



forestry, fisheries
& the environment

Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

**RISK ASSESSMENT IN TERMS OF REGULATION 8 OF THE WASTE
EXCLUSION REGULATIONS**

	(For official use only)
File Reference Number:	12/9/11
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Date Received:	

Risk Assessment for an application for exclusion of waste stream or portion of waste stream in terms of the National Environmental Management: Waste Act, 2008(Act No.59 of 2008), as amended.

Kindly note that:

1. This form is current as of 01 April 2021. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority.
2. The information must be typed within the spaces provided in the form. The sizes of the spaces provided are not necessarily indicative of the amount of information to be provided. Spaces are provided in tabular format and will extend automatically when each space is filled with typing.
3. Incomplete forms (including information as required in the application form may be returned to the applicant for revision and the inclusion of additional information.
4. Unless protected by law, all information filled in on this application will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this application on request, during any stage of the application process.

BACKGROUND INFORMATION						
Applicant	Illovo Sugar (South Africa) (Pty) Ltd – Eston Sugar Mill					
Contact Person	Country SHERQ Manager					
Name	Shaun Ramsunder					
Address	PO Box 194, Durban, South Africa, 4000					
E-Mail Address	SRamsunder@ilovo.co.za					
Telephone	031 508 4591					
Cell Phone	084 554 9664					
WASTE GENERATING FACILITY OR FACILITIES						
Physical address of facility or facilities	Eston Road, Eston, 3740, Camperdown Rural District, Eston, KZN Midlands, South Africa					
GPS co-ordinates at corners of waste generating facility or facilities <i>(please note that the co - ordinates are of the sedimentation dam)</i>	LATITUDE			LONGITUDE		
	29°	52'	40.03"S	30°	31'	31.67"E
	29°	52'	38.38"S	30°	31'	50.12"E
	29°	52'	39.05"S	30°	31'	54.39"E
	29°	52'	48.09"S	30°	31'	53.57"E
	29°	52'	56.11"S	30°	31'	38.02"E
	29°	52'	42.30"S	30°	31'	29.64"E
Waste stream or portion of a waste stream to be excluded from the definition of waste	Sludge					
Beneficial use/s	Soil enhancer on sugar cane farms.					
WASTE GENERATING PROCESS						
DETAILED DESCRIPTION OF WASTE GENERATING PROCESS ¹	Please refer to Annexure 1 for the overall process of the Eston Sugar Mill and Annexure 2 for the process flow chart for the waste stream.					
	<p>Brief overview</p> <p>The sludge is collected as the settled solids from a waste water treatment process dam. The waste water is the influent flow of all the waste liquids from the mill processes. The following section describes the waste generation processes.</p> <p>Waste stream sludge</p> <p>Effluent generated from the factory ablution facilities is collected into a septic tank, and then passed through two rotating disc biofilters before discharging into the factory effluent channel feeding into two aeration ponds.</p> <p>Wastewater generated from factory processes is collected through a series of interconnected effluent drains which have been constructed around the entire Mill. This factory wastewater is first mixed with treated domestic effluent (from ablution facilities) and then fed into the aeration ponds. The aeration ponds are connected in series and both are fitted with mechanical stirrers/agitators to facilitate the aeration and breakdown of organic matter to maintain Chemical Oxygen Demand (COD) parameters within the permitted limits stipulated by the environmental legislation.</p>					

¹ A process flow chart must be attached with this form for the process description

	<p>Aerated effluent then gravitates from the second aeration pond into the clarifier. Treated effluent is then overflowed from the clarifier, into a channel supplying the ash settling dam. Sludge from the clarifier is either re-circulated into the aeration ponds or discharged into the channel supplying the ash settling dam. Effluent filters through a network of filters are situated at the bottom, along the wall of the ash pond. Filtered effluent from the ash settling dam is collected in the clear water dam from which it is re-circulated back to the factory for scrubbing boiler stack emissions. Any excess treated clear water is either discharged into the natural water course below the clear water dam or used for irrigating in the cane fields. The dams are desludged and the sludge is dried in order to not allow the dams to overflow and to retain their capacity for effluent treatment.</p>	
<p>PRODUCTION PROCESS FLOW CHART ATTACHED</p>	<p>YES ✓ Please refer to Annexure 1 for the overall process of the Eston Sugar Mill and Annexure 2 for the process flow chart for the waste stream</p>	<p>NO</p>
<p>WASTE CLASSIFICATION</p>	<p>HAZARDOUS ✓</p>	<p>GENERAL</p>
<p>IF HAZARDOUS LIST THE HAZARDS OF THE WASTE</p>	<p>GN R634: Overall Waste Disposal to Landfill: Type 0 Waste. Disposal prohibited. GN R636 (5): Disposal Prohibitions, Restrictions: (1)(q)(ii): Moisture content 83%. Future Prohibitions, Restrictions: (1)(r)(iv): >6% TOC. GHS: NON-HAZARDOUS.</p>	

