Pre - Feasibility Report for the Proposed Up-gradation / Modernization of Orient Paper Mills, Shahdol District, Madhya Pradesh

By

Orient Paper Mills, Amlai
Prop: Orient Paper & Industries Ltd.

PO Amlai Paper Mills, Dist. Shahdol,
Madhya Pradesh, Pin - 484117

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Executive Summary

1. Overview

The Orient Paper Mills, Amlai , Prop : Orient Paper & Industries Limited unit of CK Birla Group is one of the major players in the Indian Pulp & Paper Industry. The Orient Paper & Industries Limited set up on the west bank of river Sone at Village Amlai in Shahdol District in Madhya Pradesh in the year 1965 has, over the years, continuously improve its environmental performance comparable to the best in the industry. The existing facility spreading in an area of 1467 Acres comprises of main plant and its supporting facilities, colony, water intake & pre-treatment facilities and green-belt and plantation area. The existing facility is permitted and consented to produce about 100,000 TPA (~300 TPD with about 330 operational days in a year) of writing paper and speciality tissue paper with MOEF wide letter no. F.NO.J-11011/1142/2007-IA.II dated 2nd December 2010. The current maximum paper production in the existing mill was reported to be in the order of 85,000 TPA during the year 2014- 15. The facility is granted Consent to Operate from MPPCB vide their Proceeding No. MPPCB/SDL dated 08.12.2015, valid up to 04.12.2016 under Water (P & CP) Act 1974 and Air (P & CP) Act 1981 as amended.

The facility has a full-fledged environmental cell headed by qualified senior personnel. The environmental department is working with all other departments to ensure 100% compliance with stipulated regulations and guidelines. The facility is accorded ISO 14001 certification for environmental management program. Environmental aspects and impacts matrix was developed and various continual improvement programs are being adopted in the existing facility.

1.1 Environment Friendly Mill Expansion Program

Since the existing facility is being operated at a partial loads (85% of total consented production capacity of 100,000 TPA) and also due to availability of adequate utilities such as water, power and raw materials and OPM being the largest manufacturers of the soft tissue paper in India, the management of OPM has proposed to install a 90 TPD soft tissue paper machine within the existing facility to achieve an annual paper production of 115,000 TPA.

Since the existing supporting facilities are adequate, expansion or augmentation of the down-stream facilities such as chipper house, pulp production, digesters, evaporation units, soils fired boilers and re-caustizing units not envisaged. In addition the existing boilers and captive power will be adequate to meet the marginal increase in the steam requirements after

expansion program. Similar to the existing soft tissue machines, the proposed 90 TPD Tissue machine requires very little water (when compared with conventional writing and printing paper), the overall specific water consumption in the facility will remain within the existing consented/permitted capacity.

It has been proposed to implement CO_2 sequestering plant to extract the carbon dioxide from the lime kiln operation to produce Precipitated Calcium Carbonate (PCC) slurry to use the same in the paper machine. It has been estimated that about 3000 TPA of CO_2 will be captured from the flue gas there by reducing the greenhouse emissions from the facility.

It is proposed to install facilities to extracting and treatment of Non Condensable Gases from the existing mill to treat the reduced sulphur compounds in the lime line.

2. Details of the Proposed Mill Expansion

The following facilities will be installed under the proposed augmentation program:

1. A new civil building adjacent to the existing mill
2. New 90 TPD tissue machine similar to that of the existing two tissue machines
3. Additional pulp to the tune of 32000 TPA that is required for the production of additional soft tissue will be imported from the open market from outside India. Hence no additional down-stream facilities such as wood cutting, chipper house, wood digestion and pulp making units, evaporator, recovery boiler, re-caustisizing unit etc will be installed at the facility.
4. Marginal increase in steam consumption in the facility will be sourced from the existing boilers and hence no additional steam generation units are proposed.
5. Marginal increase in electrical power consumption will be sourced from the existing 55MW captive co-generation power plant and hence no additional steam turbines will be installed.
6. Due to reduced specific water consumption in the facility, water consumption will be limited to within the existing permitted levels of 39,000 m^3/day. Hence no additional water drawl permits are envisaged.
7. However as a part of the continued environmental management program in the facility, OPM intends to adopt the following voluntary schemes under the mill augmentation program.

Table 2.1 Summary of the Proposed Expansion Scheme

Item	Permitted levels as per the consent to operate/ Environmental clearance	Existing Facilities	Proposed Facilities	Remarks
Raw materials				
Total Wood (TPA)	2,30,000 (ref 1)[1]	1,90,000	1,90,000	No additional pulp will be generated and hence, no additional wood will be consumed.
In house pulp (TPA)	80,000 (ref 1)	75,000	75,000	No additional pulp will be generated and hence, no additional wood will be consumed.
Imported pulp (TPA)	Not Applicable	Not Applicable	32000	Imported fibre will be used for manufacturing additional 90 TPD of soft tissue paper in the proposed tissue paper machine
Products				
Paper (writing, printing & color) (TPA)	1,00,000	60,000	60,000	No change from current scenario.
Tissue Paper (TPA)		25,000	55,000	Proposed to install additional a new 90TPD tissue paper machine
Total Production	1,00,000	85,000	115,000	Since there is no change in writing and printing paper production, the additional marginal increase in Tissue paper production will have insignificant impact on the overall utilities, water consumption and wastewater generation in the existing facility.
Utilities				
Power consumption (MW)	55	30 to 32	36	The additional power requirement will be sourced from the existing captive power plant. No additional power generation units will be installed.
Steam consumption (TPH)	360 (ref 1)	205	223	The existing co-generation plant and recovery boiler has an installed steam generation capacity of 490 TPH.
Fresh water consumption (m^3/day)	39,000	24,000	25,700	The total water consumption is increased by 1500m^3/day. Whereas the specific water consumption is reduced from the current level of 90m^3/T to 75m^3/T.

[1] *Ref 1: Estimated values for equivalent to 100,000 TPA of consented paper production.*

Item	Permitted levels as per the consent to operate/ Environmental clearance	Existing Facilities	Proposed Facilities	Remarks
Wastewater discharge to river (m^3/day)	30,000 (ref 2)[2]	18,000	19,400	The overall wastewater generation will be in the consented and permitted levels.

2.1 Process Description of the proposed Tissue machine

The proposed 90 TPD Tissue machine is of Periformer Crescent-Valmet make. This is a high speed crescent former machine suitable to manufacture premium grade and high softness products like facial and toilet tissues. The machine has also feature to like multilayer head-box along with quality control station and Data control station. The operation speed of the machine will be around 1950 Meters per minute. The machine will also produce qualities like towel and napkin verities with good strength and absorption quality. The entire production will be in jumbo roll forms suitable for high speed converting machines located in abroad.

Typical manufacturing process is presented as follows:

Pulp retting: Soft tissue paper comes in varying thicknesses and textures but is mainly manufactured for facial tissue, bath tissue, paper towels, napkins and sometimes packing tissue. The first step in the process of making soft tissue paper is creating paper pulp. Pulp will be created by stirring together retted (soaked and pulled apart) tree fibres in a large vat. The type of tree fibre and how much water is mixed in depends on the particular product being made.

Pressing: Once the pulp is ready, it is pressed through two pressure rolls so that a majority of the moisture is squeezed out. This leaves the pulp in a manageable consistency for the next step, which will completely dry it out and scrape it down to a thin sheet.

Creping: The pulp is processed with an air assisted dryer, a drying cylinder heated by steam or hot air. This dryer puts the pulp through a process called creping; hence the term "crepe paper." The hood above the roller dries the pulp with a forceful heat as the roller turns and a fine blade scrapes the tissue down to the soft, desired thickness. The tissue does not get completely scraped away, because the roller is first sprayed with adhesives.

[2] *As per the applicable standards and CREP guidelines, the maximum permitted wastewater discharge from paper and pulp industry is 100 m3/T of paper, which is equivalent to 30,000 m^3/day in the current scenario*

Reeling and Cutting: The long length of paper is reeled and cut with a machine, such as the Advantage SoftReel, into appropriate lengths and sections after it is dried and thinned. Throughout the process of making soft tissue paper, there are times when the fibres are exposed to extreme heat. To keep the fibres from igniting, dust collection system is used to keep eliminate air born dust from the area and keep the tissue machines clean

2.2 Details of Utilities Required for Expansion Program

2.2.1 Land Requirement

The proposed Tissue machine and supporting facilities will be developed within the existing facility. Hence no additional land will be procured for the proposed augmentation activities.

2.2.2 Pulp requirement

It has been estimated that additional 95 TPD (32,000 TPA) of bleached pulp would be required for the manufacture of additional soft Tissue in the facility after augmentation. It has been proposed to import the ready pulp required for the manufacture of the additional soft Tissue paper.

2.2.3 Water requirement

It has been estimated that additional 1700 m^3/day of water would be required for the manufacture of additional soft tissue in the facility after augmentation. The total water drawl from the river will increase from the current level of 29,000 m^3/day to 30,700 m^3/day as against the permitted and consented level of 39,000 m^3/day.

2.2.4 Power Requirement

The existing mill has an installed captive power plant capacity of 55 MW. The current power consumption for the existing operations was reported be in the range of 30 to 32 MW. The power demand will increase by an order of 4 MW (from 32 MW to 36 MW) after expansion program, which will be sourced from the existing captive power plant.

2.2.5 Steam Requirement for the Paper Machine

The proposed soft Tissue machine and additional power generation will require an additional steam of 18 TPH. Based on the current steam consumption of 205 TPH in the existing operations, the total demand during the post expansion scenario will be in the order of 223 TPH. The existing co-generation plant and recovery boiler has an installed steam generation capacity of 490 TPH. Hence

the additional steam required for the proposed tissue machine will be sourced from the existing facilities.

2.2.6 Coal consumption

The annual coal consumption in the existing facility was reported to be in the range of 2,20,000 TPA to 2,80,000 TPA. Due to additional steam demand to the tune of 18 TPH in the existing facility, about 30,000 TPA of additional coal would be needed in the facility during the post project scenario. The coal will be sourced from the existing vendors. The existing coal storage area (covered sheds) has adequate capacity to store the marginal increase in coal handling in future.

3. Baseline Environmental Scenario

The existing facility has been implementing various Environmental Management Programs and is complying with all Environmental Regulations and Standards. Six monthly compliance reports for the EC conditions have been regularly submitted to MOEF, Regional office.

The emissions from the stacks are regularly monitored and the concentrations of stipulated pollutants are being maintained well within the standards. As per the consent issued by MPPCB, the facility is permitted to discharge controlled emissions from power boilers (AFBC, CFBC, Power Boiler-1&2), chemical recovery boilers. Stack gas emission monitoring is being undertaken in the mill for the existing facility on monthly basis and also by engaging an MoEF approved environmental testing agency.

The ambient air quality of SPM, RPM, $PM_{2.5}$, SO_2, NO_2 and CO were monitored inside the project site and it is observed that RSP ranges from 63 to 83 µg/m^3, $PM_{2.5}$ ranges from 26 to 30 µg/m^3, SO_2 ranges from 34 to 37 µg/m^3 and NO_x ranges from 48 to 49 µg/m^3. The values are well within the Ambient Air Quality Standards prescribed by Central Pollution Control Board (CPCB) and Madhya Pradesh Pollution Control Board.

The noise levels are monitored in the plant near paper machine fan pump area, digester area, power house and near bamboo gate on regular basis. It is observed that the values are well within the limit of 85 dB(A) prescribed as per the Factory Act. The ambient noise levels at the facility boundary below the stipulated noise level of 55 dB(A).

Ground water was monitored in the plant premises through piezometric wells and it was found that pH ranges from 7.38 to 8.02, TDS ranges from 580 to 1200mg/l, COD ranges from 6 to 21mg/l, BOD and other heavy metals were found to be well within the drinking water standards.

4. Prediction of Environmental Impacts, Management Plant and Proposed Monitoring Program

Air Environment- Based on the plant records, it was noticed that the particulate matter emissions levels in the stack flue gas is maintained less than 100 mg/Nm^3 against the stipulated norm of 150 mg/Nm^3. The existing stacks will be adequate to meet the marginal increase in coal consumption in the co-generation power plant. The overall emissions will be well within the consented and permitted levels. Since the load on the boilers will remain within the design capacity, the overall dust load on the ESPs will remain within the design capacities. Similar to the existing operations, dust collection systems in the proposed 90 TPD soft tissue paper machine area will be installed.

Noise Environment- Since the new tissue plant is technology sound and provided with acoustics, No significant impact is envisaged.

Water Environment- Due to reduced specific water consumption in the facility, water consumption will be limited to within the existing permitted levels of 39,000 m^3/day. Hence no additional water drawl permits are envisaged.

Wastewater- About 1400 m3/day of non-coloured and low BOD wastewater will be generated from the proposed tissue machine operations and supporting utilities. The existing ETP will be adequate to meet the marginal increase in wastewater flow in to the system. The additional treated wastewater will be utilized for plantation and greenbelt in and around the plant premises.

Solid and Hazardous Waste- Except for small quantity of additional fly ash to the tune of 20 TPD and 0.5 TPD of primary clarifier sludge at the ETP will be generated. No additional solid and hazardous waste generation is envisaged. Existing solid waste disposal practices will be continued in post project scenario.

5. Cost of the Project & Schedule

The estimated project cost for the proposed modernization is Rs 66 crores. About Rs 6.6 crores is allocated for improving the environmental performance of the mill.

The proposed tissue plant will be erected and commissioned within 12 months after starting the project.

6. CSR Plan

The Company has voluntarily undertaken various Community Development Measures in the adjoining Villages, as part of its Corporate Social Responsibility (CSR) initiatives. OPM has undertaken work on one Rajiv Gandhi Watershed Mission project in under guidance of government of Madhya Pradesh/Central government for rural development, water conservation and environment improvement in the 10 villages around the catchment area since 2010-11. About Rs 83 Lakhs was spent on CSR activities during the year 2014 -15.

7. Occupational Health Measures

OPM is equipped with a fully fledged Occupational Health Centre within the factory premises. OHC is manned by a qualified Medical Officer supported with two paramedical staff. One Ambulance are stationed in the Mill 24 hours with basic facilities fitted like retractable stretcher, first aid boxes with medicines, oxygen cylinders etc., first aid boxes provided with medicines, kept at vulnerable places inside the Mill. Alike first aid boxes are provided in the company vehicles. Pharmacy is also available inside the mill premises.

8. Conclusions

Based on a detailed analysis, it has been concluded that the proposed mill expansion program will be implemented within the consented and permitted emissions and discharge levels as per the environmental clearance issued to the facility. Hence no additional utilities and supporting facilities will be required to be added in the system. The specific water consumption will be reduced from the current levels and no additional treated wastewater (from the current levels) will be discharged into River. Due to installation of precipitated calcium carbonate plant, about 3000 TPA of carbon dioxide will be captured from the lime kiln, thereby reducing the greenhouse gas emissions from the facility.

1. Introduction

1.1. Overview of the CK Birla Group

The C.K. Birla Group is a growing US$1.6 billion conglomerate with interests across industries such as automotive, heavy engineering, infrastructure, building products, consumer durables and global IT services. C.K. Birla Group companies includes Orient cements, Birla soft, Orient electric, Orient papers, Avtec Ltd., Gimmco Ltd., etc.

C.K Birla Group companies are guided by the values of the Group and they create enduring value for all stakeholders; and forge long-term relationships with customers and partners. The group invest deeply in people, and support their professional growth and personal wellbeing resulted in receiving numerous customer, peer and industry awards recognizing the quality standards, workplace excellence and environmental consciousness.

1.2. Overview of the Orient Paper & Industries Limited

The Orient Paper Mills, Amlai, Prop: Orient Paper & Industries Limited unit of CK Birla Group is one of the major players in the Indian Pulp & Paper Industry. The Orient Paper & Industries Limited set up on the west bank of river Sone at Village Amlai in Shahdol District in Madhya Pradesh in the year 1965 has, over the years, continuously improve its environmental performance comparable to the best in the industry. The existing facility spreading in an area of 1467 Acres comprises of main plant and its supporting facilities, colony, water intake & pre-treatment facilities and green-belt and plantation area. The existing facility is permitted and consented to produce about 1,00,000 TPA (~300 TPD with about 330 operational days in a year) of writing paper and speciality tissue paper. The current maximum paper production was reported to be in the order of 280 TPD during the year 2015.

1.3. Existing Plant Location

The plant is situated at Village Amlai, Block Burhar, Shahdol Dist in the state of Madhya Pradesh (**Figure 1.1**). The plant is adjacent to the National Highway NH 78 and about 28 km distant from Shahdol and 580 km distant from the State Capital Bhopal respectively. The total extent of the land is 1467 Acres and out of the total area of 1,467 Acres, the green belt and plantations comprise to an extent of 633 acres including plantation activities in 498 Acres within the confines of the well-developed lush green belt of manmade plantations of tall eucalyptus trees, irrigated by the mill's fully treated effluent.

Amlai is located at North Latitude of $23^0$9', East Longitude of $81^0$38' at about 500 M above MSL. The area is predominantly rural with forest cover and a tribal population, dotted with coal mines all around with agriculture as the main activity. There are no biosphere reserves, sanctuaries, national parks etc. within 10 Km. area of the plant site (**Figure 1.2**). The plant site area is located in the North Eastern part of the Deccan Plateau at the tri-junction of Maikal Ranges of the Satpura Mountain, the foot of the Kymore Range of the Vindhya Mountain and a mass of parallel hills, which extend over the Chhota Nagpur plateau Bihar. The area is mountainous with little ground water availability and the Irrigation in the region is mainly rain fed.

