p>Successful implementation and adherence to the risk management plan for land and groundwater contamination will minimise the risk of pollution incidents to the watercourse and therefore the potential impact on designated sites hydrologically connected to the discharge point.</p>			
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