AI078	**RO & MBR Plant**		**Occurence**	**Detection**	**Consequence**	**Operational Significance**	**Impact score**	**Significance**
Activity Description:	Ultra Filter and Reverse Osmosis system to allow the reuse of water in the production process. The plant removes solids and balances the organic load through the aerobic system. The objective is to reduce the requirement for abstraction from groundwater aquifers and allow reuse of water in the factory. This will also increase the capacity of the Waste Water Treatment Plant.	**Normal**	4.50	1.00	2.06		3	LOW
Source	Effluent from the Maltings and Malted Ingredients factory is directed to the Waste Water Treatment plant via a system of pumps, drains and pipes.	**Abnormal**	3.00	1.00	3.00		2	LOW
Pathway	Effluent from the aerobic treatment system prior to the DAF plant is pumped to the new plant where it is treated through a system of pipes and filters	**Emergency**	3.00	1.00	3.00		2	LOW
Receptor	The treated effluent is in a condition where it can either be discharged to the river or reused in the factory reducing the reliance on borehole water.	**Average**	**3.50**	**1.00**	**2.69**	**4.50**	**42.33**	LOW
Mitigation	A new filter system has been installed on the feed to the aerobic plant prior to the DAF plant reducing the solids loading to facilitate the increased loading, hence reducing the solids loading into the existing aerobic sludge activated Waste Water Treatment Plant (WWTP) to facilitate the increased loading, hence reducing the overall load on the WWT plant. A new Ultra Filtration [U/F] stage is intended to replace the Clarification separation plant with a modern full flow Ultra Filtration system complete with a Reverse Osmosis [R.O] plant. This allows the site to reuse a portion of the treated water on the site, and overall reduce borehole abstraction from the site's malting activities or avoid increasing abstraction above current levels if production volumes increased. This reduces the overall impacts of its activities on the environment, in a sustainable manner, in line with Government policy.							
	Environmental Aspects							
Solid Waste	The effluent streams contains suspended solids which the intention is are removed by the process. Solids are collected and composted for reuse or disposal							
Hazardous Material Usage	Cleaning chemicals are used for CIP. In order to reuse the RO water, it will be necessary to treate the water to address naturally occuring inhibitors that prevent germination. This will require the addition of enzimes							
Air Emissions	None							
Raw Material Usage	Water will be used for cleaning and dilution purposes							
Land Use	Two plant buildings have been built within the confines of the Waste Water Treatment Plant							
Effluent	Arisings from the RO & MBR plant are clean water for reuse in the plant and reject RO water							
Nuisance	None							
Energy	The MBR and RO plants use a significant amount of energy with significant cost to the business							
	Environmental Impacts							
Solid Waste	Solid wastes will be composted. The collection of solid waste could potentially give rise to leachates which if allowed to reach unmade up ground or water courses could cause pollution in the form of sedimentation, eutrophication, oxygen depletion and impacts on the health of aquatic life							
Hazardous Material Usage	Enzyems used in the RO water are food safe and the same as used in the malting process. Cleaning chemicals could be polluting if allowed to escape.							
Air Emissions	There are no air emissions from the process							
Raw Material Usage	Water usage is a depletion of a natural resource							
Land Use	Negligable							
Effluent	Untreated effluent in a water course can cause pollution in the form of sedimentation, eutrophication, oxygen depletion and impacts on the health of aquatic life							
Nuisance	Negligible							
Energy	The use of energy is an indirect impact which will affect people living in the vicinity of the source of the energy from atmospheric discharge causing human health issues. Energy from renewable sources such as wind and solar are more likely to be regarded aSs giving rise to nuisance issues in the form of noise and visual impacts.