Figure 1.1 Location of Amlai and Its Neighbourhood

Figure 1.2 Location of the Project Site

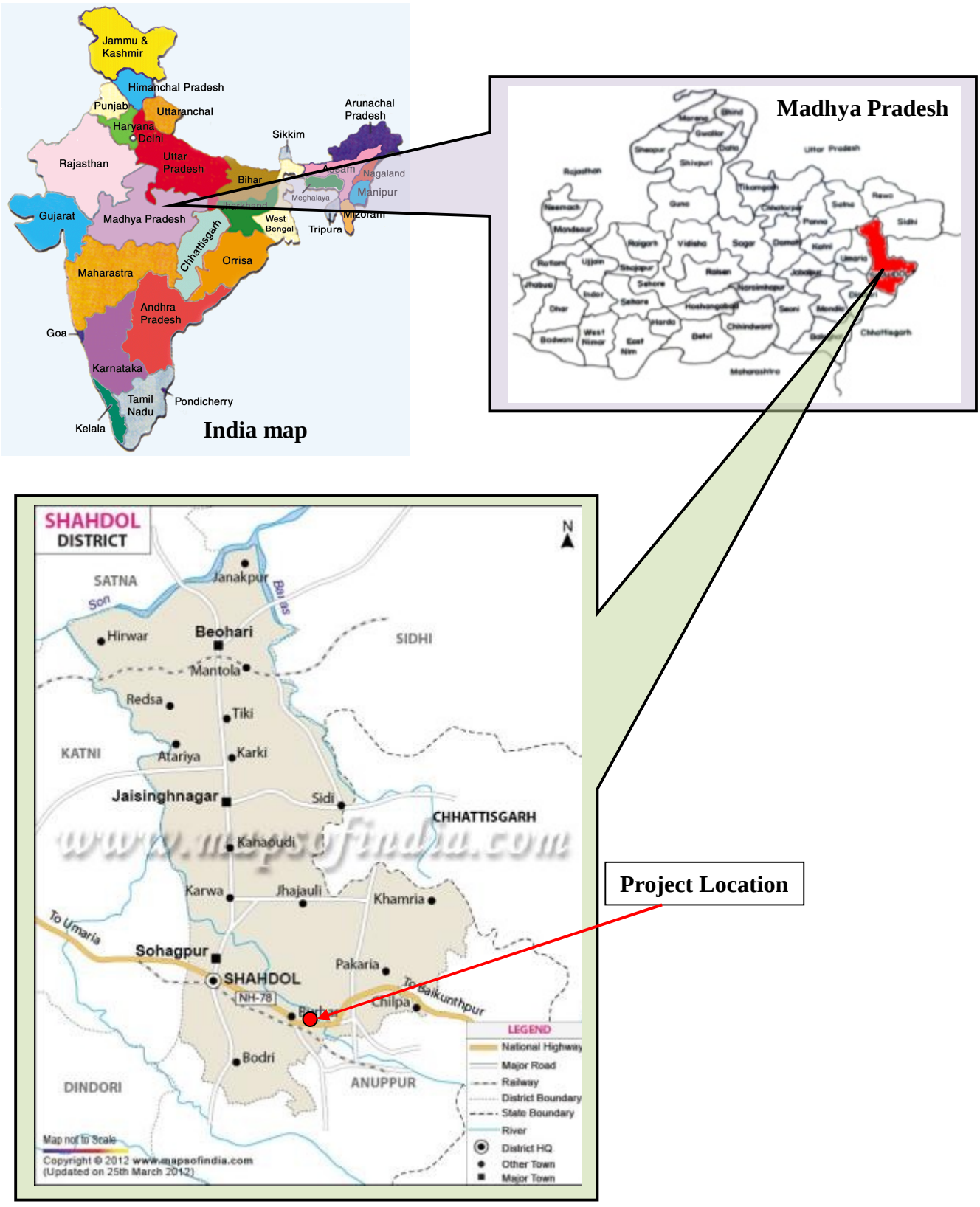


Figure 1.3 Google Image of the Existing OPM Facility

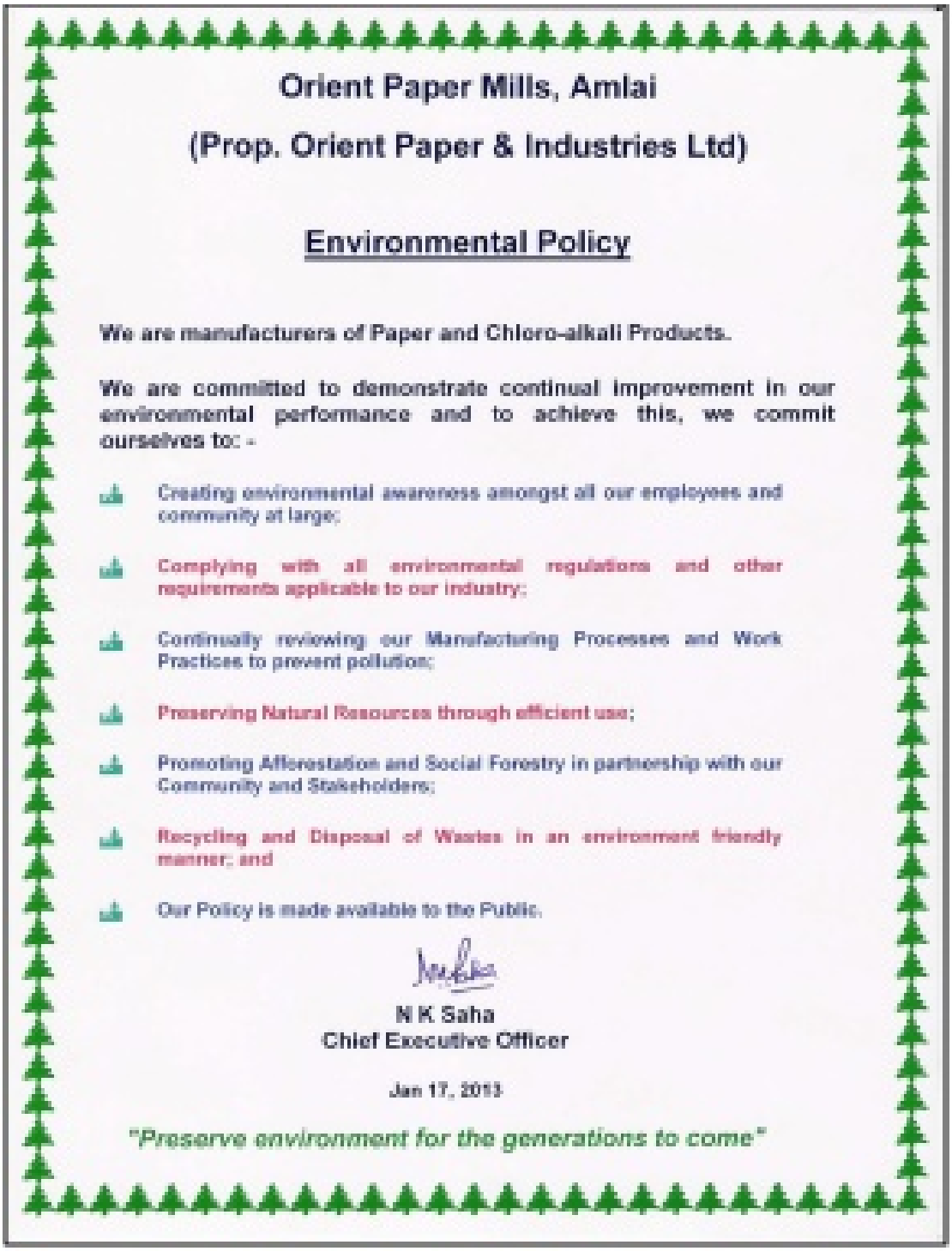
1.4. Awards & Honours

Various initiatives have brought in recognition for the company by way of the following awards:

- The industry is having well defined Environmental Policy and very well adopted in practice
- The industry is having well defined Quality Policy, Energy Policy, Occupational Health, Safety Policy and it is very well adopted in practice.
- Capexill Award as *Two Star Export House* by the Ministry of Commerce & Industry, Govt. of India in the year 2002-03.
- TERI Corporate Environmental Award (3rd Rank) for *Best Practices in Environment (Indian Paper Sector)* by the Energy & Resource Institute (TERI), New Delhi in the year 2001-02.
- Green tech Gold Award for *Outstanding performance in Environment Management (Indian Paper Sector)* by the Green tech Foundation, New Delhi (An Indo-German NGO) for the years 2001-02,2002-03,2003-04 and 2006-07 & recently on 28th Nov'2015
- Golden Peacock Award for *Outstanding performance in Environment Management (Indian Paper Sector)* by the World Environmental Foundation, New Delhi in 2006-07.
- National Award for Excellence in Water Management for *Efficient Water Management* by the Confederation of Indian Industries-Green Business Centre, Hyderabad in the year 2006-07.
- Highly improved environmental performance (ranked 15th position out of 28) recognized by the *Centre for Science & Environment, New Delhi* during the green rating study carried out by them in the year 2004 as against being ranked as a poor performer in the year 2001.
- Best Employer of state of Madhya Pradesh for year 2014
- Orient Paper mills, Amlai is ISO 9001-2008 , ISO 14001-2004 , OSHAS 18001-2007, EnMS 50001 & FSC- COC & CW certified company .

Figure 1.4 Certificates and Awards

Figure 1.5 Environment Policy



Orient Paper Mills, Amlai

(Prop. Orient Paper & Industries Ltd)

Environmental Policy

We are manufacturers of Paper and Chloro-alkali Products.

We are committed to demonstrate continual improvement in our environmental performance and to achieve this, we commit ourselves to: -

- Creating environmental awareness amongst all our employees and community at large;
- Complying with all environmental regulations and other requirements applicable to our industry;
- Continually reviewing our Manufacturing Processes and Work Practices to prevent pollution;
- Preserving Natural Resources through efficient use;
- Promoting Afforestation and Social Forestry in partnership with our Community and Stakeholders;
- Recycling and Disposal of Wastes in an environment friendly manner; and
- Our Policy is made available to the Public.

N K Saha
Chief Executive Officer

Jan 17, 2013

"Preserve environment for the generations to come"

1.5. Summary of various CSR Programme Implemented

The existing facility is providing a direct employment to more than 1463 people and indirect employment to more than 494 people in the area. Being a single largest industry in the area after the public sector coal mining operations, the facility is contributing to the significant economic growth in the area.

As a part of the corporate social responsibility of the organization, OPM has been implementing various community development programs and about Rs. 83 Lakhs was spent on various community development activities during the year 2014 -15. Some of the CSR programs implemented in the area are highlighted in the following:

- Hospital: Orient Paper Mills Ltd. runs a 12 bed Hospital with all amenities. It is open for employees as well as non employees
- School: Orient Paper Mills Ltd. runs a well established High school having 850 (416 of employees & 434 from nearby villages) students and Teachers
- Water supply to nearby villagers: Orient Paper Mills Ltd. provides potable water to all nearby villages
- Medical camps: Orient Paper Mills Ltd. conducts medical camps, Family planning camps and blood donation camps every year
- Orient Paper Mills Ltd. provides free fuel for the last rites to all the villages in its vicinity.
- Orient Paper Mills Ltd. celebrates all the big festivals like Dusshera, Chhat puja etc. involving the local communities
- Orient Paper Mills Limited has undertaken work on one Rajiv Gandhi Watershed Mission project in under guidance of government of Madhya Pradesh/Central government for rural development, water conservation and environment improvement in the 10 villages around the catchment area since 2010-11.
- The mill has a Forest Museum recognized by *Museum Association of India* housing more than 25,000 timber wood specimen and other products of forest produces found in India and overseas. The museum is also listed in “World collection of timber woods” published from Netherlands. With the improvement in the economy, Orient Paper Mills Limited has decided to install a new tissue plant with capacity @ 90 TPD.

Figure 1.6 Corporate Social Responsibility Initiatives and Activities


CSR Activities in Hospital




Various activities/competitions at schools in nearby villages

Water distribution to the nearby villages

Blood donation camps

Health and awareness camps

Figure 1.7 Watershed Management Program Activities

Village-Bhumkar

Village-Raikova

View of Stop Dam : Bhumkar

View of Ponds

View of HRTS (High Rate Transpiration System) Plantation

1.6. Existing Plant Capacity

The unit is a large-scale integrated pulp & paper mill with paper machines producing writing & printing papers, soft tissues and posters with a total consented (85000TPA) and permitted capacity of 1,00,000 TPA (300 TPD), whereas the total installed capacity of the paper production at the facility is only 85,000 TPA (258TPD). The average daily total production (paper and soft tissue and posters) during the year 2015 was reported in the order of 73,792 TPA (225 TPD). Based on this information it has been noted that the existing facility has achieved only 88% of total consented production due to various market conditions.

The Company's products are being sold throughout the country through a wide range and well-established dealer network. The main markets in the country are in the Central & Northern regions particularly Delhi, U.P., and Punjab & Haryana. The products are also exported to different countries mainly Srilanka, Nepal, Bangladesh, Singapore, Myanmar etc. Orient Paper Mills Limited's contribution to the state exchequer is over Rs. 30.00 Crores in the year 2014-15.

The Company has obtained Environmental Clearance from MOEF vide their letter No. J-11011/1142/2007-IA-II(I) Dated 19.03.2008 and subsequent amendment No.J-11011/1142/2007-IA-II(I) Dated 18.08.2008 & F.No. 11011/1142/2007-IA-II (I) dated 10.12.2010 for the production of paper to a quantity of 1,00,000 TPA. The copy of the existing Environmental Clearance and its Amendment is enclosed as **Annexure-1**.

The facility is granted Consent to Operate from MPPCB vide their Proceeding No. MPPCB/SDL dated 08.12.2015, valid up to 04.12.2016 under Water (P & CP) Act 1974 and Air (P & CP) Act 1981 as amended. The copy of the Content to Operate (CTO) is enclosed as **Annexure-2**. OPM is regularly submitting the compliance report to Regional Office, MoEF, copy of the latest compliance report submitted is enclosed as **Annexure-3.**

1.7. Proposed Expansion Program

Since the existing facility is being operated at a partial loads (85% of total consented production capacity of 1,00,000 TPA) and also due to availability of adequate utilities such as water, power and raw materials and OPM being the largest manufacturers of the soft tissue paper in India, the management of OPM has proposed to install a 90 TPD soft tissue paper machine within the existing facility to achieve an annual paper production of 1,10,000 TPA.

As a part of the proposed expansion the facility expansion or augmentation of the down-stream facilities such as chipper house, pulp production, digesters, evaporation units, soils fired boilers and re-caustizing units. In addition the existing boilers and captive power plant is adequate to meet the marginal increase in the steam requirements after expansion program.

Similar to the existing soft tissue machines, the proposed 90 TPD Tissue machine requires very little water (when compared with conventional writing and printing paper), the overall specific water consumption in the facility will remain within the existing consented/permitted capacity. Hence no additional wastewater will be generated due to expansion activities.

Table 1.1 Summary of the Proposed Expansion Scheme

Item	Permitted levels as per the consent to operate / Environmental clearance	Existing Facilities	Proposed Facilities	Remarks
Raw materials				
Total Wood (TPA)	2,30,000 (ref 1)[3]	1,90,000	190,000	No additional pulp will be generated and hence, no additional wood will be consumed.
In house pulp (TPA)	80,000 (ref 1)	75,000	75,000	No additional pulp will be generated and hence, no additional wood will be consumed.
Imported pulp (TPA)	Not Applicable	Not Applicable	32000	Imported fibre will be used for manufacturing additional 90 TPD of soft tissue paper in the proposed tissue paper machine
Products				
Paper (writing, printing & color) (TPA)	1,00,000	60,000	60,000	No change from current scenario.
Tissue Paper (TPA)		25,000	55,000	Proposed to install additional a new 90TPD tissue paper machine
Total Production	1,00,000	85,000	115,000	Since there is no change in writing and printing paper production, the additional marginal increase in Tissue paper production will have insignificant impact on the overall utilities, water consumption and wastewater generation in the existing facility.
Utilities				
Power consumption (MW)	55	30 to 32	36	The additional power requirement will be sourced from the existing captive power plant. No additional power generation units will be installed.

[3] *Ref 1: Estimated values for equivalent to 100,000 TPA of consented paper production.*

Item	Permitted levels as per the consent to operate / Environmental clearance	Existing Facilities	Proposed Facilities	Remarks
Steam consumption (TPH)	360 (ref 1)	205	223	The existing co-generation plant and recovery boiler has an installed steam generation capacity of 490 TPH.
Fresh water consumption (m^3/day)	39,000	24,000	25,700	The total water consumption is increased by 1500m^3/day. Whereas the specific water consumption is reduced from the current level of 90m^3/T to 75m^3/T.
Wastewater discharge to river (m^3/day)	30,000 (ref 2)[4]	18,000	19,400	The overall wastewater generation will be in the consented and permitted levels.

[4] *As per the applicable standards and CREP guidelines, the maximum permitted wastewater discharge from paper and pulp industry is 100 m3/T of paper, which is equivalent to 30,000 m^3/day in the current scenario*

2. Justification of the Installation of New 90 TPD Soft Tissue Paper Plant

2.1. The Proposal

As indicated in the previous section, the total paper production in the existing facility is about 258 TPD against the consented and permitted level of 300 TPD. Out of the total paper produced about 70 TPD of soft tissue is being produced from the existing two issue machines having an individual capacity of 25 TPD and 45 TPD respectively.

Globally the consumption of writing, printing paper is decreasing because of increased use of computers. On the other side there is increase in the consumption of tissues and packaging grades of paper due to more disposable income, among the intersection of the society and increased industrialization and more consciousness about health and hygiene.

Being a major soft tissue paper supplier in India, OPM intends to install additional 90 TPD tissue paper machine within the existing plant to achieve a total production of 1,10,000 TPA (330 TPD) in future. The location of the proposed tissue machine within the facility is shown

The proposed expansion program includes the following facilities:

- A new civil building adjacent to the existing mill
- New 90 TPD tissue machine similar to that of the existing machines
- Additional pulp to the tune of 32,000 TPA that is required for the production of additional soft tissue will be imported from the open market from outside India. Hence no additional down-stream facilities such as wood cutting, chipper house, wood digestion and pulp making units, evaporator, recovery boiler, re-caustisizing unit etc will be installed at the facility.
- Additional steam to the tune of 18 TPH will be sourced from the existing facilities and hence no additional steam generation units and raw water treatment facilities will be installed at the facility.
- The power requirement of the expansion program will be in the order of 4 MW which will be sourced from the existing captive power plant of capacity 55 MW. Hence no additional power generation units and supporting facilities will be installed as a part of the expansion program.

2.2. Environmental Friendly Operations of the Proposed 90 TPD Tissue Plant

- Better realization from higher tissue production and low writing & printing production will help to generate more revenue and profitability.
- The overall water consumption in the facility after expansion will be in the order of 25,700 m^3/day which is within the consented and permitted quantity of 39,000 m^3/day.
- The specific water consumption in the proposed machine will be maintained at less than 15 m^3/T of the paper produced when compared with a level of 20 to 25 m^3/T of paper in conventional paper machines.
- Similar to the existing tissue machines, a dedicated dissolved air flotation system will be installed to recover fibre from the wastewater and recycling the wastewater in the Tissue machine.
- About 95% of the steam condensate will be recycled to the boiler for steam generation.

Figure 2.1 Location of the Proposed 90 TPD Soft Tissue Paper

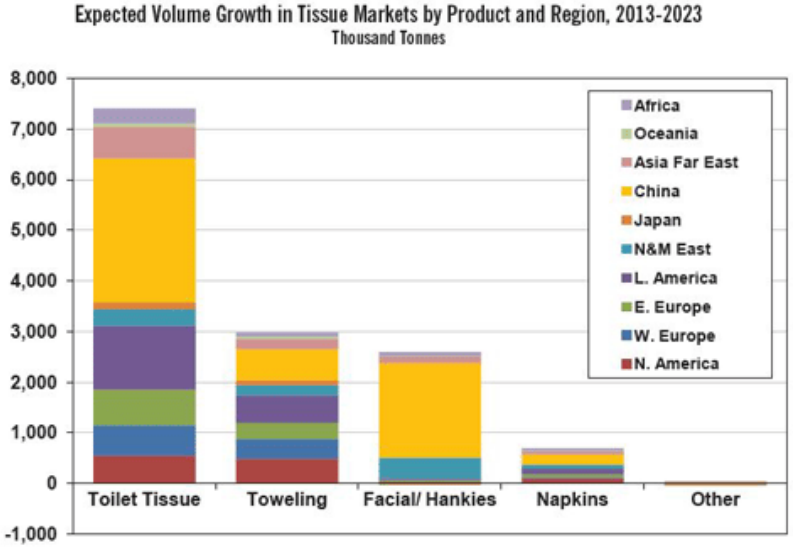
Figure 2.2 Photographs of Proposed Location for New Tissue Plant within the Existing Facility

2.3. Market Demand for Tissue Paper

2.3.1. World Demand for Soft Tissue and Tissue Paper

The global tissue industry has experienced strong growth since the global recession. Growth rates have returned to between 3.1-3.9%, after plummeting to 1.2% in 2009, and the global market continues to be in a strong expansion phase. China leads volume growth, followed by North America, Western Europe and Latin America. Over the forecast period, China is expected to continue to export tissue to other regions with a net export surplus growing from 820,000 tonnes annually in 2014 to about 960,000 tonnes by 2018. Tissue consumption grew

by an average growth rate of 1.5% in 2012, the us market even 1.8%. Eastern Europe showed a sound growth of 7.5% in 2012. The region as a whole benefitted from the strong growth in its largest countries, Russia (11%), Poland (5.4%), the Ukraine (8.6%) and Romania (9.2%). The growth in tissue consumption in the near and Middle East remained clearly lower in 2012 (4.4%) than in 2011 (9.2% based on the revised figures), affected by the political turbulences of a few countries (such as Syria) but even more by the flat market in Turkey (again, more stock changes affecting apparent consumption than any real break in actual consumption: growth was more than 15% in 2011). Iran seems to be in a very strong upswing phase despite trade and financial embargo regulations: tissue traders are clever for finding ways how to operate even in such difficult situations.



2.1.1.1. Indian Scenario for the Demand of the Soft Tissue and Tissue Paper

Growth in consumption of paper and paper products is driven by sustainable factors. Several economic factors and lifestyle changes are driving the growth of paper consumption in India. Economic development and globalization have led to an increase in corporate activity and increased per-capita consumption of paper. At the same time, increased commercial activity has spurred demand for packaged goods. Lifestyle changes have also pushed up the demand for specialty paper, such as tissue papers. The GDP has grown at a rate of more than 8 percent in the last decade, increasing affluence. This has led to increased consumption growth in key urban towns and rural markets. The higher consumption per capita leads to a higher newspaper and magazine reader base, which in turn can fuel demand for paper.

With the increasing inclination towards sophistication and cleanliness in everyday lives, consumers, especially in metro cities, are using more and more tissue and hygiene-related

products. Observed in all regions in the country, the trend was more visible in leading metro cities like Delhi, Mumbai and Bangalore, which have higher exposure to Western lifestyles and more offices and hotels. Nappies/diapers/pants registered the fastest retail value sales growth due to increased awareness, even in small towns. Sanitary protection also saw a huge increase in interest, although it recorded slower growth than nappies/diapers/pants as it has a higher sales base.

Tissue products are mainly purchased by institutions such as offices, hotels and restaurants; thus, the away-from-home (AFH) channel leads tissue sales. The popularity of retail tissue products for household purposes was limited but sales continued to see double-digit volume and value growth in 2014. Traditionally, Indians use water and towels, but tissue products are gaining acceptance because people appreciate its convenience in offices and restaurants, for example. Easy availability in modern retailing also provides an opportunity for consumers to buy tissue products for household use.

3. Details of the Existing Facilities

3.1. Overview

As indicated in the earlier sections, the existing facility consists of chipper unit, chipper grading and separation unit, chemical digesters, black liquor evaporation plant, solids firing (recovery boiler), re-causticizing unit, lime kiln and coal gasification unit to supply fuel gas to the kiln. The paper machine area consists of four paper machines out which two machines are special purpose tissue paper making machines. In order to support the utilities, a RO and DM based water raw water treatment plant, two number of stoker fired boilers, a Circulating Fluidized Bed Combustion Boiler (CFBC) and an Atmospheric Fluidized Combustion Boiler (AFBC). Summary of the details of the existing facility is presented in **Table 3.1**. Overview of the manufacturing process is presented in **Figure 3.1.**

3.2. Digester section

Pulping and bleaching technology must be matched with the quality and characteristics of the pulp and paper grades to be produced. No single pulping or bleaching process can produce pulp suitable for all uses. Wood and bamboo (75% and 25% ratio) are being process in the chippers and washed with treated wastewater. The wash water is collected in a sedimentation tank and reused in the chip washing section. The average moisture content in the wood is reported be in the order of 38 to 40%. The crushed wood/bamboo is sent to screening section, where the saw dust and over sized wood are separated and right size of the wood/bamboo chips is sent to digester. About 1200 TPD (wet basis) of wood is being sent to digester for processing. The wood is digested in 7x150 m^3 (7x40 Adtpd of wood/bamboo) capacity digesters using the white liquor (comprising of the digesting chemicals) from the re-causticizing unit at an elevated temperature using steam and hot water. Sulphate (Kraft) uses a mixture of sodium hydroxide and sodium sulphide under alkaline conditions to dissolve the lignin from wood and most non-wood fibres. Wood digesting is a batch process with 16 to 18 batch per day. About 240 Adtpd of final bleached and unbleached fibre is generated from the plant for making paper.

