



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
NEAS Reference Number:	
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						
<b>Applicant</b>	Illovo Sugar (South Africa) (Pty) Ltd – Eston Sugar Mill					
<b>Contact Person</b>	Country SHERQ Manager					
<b>Name</b>	Shaun Ramsunder					
<b>Address</b>	PO Box 194, Durban, South Africa, 4000					
<b>E-Mail Address</b>	<a href="mailto:SRamsunder@illovo.co.za">SRamsunder@illovo.co.za</a>					
<b>Telephone</b>	031 508 4591					
<b>Cell Phone</b>	084 554 9664					
WASTE GENERATING FACILITY OR FACILITIES						
<b>Physical address of facility or facilities</b>	Eston Road, Eston, 3740, Camperdown Rural District, Eston, KZN Midlands, South Africa					
<b>GPS co-ordinates at corners of waste generating facility or facilities</b>	LATITUDE			LONGITUDE		
	29°	52'	14.25"S	30°	31'	45.59"E
	29°	52'	14.30"S	30°	31'	45.89"E
	29°	52'	14.62"S	30°	31'	45.79"E
	29°	52'	14.54"S	30°	31'	45.50"E
<i>Please note that the co - ordinates are of the Boiler.</i>						
<b>Waste stream or portion of a waste stream to be excluded from the definition of waste</b>	Boiler ash					
<b>Beneficial use/s</b>	Soil enhancer on sugar cane farms and blockmaking.					
WASTE GENERATING PROCESS						
<b>Detailed description of waste generating process<sup>1</sup></b>	Please refer to Annexure 1 for the overall process of the Eston Sugar Mill and Annexure 2 for the process flow chart for the ash waste stream.					
	<p><b>Waste stream - Ash</b>            Bagasse, which is a waste stream generated as part of sugar cane processing is fed to the boilers as a fuel source, which is supplemented with other fuel sources such as coal and wood. The waste stream generated from the boilers after the combustion process is referred to as ash. Boiler ash is the waste stream relevant to this waste exclusion application, as is to be used as a fertilizer for the sugar cane farms as well as blockmaking.</p> <p><b>Process description to produce bagasse</b>            The cane is delivered to the cane yard and is directed into the mechanical chopping with cane knives where the cane is chopped into manageable pieces and then shredded with a series of hammers which flatten the cane to expose the cells in the cane for the next process. The diffuser has a conveyor inside which carries the cane through the diffusion process. Hot sugar water known as “scolding juice” is poured onto the beginning to raise the temperature of the cane / water mixture in the diffuser and to help kill bacteria which will eat the sucrose and convert into undesirable invert sugars.</p> <p>The diffuser is a fairly simple looking machine with a complex operation. Water from the “de-watering mills” and fresh water are</p>					

<sup>1</sup> A process flow chart must be attached with this form for the process description

	<p>fed into the process and this water or “Imbibition” is fed back in stages toward the beginning of the diffuser so that the most concentrated juice is at the beginning and the weakest at the end.</p> <p>The pulp leaving the diffuser is now known as “Bagasse”. There is a last wash process to extract the last sucrose, which then feeds the first de-watering mill. Here water is added to try and extract the last of the sucrose. The mill presses the water out and it is collected and sent back to the diffuser. The first de-watering mill sends its bagass load to the second and last de-watering mill. Once again, water is added, more sucrose is extracted and the water sent back to the diffuser. The water from the mills, which is sent back to the diffuser, is known as “press water”. The bagasse conveyors carry the fuel to the boilers, where the excess is rejected and stored in the bagasse shed.</p> <p><b>Combustion process to generate the ash</b>  Bagasse is fed to the boilers from a chute. This process also enables any extra bagasse to be fed from the bagasse storage shed. Bagasse can be dried by circulating it through the bagasse conveyors where a fan blows the particulates into the boiler and the resultant burnt ash is collected along a moving grate into a sluicing system which helps to cool the ash and to form a slurry. This slurry helps with the moving of the ash along the conveyor belt where it is dewatered and taken to a storage hopper.</p>	
<b>Production process flow chart attached</b>	<p style="text-align: center;"><b>YES ✓</b></p> <p>Please refer to Annexure 1 for the overall process of the Eston Sugar Mill and Annexure 2 for the process flow chart for the ash waste stream.</p>	<p style="text-align: center;">NO</p>
<b>Waste classification</b>	<p style="text-align: center;"><b>HAZARDOUS ✓</b></p>	<p style="text-align: center;">GENERAL</p>
<b>If hazardous list the hazards of the waste</b>	<ul style="list-style-type: none"> <li>• GHS Hazardous: <ul style="list-style-type: none"> <li>○ Skin Irritation: - Cat 2: H315</li> <li>○ Causes Serious Eye Damage . Cat 1: H318.</li> </ul> </li> <li>• Waste assessed as Type 3 waste for class C landfill site</li> </ul>	

