EXECUTIVE SUMMARY OF EIA/EMP STUDY

FOR

Proposed Expansion of Paper Mill Project

by

M/s Smrity Paper Mills Pvt. Ltd.

CHITMA, MAHULI ROAD
P.O.: KOTHIYAN ; PATNA CITY
DIST. PATNA – 800 009 (BIHAR)

SUMMARY
ENVIRONMENTAL IMPACT ASSESSMENT

1.0 Introduction

Smrity Paper Mills Pvt. Ltd. (SPMPL) is a company registered under Companies Act 1956 under having CIN No. U21012BR2002PTC9729 dated 29.01.2002. SPMPL is going for modernization cum expansion its existing Paper Mill by addition of bleaching process, for producing Writing Paper, from 50 TPD to 80 TPD capacity. The paper mill will generate pulp from recycling of waste paper and subsequently pulp obtained from recycling of waste paper will be utilized for production of writing paper.

SPMPL owes land of 1.2 Acres (0.48 Ha) at Mauja - Chitma, Khata No. 13 & 37, Khesra No. 63 or 62.Land is owned from land owners under lease agreement for a period of 33 years.

2.0 Project Location and Environmental Sensitivity

Particulars	Details
Total Land	1.2 Acres (0.48 Ha) of Land has been acquired on lease agreement for a period of 33 years.
Land for Green Belt	0.40 Acres (0.16 Ha) (33% of total land)
Nearest Railway Station	Patna Sahib Railway Station (7 Km.)
Nearest Airport	Patna (16 km.)
Nearest Highway	NH – 30 (2 km.)
Nearest Major City	Patna (12 Km.)
Nearest River	*River Ganga (5 Km.)/River Punpun (3 Km.)*
Ecologically sensitive zone	Not Exists
Reserved forests	Not Exists
Wild Life Sanctuary	Not Exists

3.0 **Salient Features of the Project**

<table>
<tr><td>Land requirement</td><td>Total area of 1.2 Acres (0.48 Ha) at Mauja - Chitma, Khata No. 13 & 37, Khesra No. 63 or 62. Land is owned from land owners under lease agreement for a period of 33 years. No additional land is required for proposed expansion project.</td></tr>
<tr><td>Capacity</td><td>
<table>
<tr><td rowspan="2">Production Facilities after Modernization</td><td rowspan="2">Product</td><td colspan="3">Production Capacity</td></tr>
<tr><td>Existing</td><td>Proposed</td><td>TOTAL</td></tr>
<tr><td>Pulp through recycling of high & medium grade waste paper, Formation in wire, Pressing in Press Drying in Driers, Finishing</td><td>Writing Paper, Printing Paper, Unbleached Paper</td><td>50 TPD</td><td>30 TPD</td><td>80 TPD</td></tr>
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<tr><td>Solid Waste Generation</td><td>
<table>
<tr><th>Solid Wastes</th><th>Generation after Expansion Project</th><th>Management</th></tr>
<tr><td>Process Solid Waste (Waste Paper Sheet)</td><td>2.4 TPD</td><td>Recycled and reused inside the premises in manufacturing process.</td></tr>
<tr><td>Boiler Ash</td><td>1.9 TPD</td><td>Filling in and around low lying areas</td></tr>
<tr><td>ETP Sludge</td><td>0.8 TPD</td><td>Sludge from ETP will be sold to hardboard / cardboard manufacturers for use as raw materials.</td></tr>
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<tr><td>Raw Materials</td><td>
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<tr><th>Raw Materials</th><th>Requirement</th></tr>
<tr><td>Waste Paper</td><td>96 TPD</td></tr>
<tr><td>Bleaching Agents (NaOH, ClO2 (elemental chlorine free))</td><td>5.0 KLD</td></tr>
<tr><td>Resin</td><td>1.92 KLD</td></tr>
<tr><td>A K D</td><td>1.37 MT/D</td></tr>
<tr><td>Packing Material</td><td>0.06 MT/D</td></tr>
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<tr><td>Water Requirement</td><td>Total : 246 m^3/day, Fresh Water : 160 m^3/day, ETP Treated Water : 86 m^3/day</td></tr>
<tr><td>Source of Water</td><td>Borewells</td></tr>
<tr><td>Fuel Requirement</td><td>▪ Rice Husk : 15 T/Day as Boiler Fuel after expansion
▪ Diesel : 50 ltrs./Day (for running of DG Set in case of emergency)</td></tr>
<tr><td>Power Requirement</td><td>1800 KVA of power will be sourced through SBPDCL for meeting the electricity requirement of the project and 250 KVA DG Set for back-up.</td></tr>
<tr><td>Total land Available</td><td>Total area of 1.2 Acres (0.48 Ha) at Mauja - Chitma, Khata No. 13 & 37, Khesra No. 63 or 62. Land is owned from land owners under lease agreement for a period of 33 years.</td></tr>
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Area for Green Belt	0.40 Acres (0.16 Ha) (33% of total land)
Total Cost of the Project	Rs. 535 lakhs
Captial Cost towards Environment Protection Measures	Rs. (50 Lakhs existing + 15 lakhs Proposed)
Recurring Cost / Annum towards Environment Protection Measures	Rs. 25 Lakhs
Cost towards CER activities	Rs. 11.0 Lakhs

4.0 Process Description

The proposed paper mill will generate pulp from recycling of waste paper and subsequently pulp obtained from recycling of waste paper will be utilized for production of writing paper. Steps of process are given below ;

Manufacturing Process Details

A. Pulping & De-inking

High consistency batch pulping normally uses a helical rotor, which is very much larger in relation to the pulper tub than a low consistency rotor. The low rotor speed relative to low consistency pulping reduces the cutting of plastic and other contaminants, but shearing forces are high, since the velocity difference between the stock and the rotor is high. Mechanical forces are low and when no screen plate is fitted mechanical forces are very low. Discharge from the pulper can be through a screen plate, or direct, with no screening. When discharge is through a screen, contaminants retained in the pulper are flushed out and dewatered; extracted water can be returned to pulper.