Figure 3.1 Typical Manufacturing Process

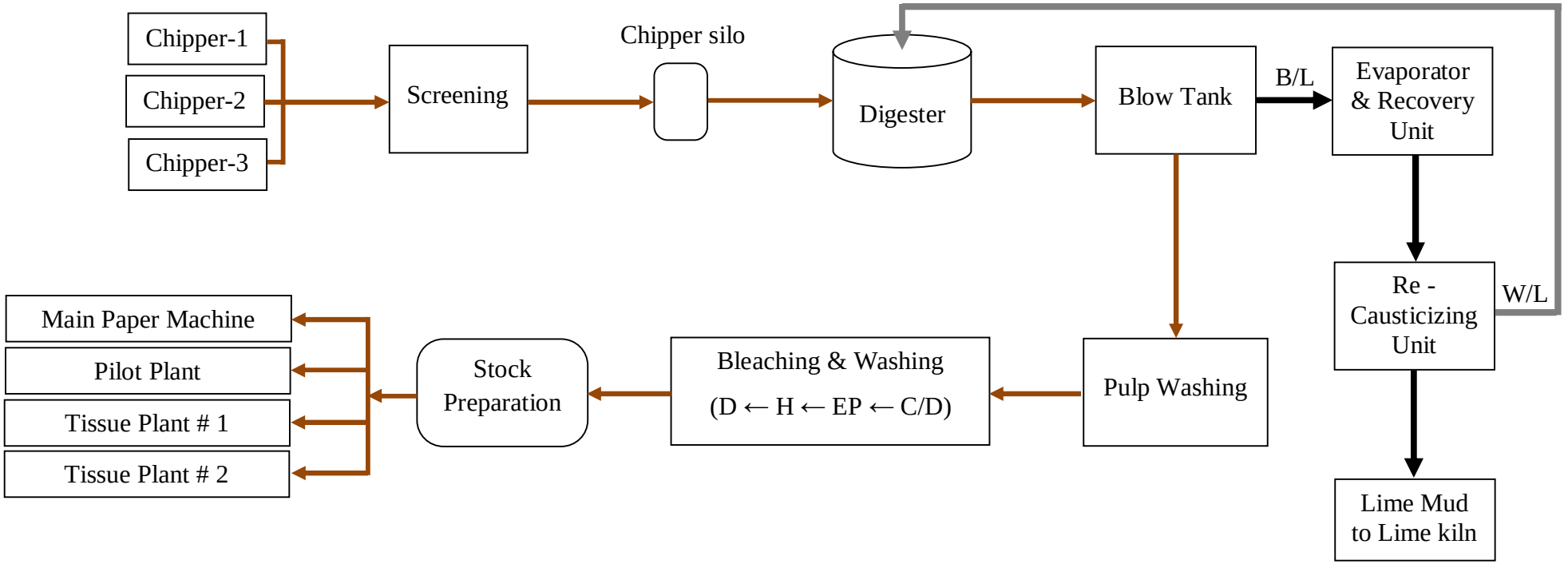
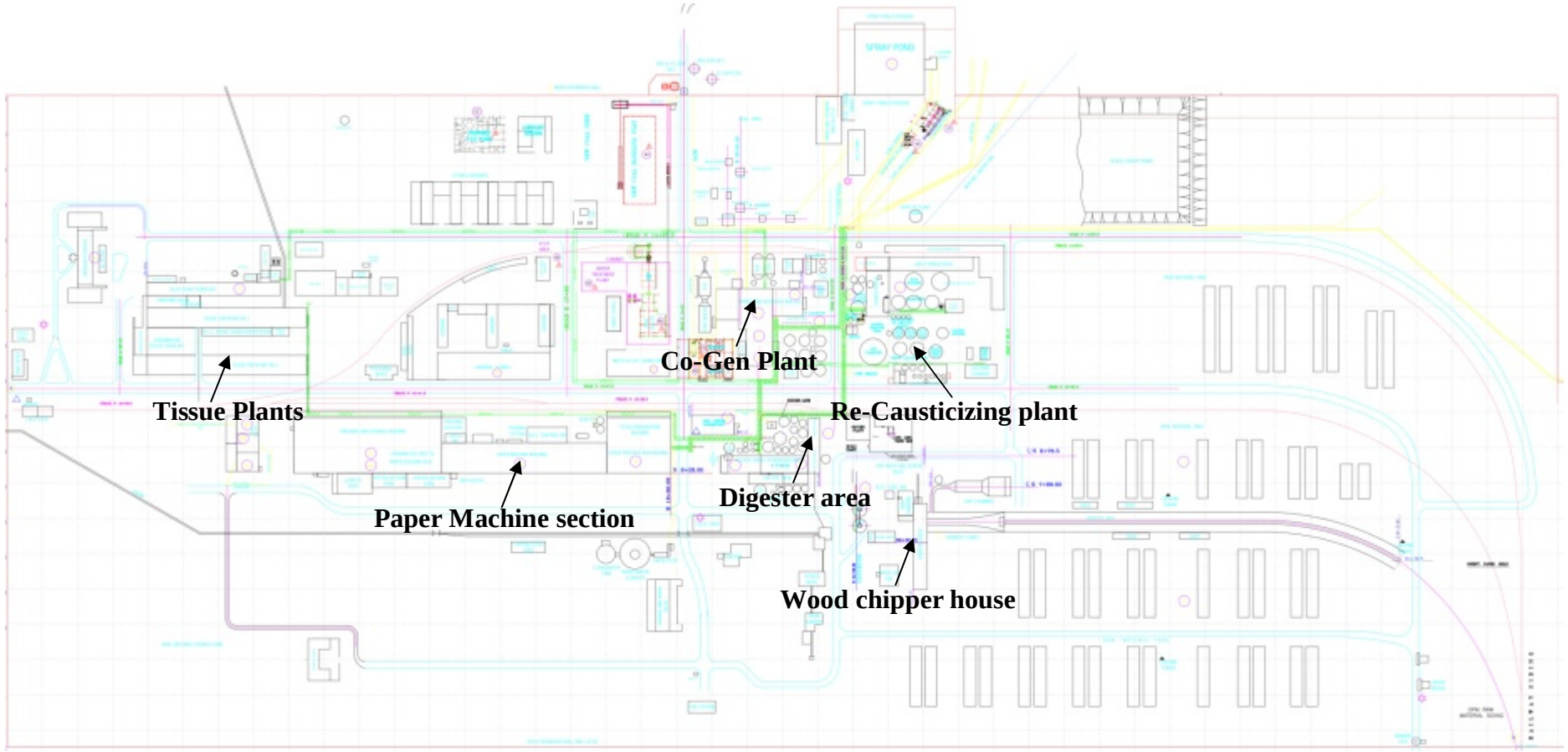


Figure 3.2 Location of Facility Showing Various Process Units in the Existing Facility

Figure 3.3 Location of Facility Layout Showing Various Process Units in the Existing Facility



3.3. Bleaching Operations

Bleaching after pulping is a chemical process applied to pulps in order to increase their brightness. To reach the required brightness level, bleaching should be performed by removing the residual lignin of chemical pulps (delignifying or lignin-removing bleaching). All lignin cannot be removed selectively enough in a single bleaching stage, but pulp is bleached in four stages process at OPM. The digested pulp is subjected screening to remove the knots (uncooked wood) and the remaining fibre is separated from the black liquor in a blow tank. The digested wood is subjected to bleaching in the subsequent phases. The bleaching sequence consists of four stages with intermediate washing operations. The bleaching sequence adopted at the OPM is C/D (Chlorine dioxide is added in chlorine stage), E_P (Alkaline extraction - Dissolution of reaction products with NaOH), H (Reaction with hypochlorite in alkaline medium) and D (Reaction with chlorine dioxide) respectively. OPM also installed oxygen de-lignifications stage to adopt environment friendly operation and to minimize the chemical consumption in the bleaching operations.

3.4. Recovery area

About 2400 m^3/day of black liquor with 475 ADTP of solids generated from the blow-tank area is being subjected to heat recovery followed by six stage multiple evaporator to increase the consistency of the solids from 14% to 50%. The solids generated from the evaporator are further fired in a dedicated 60 TPH steam generation capacity recovery boiler. The condensate from the multiple effect evaporator is utilized in the re- causticizing plant for making the white liquor. Typical manufacturing process of the recovery process is presented in **Figure 3.4**. The recovery system in a kraft pulp mill has three functions: (1). Recovery of the inorganic pulping chemicals, (2). Destruction of the dissolved organic material and recovery of the energy content and (3). Recovery of valuable organic by-products. The fuel value of the recoverable black liquor is enough to make the kraft pulp mills more than self-sufficient in heat and electrical energy. Organic by-products play a limited economic role in most kraft pulp mills. The main process units in the chemical recovery system are the evaporation of the black liquor, incineration of the evaporated liquors in a recovery boiler and causticizing, including lime regeneration. The recovery system includes the following processes: (1). Evaporation of black liquor, (2). Salt cake (Na_2SO_4) makeup to liquor, (3). Burning of concentrated black liquor in recovery boiler, (4). Dissolving of boiler smelt form green liquor, (5). Incineration of limestone in the lime kiln, (6). Lime slaking and mixing with green liquor, (7). White liquor clarification and lime mud filtering.

Soda Recovery: Black liquor from pulp washing having about 14-15% solids is concentrated in Free Flow Falling Film evaporator by mixed feeding. Counter current heating is done with the help of steam. After evaporation, black liquor concentration of 48-50% is achieved with improved steam economy. Finally the black liquor is concentrated in cascade evaporator and after mixing with sodium sulphate thick black liquor is burnt in the Recovery Furnace. High-pressure steam is obtained as a by-product from Recovery Boiler. Sodium sulphate, added as make up chemical, reacts with carbon and around 90% of Na_2SO_4 is converted into sodium sulphide as per following reaction.

$$Na_2SO_4 + 2C \rightarrow Na_2S + 2CO_2$$

The smelt moves downward through the fuel beds and is discharged from the bottom of furnace as molten stream, which consists of Na_2CO_3 and Na_2S. The smelt is dissolved in weak liquor and is known as green liquor.

Causticizing of green liquor: Green liquor is clarified in a clarifier to remove impurities picked up in smelt operation. Lime is added to green liquor. The process of converting sodium carbonate to sodium hydroxide is referred as causticizing. The reaction is as follows:

$$CaO + H_2O + Na_2CO_3 \rightarrow 2\ NaOH + CaCO_3$$

Causticizing reaction normally goes for about 85 to 90% completion. Considerable alkali remains with mud ($CaCO_3$) and recovered by counter current washing on mud washers. Finally lime sludge goes to the filters and after washing the sludge leaves the filters at around 55% solids. The sludge is collected in ponds / low lying areas. White liquor thus generated is again used at digesters for cooking of chips

Figure 3.4 Typical View of Digester area and Bleaching Area

Typical View of the Wood Chipper House

Typical View of the Digester Area

Typical View of Bleaching Section

Final Bleached Pulp Washing

Table 3.1 Overview of Various Units and Their Capacities in the Existing Facility

Process unit/Utility	Units	Installed/ Design Capacity	Current operating level	Remarks
Chipper, pulp mill and supporting facilities				
3 nos of Chipper units	TPH	3x20 = 60	40	Two units will be in operation at any given point of time.
Chipper processing and screening machines	TPH	6x10	40	Four units will be in operation at any given point of time.
Digester unit feed	AD TPD	780	630	Out of the 07 digesters, 07 number of digesters will be operated in batch mode. Each batch will last for about 6 hours.
Bleach plant throughout (C/D, E_p, H, D - process)	AD TPD	300	240	Four stage bleaching including oxygen de-lignifications in place.
Evaporator feed @ 14 to 16% solids conc.	TPD	3050	2445	Black liquor is concentrated from 14% to 64% solids in the evaporator.
Recovery boiler – solids firing	AD TPD	600	475	Based on wood processed and cooking chemicals, solids load may vary.
Pulp feed to paper machine with 5 to 10% consistency	AD TPD	300	240	90 to 100 % load
Paper machines				
Main paper machine # 1 (printing and writing paper)	AD TPA	65000	57100	90 to 100 % load

Process unit/Utility	Units	Installed/ Design Capacity	Current operating level	Remarks
Pilot plant paper machine (printing and writing paper)	AD TPA	10000	5000	Pilot plant is being operated based on market demand
Tissue paper machine # 1	AD TPA	8500	8000	95 to 100 % load due to high market demand
Tissue paper machine # 2	AD TPA	16500	15000	95 to 100 % load due to high market demand
Utilities, Power Plant and Supporting Facilities				
Raw water intake from River	m^3/day	38000	29000	Water allocation from Water Resource Department, Anuppur is 12.46 M.Cum/ annum (39000m^3/day). About 4500 m^3/day of fresh water is supplied to the nearby villages as the part of CSR activities.
Stoker fired boilers	TPH	2x90	1x35	One Boiler is in stand-by
CFBC boiler	TPH	1x100	-	Stand-by
AFBC boiler	TPH	1x150	1x120	Depends on stream requirement
Recovery Boiler	TPH	1x60	1x50	Depends on solid load
Steam Turbo Generators (Power generation units)	MW	1x18 1x6 1x35 1X25	1x20 1x12	1x18MW+ 1x6 MW units are on stand-by mode and will be operated only during the emergency when other TGs are under maintenance.
Wastewater Treatment Plant	m^3/day	30,000	18,000	

Figure 3.5 Typical Process Flow Diagram of the Evaporator and Chemical Recovery Section

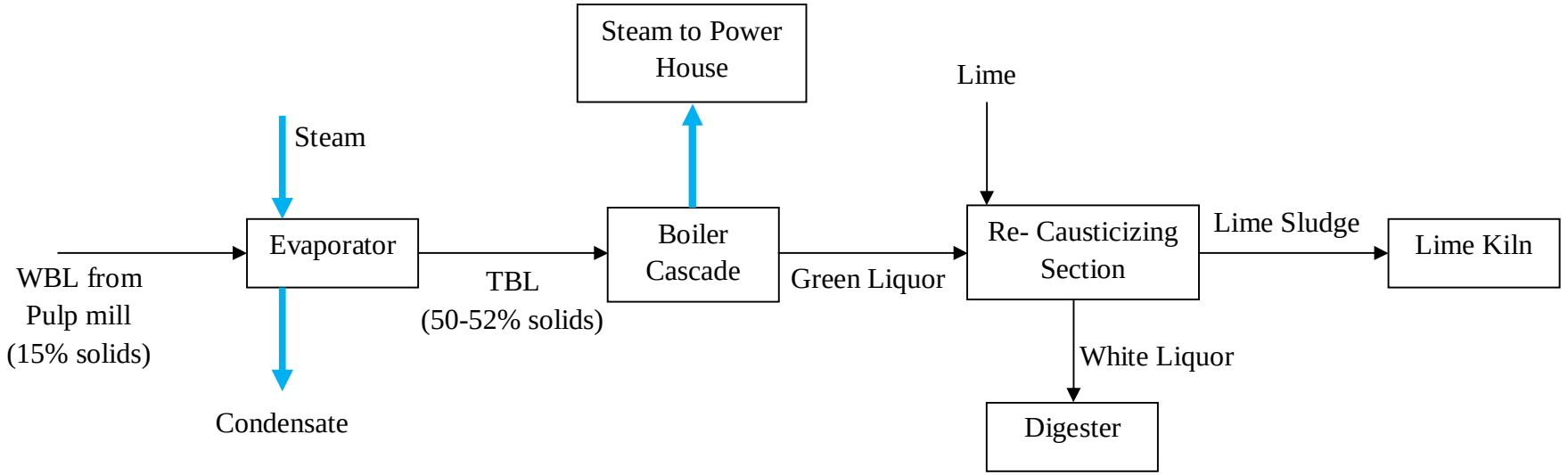
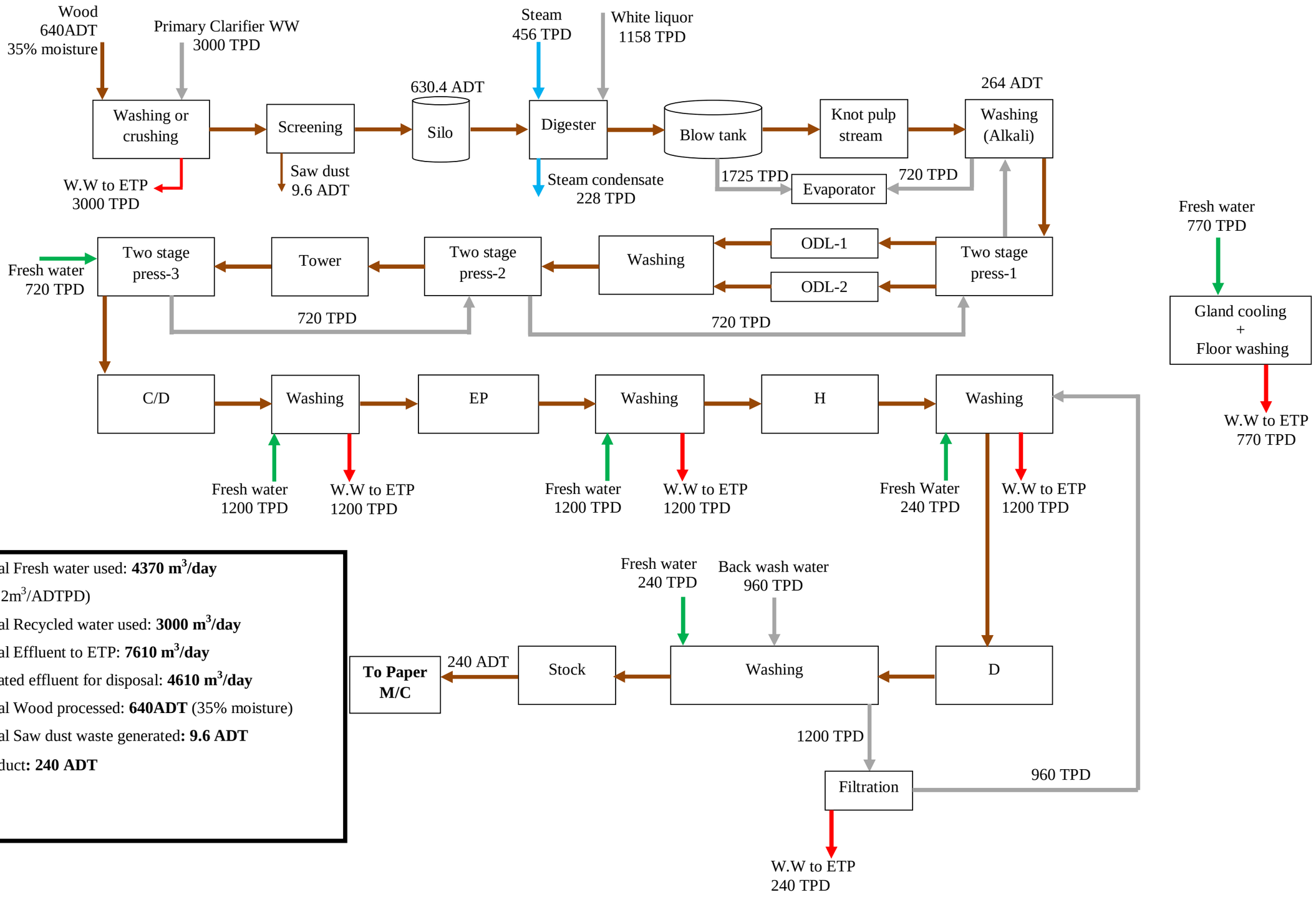
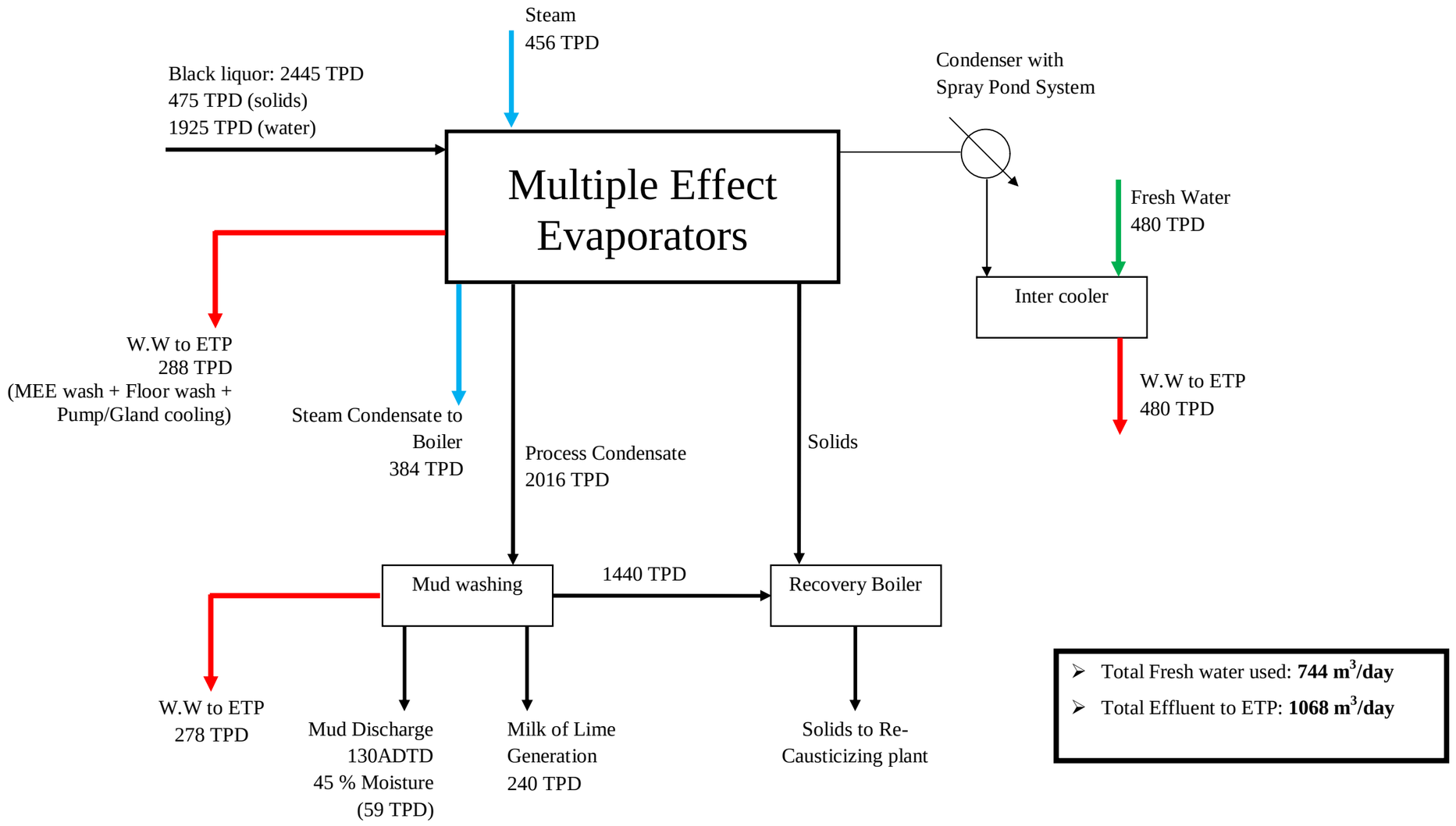


Figure 3.6 Typical Material Balance of Digester Section



- Total Fresh water used: **4370 m^3/day** ($18.2m^3$/ADTPD)
- Total Recycled water used: **3000 m^3/day**
- Total Effluent to ETP: **7610 m^3/day**
- Treated effluent for disposal: **4610 m^3/day**
- Total Wood processed: **640ADT** (35% moisture)
- Total Saw dust waste generated**: 9.6 ADT**
- Product**: 240 ADT**

Figure 3.7 Typical Material Balance of Evaporator Section



- Total Fresh water used: **744 m^3/day**
- Total Effluent to ETP: **1068 m^3/day**

3.5. Paper Machines & Tissue Paper Machine

At present the mill is having a main paper machine, a pilot paper machine and two Tissue machines. With an installed capacity of about 85,000 AD TPA against the consented and permitted levels of 1,00,000 AD TPA. The average production of paper/ Tissue in the existing facility as reported to be in the range of 62,000 to 75,000 AD TPA during the past three years.