## RISK ASSESSMENT WITHOUT MITIGATION

ACTIVITY	RISK DESCRIPTION	ENVIRONMENTAL RECEPTORS	ASSESSMENT OF RISK					SIGNIFICANCE
			Impact	Probability	Magnitude	Duration	Scale	
<p><b>Context</b>  Eston Mill has on their SHEQ system:</p> <ul style="list-style-type: none"> <li>- Pollution risk control document,</li> <li>- Waste management document.</li> </ul> <p>The classification and the SSV comparison of the boiler ash gives very good indications of the hazards encountered by all affected stakeholders when working with ash. It helps to identify areas which must be managed in order to minimise or eliminate risks. The intention is to maximize the intended beneficial use of the waste, while minimising any unacceptable impacts to people, environment and economic harm. Reference MUST be made to the Safety Data Sheet (SDS) in the</p>								

assessment and management of all risks.								
Ash/mixture removal.	Storage over a long time and running out of storage space, if demand is low.	<b>Health, safety and environment:</b> <ul style="list-style-type: none"> <li>• Damage to eyes and skin.</li> <li>• Possible overflows into stormwater or sludge dams of the ash and filter cake.</li> </ul>	High	1	6	1	1	8
Access to ash/mixture storage area	<b>Security:</b> <ul style="list-style-type: none"> <li>• Unauthorised access to ash area .</li> <li>• Unauthorised removal of ash.</li> </ul>	<b>Health and safety:</b> Should the access not be monitored, the removal of ash in an unmanaged way can lead to undesired consequence: <ul style="list-style-type: none"> <li>• accidents,</li> <li>• spillages,</li> <li>• harm to people and the environment.</li> </ul>	Low	1	4	2	2	8
Process of transferring ash/mixture from the bunded area to the receiving vehicles.	<ul style="list-style-type: none"> <li>• <b>Dust:</b> Windblown from the process of ash transfer with front end loader.</li> <li>• <b>Spillage:</b> onto area outside of bunded area.</li> <li>• <b>Hot ash:</b> The quenched ash still being too hot after coming from the boilers.</li> </ul>	<b>People: driver of vehicles and environment.</b> <ul style="list-style-type: none"> <li>• Risk to health: eyes and respiratory systems.</li> <li>• If ash storage is close to the boundary fence there is a risk to the surrounding environment by wind-blown dust.</li> </ul>	Low	3	4	1	1	18

