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						
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@illovo.co.za					
Telephone	031 508 4591					
Cell phone	084 554 9664					
WASTE GENERATING FACILITIY 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 ***(Please note that the co -ordinates are of the filter cake area.)***	**LATITUDE**			**LONGITUDE**		
	29°	52'	11.83"S	30°	31'	41.15"E
	29°	52'	11.86"S	30°	31'	41.53"E
	29°	52'	12.30"S	30°	31'	41.48"E
	29°	52'	12.29"S	30°	31'	41.11"E
Waste stream or portion of a waste stream to be excluded from the definition of waste	Filter Cake					
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 filter cake waste stream. **Waste stream - Filter cake** Filter cake is the waste stream relevant to this waste exclusion application, as is to be used as a fertilizer for the sugar cane farms. **Process description to produce filter cake** The cane is delivered to the cane yard and is directed into 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 shredded 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. The diffuser is a fairly simple looking machine with a complex operation. Water from the “de-watering mills” and fresh water are 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. 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					

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

	sent back to the diffuser, is known as “press water”. At this point the stream is split in two: • The pressed cane is squeezed out to between 48 - 52% moisture then becomes bagasse. The bagasse is fed into the boilers as the main fuel source to the mill boilers to provide energy to drive the mill processes. • This second stream is the juice stream, from the diffuser conveyor and the Oliver filters. Once fibre has been removed and sent to the bagasse stream, the juice goes through a few processes by adding additivies such as: o Indion resins for the ion exchange process to decolourise the brown sugar (sugar melt) to white sugar. o Phosphoric acid added to the juice to optimize the natural phosphates in the juice. o This juice is then heated up, milk of lime is added to precipitate part of the colloids, colouring matter and non-sugars that the juice contains. The precipitate formed with lime is mainly Tricalcium Phosphate. (Ca3(PO4)2). o The mixed juice is then in the process of being clarified by flocculating out the non-sugars. It is then flashed to atmospheric pressure to release any air bubbles . o Flocculant is then added to allow completion of the flocculation process. The juice is then sent to the clarifier which is then separated out as clear juice as the overflow and mud in the underflow. The mud is sent to the Oliver Filters where any remaining sugar is separated from the mud by the addition of steam and hot water. The filtrate is returned to the sugar juice stream and the solid fraction is now known as filter cake. The filter cake is thus a rich mix of a variety of natural sugar cane based organic chemicals and inorganic chemicals.	
PRODUCTION PROCESS FLOW CHART ATTACHED	**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 filter cake waste stream**	NO
WASTE CLASSIFICATION	**HAZARDOUS ✓**	GENERAL
IF HAZARDOUS LIST THE HAZARDS OF THE WASTE	Type 0 Waste. GN R636 (5). Disposal Prohibitions, Restrictions. (1)(b), pH - 5,6 (1)(q)(ii) - Moisture content - 71%. Future disposal prohibitions: TOC >6%. 2028. NO GHS hazards.	

RISK ASSESSMENT WITHOUT MITIGATION

ACTIVITY	RISK DESCRIPTION	ENVIRONMENTAL RECEPTORS	ASSESSMENT OF RISK					SIGNIFICANCE
			Impact	Probability	Magnitude	Duration	Scale	
Filter cake/mixture removal.	Storage over time and running out of storage space, if demand is low.	**Health and safety:** Possible filter cake overflows into stormwater or sludge dams.	High	1	6	1	1	8
Access to filter cake/mixture storage area	**Security** • Unauthorised entry into the facility. • Unauthorised removal of filter cake.	**Health and safety:** Should the access not be monitored, the removal of filter cake in an unmanaged way can lead to undesired consequence: accidents, spillages and harm to people and the environment.	Low	1	4	2	2	8
Process of transferring filter cake/mixture to the receiving vehicles.	**Dust:** Windblown from the process of filter cake transfer with front end loader. **Spillage:** onto area outside of storage area. Onto personnel not authorised to be at the location.	**People: driver of vehicles and environment and health**: • Risk to health: Eyes and respiratory systems in case of dust. • If filter cake storage is close to the boundary fence there is a risk to the surrounding environment by wind-blown dust.	Low	3	4	1	1	18