Refining & chemical additives of Pulp: The bleached pulp is subjected to enzyme treatment (Enzyme Fibercare-D) and passes through various stages of refining in hydrating Jordan's and double disc refiners to get desired freeness of pulp. Starch, dyes and other chemicals are added precisely as per the product requirement at the Trimbey Meter and final refining is done at the finishing Jordan. Talcum, PCC (Precipitated Calcium Carbonate) and the alkaline sizing chemical AKD are added at the fan pump inlet.

Sheet formation: Dilute stock of fibres and chemicals at a consistency range of 0.5-0.9% is transferred on a wire part through head box. The wire is endless and is synthetic. The water from wire part is drained through hydrofoils, suction boxes, ceramic foils and suction couch roll. At the end of the wire part the pulp consistency is around 20%. Dandy roll is provided at the end of the wire part to offset flocculation and to smoothen out the top of the sheet. It also gives better control of amount of water at the nip of Dandy. Two sidedness of the sheet is reduced by its use. At the press section the sheet passes through 1st, 2nd & 3rd presses supported by a synthetic felt. The final consistency achieved is around 36-38%. The wet sheet now passes through 1st, 2nd & 3rd section of dryers.

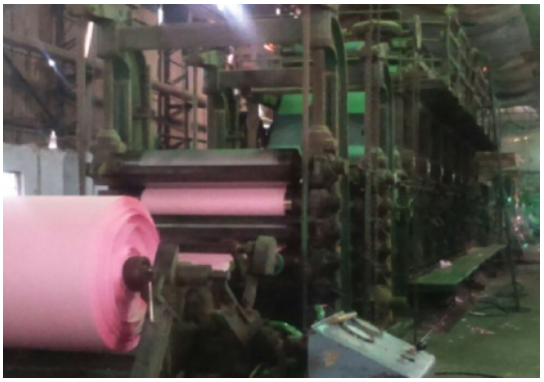
Calendaring: One set of conventional calendar stack of four rolls and one Kuster with heated thermo roll are used to maintain the desired caliper and fiber finish by application of required pressure. Paper sheet from calendar goes to reel. A Jumbo roll of max 5'8" dia can be made on this reel.

Rewinding & cutting of sheets: Jumbo rolls are converted into small reels at the winder. To cut the paper reels into cut size sheets, slitters are provided at the cutters.

Packing: Paper reels and sheets in the form of ream are packed in finishing house. Paper reels and sheet packets from finishing house are taken to paper godown where these are properly stacked. Fire hydrants and hose reels are provided all around the paper godown in accordance with fire protection rules. Paper ream and reels are transported by trucks and rail to the desired destination.

Figure 3.8 Typical View of Paper Machines

Typical View of Main Paper Machine



Typical View of Pilot Plant Paper Machine

Typical View of Tissue Machine # 1

Typical View of Tissue Machine # 2

Typical View Fibre recovery and water recovery Unit in Main Paper Machine

Typical View Fibre recovery and water recovery Unit in Tissue Paper Machines

3.6. Machinery Details

Chipper House comprises of the following machines: (1). 3 nos. of 1200 mm dia Drum chippers of 400 KW each with Capacity 25 TPH each, (2). Chip Screens 6 Nos, 15 T/hr capacity, (3). Chips screens 6 Nos, 15 T/hr capacity. Digester House & Pulpmill house comprises of the following: (1). 7 Nos of 150 M^3 TATA-KMW Vertical stationary digesters with ancillary equipments. one blow tank of 350 m^3

Stock Preparation section comprises of the following: (1). A hydrating Jordan of 450 HP each, (2) two nos of double disc refiners of 600 HP each, (3). Two nos. of 1 SDM refiners of 800 HP each, (4) one broke deflaker of 150 HP, (5). Two nos of Primary Jordan of 450 HP each, (6). Two nos of Finishing jordans of 450 HP each Including stock chests and mechanical additive system.

Main Paper Machine # 1: (Beloit 225 TPD fourdriner paper machine of 6.20 meter deckle having designed speed of 610 MPM comprising centricleaners, screens, design fourdrinier, 3-group press section and dryer section with 44 dryer cylinders, one set of calanders and one set of Kuster calander with heated roll, incorporating moisture, basis weight, caliper control, Ash monitoring and control system along with winder and Simplex cutters.)

Paper Machine-2 (Pilot Plant 12 TPD fourdrinier paper machine of 1.3 Mtr deckle, Maximum speed 175 MPM with cutter and winder).

Tissue Paper Machine-1 (TOSCHI Machine capacity 47 TPD (MG), deckle 2.75 Mtr Maximum speed 915 MPM with winder).

Tissue Paper Machine-2 (DCS controlled TOSCHI soft tissue manufacturing Machine capacity 59 TPD (MG), deckle 2.75 Mtr Maximum speed 1,500 MPM with Cresent-former and complete with Stock Preparation and Winder).

Power Plant (Consisting coal fired boilers 3 nos. and one new 150 TPH AFBC boiler from M/s Thermax. TG set 55 MW from M/s SIEMENS).

Soda Recovery Plant (Consisting of Evaporator plant, Recovery boiler of 55 TPH steam generation with causticizing plant).

3.7. Steam Requirement and Generation Facilities

The existing facility consists of two stoker fired boiler, a CFBC boilers, an AFBC boiler and a recovery boiler that are careering to the steam requirements of the process, main plant and power generation needs. Details of the boilers are presented in **Table 3.2**. Necessary permits and consent to operate is being issued for the installed capacities of all the boilers. The total installed steam generation capacity of all the boilers is about 490 TPH at ISO conditions. In order to achieve 235 AD TPD of pulp and 258 AD TPD of paper and 32 MW of power required in the existing facility, about 205 TPH of steam is being generated. One stoker fired boiler and AFBC boiler are continuously operated during the normal operations. One stoker

fired boiler and CFBC boiler are kept under stand-by mode. Typical view of the co-generation boilers are presented in **Figure 3.7**. Detailed steam balance in the facility is presented in **Figure 3.8**. About 50 TPH of condensate from the condensing turbine is recycled back in to the boiler for steam generation. The overall steam recovery in the Tissue paper machine was reported to be as high as 90% due to installation of steam recovery units.

Entire quantity of coal required for the plant is being sourced from M/s. South Eastern Coalfield Limited (SECL). The copy of the MoU with SECl for supply of coal is enclosed as **Annexure-4.** Indian coal with calorific value of 4200 Kcal/Kg is being used for the steam generation in the co-generation boilers. The proximate analysis of the coal indicated that the ash, moisture, carbon and sulphur content in the coal was found to be in the order of 32%, 10%, 40% and 0.5% respectively. About 750 TPD (273066 TPA) of coal was used during the last year. In addition to the coal, about 10 to 12 TPD of saw dust collected from the chipper section is also used in the co-generation boilers. Coal is being sourced from linkage and from open market through authorized vendors. A cover coal storage facility of capacity 3200 m^2 (10000 m^3 of coal) is in place. Two dedicated coal crushers of capacity 80 TPH & 40 TPH with adequately designed dust collection systems is provided at the existing facility.

Table 3.2 Steam Generation Capacities in the Facility

Boiler type	Installed Steam Generation Capacity – TPH	Steam Pressure (Bar)	Steam Temperature (Deg C)
Stoker fired boiler # 1	90	56	430
Stoker fired boiler # 2	90	56	430
CFBC boiler	100	56	430
AFBC boiler	150	87	510
Recovery boiler	60	56	430
	490	-	-

Figure 3.9 Typical View Co-generation Boilers with ESPs

Typical View of Co-generation Boiler EPSs

Typical View of Recovery Boiler ESP

3.8. Power Requirement and Generation Facilities

The facility is permitted to install and generate about 55 MW of power from the captive power plant. The existing plant has two main steam turbo generators of capacity 30MW and 25MW each with a net useful energy (after auxiliary consumption) of about 50 MW. The maximum power demand in the facility for a peak production of 1,00,000 TPA (consented levels) will be in the order of 40 MW, whereas the current power consumption in the plant is reported to be in the range of 30 to 32 MW. Hence the existing power generation facilities are adequate for future demands. In spite being an old paper mill, the power consumption in the mill has been maintained on par with some of the best operated mills in India due to implementation of various energy conservation measures over a period of last ten years. The cooling requirements of the condensing turbine have been met through a mist/spry cooling system.

Figure 3.10 Typical View of the TG Units in the Existing Facility

3.9. Water Requirement and Treatment Facilities

Water is a vital component for the paper production. The facility is permitted to draw about 39,000 m^3/day of water from the Son River, which is flowing at about 3 to 5Km from the plant. The water draw permission was obtained from Executive engineer, Water Resource Department, Anuppur, the copy of the MoU for water drawl is enclosed as **Annexure-5.**

Based on the plant records the raw water intake from the river was reported to be ~29,000 m^3/day, depending on the season and daily production loads. The specific water consumption was reported to be in the order of ~90 m^3/t of paper produced which is well within the stipulated level of 100 m^3/t as per the environmental protection act and rules for paper and pulp sector.

Typical raw water intake and pre-treatment scheme is presented in **Figure 3.9 and Figure 3.10**. Raw water received from the river is stored in 11,36,500 m^3 capacity reservoir. Water is subjected to gravity settling in a large clarifier of capacity 45000 m^3. Out of the total water intake of 29,000 m^3/day, about 5000 m^3/day has been supplied to the local villages and nearby settlements for drinker purpose and other needs. The remaining 24000 m^3/day of water is used for process, cooling and domestic applications. Typical fresh water treatment scheme in the existing facility is shown in **Figure 3.11**. Water used for boiler make up is subjected a four stage rigorous treatment (multi-media filter, Ultra Filtration, Reverse Osmosis Plant, De-mineralization plant) to remove dissolved solids. The Water distribution and wastewater generation in existing facility is presented in **Table 3.3**.

3.10. Residential Town-ship and Amenities

In order to cater to the employee needs, a dedicated colony comprising of about 1659 number of residential units is located adjacent to the main plant. A dedicated sewage treatment plant is in place to treat the sewage generated from the colony.

Figure 3.11 Typical Raw Water Intake and Pre-treatment Scheme

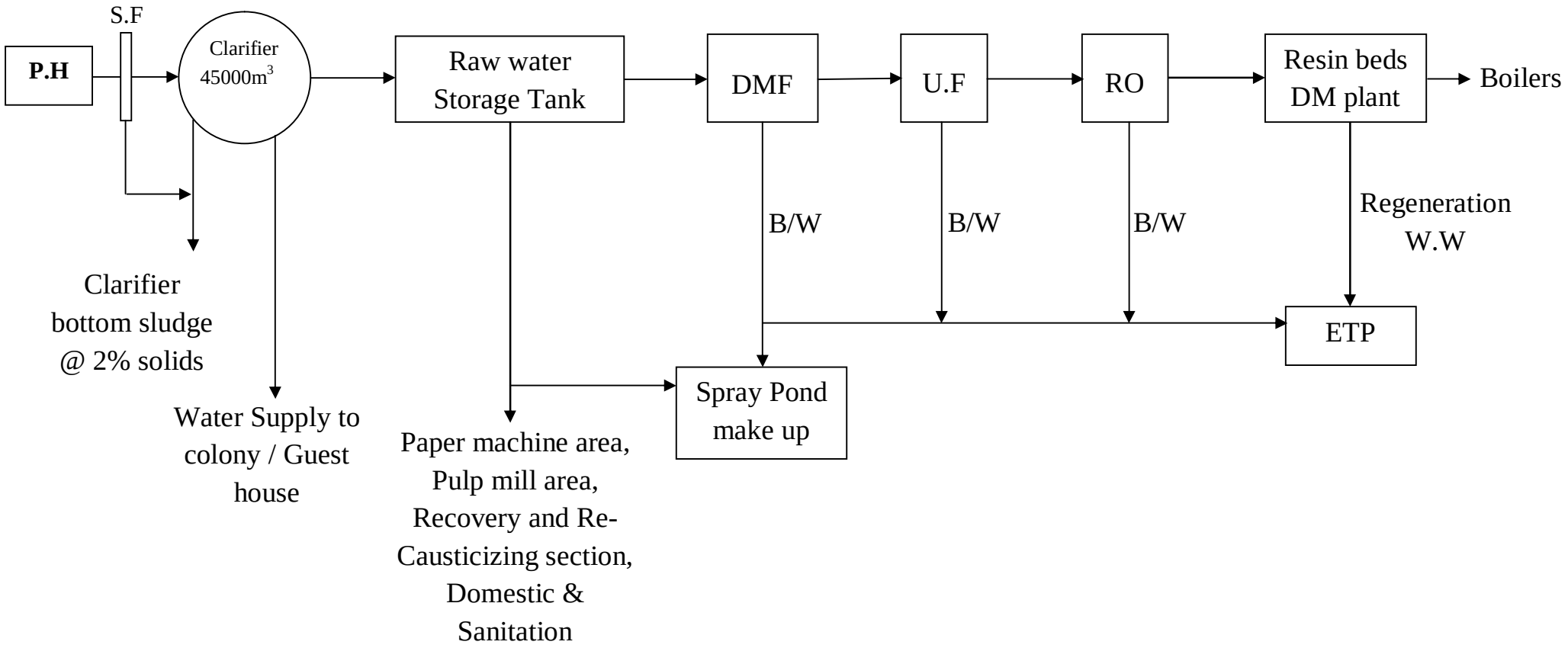


Figure 3.12 Photographs showing Raw Water Intake and Pre Treatment

Raw water intake on Son River

Raw water pump house

Raw Water Reservoir

Raw water clarifier

RO plant

Table 3.3 Steam Generation Capacities in the Facility

Source	Fresh water consumption, m^3/day	Evaporation, m^3/day	Wastewater generation, m^3/day
MGF, RO and UF rejects sent to spray cooling pond as make-up	1758	1230.6	527
DM plant regeneration to ETP	130	0	130
Boiler make up (steam loss as evaporation and discharge into drain through process units)	1850	555	1295
Pulp mill	4400	0	4400
Re-causticizing unit	750	0	750
Main paper machine	5100	255	4845
Pilot paper machine	500	25	475
Tissue 1	600	30	570
Tissue 2	1000	50	950
Spray cooling pond	6000	4200	1800
Domestic for colony use	2125	43	2083
Domestic in main plant	200	4	196
Total	**24413**	**6392**	**18021**
Treated wastewater using for Greenbelt			**3521**
Treated wastewater discharge to river			**14500**

4. Details of the Proposed Activities

4.1. Overview of the Proposal

As indicated in previous sections of this report, the management of OPM intends to augment their soft Tissue paper manufacturing from the current level of 23000 AD TPA to 53000 AD TPA by installing the a new Tissue paper machine line in a separate building. The ultimate final product (paper and Tissue) will be increased from current level of 85000 ADTPA to 115,000 ADTPA as against the consented and permitted quantity of 100,000 ADTPA.

The following facilities will be installed under the augmentation program:

8. A new civil building adjacent to the existing mill
9. New 90 TPD tissue machine similar to that of the existing two tissue machines
10. Additional pulp to the tune of 35000 TPA that is required for the production of additional soft tissue will be imported from the open market from outside India. Hence no additional down-stream facilities such as wood cutting, chipper house, wood digestion and pulp making units, evaporator, recovery boiler, re-caustisizing unit etc will be installed at the facility.
11. Marginal increase in steam consumption in the facility will be sourced from the existing boilers and hence no additional steam generation units are proposed.
12. Marginal increase in electrical power consumption will be sourced from the existing 55MW captive co-generation power plant and hence no additional steam turbines will be installed.
13. Due to reduced specific water consumption in the facility, water consumption will be limited to within the existing permitted levels of 39,000 m^3/day. Hence no additional water drawl permits are envisaged.
14. However as a part of the continued environmental management program in the facility, OPM intends to adopt the following voluntary schemes under the mill augmentation program.

- Precipitated Calcium Carbonate (PCC) slurry plant will be installed to capture the CO_2 emissions from the boiler. This will help in not only reducing the greenhouse emission load by an order of 3000 TPA from the plant and also avoids significant quantity of filler material in the paper making by utilizing the Precipitated Calcium Carbonate

- It is also proposed to capture the Non Condensable Gases (NCGs) from the blow tanks, recovery section through a net work of ventilation system and the NGCs will be fired in the lime kiln. By capturing and treating the NCGs in the plant the concentration of odour bearing gases such as H_2S and mercaptans will be reduced below the certain threshold levels and thereby avoiding the odour issues in the vicinity of the mill.

The proposed facilities will be developed in the vacant land within the existing mill. Out of the total 1479.16 Acres of the existing facility, about 50 Acres of vacant land is available for future expansion and modernization activities. The proposed Tissue machine and supporting facilities will be developed in an area of 1.5 Acres within the existing facility. Hence no additional land will be procured for the proposed augmentation activities.

4.2. Manufacturing Process of the proposed 90 TPD Tissue plant

The proposed Tissue machines operations will be similar to that of the existing two machines. Depending on the demand, about 95 AD TPD of bleached fibre will be either sourced from the in-house operations or imported from the reputed sources elsewhere in the world for the manufacture of 90 AD TPA soft Tissue paper under the proposed augmentation program.

The proposed 90 TPD Tissue machine is of Periformer Crescent-Valmet make. This is a high speed crescent former machine suitable to manufacture premium grade and high softness products like facial and toilet tissues. The machine has also feature to like multilayer head-box along with quality control station and Data control station. The operation speed of the machine will be around 1950 Meters per minute. The machine will also produce qualities like towel and napkin verities with good strength and absorption quality. The entire production will be in jumbo roll forms suitable for high speed converting machines located in abroad.

In order to obtain excellent reel quality there will be two winders from M/s Jagenberg Varisoft type to facilitate production of high diameter reels of both jumbos and small reel verities. The reels will be packed with stretch film and neutral packing as per customer requirement. Technical details of the proposed 90 TPD Tissue machine are presented in **Table 4.1.**

The machine will also produce for c-fold and MN–fold verities required for away from home (AFH) specialties. The machine will have quality control facilities for controlling basis weight and moisture for optimal weight of paper and other related qualities. Most of the

Tissue will be exported to Dubai, Abu Dhabi, Jeddah and Durban and partially will be marketed in the domestic market.

Typical manufacturing process is presented in the following text:

Pulp retting: Soft tissue paper comes in varying thicknesses and textures but is mainly manufactured for facial tissue, bath tissue, paper towels, napkins and sometimes packing tissue. The first step in the process of making soft tissue paper is creating paper pulp. Pulp will be created by stirring together retted (soaked and pulled apart) tree fibres in a large vat. The type of tree fibre and how much water is mixed in depends on the particular product being made.

Pressing: Once the pulp is ready, it is pressed through two pressure rolls so that a majority of the moisture is squeezed out. This leaves the pulp in a manageable consistency for the next step, which will completely dry it out and scrape it down to a thin sheet.

Creping: The pulp is processed with a air assisted dryer, a drying cylinder heated by steam or hot air. This dryer puts the pulp through a process called creping; hence the term "crepe paper." The hood above the roller dries the pulp with a forceful heat as the roller turns and a fine blade scrapes the tissue down to the soft, desired thickness. The tissue does not get completely scraped away, because the roller is first sprayed with adhesives.

Reeling and Cutting: The long length of paper is reeled and cut with a machine, such as the Advantage SoftReel, into appropriate lengths and sections after it is dried and thinned. Throughout the process of making soft tissue paper, there are times when the fibres are exposed to extreme heat. To keep the fibres from igniting, dust collection system is used to keep eliminate air born dust from the area and keep the tissue machines clean.