		<ul style="list-style-type: none"> <li>Ensure that the ash is at a safe temperature to remove.</li> </ul> <p><b>Economics:</b> The cost of unnecessary effort to clean-up spillages on site, and that which the vehicle may spill on the route even within the mill site.</p>						
Process of mixing the ash with the filter cake to make the fertilizer blend: on mill site.	<b>Dust and spillage</b> from the mixing process of ash with filter cake.	<p><b>People: driver of vehicles and environment.</b></p> <ul style="list-style-type: none"> <li>Risk to health: eyes and respiratory systems.</li> <li>Spillages which may result in flow to the effluent plant/sludge dam or stormwater drains.</li> <li>Unnecessary pressure on the sludge dam processes and hence increases the sludge quantity to be removed, the frequency of sludge removal.</li> </ul>	Medium	2	6	1	1	16
Transporting of ash/mixture by tractor and trailer to farm.	<p><b>Spillage:</b></p> <ul style="list-style-type: none"> <li>Overfilling receiving vehicle with ash/mixture.</li> </ul>	<p><b>Health and Safety:</b></p> <ul style="list-style-type: none"> <li><b>Health: People:</b> driver of vehicles:</li> </ul>	Medium	3	5	2	2	27

	<ul style="list-style-type: none"> <li>• Windblown ash.</li> <li>• Road accidents causing spillages on the main roads..</li> <li>• Non – compliance to the Road Traffic Act (RTA)</li> <li>• Soil contamination.</li> <li>• Affects the flora and local animals, domestic and wild.</li> <li>• Natural water sources contamination.</li> </ul>	<p>eyes and respiratory systems.</p> <ul style="list-style-type: none"> <li>• <b>Safety and compliance to the RTA :</b> <ul style="list-style-type: none"> <li>○ If the vehicle (tractor and trailer) integrity is compromised it will endanger the lives of driver and the public.</li> <li>○ If vehicle is not properly maintained, the safety and integrity of the vehicle is compromised further. Includes the driver of the vehicles.</li> <li>○ The drivers must be correctly trained and licenced for driving on public roads with consideration.</li> <li>○ The judgement by driver of the ability of the vehicle to manage the farm roads without getting stuck and causing spills.</li> </ul> </li> </ul>						
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		<ul style="list-style-type: none"> <li>• <b>Environmental</b> <ul style="list-style-type: none"> <li>○ Spillage onto the road as well as spreading into the surrounding environment by wind and rain.</li> </ul> </li> <li>• <b>Reputation:</b> <ul style="list-style-type: none"> <li>○ Damage to reputation as Eston Mill is seen as the owner and source of the ash.</li> <li>○ Ash on the roads and walk ways</li> </ul> </li> <li>• <b>Safety:</b> <ul style="list-style-type: none"> <li>○ Nuisance to vehicles following tractor and trailer by windblown dried ash/mixture.</li> <li>○ Pedestrians and cyclists affected by windblown ash/mixture. Causing a physical and health hazard to people and animals in the vicinity.</li> </ul> </li> </ul>						
Vehicle ash/mixture off-loading.	<b>Spillage:</b> <ul style="list-style-type: none"> <li>• Outside of dedicated area.</li> <li>• The vehicle used to offload may drop</li> </ul>	<b>Environment:</b> <ul style="list-style-type: none"> <li>• Spillages in the natural water course and into the surrounding area</li> </ul>	Moderate	4	4	2	2	32



	residual mixture when travelling to other places to do work.	affecting flora and water quality.						
Storage at end user facilities	<ul style="list-style-type: none"> <li>Water run off from fields with ash after rain,</li> <li>Possible windblown dust if mixture is allowed to dry.</li> </ul>	<b>Environment:</b> <ul style="list-style-type: none"> <li>Rain run-off from the fields harming the environment and natural water sources.</li> <li>Dust from dried out mixture, blown by wind into the surrounding area affecting the flora and water.</li> <li>Possible contamination of the environment and natural water source is the principle concern.</li> <li>This will affect the water quality ito possible pH change and adding salts which may include heavy metals: lead, mercury, etc.</li> </ul>	Low	3	4	2	2	24
Ash/mixture management during distribution onto the intended farm soil as the fertilizer/soil enhancer.	<b>Dust:</b> <ul style="list-style-type: none"> <li><b>Health.</b>There may be health impacts from working with the possibly dried ash/mixture during</li> </ul>	<b>Dust:</b> <b>Health.</b> <ul style="list-style-type: none"> <li>from working with ash/mixture during the fertilizer spreading if it has</li> </ul>	Medium	3	5	2	2	27

