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Minister of Environmental Affairs  
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15 December 2017

By E-mail: [RTshikalanke@environment.gov.za](mailto:RTshikalanke@environment.gov.za)

Dear Sir,

**Sappi Southern Africa Limited Pollution Prevention Plans in respect of Greenhouse Gases**

As per the National Pollution Prevention Plans Regulations (General Notice No. 712) herewith the required information as per 3(1) (a – f):

(a) Administrative details of the submitter on behalf of the company:

[REDACTED]

(b) Description of the production processes being conducted:

Annexure A (n) Pulp and Paper Production has relevance (refer Annexure 1).

(c) Greenhouse gases generated from the production processes:

Activities are reported in accordance with the National Greenhouse Gas Emission Reporting Regulations – refer Table 1 (Annexure 2).

(d) Total greenhouse gas emissions for the year preceding the submission:

Refer Table 1 (Annexure 2).

(e) GHG emission monitoring methodology:

The methodology used is in line with the National Greenhouse Gas Emission Reporting Regulations – refer Table 1 (Annexure 2).

(f) Description of the mitigation measures that will be implemented:


Mitigation measures stated (refer Table 2; Annexure 3) are based on the best information available at this time.

Please note that the Pollution Prevention Plan submitted relates to Scope 1 emissions only. As this is absolute emissions, in reality as we upgrade our operations to increase production to ensure a sustainable business, our overall emissions increase despite the specific values decreasing (emissions per ton of product manufactured reduces). In addition, industry is focused on reducing Scope 2 emissions by increasing energy self-sufficiency and this will not be apparent in the plan submitted as only Scope 1 emissions is required as per the Regulations. Furthermore, sequestration and carbon sinks are currently excluded from the emission reporting (although biogenic CO<sub>2</sub> from pulp and paper production processes emitted has been calculated and stated).

**Declaration of accuracy of information provided:**

Name of Company: Sappi Southern Africa Limited

Company registration number: 1951/003180/06

I,  declare that the information provided in this report is in all respects factually true and correct to the best of my knowledge and as at the date of signature.

Signed at Rosebank on this 15<sup>th</sup> day of December 2017



Signature



Vice President: Strategy and Business Development of Sappi SA

Capacity of Signatory

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**sappi**

# Annexure 1

### Description of the production processes:

#### Lomati Sawmill

The Lomati Sawmill is located near Barberton in the Mpumalanga province. The sawmill processes pine logs and produces structural and industrial timber. The sawmill operates six kilns which are used to dry the timber. Heat for the kilns is supplied by three boilers, which are fired using biomass. The Lomati production process is shown in Figure 1. As shown in the figure, the only source of Scope 1 GHG emissions are emissions from biomass combusted in the boilers, of which the CO<sub>2</sub> emissions are biogenic.

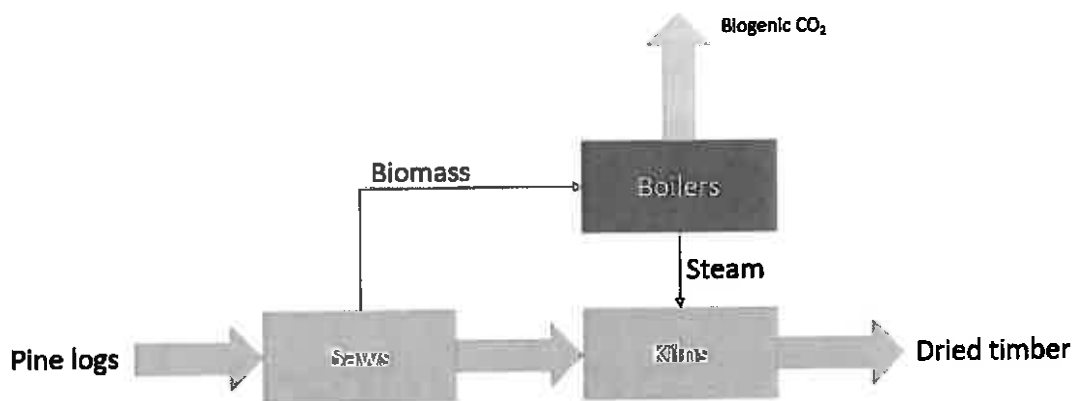


Figure 1: Lomati Sawmill production process

#### Ngodwana Mill

Ngodwana is an integrated pulp and paper mill located near Nelspruit in the Mpumalanga province. Ngodwana Mill is a Kraft mill, producing various grades of pulp as well as newsprint and Kraft liner. The plant has two continuous pulping lines, as well as a batch process where chemical cellulose is made. The mill is also capable of using recycled fibres. Chemicals used in the digestion process are recovered in two recovery furnaces.