Table 4.1 Technical Details of the proposed 90 TPD Tissue Machine

Parameter		Details
Machine Type		Periformer Crescent-Valmet
GSM Range		15 to 30
Max Operation Speed		1950 mpm
Max Sheet Width		2820 mm
Stock Preparation	Pulper	Pulper St 9 CE W Voith -1999,Cap 30 m3 (10% Stock Density),400 KW motor
	Conveyor1	Slat Conveyor type 1500X 20.625 Sulzer-1994 ,inclination 25 deg,11 KW motor, cell load 500 kg/m

Parameter		Details
	Conveyor2	Slat Conveyor type 1500X 36.625 Voith-1999 ,inclination 25 deg,18.5 KW motor.
	Refiner 1	Andritz RTC 2000,2 Triconic Refiners ,500HP,Schopper Increase 6-10 deg SR
	Refiner 2	Andritz RTC 2100,2 Triconic Refiners ,500HP,Schopper Increase 6-10 deg SR
Broke line	Under Machine pulper	Grubbens Pulper Type W7.5-12 SRM
	HDC	Grubbens Cellwood Machinery Tipo 600,35-40 TPD,600-400 lpm
	Deflaker	Deflaker E1k -1999,motor speed 3600 rpm
Fibre Recovery Plant & Water	Floatation Unit	Purgomat PU 100S Voith Sulzer,2800 kg wt sludge discharge
Head Box		Sym Flo (1999 Rebuild) Valmet, Outlet Width 2826 mm, Max Operating speed 1900 m/min jet speed, max 81260l/min flow rate
Forming Roll		Valmet, face length 3070 mm, Dia 1520mm, Power 306 KW DC, Hard Rubber 0-1 deg P & J
Wire	Wire	Width 2760mm,Speed 2000 m/min, Frame Type is cantilever, Wire Tension 7-10KN/m
	Wire Rolls	Total 6 Nos, face Length 3070mm cover Thickness 7 mm
Felt	Felt	Z Valmet 1994,C Frame prota bar, felt width 2970mm,felt length min 48403 max 51403 mm, Felt Tension 5 KN/m
	Felt Rolls	Total 10 Nos ,Face Length 3070mm, Dia 674 mm ,7 mm cover thickness
Suction Press Roll		Valmet, Face Length 3170mm, Dia 1090mm, Power 278 kW, Max Linear Load 90KN/m, Rubber Hardness 32 deg P&J, hole size 4.3 mm Low Vacuum zone 648 mm 35 Kpa, High vacuum zone 160mm 40 Kpa
Yankee		Valmet 1994,Cast Iron,4876 Diameter, Face Length 3170mm Installed Power 2 X 278 KW, Max Working Pressure 850KPa,Shell Thickness 45 mm Groove depth 32 mm deep 12 mm width, Metal Coating Thickness 80.2,Surface Finish 0.3-0.4 Ra
Pope Reel		Valmet, Dia 900mm,face length 2850 mm, Installed Power 69 kW, max Diameter of Parent Roll 2600 mm

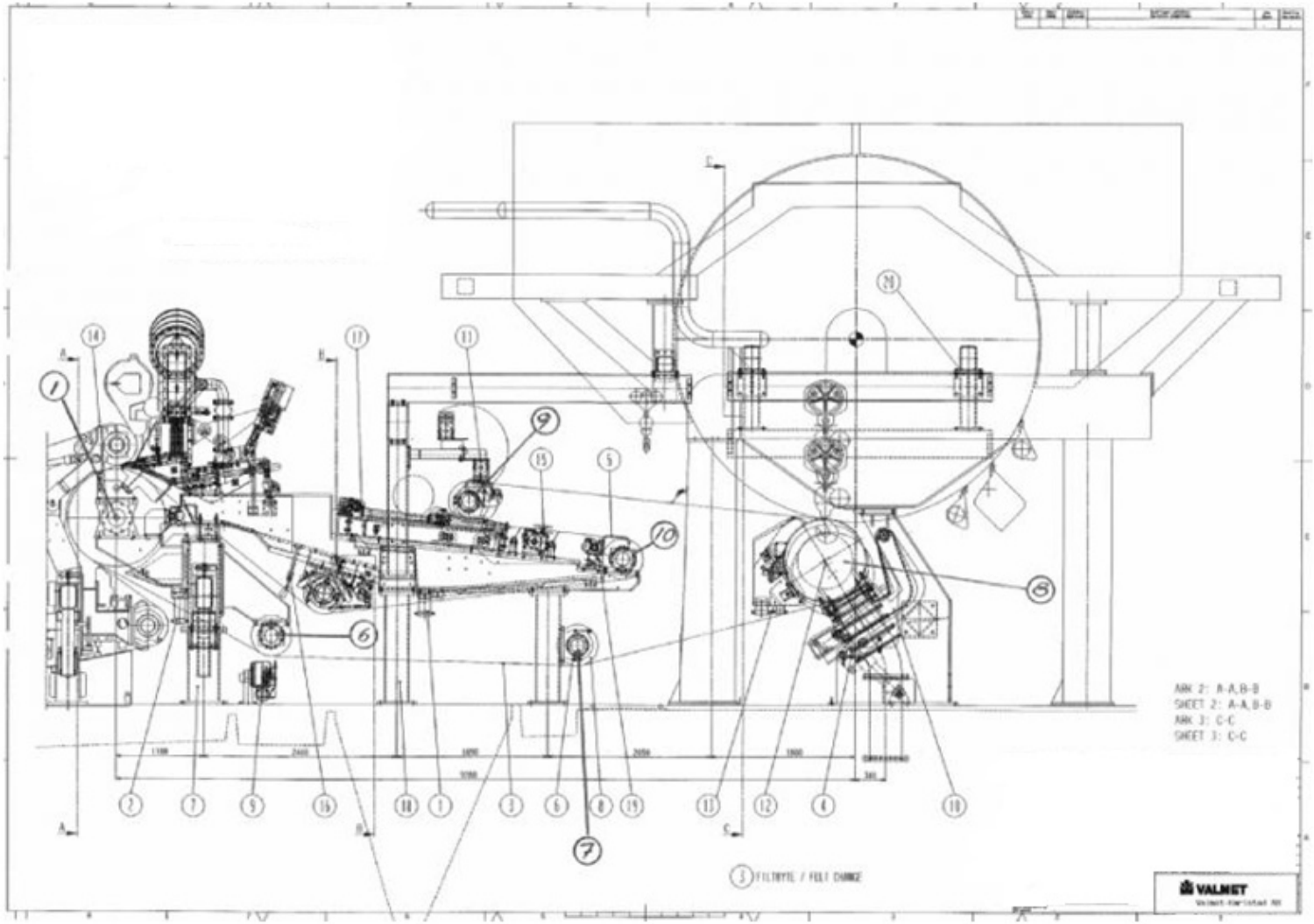
Parameter		Details
Rewinder		Jagenberg, Varisoft type TR 36-20/610 1994,trim width 2800mm, paper 1-2 layers, Max speed 1800 mpm working with axis, Working without axis 1200 mpm ,max dia rewinder 2000 mm, cut min wide 150mm, knifes no 10

Figure 4.1: Typical View of Proposed Valmet Tissue Machine

For Illustration Only

For Illustration Only

Figure 4.2 Typical Machine Cross Section (For Illustration only)



4.1 Precipitated Calcium Carbonate (PCC) - Proposed

With the trend in paper making towards using the alkaline over acid process, PCC is being used increasingly as a filler and coating material for premium quality paper. The trend is to produce PCC in the slurry at satellite plant within the mil area, using commercially quicklime. At present, precipitated Calcium Carbonate (PCC) is purchased and used as filler in paper making. In order to minimise CO_2 emission from lime kiln, part of CO_2 will be converted into precipitated Calcium Carbonate (PCC), thus aiming at reducing the CO_2 emission into atmosphere. Precipitated Calcium Carbonate (PCC) is a filler material in the paper making process. While re-burning the lime sludge ($CaCO_3$) in the rotary lime kiln, calcium dioxide (CaO) and carbon dioxide (CO_2) are generated.

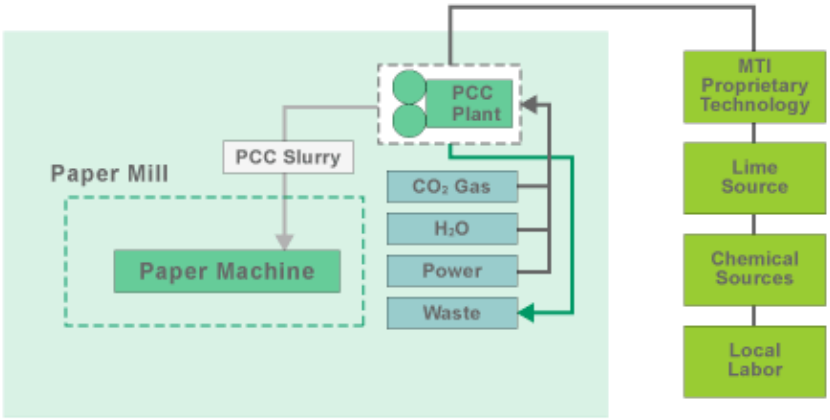
$$CaCO_3 \xrightarrow{\Delta H} CaO + CO_2 \uparrow \quad (1)$$

$$CaO + H_2O \longrightarrow Ca(OH)_2 + \Delta H \quad \sim pH\ 12.4 \quad (2)$$

$$Ca(OH)_2 + CO_2 \rightleftharpoons CaCO_3 + H_2O + \Delta H \quad \sim pH\ 9.4 \quad (3)$$

Since, the precipitated calcium carbonate requires very high brightness for paper making, it is proposed to use purchased burnt lime of high purity and convert the same to calcium hydroxide using water. This calcium hydroxide will then react with carbon dioxide from the lime kiln in a controlled "carbonator" and stored in storage tanks for use in the paper making process. The capacity of the said On-site precipitated calcium carbonate plant is 20 tpd. It has been estimated that about 3000 TPA of CO_2 will be captured from the flue gas there by reducing the greenhouse emissions from the facility.

Figure 4.1 Typical Illustration of PCC Manufacturing Scheme Using Flue gas CO_2



4.2 Raw materials and Utilities Requirement

Pulp requirement: It has been estimated that additional 32,000 TPA of bleached pulp would be required for the manufacture of additional soft Tissue in the facility after augmentation. It has been proposed to import the ready pulp required for the manufacture of the additional soft Tissue paper.

Hence augmentation of the existing pulp mill unit and other supporting facilities is not envisaged under this augmentation program. Therefore the overall pollution load from the down streams units (pulp mill, bleaching etc) will be maintained within the existing consented and permitted conditions.

Water requirement: It has been estimated that additional 1800 m^3/day of water would be required for the manufacture of additional soft tissue in the facility after augmentation. The total water drawl will increase from the current level of 29,000 m^3/day to 30,800 m^3/day as against the permitted and consented level of 39,000 m^3/day. It can be noted that the specific water consumption in the facility will reduce from the current level of 93 m^3/T to 74 m^3/T of paper produced during the post project scenario. Since the existing raw water intake, storage and treatment facilities are adequate no additional facilities will be installed under the augmentation scheme.

Power requirement: The existing mill has an installed captive power plant capacity of 55 MW. The current power consumption for the existing operations was reported be in the range of 30 to 32 MW. The power demand will increase by an order of 4 MW (from 32 MW to 36 MW) after expansion program, which will be sourced from the existing captive power plant. Since the facility is already permitted to generate 55MW power, no additional power generation units (boilers and steam turbines) will be installed under the proposed scheme.

Steam requirement for the paper machine: The proposed soft Tissue machine would require an additional steam of 7 TPH. Additional power requirement will be in the order of 4 MW and the corresponding stream demand will be 18 TPH (4 MW x 4.5 TPH of stream). It has been proposed to utilize the low pressure stream form the turbine of the proposed soft tissue machine, hence no additional stream to be generated for proposed tissue machine. Based on the current steam consumption of 205 TPH in the existing operations, the total demand during the post expansion scenario will be in the order of 223 TPH. The existing co-generation plant and recovery boiler has an installed steam generation capacity of 490 TPH. Hence the additional steam required for the proposed tissue machine will be sourced from the existing facilities. No additional boilers will be installed under the current scheme. Similar to the existing tissue machines OPM will achieve 95% steam condensate recovery in the paper machine to conserve both energy and water.

Coal consumption: The facility consumes about 0.2 Tons of coal for every ton of steam produced in the existing facility. The annual coal consumption in the existing facility was reported to be in the range of 2,73,066 TPA . Due to additional steam demand to the tune of 18 TPH in the existing facility, about 30,000 TPA of additional coal would be needed in the facility during the post project scenario. The coal will be sourced from the existing vendors. The existing coal storage area (covered sheds) has adequate capacity to store the marginal increase in coal handling in future.

5. Environmental Management Aspects

This section summarizes the summary of various environmental management aspects adopted at the existing facility and also the proposed pollution control systems.

As discussed in the previous sections, the proposed paper machine operations will be environment friendly in nature. Emissions and discharges from the facility will be maintained within the consented and permitted levels as per the environmental clearance issued in 2010.

5.1 Summary of Various Environmental Management Aspects Implemented in the Existing Facility

The facility has a full-fledged environmental cell headed by qualified senior personnel. The environmental department is working with all other departments to ensure 100% compliance with stipulated regulations and guidelines. The facility is accorded ISO 14001 certification for environmental management program. Environmental aspects and impacts matrix was developed and various continual improvement programs are being adopted in the existing facility.

Air emissions control: All the existing four boilers are provided with dedicated electrostatic precipitators and continuous emissions monitoring systems are being installed on all the stacks. Based on the plant records, it was noticed that the particulate matter emissions levels in the stack flue gas is maintained less than 100 mg/Nm^3 against the stipulated norm of 150 mg/Nm^3. Dry fly ash pneumatic conveying system was implemented to collect the fly ash in the silos. Entire fly ash is disposed to cement manufacturing units. Onsite ash ponds are not adopted. In order to control the fugitive emissions from the coal storage yards, water sprinkling systems are in place. All coal transfer points are provided with dust extraction and collection systems. Entire coal storage yard is covered under the shed. Dedicated dust collection systems are in place in both the Tissue machines. Typical view of various pollution control systems in the existing facility are shown in **Figure 5.1**.

Odour control programs: The management of OPM has undertaken a detailed technical feasibility study for collection and treatment of Non Condensable Gases (NCG) in the existing facility. The proposed system consists of vapour./gas extraction systems at the evaporator, blow tank and lime kiln section. The extracted NCGs will be burnt in the lime kiln.

Wastewater generation, **treatment and reuse**: Significant quantities of water are being reused within the paper machine for stock preparation. Dedicated dissolved air flotation systems and SAVEALL systems are already in place in main paper machine, pilot machine and both the tissue machines. Spill control and collection systems are implemented in the digester and wood chipper area to ensure 100% recycling black liquor spills in the plant. As far as possible treated wastewater is being used for floor wash, equipment wash, wood chipper cleaning etc. Coloured effluents are segregated from the non-coloured effluents in the pulp mill and bleach section for effective treatment. Two parallel effluent treatment plants are in operation at the site. The coloured effluents to the tune of 3500 m^3/day are being treated in a dedicated ETP and reused for plantation and irrigation purpose. Non coloured effluents are further treated in a separate stream and about 14500 m^3/day of unutilized final treated wastewater is discharged into the Son River. The COD and BOD levels in the treated wastewater discharged into the river were reported to be in the order of 99 mg/l and 15 mg/l respectively. Typical view of the existing ETP is shown in **Figure 5.2**.

Solid and hazardous waste management: Wood saw dust to the tune of 25 TPD is being used in the boiler as fuel. The rejected low quality lime mud purged from the lime kiln is being disposed to cement manufacturing units. Dedicated onsite fly ash bricks manufacturing facilities are provided at the plant to encourage the use of fly ash by the local people. The sludge from the primary clarifier of the ETP is being disposed as secondary fibre to the local secondary board manufacturing units for making egg trays etc.

Greenbelt and plantation: Out of the total 1469 Acres of the entire facility, 633 Acres of the land was developed under greenbelt and plantation. Typical view of the plantation in and around the existing plant is shown in **Figure 5.3**. About 3.0 lacs number of trees was fully grown in the plantation area.

Figure 5.1 Typical View of Existing Pollution Control Systems

	
ESPs on the boiler flue gas	**Dust Collection system for fly ash silos**
	
Water sprinkling arrangements at the coal yard	**Dust collection system Coal Handling Area**

Figure 5.2 Typical View of Existing ETP Facilities

<table>
<tr><td>  </td><td>  </td></tr>
<tr><td>Wastewater Inlet to ETP</td><td>Inlet Wastewater composite Sampler</td></tr>
<tr><td>  </td><td> 
</td></tr>
<tr><td>Existing primary Clarifier</td><td>Clarified effluent recycle to Chipper house and Power house</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Treated effluent storage pond (Used for plantation)</td><td>Treated effluent discharge to River Sone</td></tr>
<tr><td> 
</td><td>  </td></tr>
<tr><td colspan="2">Online Continuous Effluent Monitoring System</td></tr>
</table>

Figure 5.3: Typical View of Plantation and Greenbelt

5.2 Proposed Pollution Control Systems

As a part of the paper machine expansion plant, the following environmental protection and air pollution control systems will be implemented.

Similar to the existing operations, dust collection systems in the proposed 90 TPD soft tissue paper machine area will be installed.

The existing stacks will be adequate to meet the marginal increase in coal consumption in the co-generation power plant. The overall emissions will be well within the consented and permitted levels. Since the load on the boilers will remain within the design capacity, the overall dust load on the ESPs will remain within the design capacities.

In addition to the existing wastewater flow of 18000 m^3/day, about 1300 m^3/day of non-coloured and low BOD wastewater will be generated from the proposed tissue machine operations and will reutilized in the plant. The existing ETP will be adequate to meet the marginal increase in wastewater flow in to the system. The additional treated wastewater will be utilized for plantation and greenbelt in and around the plant premises.

6. Project Cost and Schedules

6.1. Proposed Project Cost

The estimated project cost of New Tissue Paper Plant is **Rs 72.6 crores**. Out of this, about **Rs 66 crores** is allocated for project development and the breakup is given in **Table 6.1** and about **Rs. 6.6 crores** is allocated for improving the environmental performance of the mill. The project will be financed from company's reserves, internal accruals & loan from Financial Institutions.

Table 6.1 Project Cost Estimate- New Tissue Paper Machine 90 TPD

S.No	Description of Item	Estimated Cost (Rs. Lakhs)
1	Cost of New Machine	1796
2	Additional Stock Preparation System	223
3	Additional Rewinder Combiner	532
4	Modification of Existing Rewinder Combiner	29
5	Supervision of Contractor	40
6	OPI supervision cost	25
7	Insurance at Mexico	15
8	Electrical Equipments	700
9	Pumps	50
10	Piping, Valves	100
11	Spares	125
12	Site Development, Building etc.,	1371
13	Supervision of erection & Commisioning	50
14	Engineering Services	100
15	Customs Duty	176
16	Miscellaneous fixed assets	255
17	Pre-Operative expenses	80
18	Contigency @5% of above costs	283
19	Interest During Construction	600
Total		**~ 6600**

6.2. Additional Budget for Pollution Control Systems

The details of investment for procuring the equipment for effluent control and monitoring of pollution are as below.

Table 6.2: The Break-up cost of Pollution control measures:

S.No	Description of the Control System	Existing (Rs. Lakhs)	Modernisation (Rs. Lakhs)
1.	Water Pollution Control System	980	200
2.	Air Pollution Control System	1050	310
3.	Lime Re-burning Kiln	4000	NA
4.	Proposed PCC plant based on CO_2 sequestering (Outsourced)	NA	-----

S.No	Description of the Control System	Existing (Rs. Lakhs)	Modernisation (Rs. Lakhs)
5	Proposed NCG collection and treatment facilities	NA	150
6	**Total**	**6030**	**660**

6.3. Project Schedule

The proposed New Tissue Paper Plant will be erected and commissioned in 12 month's time from the date of receipt of necessary permits and clearances from various statutory agencies.

P Sarkar
P.K. Sarkar. Sr.VP(OP)
Signature of the applicant
With Name and Full Address
(Project Proponent / Authorized Signatory)
Orient Paper Mills
Prop. Orient Paper & Industries Ltd.

ORIENT PAPER MILLS
Prop. Orient Paper & Industries Limited.
P. O. : Amlai Paper Mills - 484117, Distt. Shahdol, Madhya Pradesh, India, +91 7652 286275 Fax +91 7652 286274
Registered Office : Unit VIII, Plot No. 7, Bhoinagar, Bhubaneshwar 751012, India www.orientpaperindia.com
CIN L21011OR1936PLC000117, An ISO 9001-2008, ISO 14001-2004 Certified Company

Annexure 1

Existing Environmental Clearance and its amendment

SPEED POST

Baart sarkar

Payaa-varNa evaM vana maM~alaya
Government of India
Ministry of Environment & Forests
(IA Division)

Paryavaran Bhawan
CGO Complex, Lodhi Road
New Delhi – 110 003
E-mail: hsmalviya@gmail.com
Telephone: 011: 2436 7076

F. No. J-11011/1142/2007-IA-II(I) Dated : March 19, 2008

To

M/s Orient Paper Mills
Amlai, P.O. Amlai Paper Mills-484117,
District Shahdol,
Madhya Pradesh

***Unit-amlai@orientpaperindia.com*.**

Sub : Modernisation, balancing and Expansion of paper mill (85000 TPA to 100000 TPA) at Amlai, P.O. Amlai Paper Mills-484117, District Shahdol, Madhya Pradesh by M/s Orient Paper Mills – Environmental Clearance reg.