	<p>the spreading of fertilizer operations.</p> <ul style="list-style-type: none"> <li>• <b>Environment:</b> Any mixture slurry which may run-off from the mixture spreading operations will affect the receiving environment if not managed correctly, especially near to natural water sources.</li> </ul>	<p>been allowed to dry out. The ash component is deemed hazardous.</p> <ul style="list-style-type: none"> <li>• Correct PPE is required, to keep the dust/mixture from the skin, hands, feet, eyes and lungs.</li> <li>• The ash causes skin irritation and serious eye damage. Hence appropriate PPE and management of the material must be adhered to.</li> </ul> <p><b>Environment:</b> Any run-off from the operations into natural water sources during the spreading out onto the fields as well as during rain run-off will affect the receiving environment from siltation if not managed correctly.</p>						
Repeat application onto the same fields.	<p><b>Environment:</b> The soils may develop salinity build up if the soils are not monitored</p>	<p><b>Environment:</b> 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	<b>Environment:</b> Secondary waste generation would involve ash/mixture with a multitude of other items like oils, grease, as well as other items if the storage sites are not managed.	<b>Environment:</b> Should this contaminated ash/mixture escape into the environment through poor management the i environment: flora, fauna, soil and natural water sources would be impacted.	Low	1	2	2	2	6
<b>Socio-Economic Risks: Positive spin offs at risk should ash/mixture beneficiation not be possible.</b>								
Employment and utilization of a renewable resource which is redirected off landfill site.	Employment for the local community for the operation as the resource is freely available to the farmers and the blockmakers.	<b>Local economy.</b> 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.	<ul style="list-style-type: none"> <li>Some members of the community also can provide opportunities for themselves by growing healthy vegetables to sell.</li> <li>The community can also make blocks as a business and generate an income.</li> </ul> <p>The ash /mixture is not sold.</p>	<b>Local economy.</b> Particularly amongst the vulnerable community groups: youth and women.	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:

Significance (S) = (Magnitude + Duration + Scale) x 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 applicant<sup>2</sup>/ Signature on behalf of the applicant:

Shaun Ramsunder

Name of Applicant:

COUNTRY SHERD

Designation

17/05/2023

Date:

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<sup>2</sup> 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:**