		• Unauthorised personnel may be at risk during the transfer of spillage onto them and onto their clothing. **Economics:** 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.						
• The Milling operation will offload ash and filter cake at predetermined zones on fields dependent on demand from third parties. • Process of mixing the filter cake with the boiler ash to make the fertilizer blend: on site.	Dust and spillage from mixing ash with filter cake.	**People: driver of vehicles and environment and health**: • Eyes and respiratory systems. • Spillages which may result in flow to the effluent plant/sludge dam or stormwater drains. • Unnecessary pressure on the sludge dam processes and increases the sludge quantity to be removed. • On the farm site, the risk is the spillage outside of the mixing	Medium	2	6	1	1	16

		area, should this activity happen on the loading site, and not in the field.						
Transporting of filter cake/mixture by tractor and trailer to farm.	**Spillage:** • Overfilling receiving vehicle trailer with filter cake/ash mixture. • Filter cake has a very strong odour. • 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.	**Health and Safety:** **Health: People:** Spills onto their clothing when walking on the roads, and splashed on with motor vehicles driving through spilt materials. **Safety** and **compliance to the RTA** • If the vehicle (tractor and trailer) integrity is compromised endangering the lives of driver and the public. • 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	Medium	3	5	2	2	27

		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 . **Environmental and reputation:** • Spillage onto the road as well as spreading into the surrounding environment by wind and rain. • Damage to reputation as Eston Mill is seen as the owner and source of the filter cake. • Nuisance to vehicles following tractor and trailer by windblown dried filter cake/mixture. • Pedestrians and cyclists affected by filter cake/mixture splashing onto them. Causing a physical and health hazard to people and animals in the vicinity.						

		• Filter cake on the roads and walk ways may have run-off into neighbouring properties and into natural water courses.						
Vehicle filter cake/mixture off-loading on designated area.	**Spillage:** • Outside of designated area. • Depending on the offloading procedure, the vehicle used to offload the mixture may spill residual mixture when travelling to other places to do work.	**Environment:** Spillages in the natural water course and into the surrounding area affecting flora and water quality.	Moderate	4	4	2	2	32
Storage at end user facilities	**Health and environment** • Run off and possible windblown dust if mixture is allowed to dry. • Unauthorised removal of material	**Environment:** • Run-off from the fields harming the environment and natural water sources. • Dust of possibly dried out mixture, blown by wind into the surrounding area affecting the flora and water. • Possible contamination of the environment and	Low	3	4	2	2	24

		natural water source is the principle concern. • This will affect the water quality possible pH change and 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						
Filter cake/mixture management during distribution onto the intended farm soil as the fertilizer/soil enhancer	**Dust:** **Health.** There may be health impacts from working with the possibly dried filter cake/mixture during the spreading of fertilizer operations. **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.	**Dust:** **Health.** • There may be health impacts from working with filter cake/mixture during the fertilizer spreading if it has been allowed to dry out. • Correct PPE is required, to keep the dust/mixture from the skin, hands, feet, eyes and lungs.	Medium	3	5	2	2	27

	Heat Safety: Fresh filter cake retains heat that may cause minor burns and affect flora in the area.	• However, the mixture is unlikely to affect the lungs as it is moist from the filter cake. • However, the mixture must not be contacted by the skin, feet, hands and eyes. Hence appropriate PPE and management of the material must be adhered to. **Environment:** • 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.	**Environment:** The soils may have salinity build up if the	**Environment:** The soils viability to propagate the sugar	Low	2	2	2	1	10

	soils and application are not monitored	cane crops will be affected if not monitored correctly						
Secondary waste generation	**Environment:.** Secondary waste generation would involve filter cake/mixture with a multitude of other contaminant items like litter, oils, grease, as well as other items if the storage sites are not managed. • Filter cake may also contaminate other streams if spillages occur.	**Environment:** Should this contaminated filter cake/mixture escape into the environment through poor management the impacts on the environment: flora, fauna, soil and natural water sources would be impacted.	Low	1	2	2	2	6
Socio-Economic Risks: Positive spin offs at risk should filter cake/mixture beneficiation not be possible.								
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 available to the farmers.	**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 filter cake /mixture 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:

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: Waset Act, 2008 (Act 59 of 2008).