Sir,

This has reference to your letter no. OPA/PROJ/ dated 15th October, 2007 along with Application in Form-I, Pre feasibility Report and EIA/EMP report seeking environmental clearance for the above project under the Environment Impact Assessment Notification, 2006.

2. The Ministry of Environment and Forests has examined the proposal and noted that the proposal is for environmental clearance for Modernisation, balancing and Expansion of paper mill (85000 TPA to 100000 TPA) at Amlai, P.O. Amlai Paper Mills-484117, District Shahdol, Madhya Pradesh by M/s Orient Paper Mills**.** The expansion will be within the existing premises. No additional land will be required for the proposed expansion of the project. The total cost of the project will be Rs. 165.25 Crores. Details of the modernization balancing and expansion activities are as given below:

A. Production capacity balancing and expansion :
a. A new Tissue paper machine of (59 TPD).
b. Upgradation of existing Bamboo/Hardwood pulping system by new Oxygen Delignification (275 TPD) pulp production,
c. New Screening and Cleaning system (275 TPD),
d. Balancing and expansion of Soda Recovery plant, Evaporator plant and Causticizing plant
e. Augmentation power generation 6 MW Extraction-condensing type Turbo Generator Set

B. Modernisation and Improvement of Environmental Performance :
a. A new ESP for boiler no. 1

b. Blow heat recovery system for 300 TPD flash steam handling capacity
c. Non condensable gases incineration system
d. Rotary lime kiln (120 TPD) for lime recovery with producer gas as fuel

3. Water requirement (36000 KLD) will be met from existing supply and no additional water will be required for the expansion. Sewage and other effluent generated from the process will be treated in full fledged ETP and then utilized for the HRTS and gardening. ETP sludge generated will be reused for board making and as manure after dewatering.

4. The sources of air emissions are boilers, pulp mill and soda recovery sections. Electro-static precipitator (ESP) has been installed with the boiler. NCG collection and incineration system along with blow heat recovery system has also been included in the proposed scheme for control of the gaseous emissions from pulp mill and soda recovery sections.

5. Pulp and paper industry excluding manufacturing paper from waste paper and manufacture of paper from ready pulp without bleaching are listed at serial no. 5(i) of schedule of EIA Notification, 2006 under category "A". The proposal was considered and appraised at centre level as per Para 7(ii) of EIA Notification, 2006 requiring no public hearing/public consultation and EIA/EMP.

6. The Ministry of Environment and Forests hereby accords the environmental clearance to the above project under the provisions of EIA Notification dated 14th September, 2006 subject to compliance of the following specific and general conditions:

A SPECIFIC CONDITIONS:

The water requirement shall not exceed 36000 KLD and shall be met from existing supply. Sewage and other effluent generated from the process shall be treated and utilized for the HRTS and gardening.

The industry shall ensure that the treated effluent from the unit are within the norms stipulated under the EPA rules or SPCB whichever is more stringent. In case of treatment process disturbances/failure of pollution control equipment adopted by the unit, the respective unit shall be shut down and shall not be restarted until the control measures are rectified to achieve the desired efficiency.

Adequate number of influent and effluent quality monitoring stations shall be set up in consultation with the State Pollution Control Board and regular monitoring shall be carried out for all relevant parameters to maintain the effluent treatment efficiency. The report shall be submitted to Ministry's Regional Office at Bhopal, CPCB and SPCB.

(iv) The ground water quality monitoring shall be undertaken regularly around the HRTS/plant area to assess the contamination of ground water. The company shall install the at least four piezometric holes in the area to monitor the ground water quality and reports shall be submitted to CPCB and Ministry's Regional Office at Bhopal.

(v) The Company shall obtain permission for drawl of water from the competent authority and copy of the permission letter shall be submitted to Ministry's Regional Office at Bhopal within 3 months from date of issue of this letter.

(vi) The project authority shall install Electro-static precipitator (ESP) with the boilers to achieve the particulate emission below 100 mg/Nm^3. NCG collection and incineration system along with blow heat recovery system shall be included in the proposed scheme for control of the gaseous emissions from pulp mill and soda recovery sections.

(vii) Blow heat recovery system upgradation shall be done to reduce energy consumption and improve ambient air quality along with installation of incineration system for non-condensable gases.

(viii) The company shall install the Oxygen delignification stage (275 TPD) capacity in the pulp mill to reduce chlorine demand and to achieve AOX level below 1.5 kg/Tonne of paper.

Ambient Air Quality Monitoring Stations shall be set up in the down wind direction as well as where maximum ground level concentration of SPM, SO_2, NOx, are anticipated in consultation with the MP Pollution Control Board.

Fugitive emissions in the work zone environment, product, raw materials storage area etc. shall be regularly monitored. The emissions shall conform to the limits imposed by MPPCB. For control of fugitive emission.

The process emissions and particulate matter from various units shall conform to the standards prescribed by the concerned authorities from time to time. At no time, the emission levels shall go beyond the stipulated standards. In the event of failure of pollution control system(s) adopted by the unit, the unit shall be immediately put out of operation and shall not be restarted until the desired efficiency has been achieved.

The project authority shall dispose of hazardous waste as per the provision of Hazardous Wastes (Management and Handling) Rules, 2003.

The company shall develop 294 ha. as green belt as per the CPCB guidelines to mitigate the effect of fugitive emissions.

Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.

The company shall make the arrangement for protection of possible fire hazards during manufacturing process in material handling.

During transfer of materials spillages shall be avoided and garland drains be constructed to avoid mixing of accidental spillages with domestic waste and storm drains.

All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the pulp and paper sector shall be strictly implemented.

GENERAL CONDITIONS

The project authorities shall strictly adhere to the stipulations of the SPCB/state government or any statutory body.

Electrostatic precipitator(s) shall be provided boiler stacks to control gaseous emissions within 100 mg/Nm^3. The height of the stacks shall be as per the CPCB guidelines. Gaseous emissions shall be regularly monitored and records maintained.

No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests. In case of deviations or alterations in the project proposal from those submitted to this Ministry for clearance, a fresh reference shall be made to the Ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any.

The project authorities shall strictly comply with the rules and regulations under Manufacture,

Storage and Import of Hazardous Chemicals Rules, 1989 as amended. Authorization from the SPCB shall be obtained for collection, treatment, storage, and disposal of hazardous wastes.

For control of process emissions, stacks of appropriate height as per the Central Pollution Control Board guidelines shall be provided. The scrubbed water shall be sent to ETP for further treatment.

The company shall undertake following Waste Minimization measures :-

- **Metering of quantities of active ingredients to minimize waste.**
- **Reuse of by-products from the process as raw materials or as raw material substitutes in other processes.**
- **Maximizing recoveries**
- **Use of automated material transfer system to minimize spillage.**
- **Use of "Closed Feed" system into batch reactors.**

The project authorities must strictly comply with the rules and regulations with regard to handling and disposal of hazardous wastes in accordance with the Hazardous Wastes (Management and Handling) Rules, 2003. Authorization from the Gujarat Pollution Control Board shall be obtained for collections/treatment/ storage/disposal of hazardous wastes.

The overall noise levels in and around the plant area shall be kept well within the standards (85 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under Environment (Protection) Act, 1986 Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time).

A separate Environmental Management Cell equipped with full fledged laboratory facilities shall be set up to carry out the environmental management and monitoring functions.

Financial provision should be made in the budget of the project for implementation of the above suggested environmental safeguards. Fund so earmarked shall not be diverted for any other purposes.

The project authorities shall provide rainwater harvesting system and ground water recharge.

The implementation of the project vis-à-vis environmental action plans shall be monitored by Ministry's Regional Office /SPCB / CPCB. A six monthly compliance status report shall be submitted to monitoring agencies.

The project proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB and may also be seen at Website of the Ministry at http://envfor.nic.in. This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the Ministry`s Regional Office.

The project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of start of the project.

7. The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.

8. The Ministry reserves the right to stipulate additional conditions, if found necessary. The company in a time bound manner shall implement these conditions.

9. The above conditions will be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous Wastes (Management and Handling) Rules, 2003 and

the Public Liability Insurance Act, 1991 alongwith their amendments and rules.

(H.S. Malviya)

Joint Director

Copy to : -

1. The Secretary (Environment), Govt. of Madhya Pradesh, Mantralaya, Ballabh Bhavan, Bhopal, MP.

2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD-cum-Office Complex, East Arjun Nagar, New Delhi – 110032.

3. The Chairman, Madhya Pradesh Pollution Control Board, Paryavaran Parishar , E-5, Arera Colony, Bhopal – 462016

4. The Chief Conservator of Forests (Central), Ministry of Environment, and Forests, Western Regional Office, Kendriya Paryavaran Bhavan, Link Road No. 3, Ravi Shankar Nagar, Bhopal – 462016

5. Adviser IA, Ministry of Environment and Forests, Paryavaran Bhavan, CGO Complex, New Delhi-110003.

6. Monitoring Cell, Ministry of Environment and Forests, Paryavaran Bhavan, CGO Complex, New Delhi-110003.

7. Guard file.

8. Record file

(H.S. Malviya)

Joint Director

F. No. 11011/1142/2007-IA.II (I)
Government of India
Ministry of Environment & Forests

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CGO Complex, Lodhi Road
New Delhi – 110 003
E-mail: plahujarai@yahoo.com
Tele/fax: 011- 2436 3973
Dated: December 2nd, 2010

To

M/s Orient Paper Mills
Amlai, P.O. Amlai Paper Mills- 484117,
District Shadhol, Madhya Pradesh

Ph: 07652- 286275 / 286277
Fax: 07652- 286274

Sub: Modernization, balancing and expansion of paper mill (from 85,000 TPA to 1,00,000 TPA) at P.O Amlai, District Shadhol, Madhya Pradesh by M/s Orient Paper Mills (Amendment to Environmental Clearance)

Sir,

This has reference to your letter no PROJ/383 dated 14.06.2010 on the above mentioned subject requesting the Ministry for amendment of environmental clearance accorded on 18th March, 2008.

2. The proposal was placed before the Expert Appraisal Committee-1 (Industry) in its meeting 25th - 27th October, 2010. It is noted that the proposed modernization is for environmental performance of the mill by adopting ECF bleaching system, measures for water conservation, up gradation of ETP, replacement of the existing ClO_2 plant by the latest technology installation of chip washing system and augmentation of Captive power plant capacity from 43 MW to 55 MW by increasing the capacity of the turbo generator set by 18 MW to 30 MW without any change in the capacity of boiler and any of its auxiliaries.

3. The Committee noted that as per the information furnished before it, there will be reduction in the specific chlorine consumption, water, lime, raw material consumption and reduction in the generation of effluent quantity, AOx levels and particulate emissions.

4. In view of the above, the Committee recommended the proposal for amendment of environmental clearance accorded to the project vide letter of even no. dated 18.03.2008 by increasing the capacity by CPP from 43 MW to 55 MW.. The Ministry accepts the recommendations of the Expert Appraisal Committee subject to stipulation of following additional conditions and addition to the conditions prescribed by the Ministry vide letter of even no. dated 18.03.2008:

(i) Data on ambient air, stack and fugitive emissions shall be regularly submitted online to Ministry's Regional office at Bhopal, MPPCB and Central Pollution Control Board as well as hard copy once in six months and display data on

RSPM, SO_2 and NOx outside the premises at the appropriate place for the general public.

(ii) The National Ambient Air Quality Standards issued by the Ministry vide G.S.R. No. 826 (E) dated 16th November, 2009 shall be followed.

(iii) The industry shall ensure the compliance of the standards for discharge of the treated effluent from the unit as stipulated under the EPA rules or SPCB whichever is more stringent. The company shall make efforts to limit the water consumption up to 75 m^3/tonne of product.

(iv) In case of treatment process disturbances/failure of pollution control equipment adopted by the unit, the respective unit shall be shut down and shall not be restarted until the control measures are rectified to achieve the desired efficiency.

(v) The company shall use ECF technology.

(vi) The ash generated from the plant shall be disposed of in accordance with the provisions of the Fly Ash Notification, 2003 and its subsequent amendments.

(vii) The project authority shall dispose of hazardous waste base as per the provision of Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008.

(viii) The project proponent shall also submit six monthly reports on the status of the compliance of the stipulated environmental conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MOEF, the respective Zonal Office of CPCB and the SPCB. The Regional Office of this Ministry at Bangalore/CPCB/SPCB shall monitor the stipulated conditions.

(ix) The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company alongwith the status of compliance of environmental conditions and shall also be sent to the respective Regional Offices of the MOEF by e-mail.

5. This issues with approval of the Competent Authority.

Yours faithfully,

P. Ahujarai

Dr. (P.L. Ahujarai)
Scientist 'F'

Copy to: -

1. The Secretary (Environment), Govt. of Madhya Pradesh, Mantralaya, Ballabh Bhavan, Bhopal, MP.
2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD-cum-Office Complex, East Arjun Nagar, New Delhi ? 110032.
3. The Chairman, Madhya Pradesh Pollution Control Board, Paryavaran Parishar , E-5, Arera Colony, Bhopal ? 462016
4. The Chief Conservator of Forests (Central), Ministry of Environment, and Forests, Western Regional Office, Kendriya Paryavaran Bhavan, Link Road No. 3, Ravi Shankar Nagar, Bhopal ? 462016
5. Monitoring Cell, Ministry of Environment and Forests, Paryavaran Bhavan, CGO Complex, New Delhi-110003.
6. Guard file.
7. Record file

Dr. (P.L. Ahujarai)
Scientist 'F'

to:

Annexure 2

Consent to Operate of the Existing Facilities

Consent Order

M.P. Pollution Control Board
E-5, Arera Colony
Paryavaran Parisar, Bhopal - 16 MP
Tele : 0755-2466191, Fax-0755-2463742

RED-LARGE	CCA-Expansion	VALIDITY (A/W): 04/12/2016	CONSENT NO: ***	PCB ID: 24858

NO: /MPPCB/SDL **Dated: 08/12/2015**

To,

M/s. Orient Paper Mill, Amlai Main Plant Distic Shahdol,
O.P.M Amlai,
O.P.M Amlai,City : Amlai,
Dist : Shahdol, Tal : Sohagpur, SIDC : I/E Narsarha, Shahdol

Subject: Grant of Consent to Operate under section 25 of the Water (Prevention & Control of Pollution) Act,1974 under section 21 of the Air (Prevention & Control of Pollution) Act,1981

Ref: Your Consent to Operate Application Receipt No. 122180 Dt. 21/10/2015 and last communication received on Dt.

With reference to your above application for consent to operate has been considered under the aforesaid Acts and existing rules therein. The M. P. Pollution Control Board has agreed to grant consent up to 04/12/2016, subject to the fulfillment of the terms & conditions, enclosed with this letter

SUBJECT TO THE FOLLOWING CONDITIONS :-

a. Location: O.P.M Amlai O.P.M Amlai , Amlai, Tehsil Sohagpur, Dist. Shahdol, (M.P.)

b. The capital investment in lakhs: 120883.08

c. Product & Production Capacity:

Product	CTE Qty	CCA Qty	Applied Qty / year
D G Set	6.000 MWH	6.000 MWH	6.000 MWH
Line Kiln (Using Lime Sludge)	39600.000 M.T	39600.000 M.T	39600.000 M.T
Manufacture of pulp, Paper Board & Tissue	85000.000 M.T	85000.000 M.T	85000.000 M.T
PCC In Slurry Form	8000.000 M.T	8000.000 M.T	8000.000 M.T
Power Generation	55.000 MWH	55.000 MWH	55.000 MWH
producer Gas Plant	4645.000 SCM	4645.000 SCM	4645.000 SCM
Tissue Paper	25000.000 M.T	25000.000 M.T	25000.000 M.T

Note:- For any change in above industry shall obtain fresh consent from the board.

Note :- The total production capacity shall not exceed 85000 MT in any case, it include Manufacture of pulp, Paper Board & Tissue products.

The Validity of the consent is up to 04/12/2016 and has to be renewed before expiry of consent validity. Online application through XGN with annual license fees in this regard shall be submitted to this office 6 months before expiry of the consent/Authorization. Board reserves the right to amend/cancel / revoke the above condition in part or whole as and when required.

Enclosures:-

* Conditions under Water Act
* Conditions under Air Act

* General conditions

M.P. Pollution Control Board
E-5, Arera Colony
Paryavaran Parisar, Bhopal - 16 MP
Tele : 0755-2466191, Fax-0755-2463742

CONDITIONS PERTAINING TO WATER (PREVENTION & CONTROL OF POLLUTION) ACT 1974 :-

1. The daily quantity of trade effluent at out fall of the unit shall not exceed 18900.000 KL/day, and the daily quantity of sewage at out fall of the unit shall not exceed 1100.000 KL/day

2. Trade Effluent Treatment:-
The applicant shall provide comprehensive effluent treatment system as per the proposal submitted to the Board and maintain the same properly to achieve following standards-

pH	Between	5.5 – 9.0	TDS	Not exceed	2100 mg/l.
Suspended Solids	Not exceed	100 mg/l.	Chlorides	Not exceed	1000 mg/l.
BOD 3 Days 270C	Not exceed	30 mg/l.			
COD	Not exceed	250 mg/l.			
Oil and grease	Not exceed	10 mg/l.			

For other parameters general standards of discharge as notified under EP Act 1986 shall be applicable.

3. Sewage Treatment :- The applicant shall provide comprehensive sewage treatment system as per the proposal submitted to the Board and maintain the same properly to achieve following standards-

pH	Between	5.5 – 9.0
Suspended Solids	Not exceed	100 mg/l.
BOD 3 Days 270C	Not exceed	100 mg/l.
COD	Not exceed	250 mg/l.
Oil and grease	Not exceed	10 mg/l.

4. The effluent shall be treated up to prescribed Standards and reuse in the process, for cooling and for green belt devolvement/gardening within premises. Hence zero discharge condition shall be practiced. In no case treated effluent shall be discharged outside of industry/unit premises.

5. Water meter preferably electromagnetic/ultrasonic type with digital flow recording facilities shall be installed separately for category wise consumption of water as per Water (Prevention and Control of Pollution) Cess Act 1977 for Industrial cooling/boiler feed, mine spray, process & domestic purposes and data shall be submitted online through monthly patrak/statements. The industry/unit shall also monitor the treated wastewater flow and report the same online through monthly patrak/statements.

6. Any change in production capacity, process, raw martial used etc. and for any enhancement of the above prior permission of the Board shall be obtained. All authorized discharges shall be consistent with terms and conditions of this consent. Facility expansions, production increases or process modifications which result new or increased discharges of pollutants must be reported by submission of a fresh consent application for prior permission of the Board

7. All treatment/control facilities/systems installed or used by the applicant shall be regularly maintained in good working order and operate effectively/efficiently to achieve compliance of the terms and conditions of this consent

8. The Consent does not authorize or approve the Construction of any physical structures or facilities or the undertaking of any work in any water course or within its high flood level (HFL) area

9. Compilation of Monit
i. Samples and measurements taken to meet the monitoring requirements specified above shall be representative of the volume and nature of monitored discharge.

ii. Following promulgation of guidelines establishing test procedures for the analysis of pollutants, all sampling and analytical methods used to meet the monitoring requirements specified above shall conform to such guidelines unless otherwise specified sampling and analytical methods shall conform to the latest edition of the Indian Standard specifications and where it is not specified the guidelines as per standard methods for the examination of Water and Waste latest edition of the American Public Health Association, New York U.S.A. shall be used.
iii. The applicant shall take samples and measurement to meet the monthly requirements specified above and report online the same to the Board.

10. Recording of Monitor
i. The applicant shall make and maintain online records of all information resulting from monitoring activities by this

M.P. Pollution Control Board
E-5, Arera Colony
Paryavaran Parisar, Bhopal - 16 MP
Tele : 0755-2466191, Fax-0755-2463742

Consent.
ii. The applicant shall record for each measurement of samples taken pursuant to the requirements of this Consent as follows:

(I) The date, exact place and time of sampling
(ii) The dates on which analysis were performed
(iii)Who performed the analysis?
(iv)The analytical techniques or methods used and
(v)The result of all required analysis

iii. If the applicant monitors any Pollutant more frequently as is by this Consent he shell include the results of such monitoring in the calculation and reporting of values required in the discharge monitoring reports which may be prescribed by the Board. Such increased frequency shall be indicated on the Discharge Monitoring Report Form.
iv. The applicant shall retain for a minimum of 3 years all records of monitoring activities including all records of Calibration and maintenance of instrumentation and original strip chart regarding continuous monitoring instrumentation. The period of retention shall be extended during the course of any unresolved litigation regarding the discharge of pollutants by the applicant or when requested by Central or State Board or the court.

11. Reporting of Monitoring Results:-
Monitoring Information required by this Consent shall be summarized and reported by submitting a Discharge Monitoring report on line to the Board.

12. Limitation of discharge of oil Hazardous Substance in harmful quantities:-
The applicant shall not discharge oil or other hazardous substances in quantities defined as harmful in relevant regulations into natural water course. Nothing in this Consent shall be deemed to preclude the institution of any legal action nor relive the applicant from any responsibilities, liabilities, or penalties to which the applicant is or may be subject to clauses.

13. Limitation of visible floating solids and foam:
During the period beginning date of issuance the applicant shall not discharge floating solids or visible foam.

14. Disposal of Collected Solid
All hazardous waste/sludge shall be disposed of as per the Authorization issued under HW Rules 2008. And/other Solids Sludges, dirt, silt or other pollutant separated from or resulting from treatment shall be disposed of in such a manner as to prevent any pollutant from such materials from entering any such water Any live fish, Shall fish or other animal collected or trapped as a result of intake water screening or treatment may be returned to eaters body habitat.

15. Provision for Electric Power Failure
The applicant shall assure to the consent issuing authority that the applicant has installed or provided for an alternative electric power source sufficient to operate all facilities utilized by the applicant to maintain compliance with the terms and conditions of the Consent.