Ngodwana is a complex mill, with multiple processes taking place at the same facility. Boilers are operated on site to produce steam, while some steam is also produced from the recovery process. Fuel for steam production includes coal, bark and black liquor. Fuel Oil is used during start-up of some of the boilers. Steam from the boilers is also used to drive turbines, supplying some of the mill's electricity needs. Some electricity is exported to the national grid. The Kraft process requires lime to recover the cooking liquors. After use, the lime is regenerated in a kiln. Some lime is also purchased to make up for losses in the process. The kilns are fired with producer gas, which is made on site by gasifying coal. Figure 2 shows a diagram of the relevant processes at Ngodwana.

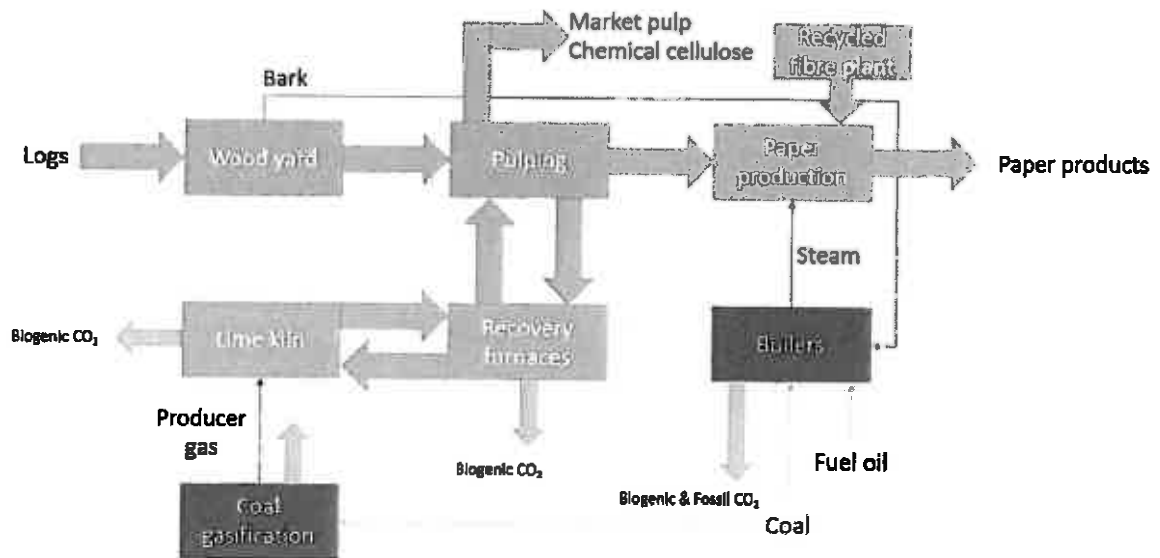


Figure 2: Ngodwana Mill production process

**Saiccor Mill**

Saiccor Mill is located near Umkomaas in the KwaZulu-Natal province, next to the Umkhomazi River. This mill focuses purely on the production of cellulose, and does not produce paper products.

The mill has six coal fired boilers, which are used for cogeneration. Two further magnesium fired boilers are used for cogeneration, as well as to recover some of the cooking chemicals. Sulphur dioxide is absorbed by limestone to produce calcium bisulphite, which is used as a cooking liquor. The cooking liquor is used to digest mainly eucalyptus wood chips into pulp. Of the three digester processes, two make use of magnesium bisulphite and the third uses calcium bisulphite.

The resulting pulp is bleached, dried and sold. Figure 3 shows the relevant Saiccor processes.