Signature of the applicant[2]/ Signature on behalf of the applicant:

SHAUN RAMSUNDER

Name of Applicant:

COUNTRY SHERQ

Designation

17/05/2023

Date:

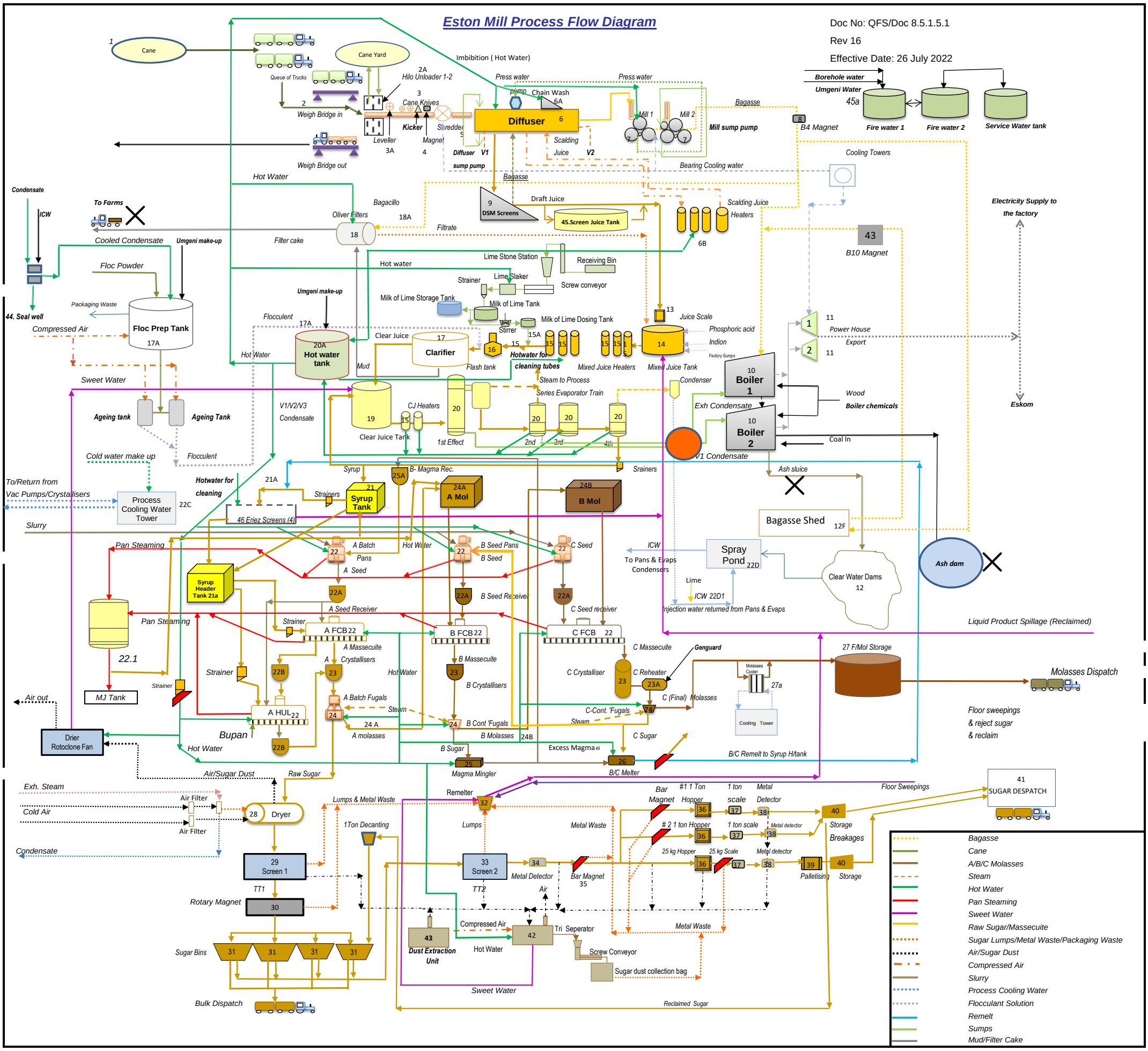
[2] If the applicant is a juristic person, a signature on behalf of the applicant is required as well as proof of such authority.