16. Prohibition of By pa
The diversion or by-pass of any discharge from facilities utilized by the applicant to maintain compliance with the terms and conditions of this Consent in prohibited except :
i. where unavoidable to prevent loss of life or severe property damage, or
ii. Where excessive storm drainage or run off would damage any facilities necessary for compliance with the terms and conditions of this Consent. The applicant shall immediately notify the consent issuing authorities in writing of each such diversion or by-pass in accordance with the procedure specified above for reporting non-compliance.

17. This consent to discharge shall expire on midnight of date of expiry. The occupier shall not discharge any effluent after the date of expiration.

Additional Water condition:- (if any) :-

Outward No:22908,16/12/2015,Consent No:AW-45054

1. Industry shall submit time bound action plan to ensure 0 discharge condition.
2. Necessary modification shall be undertaken to minimize fresh water consumption and to reduce effluent quantity.

M.P. Pollution Control Board
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Paryavaran Parisar, Bhopal - 16 MP
Tele : 0755-2466191, Fax-0755-2463742

CONDITIONS PERTAINING TO AIR (PREVENTION & CONTROL OF POLLUTION) ACT 1981 :-

1. The applicant shall provide comprehensive air pollution control system consisting of control equipments as per the proposal submitted to the Board with reference to generation of emission and same shall be operated & maintained continuously so as to achieve the level of pollutants to the following standards:-

Name of section	Capacity	Stack height	Control equipment to be installed	P.M, SOX, NOX
Boiler	soda recovery	43	Dumper,Dust Collector,E.S.P,Green Belt,Heater/Furnace-Low Sulphur Fuel,Water Sprinkler,	150,100,50
Boiler	rotary lime kiln	50	Dumper,Dust Collector,E.S.P,Green Belt,Heater/Furnace-Low Sulphur Fuel,Water Sprinkler,	150,100,50
Boiler	afbc	86	Dumper,Dust Collector,Dust Suppressor,E.S.P,Green Belt,Water Sprinkler,	150,100,50

2. The applicant shall observe the following fuel pattern:

Name of Fuel	Quantity
Coal	150 TONS/HOUR

2. Ambient air quality at the boundary of the industry/unit premises shall be monitored and reported to the Board regularly on quarterly basis: The Ambient air quality norms are prescribed in MoEF gazette notification no. GSR/826(E), dated: 16/11/09. Some of the parameters are as follows:

a. Particulate Matter (less than 10 micron) - 100 microgram/cubic meter (PM10 mg/m3 24 hrs. basis)
b. Particulate Matter (less than 2.5 micron) - 60 -"- (PM25 mg/m3 24 hrs. basis)
c. Sulphur Dioxide [SO2] (24 hrs. Basis) - 80 -"-
d. Nitrogen Oxides [NOx] (24 hrs. Basis) - 80 -"-
e. Carbon Monoxide [CO] (8 hrs. Basis) - 2000 -"-

3. The industry shall take adequate measures for control of noise level generated from industrial activities within the premises less than 75 dB(A) during day time and 70 dB(A0 during night time.

4. Industry/Unit shall provide with each stack port hole with safe platform of 1 meter width with support & spiral ladder/ Stepped ladder with hand rail up to monitoring platform as per specifications given in part-III emission regulation of CPCB. In no case monkey ladder shall be allowed as stack monitoring facility.

5. The industry/unit shall ensure the fugitive emission of particulate matter below 600 microgram/CuM at a distance of 10 meter from any source of emission/section/activities.

6. All other fugitive emission sources such as leakages, seepages, spillages etc shall be ensured to be plugged or sealed or made airtight to avoid the public nuisance.

7. The industry/ unit shall ensure all necessary arrangements for control of odour nuisance from the industrial activities or process within premises

8. All the internal roads shall be made pucca to control the fugitive emissions of particulate matter generated due to transportation and internal movements. Good housekeeping practices shall be adopted to avoid leakages, seepages, spillages etc.

9. Industry shall take effective steps for extensive tree plantation atleast in 03 rows of the local tree species with minimum spacing of 4X4 meter within or around the industry/unit premises for general improvement of environmental conditions and as stated in additional condition

Additional Air condition:- (if any)
:-

M.P. Pollution Control Board
E-5, Arera Colony
Paryavaran Parisar, Bhopal - 16 MP
Tele : 0755-2466191, Fax-0755-2463742

GENERAL CONDITIONS:

1. The non hazardous solid waste arresting in the industry/unit/unit premises sweeping, etc. be disposed off scientifically so as not to cause any nuisance/pollution. The applicant shall take necessary permission from civic authorities for disposal to dumping site. If required.

Non Hazardous Solid wastes:-

Type of waste	Quantity	Disposal
Scrap/ Plastic packing material wood, card board, gunny begs etc		Sale to authorized party/As Per CPCB. MoEF Guide lines.

2. The applicant shall allow the staff of Madhya Pradesh Pollution Control Board and/or their authorized representative, upon the representation of credentials:
   a. To inspect raw material stock, manufacturing processes, reactors, premises etc to perform the functions of the Board.
   b. To enter upon the applicant's premises where an effluent source is located or in which any records are required to be kept under the terms and conditions of this Consent.
   c. To have access at reasonable times to any records required to be kept under the terms and conditions of this Consent.
   d. To inspect at reasonable times any monitoring equipment or monitoring method required in this Consent: or,
   e. To sample at reasonable times any discharge or pollutants.

3. This consent/authorisation is transferable, in case of change of ownership/management and addresses of new Owner/partner/Directors/proprietor should immediately apply for the sam

4. The issuance of this Consent does not convey any property rights in either real or personal property or any exclusive privileges, nor does it authorise any invasion of personal rights, nor any infringement of Central, State or local laws or regulations.

5. Industry shall install separate electric metering arrangement for running of pollution control devices and this arrangement shall be made in such fashion that any non functioning of pollution control devices shall immediately stop electric supply to the production and shall remain tripped till such time unless the pollution control device/devices are made functional. The record of electricity consumption for running of pollution control equipment shall be maintained and submitted to the Board every month

6. This consent is granted in respect of Water pollution control Act 1974 or Air Pollution Control act, 1981 or Authorization under the provisions of HW (M, H & T) Rules 2008 only and does not relate to any other Department/Agencies. License required from other Department/Agencies have to be obtained by the unit separately and have to comply separately as per there Act / Rules.

7. Balance consent/authorisation fee, if any shall be recoverable by the Board even at a later date.

8. The applicant shall submit such information, forms and fees as required by the board not letter than 180 day prior to the date of expiration of this consent/authorisation

9. The industry/unit shall establish a separate environmental cell, headed by senior officer of the unit for reporting the environmental compliances. The industry/ Unit shall submit environmental statement for the previous year ending 31st March on or before 30th September every year to the Board.

10. Industry shall obtain membership of Emergency Response Center of the Board if needed.

11. Knowingly making any false statement for obtaining consent or compliance of consent conditions shall result in the imposition of criminal penalties as provided under the section 42(g) of the Water Act or section 38 (g) of the Air Act.

12. After notice and opportunity for the hearing, this consent may be modified, suspended or revoked by the Board in whole or in part during its term for cause including, but not limited to, the following :
   (a) Violation of any terms and conditions of this Consent.
   (b) Obtaining this Consent by misrepresentation of failure to disclose fully all relevant facts.
   (c) A change in any condition that requires temporary or permanent reduction or elimination of the authorized discharge.

13. On violation of any of the above-mentioned conditions the consent granted will automatically be taken as canceled and necessary action will be initiated against the industry.

M.P. Pollution Control Board
E-5, Arera Colony
Paryavaran Parisar, Bhopal - 16 MP
Tele : 0755-2466191, Fax-0755-2463742

Additional condition:- (if any) :-

Consent/authorization as required under the Water (Prevention & Control of Pollution) Act,1974 , The Air (Prevention & Control of Pollution) Act,1981is granted to your industry subject to fulfillment of all the conditions mentioned above. For renewal purpose you shall have to make an application to this Board through XGN at least Six months before the date of expiry of this consent/authorisation. The applicant without valid consent (for operation) of the Board shall not bring in to use any outlet for the discharge of effluent and gaseous emission.

For and on behalf of
M.P. Pollution Control Board

Achyut mishra

(Member Secretary)

Outward No:22908,16/12/2015,Consent No:AW-45054

Annexure 3

Latest Compliance Report submitted to RO, MOEF

OPA/GEN/ 320 Date- 6.01.2012

Ministry of Environment & Forests
Regional Office, Western Region
Kendriya Paryavaran Bhavan
Link Road No.3, Ravi Shankar Nagar
Bhopal – 462016 (M.P.)

Sub: **Modernization, balancing and Expansion of paper mills (85000 TPA to 100000TPA) at Amlai, P.O. Amlai paper Mils – 484117, District Shahdol, Madhya Pradesh by M/S Orient Paper Mills – Environmental Clearance**

Ref: MOEF Environmental Clearance dated – 02.12.2010

With reference to subject mentioned above, we are herewith forwarding half yearly Compliance Report from June to Dec, 15th 2011 as **Annexure – 1**.
We hope that you would find the above in order.

Thanking you

Yours Faithfully
For Orient Paper Mills Amlai

P. Sarkar

P. K . Sarkar
Sr. Vice President (O.)

Encl: As above

CC: The Incharge , Zonal Office
Central Pollution Control Board
3rd Floor, Sahkar Bhawan,
North T.K. Nagar,
Bhopal – 462003
CC: Member Secretary
M.P. Pollution Control Board
Paryavaran Parisar, E- 5 Arera Colony
Bhopal – 462016
CC: Environment Management
CC: Project Department

ORIENT PAPER MILLS, AMLAI

Date- 6.01.2012

Annexure –I

MOEF's ENVIRONMENTAL CLEARENCE
Ref. J- 11011/1142/2007-IA-(II(I) Dated 02.12.2010
- SIX MONTHLY COMPLIANCE REPORT as on 15.12.2011

EC Item		Compliance Status
4 –(I)	Submission of Data on Ambient Air ,Stack & Fugitive emissions to Ministry's Regional office at Bhopal, MPPCB & CPCB	Being Complied with Ambient Air and Stack monitoring report for last six months from June 2011 to November 2011 is enclosed as **Annex - I**
(II)	The National ambient air quality standards issued by Ministry vide GSR no. 826 (E)dt.16th November, 2009 shall be followed	Being Complied with
(III)	Industry shall insure compliance of standard for discharge of treated effluent and efforts to limit water consumption up to 75m3/T	Being Complied with Test results for last six months from June 2011 to Nov 2011 is enclosed as **Annex – II.** Efforts to limit water consumption is being made.
(IV)	In case of treatment process disturbances/ failure of pollution control equipment the unit shall be shut down.	Being Complied with Effluent Treatment Plant & air pollution equipments are working satisfactorily.
(V)	Use of ECF Technology	Steps are being taken
(VI)	Disposal of generated ash from the plant in accordance with the provision of Fly Ash Notification, 2003	Being Complied with
(VII)	Disposal of Hazardous Waste as per the provision of Hazardous Waste (Management, Handling and Transboundary movements) Rules, 2008	Being Complied with
(VIII)	Submission of six monthly reports on the status of compliance of the stipulated environmental conditions.	A major part of the project which commenced on 05.08.08 has been completed. The financial closure status is as follows. Following Projects have been completed 1. Installation of Lime Sludge Re-burning system 2. Installation of Electrostatic Precipitator(ESP) for Power Boiler 1 3. Installation of Oxygen De lignification

		system at Pulp Mill 4. Up-gradation of Pulp Mill 5. Up-gradation of Recovery Boiler 6. Up-gradation of Evaporator 7. Installation of New Tissue Machine Jobs under execution/to be implemented are the following:- 1. Up gradation of Caustisizing system 2. Installation of NCG system 3. Installation of 55 MW Captive Power Plant. 4. ECF Bleaching 5. Measure for Water conservation 6. Up gradation of Effluent treatment plant 7. New Chlorine di oxide plant 8. Chips Washing system Financial closure of jobs under execution /to be implemented is being done through internal resources and by external borrowing if necessary.
(IX)	The Submission of environmental Audit statement for each financial year ending 31st March in Form – V.	Being Complied with

For Orient Paper Mills
Amlai
6.1.2012

Environmental Lab, Research Division
Orient Paper Mills, Amlai

S.NO.	PARAMETERS	GRADE-II EFFLUENT						GRADE-III EFFLUENT						Treated Effluent Discharge to River			RIVER WATER At 100 m.d.s.after confluence of treated effluent discharge		
		Inlet to clariflocculator (Raw)			Outfall of Aeration cum Oxidation (Treated)			Inlet to clariflocculator (Raw)			Outfall of Polishing Pond (Treated)								
		Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max
SUMMARY FOR SIX MONTHS (JUN TO NOV 2011)																			
		Analysis report of waste water treatment for the month 'Jun - Nov' 2011																	
1	pH	7.5	6.6	8.4	7.4	6.8	8.1	7.6	6.6	8.3	7.7	7.1	8.1	7.5	7.1	8.0	7.8	7.1	8.2
2	BOD_3, mg/l	122	24	196	13	8	18	214	80	260	26	22	28	20	10	26	6	4	10
3	COD, mg/l	495	40	770	81	35	130	887	70	1080	212	180	228	149	51	200	37	11	74
4	Suspended Solids,mg/l	590	29	800	20	8	36	278	32	640	80	34	95	47	10	80	315	6	2148 *
5	Chloride, mg/l	419	80	750	410	130	600	511	230	790	513	260	700	447	330	550	113	8	310
6	Oil & Grease,mg/l				4.2	3.0	5.0				5.4	4.0	6.6	4.5	3.0	5.3			
7	Temperature, ° C	30.0	22.0	38.0	31.3	20.0	45.0	35.0	23.0	43.0	29.5	24.0	35.0						

* Suspended solid high in upstream due to rain.

Sr. Research Officer

Asst. Gen. Manager,
Research

ORIENT PAPER MILLS, AMLAI

SUMMARY DATA FROM MAY TO NOVEMBER 2011

Stack Monitoring

S.No.	Characteristics	Unit	Limit	Power Boilers Stack									SRP		
				1			2			CFBC					
				Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max
1-	Particulate matter.	mg/Nm^3	150	110	98	128	113	95	132	124	110	135	121	105	138
2-	Sulphur dioxide.	"	-	-	-	-	-	-	-	-	-	-	-	-	-
3-	Carbon Monoxide.	"	-	-	-	-	-	-	-	-	-	-	-	-	-
4-	Nitrogen oxide's.	"	-	-	-	-	-	-	-	-	-	-	-	-	-
5-	Hydrogen Sulphide.	"	10	-	-	-	-	-	-	-	-	-	4	4	5
6-	Carbon disulphide.	"	-	-	-	-	-	-	-	-	-	-	-	-	-
7-	Chlorine.	"	-	-	-	-	-	-	-	-	-	-	-	-	-
8-	Fluorine.	"	-	-	-	-	-	-	-	-	-	-	-	-	-
9-	Acid mist.	"	-	-	-	-	-	-	-	-	-	-	-	-	-
10-	Others.	"	-	-	-	-	-	-	-	-	-	-	-	-	-

Ambient Air Monitoring

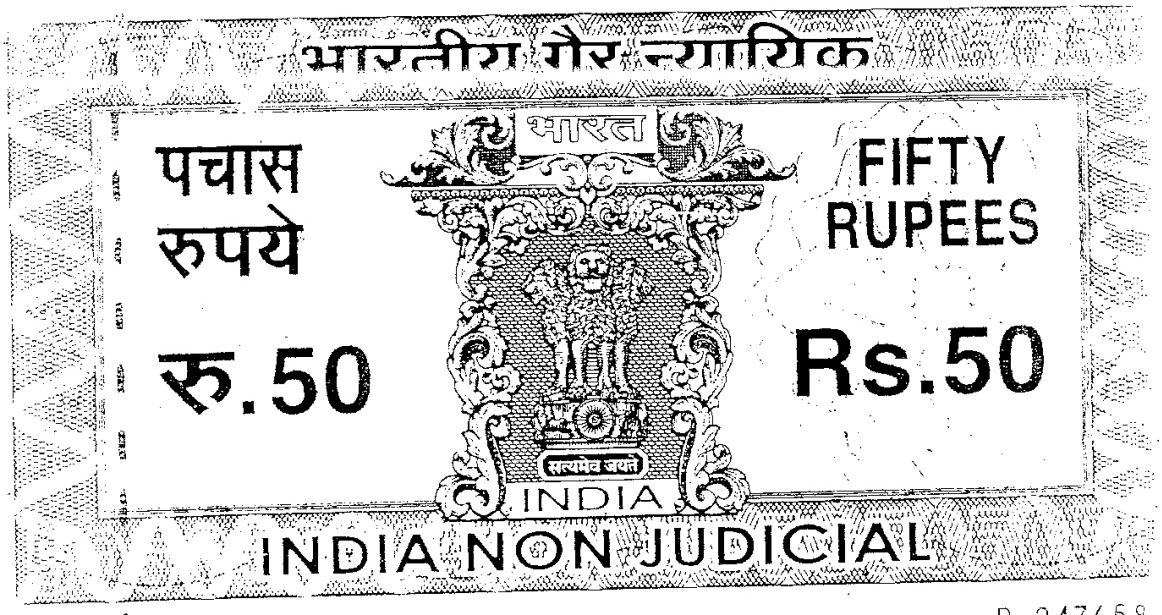
S.No.	Characteristics	Unit	Limit	Research Building, Distance 600m			Bamboo Gate, Distance 700m			Guest House, Distance 700m			WTPlant, Distance 1000m		
				Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max
1-	SPM	$\mu g/m^3$	500	125	112	140	183	162	208	119	105	130	116	100	130
2-	RPM	"	150	95	80	102	121	110	128	92	85	101	84	71	100
3-	SO_2	"	120	40	33	50	48	40	57	38	34	44	37	30	50
4-	NOx	"	120	53	46	60	66	59	72	53	47	60	50	44	60
5-	CO	mg/m^3	5	-	-	-	-	-	-	-	-	-	-	-	-
6-	Others.	$\mu g/m^3$	-	-	-	-	-	-	-	-	-	-	-	-	-

Research Officer

Asst. Gen. Manager,
Research

Annexure 4

Coal Supply Agreement



छत्तीसगढ़ CHHATTISGARH B 243658

Whereas the Purchaser has requested the Seller for supply of Coal to **Orient Paper Mills (Prop. Orient Paper & Industries Limited) (Paper Plant), P.O. Amlai Paper Mills –484117, Distt. Shahdol (M.P.)** of the Purchaser (as per details contained in Schedule-I to this Agreement) and the Seller has agreed to make such supplies on the terms and conditions set out hereafter.

Now, therefore, in consideration of the agreement and covenants hereafter set forth and intending to be legally enforceable, the Seller and the Purchaser (each individually a Party hereto and collectively the Parties) hereby covenant and agree as follows:

1. DEFINITIONS:

a) **"Agreement"** means this Coal supply agreement including all its Schedules, Annexure and attachments and subsequent amendments as may be issued in accordance with the terms and conditions hereof.

b) **"Annual Contracted Quantity"** or **"ACQ"** shall have the meaning as ascribed to it in Clause 4.1

c) **"Applicable Laws"** means all laws, brought into force and effect by the Government of India ("GoI") or the State Government including rules, regulations and notifications made thereunder, and judgements, decrees, injunctions, writs and orders of any court of record, applicable to either Seller/CIL or the Purchaser, their obligations or this Agreement from time to time.

Schedule-I

Annual Contracted Quantity
(Refer Clause 4.1)
Annual Contracted Quantity

Sl. No.	Name of the Plant owned by Purchaser	Annual Contracted Quantity (Metric Tonne) / Mode							
		Rail			Road		Rail/Road		Total
		Qty	Source Coal-field of Seller*	Rake fit Station	Qty	Source Coal-field of Seller*	Qty	Source Coal-field of Seller*	
1	2	3	4	5	6	7	8	9	10
1	Orient Paper Mills (Prop. Orient Paper & Industries Limited) (Paper Plant), P.O. Amlai Paper Mills – 484117, Distt. Shahdol (M.P.)	---	---	---	161290	SECL	----	----	161290

This schedule is subject to following provisions:

1. In case of imported coal, the name of the country/source shall be indicated by the Seller from time to time, when required.
2. In case of any revision in normative quantities by MOC/CIL, the ACQ will stand revised accordingly from the date such revised norms are made applicable by MOC/CIL and actual deliveries shall be adjusted accordingly.
3. Seller shall have the right to alter the mode wise distribution of ACQ as above, if and when required, due to Seller's operational/logistical reasons.
4. Purchaser will have the option to revise mode wise distribution of ACQ as above, not more than once a quarter, subject to informing the same at least 1 month in advance of commencement of a quarter. This would however be at the discretion of Seller.
5. Seller will not be under any obligation, whatsoever, including non materialization, if the Purchaser seeks supplies through washeries as per their own arrangement and delivery orders are issued as per the request of Purchaser.
6. Notwithstanding anything mentioned elsewhere in this Agreement, it is expressly agreed that the ACQ/validity period of this Agreement will stand revised at any point of time, according to the directives of MOC/CIL/Coal Controller, arising out of allotment of/production from the coal block(s) against any of the plants mentioned in this schedule. It shall be the sole responsibility of the Purchaser to inform the Seller, if and when allotment of coal block/production takes place, in order to modify the ACQ/validity period of this Agreement accordingly.