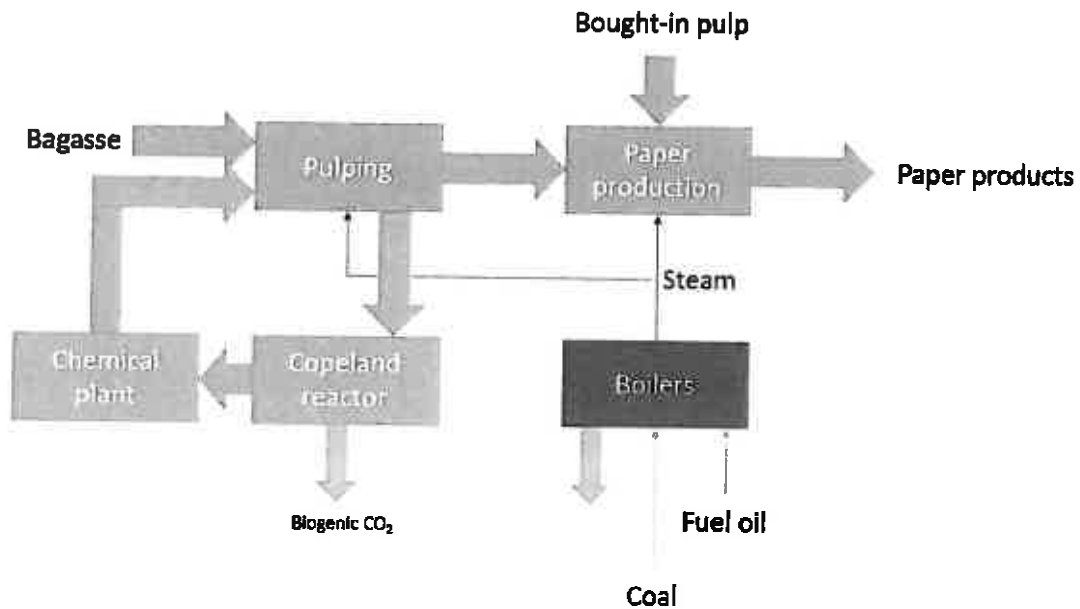


Figure 4: Stanger Mill production process

**Tugela Mill**

Tugela Mill is located along the Tugela River, near the town of Mandeni. This mill produces pulp, from which it makes various types of fluting and corrugating products. The mill also has the capability of using recycled fibres. The plant also produces lignosulphonate as a market product, both in powder and liquid form.

The digester on Tugela operates a neutral sulphite semi chemical process. The resulting red liquor is concentrated to form the lignosulphonate. Heavier elements of the liquid are further processed in a Copeland reactor, where it is combusted and some of the components recovered.

The mill has five coal fired boilers, as well as two natural gas fired boilers. This allows the mill to generate steam, from which it generates electricity for own consumption and supplies process-heating needs. A basic flow diagram of relevant processes is shown in Figure 5.