RISK ASSESSMENT WITHOUT MITIGATION

ACTIVITY	RISK DESCRIPTION	ENVIRONMENTAL RECEPTORS	ASSESSMENT OF RISK					SIGNIFICANCE
			Impact	Probability	Magnitude	Duration	Scale	
Sludge removal on request	Storage over time and running out of dam storage space, if demand is low.	Health and safety: Possible overflows into the environment and then into the natural watercourse	High	2	6	2	2	20
Access to sludge storage area	Security: <ul style="list-style-type: none"> Unauthorised entry into the facility. Unauthorised removal of filter cake. 	Health and safety: Should the access not be monitored, the access to the sludge storage site and the removal of sludge in an unmanaged way can lead to undesired consequence such as accidents, spillages and harm to people and the environment.	low	1	4	2	2	8
Process of transferring sludge to the receiving vehicles.	Spillage: <ul style="list-style-type: none"> Onto area outside of protection area. Splash onto personnel not authorised to be at the location. 	People: driver of vehicles and environment. <ul style="list-style-type: none"> If sludge storage is close to the boundary fence there is a risk to the surrounding environment by the sludge run-off into the natural water courses. 	Low	3	4	1	1	18

		<ul style="list-style-type: none"> Unauthorized personnel may be at risk during the transfer of sludge onto them, onto their clothing. Risk to health. <p>Economics: The cost of unnecessary activity to clean-up spillages on site.</p>						
Transporting of sludge by tractor and trailer to farm.	<p>Spillage:</p> <ul style="list-style-type: none"> Overfilling receiving vehicle trailer with sludge Road accidents. Non-compliance to the Road Traffic Act (RTA) Soil contamination. Affects the flora and local animals, domestic and wild as well as residents. Natural water sources contamination. 	<p>Health and Safety:</p> <p>Health:</p> <p>People:</p> <ul style="list-style-type: none"> Spills onto their clothing when walking on the roads, and splashed on with motor vehicles driving through spilt materials. Nuisance <p>Safety and compliance to the RTA</p> <ul style="list-style-type: none"> The vehicle (tractor and trailer) integrity is compromised endangering the lives of driver and the public. 	Medium	3	5	2	2	27

		<ul style="list-style-type: none"> • If vehicle is not properly maintained, the safety and integrity of the vehicle is compromised further. • Includes the driver of the vehicles. • They must be correctly trained and licenced for driving on public roads with consideration. • The judgement by driver of the ability of the vehicle to manage the farm roads without getting stuck and causing spills. • Ensuring the correct placarding is on the vehices transporting hazardous waste. <p>Environmental and reputation:</p> <ul style="list-style-type: none"> • Spillage onto the road as well as spreading into the surrounding environment by wind and rain. 						
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		<ul style="list-style-type: none"> • Damage to reputation as Eston Mill is seen as the owner and source of the sludge. • Nuisance to vehicles following tractor and trailer by windblown sludge spray. • Pedestrians and cyclists affected by sludge splashing onto them. • Causing a physical and health hazard to people and animals in the vicinity. • Sludge on the roads and walk ways may have run-off into neighbouring properties and into natural water courses. 						
Vehicle sludge off-loading in designated area.	<p>Spillage:</p> <ul style="list-style-type: none"> • Outside of designated area. • Depending on the offloading procedure, the vehicle used to offload may spill residual mixture remaining on it when 	<p>Environment: Natural water course into the surrounding area affecting flora and water.</p>	Moderate	4	4	2	2	32

	travelling to other places to do work.							
Storage at end user facilities	<ul style="list-style-type: none"> Run off and possible windblown dust if mixture is allowed to dry. Unauthorised removal of material 	Environment: <ul style="list-style-type: none"> Run-off of any liquid. Dust of possibly dried out mixture, blown by wind into the surrounding area affecting the flora and water. Possible contamination of the environment and natural water source is the principle concern. This will affect the water quality; adding organic load which may cause eutrophication if water source is small. Unmanaged waste activity by unauthorised removal, resulting in possible human health problems and environmental damage. 	Low	3	4	2	2	24