Annexure 1:

Overall Process of the Eston Sugar Mill

Eston Mill Process Flow Diagram

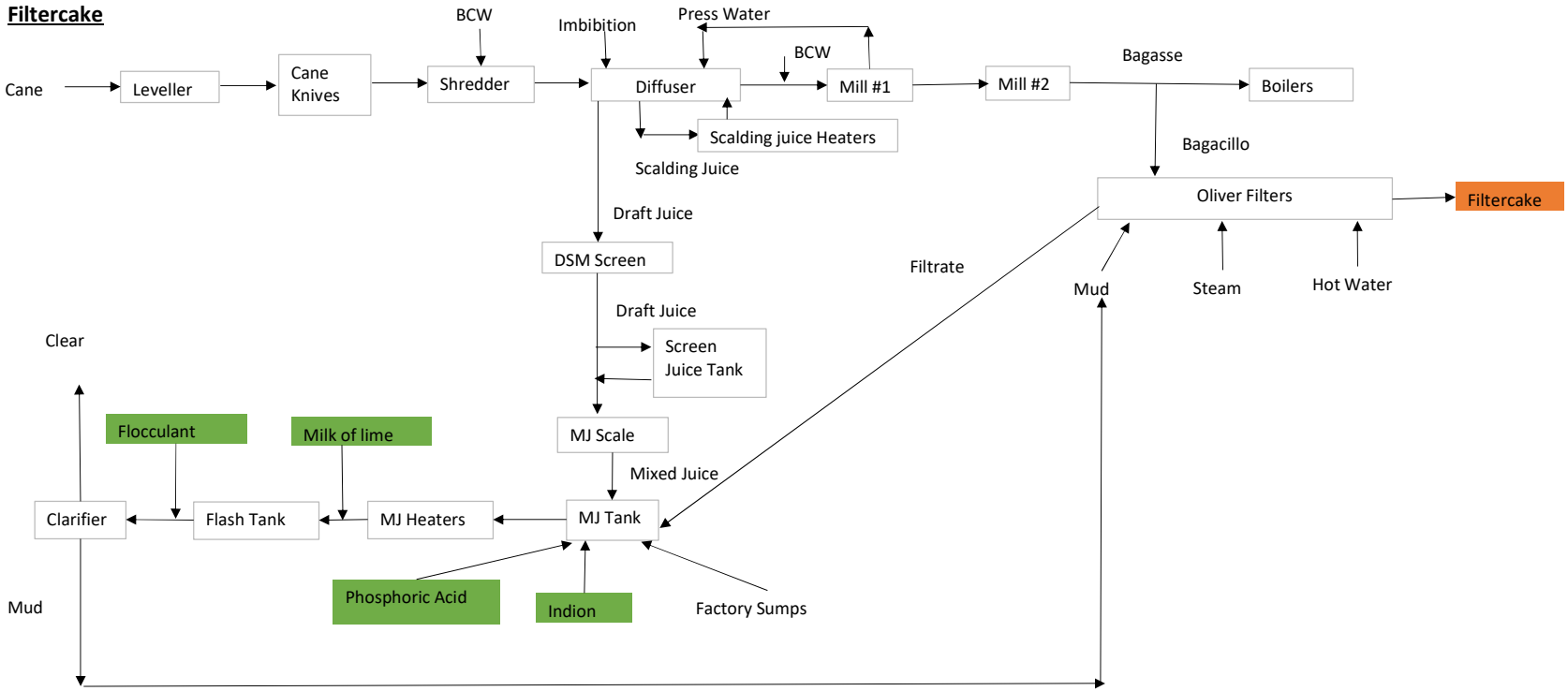
Doc No: QFS/Doc 8.5.1.5.1
Rev 16
Effective Date: 26 July 2022



Annexure 2:

Process Flow Chart for the Filter Cake Waste Stream

Filtercake


Cane
Leveller
Cane Knives
BCW
Shredder
Imbibition
Press Water
BCW
Diffuser
Mill #1
Mill #2
Bagasse
Boilers
Scalding juice Heaters
Scalding Juice
Bagacillo
Oliver Filters
Filtercake
Draft Juice
DSM Screen
Filtrate
Mud
Steam
Hot Water
Draft Juice
Screen Juice Tank
Clear
Flocculant
Milk of lime
MJ Scale
Mixed Juice
Clarifier
Flash Tank
MJ Heaters
MJ Tank
Phosphoric Acid
Indion
Factory Sumps
Mud