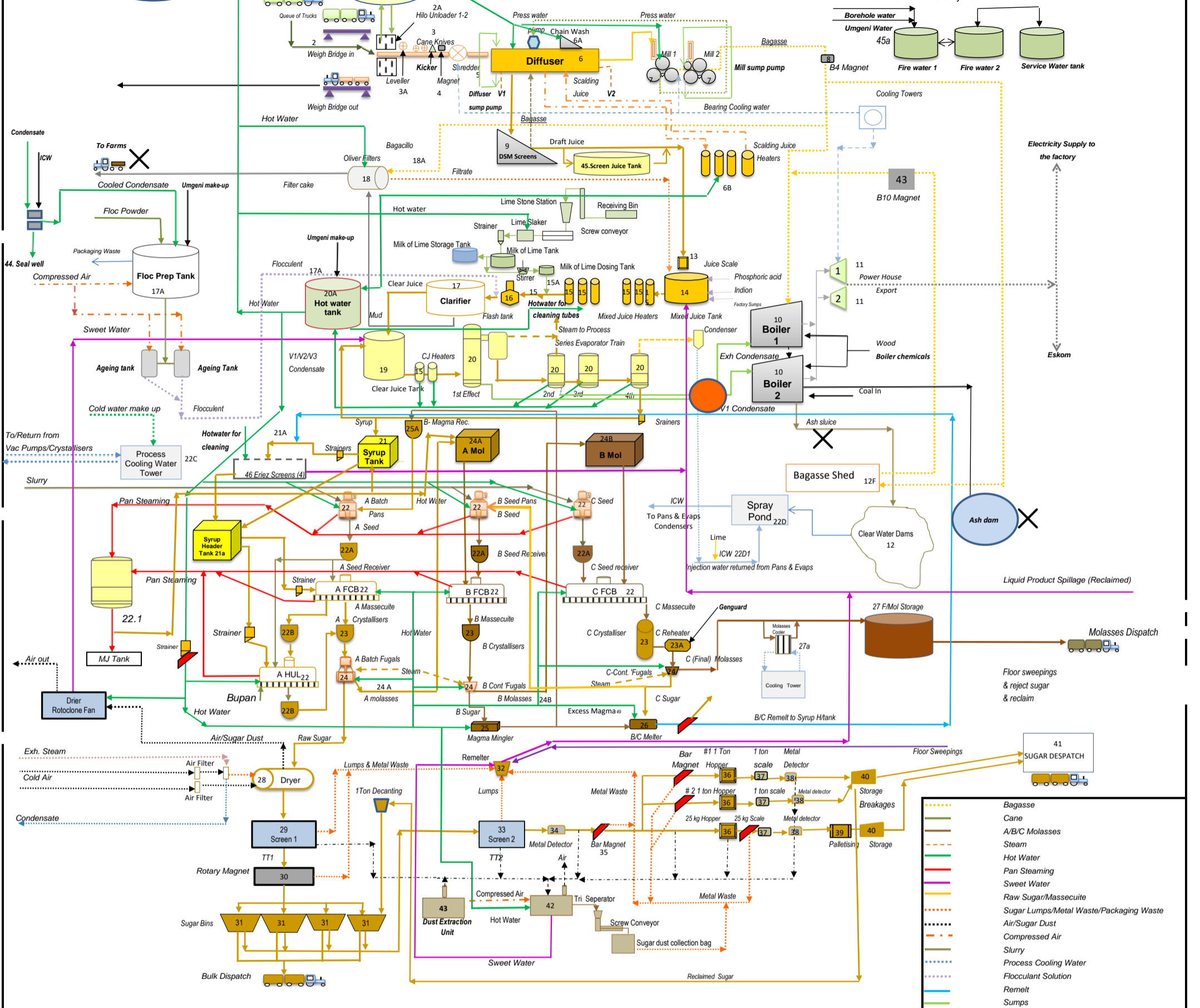
Overall Process of the Eston Sugar Mill

# Eston Mill Process Flow Diagram

Doc No: QFS/Doc 8.5.1.5.1

Rev 16

Effective Date: 26 July 2022



<span style="color: green;">—</span>	Bagasse
<span style="color: blue;">—</span>	Cane
<span style="color: red;">—</span>	A/B/C Molasses
<span style="color: orange;">—</span>	Steam
<span style="color: purple;">—</span>	Hot Water
<span style="color: yellow;">—</span>	Pan Steaming
<span style="color: brown;">—</span>	Sweet Water
<span style="color: pink;">—</span>	Raw Sugar/Masseccuite
<span style="color: grey;">—</span>	Sugar Lumps/Metal Waste/Packaging Waste
<span style="color: lightblue;">—</span>	Air/Sugar Dust
<span style="color: lightgreen;">—</span>	Compressed Air
<span style="color: lightyellow;">—</span>	Slurry
<span style="color: lightpurple;">—</span>	Process Cooling Water
<span style="color: lightorange;">—</span>	Flocculant Solution
<span style="color: lightred;">—</span>	Remelt
<span style="color: lightblue;">—</span>	Sumps
<span style="color: lightgreen;">—</span>	Mud/Filter Cake

## **Annexure 2:**

Process Flow Chart for the Ash Waste Stream



**Ash**