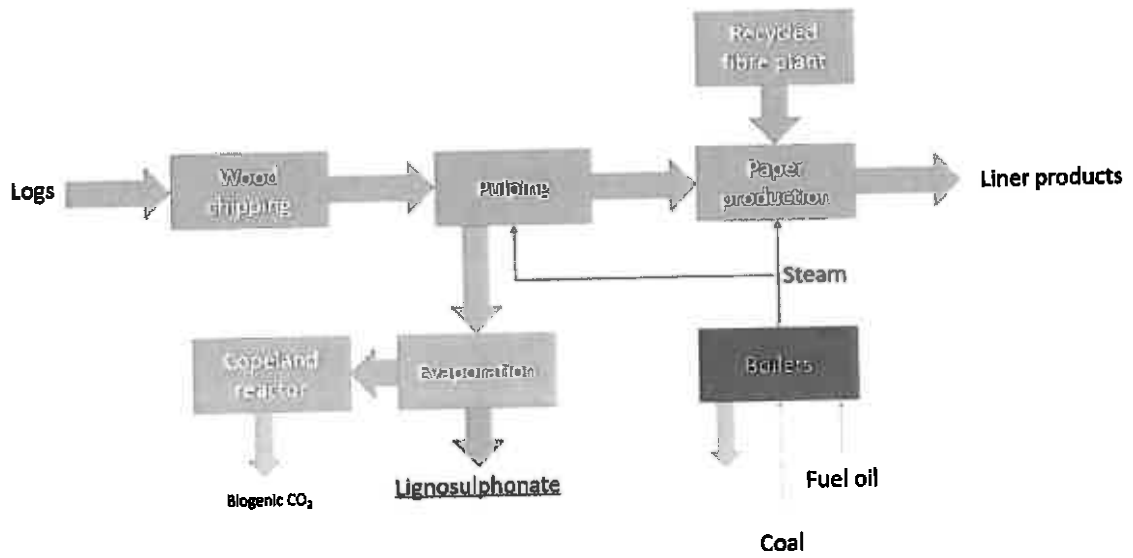


Figure 5: Tugela Mill production process





Table 1: Total annual emissions from each activity measured as CO<sub>2</sub>-eq for the preceding calendar year

Activity (IPCC Source Category)	Year (insert calendar years for which data is provided)	GHG1 CO <sub>2</sub> (Fossil)	GHG1 CO <sub>2</sub> (Biogenic)	GHG2 CH <sub>4</sub> (CO <sub>2</sub> -eq)	GHG3 N <sub>2</sub> O (CO <sub>2</sub> -eq)	GHG4	GHG5	GHG6	Methodology and GHG emission factors used to estimate baseline emissions	Total GHG emissions in CO <sub>2</sub> equivalents
1A2d	2016	2 067 848	2 071 380	7 359	22 261	-	-	-	Fossil and renewable net calorific values for fuels as reported by the mill, Table A.1 emission factors taken from Technical Guidelines for Monitoring, Reporting and Verification of Greenhouse Gas Emissions by Industry (April 2017), Tier 2. Natural Gas EF used as no methane rich EF available. Table C1 emission factors taken (dolomitic lime) from Technical Guidelines for Monitoring, Reporting and Verification of Greenhouse Gas Emissions by Industry (April 2017), Tier 2. Limestone: IPCC Table 2.1 Mineral Industry Emissions (CaCO <sub>3</sub> ) emission factor used Tier 1.	2 097 467
1A1aii	2016	9 150	10 878	38	115	-	-	-	Fossil and renewable net calorific values for fuels as reported by the mill, Table A.1 emission factors taken from Technical Guidelines for Monitoring, Reporting and Verification of Greenhouse Gas Emissions by Industry (April 2017), Tier 2	9 303
1A2i	2016	-	95 239	638	1 014	-	-	-	Net calorific values for fuels as reported by the mill, Table A.1 emission factors taken from Technical Guidelines for Monitoring, Reporting and Verification of Greenhouse Gas Emissions by Industry (April 2017), Tier 2.	1 651
<b>Total by gas</b>		<b>2 076 997</b>	<b>2 177 497</b>	<b>8 035</b>	<b>23 389</b>	<b>-</b>	<b>-</b>	<b>-</b>		<b>2 108 421</b>

# Annexure 2

Table 2: Template for providing details of planned mitigation measures

Mitigation measure	Description of mitigation measure	Anticipated implementation date	Assumptions used to estimate anticipated GHG emission reduction	Affected GHG	Anticipated emission reduction (tonnes CO <sub>2</sub> e)						
					Y1	Y2	Y3	Y4	Y5	Total over 5 years	
					2017	2018	2019	2020			
Heat Recovery and Steam Reduction	Repair steam leaks (phased 3 year approach)	Phased until Dec 2020	Optimisation of steam will result in a reduction of coal consumption on the coal fired boilers. This is based on a steam to coal ratio of 7.	CO <sub>2</sub>	-	-	-	-	-	-	-
Reduced Coal Consumption	increase black liquor Replacement of C5 Comorbloc Heat Exchangers with Shell & Tube Heat exchangers	Dec-20	Assume stable operations as to increase renewable energy production.	CO <sub>2</sub> CH <sub>4</sub> N <sub>2</sub> O	-	-	-	-	-	-	-
<b>Total (CO<sub>2</sub>e)</b>											<b>28 728,34</b>