<p>Sludge management during distribution onto the intended farm soil as fertilizer.</p>	<p>Dust: Health. There may be health impacts from working with the possibly dried sludge during the spreading of fertilizer operations.</p> <p>Environment: Any mixture run-off from the mixture spreading operations will affect the receiving environment if not managed correctly, especially near to natural water sources.</p>	<p>Dust: Health.</p> <ul style="list-style-type: none"> • There may be health impacts from working with sludge during the fertilizer spreading if it has been allowed to dry out. • Correct PPE is required, to keep the dust from the skin, hands, feet, eyes and lungs. However, the mixture is unlikely to affect the lungs as it is moist from the sludge. • However, the mixture must not be contacted by the skin, feet, hands and eyes. • The appropriate PPE and management of the material must be adhered to. • Spreading of the sludge must be done as soon as possible. • The sludge must be ploughed into the soil as soon as possible and not 	<p>Medium</p>	<p>3</p>	<p>5</p>	<p>2</p>	<p>2</p>	<p>27</p>
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		<p>stored, to prevent any possible impacts of water run-off from sludge.</p> <p>Environment:</p> <ul style="list-style-type: none"> Any run-off from the operations into the water during the spreading out onto the fields as well as during rain run-off will affect the receiving environment if not managed correctly. The same management protocol would be required as with commercial fertilizers and lime onto the fields. 						
Repeat application onto the same fields.	<p>Environment: The soils may have salinity build up if the soils and application are not monitored</p>	<p>Environment: The soils viability to propagate the sugar cane crops will be affected if not monitored correctly</p>	Low	2	2	2	1	10
Secondary waste generation	<p>Environment:. Secondary waste generation would involve sludge with a other contaminant items like</p>	<p>Environment: Should this contaminated sludge escape into the environment through</p>	Low	1	2	2	2	6

	litter, oils, grease, as well as other items if the storage sites are not managed and wind blown waste enters the sludge storage/dam.	poor management the impacts on the environment: flora, fauna, soil and natural water sources would be impacted.						
Socio-Economic Risks: Positive spin offs at risk should sludge beneficiation not be possible.								
Employment and utilization of a renewable resource which is redirected off landfill site.	Employment from the local community for the operation as the resource is freely available.	Local economy. Particularly amongst the vulnerable community groups: youth and women.	Positive					+
Small business development and community based projects. Example growing vegetables utilizing this mix as a fertilizer medium.	Some members of the community also can provide opportunities for themselves by growing healthy vegetables to sell. The sludge is not sold.	Local economy. Particularly amongst the vulnerable community groups: youth and women. Opportunities for project based use of the resource.	Positive					+

The following factors and criteria must be used to assess the impacts of the activities:

CRITERIA	
Magnitude (Severity)	Duration
10 – Very high	5 – Permanent (longer than 10 years)
8 – High	4 – Long term (5 – 10 years)
6 – Moderate	3 – Medium term (12 months to 5 years)
4 - Low	2 – Short term (< 12 months)
2 - Minor	1 – Immediate
Scale	Probability (Likelihood)
5 – International	5 – Definite
4 – National	4 – Highly probable
3 – Regional	3 – Medium probability
2 – Local	2 – Low probability
1 – Site only	1 – Improbably
0 – None	0 - None

Magnitude

Measures the size of the impact

Duration

Duration refers to the lifetime of the impact i.e. how long it will last

Scale

The scale refers to the extent of the impact

Probability

The probability refers to the chance of the impact to occur. The potential impact could be most likely to occur, unlikely, etc.

Assessment of Significance of Impact

Significance rating of the potential impact illustrates the importance of the impact itself. The size of the area affected by pollution may be extremely high but the significance of this effect is dependent on the concentration or level of pollution in that area. In order to determine the significance of an impact, the following method should be used:

$$\text{Significance (S)} = (\text{Magnitude} + \text{Duration} + \text{Scale}) \times \text{Probability}$$

The values of S must then be categorised as follows:

RATING		DESCRIPTION
SP > 60	High significance	An impact which could influence the decision about whether or to proceed with the activities regardless of any possible mitigation
SP 30 - 60	Moderate significance	An impact or benefit which is sufficiently important to require management and which could have an influence on the decision unless it is mitigated
SP < 30	Low significance	Impacts with little real effect and which will not have an influence on or require modification of the activities
+	Positive impact	An impact that is likely to result in a positive consequence/effect

I, S. Ramsunder (the Applicant) hereby declare that I have read the completed Risk Assessment form and hereby confirm that the information is, to the best of my knowledge, true and correct

Furthermore, I declare that I am fully aware of my responsibilities in terms of the Waste Exclusion Regulations, and that failure to comply with these Regulations may constitute an offence in terms of the National Environmental Management: Waste Act, 2008 (Act 59 of 2008).