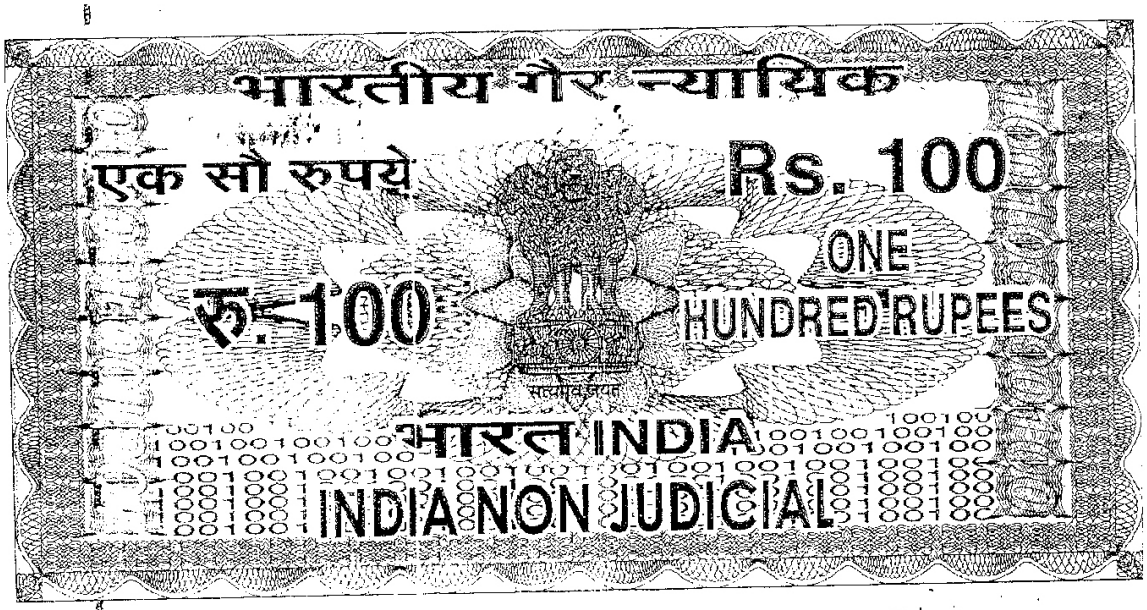
* Name of the Country/Source shall be mentioned in case of Imported Coal.

Schedule-II

QUALITY OF COAL

(Refer Clauses 5.1 & 5.2)

Name of the Plant	Size	Grade(s) of Coal
Orient Paper Mills (Prop. Orient Paper & Industries Limited) (Paper Plant), Distt. Shahdol (M.P.)	Steam/Slack/ROM/ Sized ROM	D (E/F grades may also be supplied under eventuality)



छत्तीसगढ़ CHHATTISGARH G 664691

COAL SUPPLY AGREEMENT

BETWEEN

SOUTH EASTERN COALFIELDS LIMITED

AND

HJI-DIVISION OF ORIENT PAPER MILLS (Prop: ORIENT PAPER & INDUSTRIES LIMITED)

This Agreement is made on this 24th day of **Sep'2015** between **South Eastern Coalfields Limited**, a company registered under the Companies Act, 1956 and having its registered office at **Seepat Road, Bilaspur (Chhattisgarh)-495006**, hereinafter called the "Seller" (which expression shall unless excluded by or repugnant to the subject or context, include its legal representatives, successors and permitted assigns) of the one part,

AND

M/s **HJI-Division of Orient Paper Mills (Prop: Orient Paper & Industries Limited)** ***(Formerly known as HJI Prop. GMMCO Ltd.)*** a company registered under the Companies Act, 1956 and having its registered office at **Unit-VIII, Plot No.7, Bhoinagar, Bhubaneshwar-751012, Orissa** hereinafter called the "Purchaser" (which term shall unless excluded or repugnant to the subject or context include its legal representatives, heirs, successors and permitted assigns) of the other part

Schedule-I

Annual Contracted Quantity
(Refer Clause 4.1)
Annual Contracted Quantity

S. No.	Name of the Plant owned by Purchaser	Annual Contracted Quantity (Metric Tonne)/Mode					
		Rail			Road		Total
		Qty	Source Coal-field of Seller*	Rake fit Station	Qty	Source Coal-field of Seller*	
1	2	3	4	5	6	7	8
1	HJI-Division of Orient Paper Mills (Prop: Orient Paper & Industries Limited), CPP 30 MW (Revised from 15 MW), Amlai, Distt-Anuppur, Madhya Pradesh-484117	-	-	-	88,000	Any Source/ coalfield of SECL	88,000 (**)

* Details of Imported Coal shall be furnished by the Seller to the Purchaser from time to time as and when such Coal is offered.

** ACQ of 88,000 MT is the LOA Quantity of 15 MW.

This schedule is subject to following provision:

In case Purchaser seeks supplies through washeries as per their own arrangement, mode of such supplies shall be taken as "Road" under this Agreement. However Seller shall not be under any obligation, whatsoever, including non materialization, in such cases.

FSA Model Type & Date: New Consumers (Non Power)-Medium Demand, 03rd July'2008. Modified as per letter no. CIL/CMO/47252(NewPol)/175 dated 20/03/2012, CIL/CMO/47252(NewPol)/181 dated 21/03/2012, CIL/CMO/S&M/ 47252/(New Pol)/266 dated 02.04.2013, CIL/S&M:CMO:47252 (New Pol)/404 dated 06.06.2013, CIL/S&M:CMO:47252 (New Pol):627 dated 07.08.2013. CIL:S&M:CMO:47252 (New Pol):375 dated 17.04.2014, CIL/S&M:CMO:47252 (New Pol):391 dated 25.04.2014. SECL/BSP/S&M/FSA/150/NCDP/1779 dated 06.08.2014, CIL/S&M/47252 (New Pol)/289 dated 22.04.2015.

Schedule-II

QUALITY OF COAL

(Refer Clauses 5.1 & 5.2)

Name of the Plant	Size	Grade(s) of Coal (*)
HJI-Division of Orient Paper Mills (Prop: Orient Paper & Industries Limited), CPP 30 MW (Revised from 15 MW), Amlai, Distt-Anuppur, Madhya Pradesh-484117	Steam/Slack/ROM/Sized ROM	G10, G11 & G12

(*) Equivalence of erstwhile 'F' Grade is indicated based on present grade declaration structure of SECL

FSA Model Type & Date: New Consumers (Non Power)-Medium Demand; 03rd July'2008. Modified as per letter no. CIL/CMO/47252(NewPol)/175 dated 20/03/2012, CIL/CMO/47252(NewPol)/181 dated 21/03/2012, CIL/CMO/S&M/ 47252 (New Pol)/266 dated 02.04.2013, CIL:S&M:CMO:47252 (New Pol):404 dated 06.06.2013, CIL:S&M:CMO:47252 (New Pol):627 dated 07.08.2013, CIL/S&M:CMO:47252 (New Pol):376 dated 17.04.2014, CIL:S&M:CMO:47252 (New Pol):391 dated 25.04.2014, SECL/BSP/S&M/FSA/150/NCDP/1779 dated 06.08.2014, CIL/S&M/47252 (New Pol)/289 dated 22.04.2015.

Annexure 5

Water drawl permission Agreement

भारतीय गैर न्यायिक

एक सौ रुपये

Rs. 100

ONE HUNDRED RUPEES

रु. 100

सत्यमेव जयते

भारत INDIA

INDIA NON JUDICIAL

मध्य प्रदेश MADHYA PRADESH

R 868381

AGREEMENT FOR SUPPLY OF WATER TO ORIENT PAPER MILLS, AMLAI (M.P.)

Form – 7A

(See Rule 71-A)

This agreement made on this day. nineth day of September two-thousand ten between the Governor of Madhya Pradesh, acting through Executive Engineer, Water Resource Department, Anuppur (herein after referred to as (M.P.W.R.D.) which expression shall where the context so admits, include his successors assigned in office of the first part and M/s. Orient Paper Mills, Amlai, District Shahdol, Madhya Pradesh, a company registered under the Indian Companies Act 1955 (No.1 of 1956) and having its registered office at Plot No.7, Unit VIII, Bhoinagar, Bhubaneswar, Orissa, India, herein after referred to as "the Company"] which expression shall unless excluded by of be repugnant to context meaning there of be deemed to include its successors assigned of the other part.

Orient Paper Mills
Proprietors: Orient Paper & Industries Ltd
P.O.Amlai Paper Mills, Pin - 484117
Dist. Shahdol (Madya Pradesh), India

Executive Engineer
Water Resource Division
Anuppur (M.P.)

Whereas the company has applied to the Government for permission to draw 12.46 M.cum (440 m.cu.ft.) per annum from the river Sone (herein after referred to as "the said natural or Government water source") for the use by the Company M/s Orient Paper Mills, Plant located at Amlai, Dist. Shahdol, MP (herein after referred to as "the said plant" and laying underground and surface pipes and drains for discharge of the factory effluent.) w.e.f. 27th May 2009.

And whereas the Government has agreed to grant the aforesaid permission to the company to use water from the said natural or Government source at their own cost on the terms and conditions hereafter appearing.

And whereas prior to the execution of these presents the Company has deposited with the Government, the sum of Rs.31,15,000/- (Rupees thirty one lacs fifteen thousand only) being the water rates and local fund cess for the quantity to be drawn by the company in three months.

And whereas it has been agreed that the said sum of Rs.31,15,000/- (Rupees thirty one lacs fifteen thousand only) will not bear any interest.

Now this agreement witnessth as under:-

(1) In consideration of the company duly making payment in the past to the Government as hereinafter specified and duly observing and performing the covenants and conditions, both herein contained Government hereby give permission to the company to draw 12.46 M.cum. (440 m.cu.ft.)

Orient Paper Mills
Proprietors: Orient Paper & Industries Ltd
P.O.Amlai Paper Mills, Pin - 484117
Dist. Shahdol (Madya Pradesh) India

Executive Engineer
Water Resource Division
Anuppur (M.P.)

annually from the said natural or government water source to the company's said plant for term of 30 (thirty) years commencing from the nineth day of September two thousand ten on the terms and conditions herein contained. The permission hereby granted shall be subject to the provisions of Madhya Pradesh Irrigation Act, 1931 (3 of 1931) and any executive orders issued in this behalf by the Government from time to time and for the time being in force.

(2) The Company shall pay to the government water rates for water drawn by it from said natural or Government water source at the rates fixed by Water Resources Department No. 18/-1/91/Madhyam/ 31/436 dated 21st April 2010 which is Rs 1.00 per CuM wef 01.01.2010, and Rs. 1.15 Per CuM wef 01.01.2011, Rs 1.35 Per CuM wef 01.01.2012 and Rs. 1.50 Per CuM wef 01.01.2013.

Note: The rates which are going to apply to the company must be shown and not other rates. For the quantities of water drawn in excess of the agreed quantities and for any other un-authorities drawl of water then, 50% (Fifty percent) additional rates shall be charged in addition to the normal rates as specified above.

In addition to the payment of water rates as specified above, the company shall also pay the Water Resources Department local fund cess or any other tax at the rates as fixed by the Government from time to time. Government hereby reserves the right to revise the rates from time to time the said water rates and the local cess or other taxes to be paid by the company and the company shall pay such revised water rates and local cess or other taxes as may be fixed by the Government from time to time. Excepting the circumstances or short water supply specified in Clause (15) the company shall in any event, pay water charges for at least 90% of the total quantum of water allowed to be draw by it though the actual quantity of water drawn by the company is less than 90% of the quantum of water allowed to be drawn by under clause (1).

Orient Paper Mills
Proprietors: Orient Paper & Industries Ltd
P.O. Amlai Paper Mills, Pin - 484117
Dist. Shahdol (Madya Pradesh), India

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Water Resource Division
Anuppur (M.P.)

(3) The company shall make its own arrangements at its own cost to use water either by construction of any civil engineering work which may include construction of pick up weir, barrage, dam, dugwell, tubewell etc. The design of such civil engineering facility will be prepared any submitted by the company for approval of the Water Resources Department. the concerning Chief Engineer will give his decision within thirty days to the State Water utilization Committee. The decision of State Water Utilization Committee shall be final.

(4) In the event of any emergency interruption in the water supply to the said natural Government water source resulting from a non Government Act (such as sudden reduction in inflow) the Executive Engineer shall give immediate written notice to the company. Upon receipt of such notice the company shall have no right to be compensated for any cessation in water supply nor will the company have any liability for payments for water charges, local fund cess or taxes, except those amounts than due but unpaid, until such time as the flow of water through the said natural water sources shall be forced to the level required to be provided by the Government hereunder.

(5) Subject to the terms and conditions of this agreement nothing herein contained shall be deemed to imply any guarantee on the part of the Government the un-interruptability in the supply of water during an event of Force Majeure. The Government shall also not responsible for such non supply or inadequate supply of water as result of any event of Force Majeure or for damages or losses due to any event of Force Majeure. During an event of Force Majeure the company shall not be liable for payment of any water charges local fund cess or other taxes, except those pertaining to water already received by the company for which payment is due and unpaid, which amount shall remain due and payable in accordance with terms of this agreement. Force Majeure shall include droughts and

Orient Paper Mills
Proprietors:Orient Paper & Industries Ltd
P.O.Amlai Paper Mills, Pin - 484117
Dist. Shahdol (Madya Pradesh). India

Executive Engineer
Water Resource Division
Anuppur (M.P.)

other similar natural disasters, which are beyond the control of State Government

(6) The Company / corporation shall pay adequate compensation to any person/persons affected due to submergence of land, property, public facilities etc. by the construction of the civil engineering works for creating the sources of water supply.

(7) The water from natural / Government water source shall be used by the company for the purposes of the company's said plant including water supply to the colony and shall not be misused by the company by sale of water to any other consumer in the event of any such sale of water by the company with out prejudice to the Government's rights to revoke this license and the Government shall be entitled to recover from the company, the proceeds of such sale of water realized by the company.

(8) The permission hereby granted shall not in any manner prejudicially affect the existing water rights vested in the upstream riparian owners nor shall it in any way prejudice Government's right to hereafter launch or implement any new scheme or schemes of its own act, on or in connection with the present source of the said natural / Government water source. However, Government of Madhya Pradesh hereby assures that any other water rights granted by them for the purpose of irrigation or any other industrial purposes shall be granted in a manner so as not to affect the availability of required water for the project through out the term of this agreement.

(9) The company shall not construct the civil engineering work, viz., pick-up weir, barrage, reservoir, dam, dugwell, tubewell and lifting arrangements etc. in the said water source unless the proposals, plant drawings, specifications, estimates and all other details thereof are previously submitted to and approved in writing by an officer authorized in that behalf by the Government and while granting its approval to the construction of the

Orient Paper Mills
Proprietors: Orient Paper & Industries Ltd
P.O. Amlai Paper Mills, Pin - 484117
Dist. Shahdol (Madya Pradesh), India

Water Re... Div...
Am... (M.P.)

Civil Engineering work pick-up weir, barrage lifting arrangements etc. Government may impose such conditions as it may in its absolute discretion think fit.

(10) The arrangements for measurements of water drawn by the company from the said water source shall be made by the company in such a manner as may be directed by the Government or Executive Engineer, Water Resources Division, Anuppur, M.P. (hereinafter referred to as the Executive Engineer). The automatic measuring device shall be installed and maintained by the company at its own cost after obtaining prior approval therein writing from the Government or the Executive Engineer. In the event of measuring device so installed by the company as aforesaid, ceases to function or goes out of order, the charges which the company would be liable to pay to Government in respect of consumption of water for the days measuring device does not work, shall be calculated alternatively on the basis of maximum hourly pumping capacity multiplied by the number of hours of operation of those pumps for which it will be obligatory for the company to maintain records.

(11) The company shall treat the affluent (Discharge of water after use) for all the impurities ferrous and other chemicals and shall appropriately purify the water as per Central Government Public Health Environmental Engineering Organization, water supply manual, which specifies the standard of potable water.

(12) Within thirty days from the date monthly demands are received by the company from executive Engineer, the company shall pay to the Executive Engineer the amount of water rates and local fund cess for the water drawn by the company during the preceding month. Interest at the rate of 24% (twenty four percent) per year and service charge at the rate of 1% (one percent) per year shall be recovered if the payment is not done within three months from the date of the bill for water supplied. Non payment of the bills

Water Resource Division
Anuppur (M.P.)

up to six months from the due date of payment shall be treated as the breach of agreement.

(13) The company shall always keep deposited with the Executive Engineer the said sum of Rs.31,15,000/- (Three times of assessed monthly bill) as security for due and proper payment of the water rates and local fund cess and irrigation dues and due observance and performance of the terms and conditions herein. In the event of failure by the company to duly pay the aforesaid dues, the outstanding dues from the company shall be adjusted against the said deposit on default of the company to punctually pay the water rates and local fund cess as aforesaid the Government shall without prejudice to its any other rights and remedies, be entitled to terminate this agreement forthwith.

(14) Without prejudice to any other, its remedies and powers of the Government any sum due and payable by the Company, under these presents shall be recoverable from the company in the same manner as an arrear of land revenue under the provisions of law for the time being in force in that behalf.

(15) In the event of there being a shortage of water in the said natural / Government water source, the Executive Engineer shall serve a notice on the company explaining the possibility of the anticipated shortage. The company shall in such circumstances, reduce the consumption of water and will furnish to the Executive Engineer, a weekly return showing the actual quantum of water drawn by it.

(16) No existing irrigation interests under the river, spring, channels and irrigation wells, shall be prejudiced. If in the opinion of the Government such existing interests are prejudiced, the company shall pay such compensation to the concerned person or persons whose interests are affected as may be determines by the Government.

Orient Paper Mills
Proprietors:Orient Paper & Industries Ltd
P.O.Amlai Paper Mills, Pin - 484117
Dist. Shahdol (Madya Pradesh). India

Executive Engineer
Water Resource Division
Anuppur (M.P.)

(17) The company shall at all times allow an officer of Water Resources Department of the Government of Madhya Pradesh authorized in that behalf to inspect the measuring device as well as the water accounts and furnish to the Government copies of entries from the records maintained by the company.

(18) Any notice or other documents to be given to or served upon the company there under may be given or served on behalf of the Government by the Executive Engineer and any such notice or documents shall be deemed to have been duly given to or served upon the company if it is sent by registered post or delivered at the registered office of the company.

(19) If the company commits a breach of any of the terms and conditions hereof, Government shall be entitled to terminate this agreement and there upon the company shall discontinue to draw water from the said natural water source without Government being liable for payment of any compensation whatsoever to the company.

(20) On the expiry of term of this agreement, Government, may renew this agreement for such further period and on such terms and conditions as the Government may in its absolute discretion deem fit.

(21) The cost and incidental charges incurred in the execution of this agreement including stamp duty shall be borne and paid by the company.

(22) Order No. सी बी/रा.स्त. 1 45/31/2009/500 भोपाल Dated 18/08/2010 (For water allocation and executive instructions etc.) will also form the part of this agreement.

Orient Paper Mills
Proprietors: Orient Paper & Industries Ltd
P.O.Amlai Paper Mills, Pin - 484117
Dist. Shahdol (Madya Pradesh). India

Water Resource Division
Anuppur (M.P.)

(23) SETTLEMENT OF DISPUTES

(a) Mutual Discussion. – the parties to this agreement agree that all disputes touching upon or arising out of this agreement including interpretation of any of the clauses of this agreement, the respective rights and obligation of the parties or non performance of obligation on the part of any party shall be amicably resolved by mutual negotiations.

(b) Arbitration. – If after sixty days from the commencement of such negotiations, the parties have been unable to resolve amicably a dispute, such dispute or difference shall be referred to Arbitration under the provisions of the Arbitration and Conciliation Act, 1996. The award of the Arbitration panel shall be final and binding on the parties.

(24) SPECIAL CONDITIONS (IF ANY) –

The other terms and conditions stipulated in the previous Agreement dtd 02.09.1970 between the Governor of Madhya Pradesh, action through the Executive Engineer, Shahdol, M.P. and the Orient Paper Mills Ltd., a Company incorporated under Indian Companies Act, 1956, shall also form a part of this present agreement except the quantity of water i.e. 440 m.cu.ft. as permitted to draw as incorporated in Clause-1 as above w.e.f. 27th May,2009.

Orient Paper Mills
Proprietors: Orient Paper & Industries Ltd
P.O.Amlai Paper Mills, Pin - 484117
Dist. Shahdol (Madya Pradesh). India

Water Resource Division
Anuppur (M.P)

IN WITNESS WHERE OF Sri. R. P.Singh Kanwar, Executive Engineer Water Resource Division, Anuppur (M.P.) has for and on behalf of the Governor of Madhya Pradesh hereto set his hand and affixed the seal of the office and the common seal of the Executive Engineer, Water Resource Division, Anuppur (M.P.) has been here up to affixed on the day, month & year first herein above written.

SIGNED SEALED DELIVERED

9/9/10

Executive Engineer
Water Resource Division
Anuppur (M.P)

(By Shri R.P. Singh Kanwar, Executive Engineer, Water Resources Department, Anuppur (M.P.), for and on behalf on the Governor of Madhya Pradesh in the presence of

(1) M. P. Chaturvedi
SDO
WR Sub Division Anuppur. 9/9/10

(2) A. N. Sharma
SDO.
W.R. Sub div. Jaithari 09/9/10

(THE COMMON SEAL OF M/s Orient Paper Mills was pursuant to the resolution of the Board of the Directors of the company dated 10th day of May, 2010 and Shri D.N. Swain, Vice President (H.R.) of the company who in token thereof have hereto set their respective hand in presence of)

D. N. Swain
Vice President - HR
Orient Paper Mills
Proprietors: Orient Paper & Industries Ltd.
P.O. Amlai Paper Mills, Pin - 484117
Dist. Shahdol (Madya Pradesh). India

Witness:

(1) Shri M.M. Dash 09-0-9-10
Senior Manager (Admn.)
Orient Paper Mills, Amlai (M.P.)

(2) Shri P.K. Lakhera 09/09/10
Asstt. Officer (Legal)
Orient Paper Mills, Amlai (M.P.)