Signature of the applicant²/ Signature on behalf of the applicant:

Shaun Ramsunder

Name of Applicant:

COUNTRY SHERIFF

Designation

17/05/2023

Date:

² If the applicant is a juristic person, a signature on behalf of the applicant is required as well as proof of such authority.

Annexure 1:

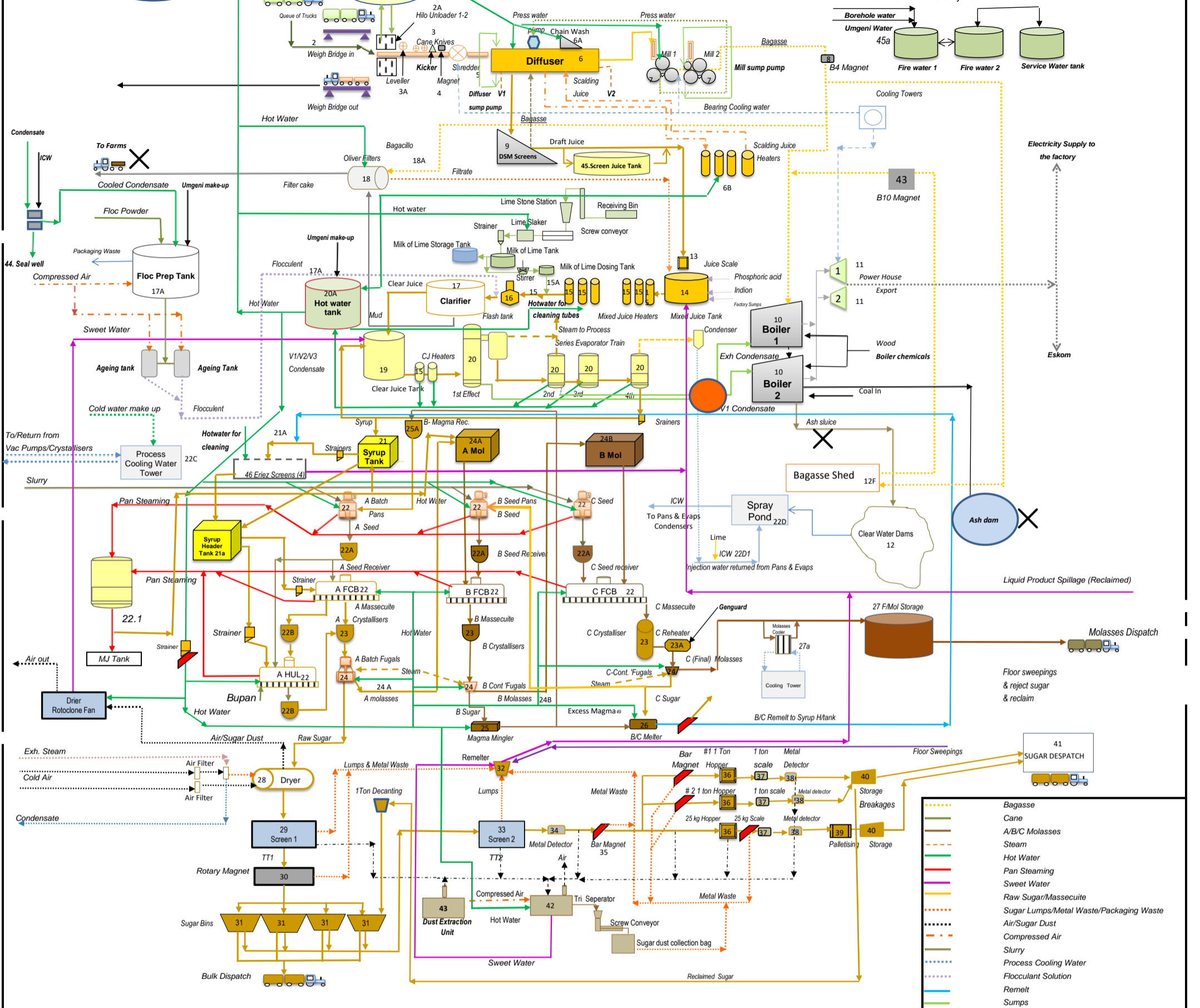
Overall Process of the Eston Sugar Mill

Eston Mill Process Flow Diagram

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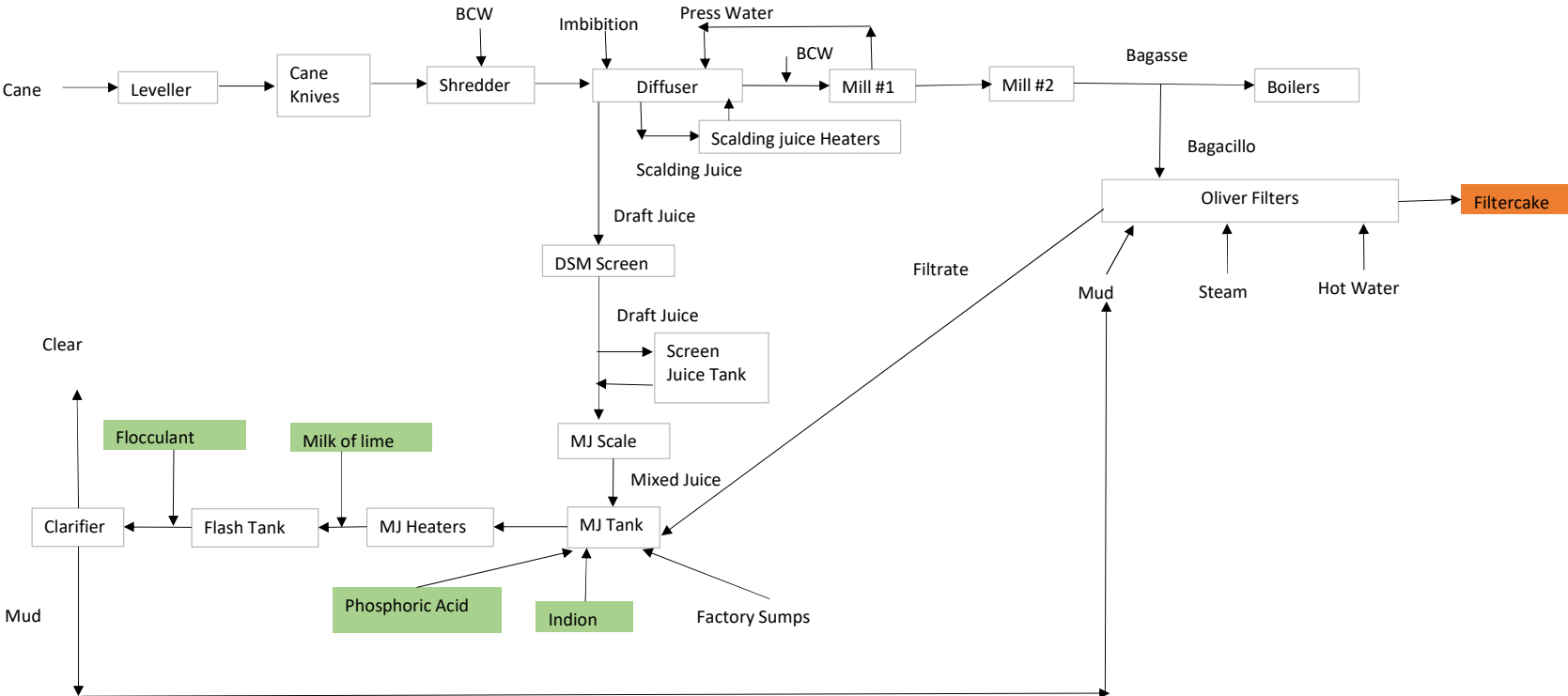


- Bagasse
- Cane
- A/B/C Molasses
- Steam
- Hot Water
- Pan Steaming
- Sweet Water
- Raw Sugar/Masseccuite
- Sugar Lumps/Metal Waste/Packaging Waste
- Air/Sugar Dust
- Compressed Air
- Slurry
- Process Cooling Water
- Flocculant Solution
- Remelt
- Sumps
- Mud/Filter Cake

Annexure 2:

Process Flow Chart for the Waste Stream

Attachment 1 : Eston Mill: process flow chart schematic showing the generation process of the ash, filter cake and waste water waste streams.



Attachment 2: Schematic of the waste water treatment works and the sludge storage facility.

Ash