Recycled paper, newsprint and magazine is charged in Hydraulic pulper with addition of water and same is processed till waste paper is converted into slurry form with high consistency pulp. The hydro pulped pulp is cleaned in high density cleaner followed

by turbo separator for heavy weight and light weight impurities respectively. Then it is continuously forwarded to centricleaner after passing through screen. At centricleaner, the sand is separated due to centrifugal force. The pulp is then taken to Decker thickener where the wastewater is removed and pulp is thickened. The thickened pulp is processed to a chest through refiner by which the pulp becomes finer as per process requirement.

Then it is transferred to machine chest where addition of dye and chemical takes place. This pulp is then fed to the machine chest.

B. De-inking

The function of the pulper in a deinking operation is to defiber the paper and to detach the ink particles from the fibers, while retaining the contraries (undesirable materials) large enough to be removed by centricleaners and screens in subsequent stages. The flotation unit has often been referred to as the “heart” of the deinking system. It is reasonable then to think of the pulper as the “brain” of the system. If the pulper does not work properly, or if the chemistry of the chemicals added is unbalanced, the batch has little chance of success. Normally the pulper has provisions for supplying heat to obtain the desired temperature at the desired mixing speed and consistency

C. Bleaching

This is done in two stages. Firstly the pulp is treated with NaOH in the presence of O_2. The NaOH removes hydrogen ions from the lignin and then the O_2 breaks down the polymer. Then, the pulp is treated with ClO_2 then a mixture of NaOH, O_2 and peroxide and finally with ClO_2 again to remove the remaining lignin.

Bleaching involves removing virtually all of the lignin that still remains after cooking, as the lignin contains the chromophoric groups which make the pulp dark. Strictly speaking, bleaching and cooking are both delignification processes, and modern developments have tended to blur the difference between the two processes. However, traditionally the name 'bleaching' is reserved for delignification that is taking place downstream of the cooking process. In practice, there are two separate "bleaching" process steps: oxygen delignification and final bleaching

D. Oxygen Delignification

In oxygen delignification, washed pulp is treated with a highly alkaline solution of sodium hydroxide. The high pH ionizes phenolic groups in the lignin, which are then attacked by molecular oxygen. The aromatic part of the lignin is partly destroyed and it is then depolymerised to lower molecular weight compounds. These are more soluble in water and can be removed from the fibres. It is important that the pulp has been at least partly washed beforehand because the black liquor solids in unwashed pulp consume oxygen. After the oxygen delignification stage, the pulp has to be washed very well, as otherwise the organics carry over to the final bleaching process, consuming chemicals there and also decreasing the environmental benefits.

Oxygen delignification can significantly decrease the water pollution from the final (normally chlorine or chlorine dioxide based) bleaching. In addition, it is an effluent free process. All dissolved lignin and other organics (as well as the inorganic chemicals) are recovered in the black liquor and returned to the chemical recovery system, rather than being discharged as effluent as they are in chlorine-based bleaching. Finally, oxygen is a fairly cheap bleaching chemical, although the capital costs are high for an efficient system. On the IV-Forestry-C-Pulp and Paper-6 negative side, the process has the potential to degrade the pulp strength if it is not controlled properly.

E. Final Bleaching

The final bleaching is always carried out in several stages to improve the efficiency of the chemicals used, and to decrease the strength loss of the pulp. There are quite a number of bleaching chemicals used commercially, and many more have been tried in the laboratory. The chemicals used are:

- Sodium hypochlorite
- Hydrogen Peroxide
- Ozone

These chemicals, are non-chlorine oxidizing compounds. Elemental chlorine (Cl_2) was for many years the work horse of the bleaching process. It is efficient in bleaching the

pulp and (if properly used) does not degrade the pulp strength. However, it produces a large amount of chlorinated organic compounds in the effluent, and strenuous efforts have therefore been made to decrease its usage. For the same reason, the use of sodium hypochlorite (which also tended to affect the pulp strength) is now virtually eliminated. The final bleaching agent will be hydrogen peroxide and sodium hypochlorite.

F. Stock Preparation

Bleached pulp is mixed with long fibre pulp, comprising mainly rags and wastepaper pulp. The mix pulp is blended with additives and fillers in the blending chest. The chemicals added to the blending chest are rosin, alum, talc, dye (optional), optical whitener and high gum. The chemicals (additives, fillers etc) solutions are prepared and added manually in every batch.

G. Paper Machine

The blended pulp is again centricleaned to remove impurities and finally fed to the paper machine through a head box. From the dewatering and paper making angle, the machine has three principal stages:

- The gravitational and vacuum dewatering stage (wire part)
- The mechanical dewatering stage (press rolls part)
- The thermal drying stage (indirect steam dryers)

On the wire part of the paper machine, the dewatering of pulp takes place by gravity and vacuum. The water from the wire mesh is collected in a fan pump pit and is continuously recycled to dilute the pulp fed into the paper machine centricleaner. In some mills, the wire is continuously washed with fresh water showers. The water is collected and fibre is recovered through Krofta save-all. The clear water from save-all is recycled back to different consumption points. Excess is discharged to drain.

After the wire part, the edge cutting operation is carried out to obtain paper of a definite width. The edge cuts of the pulp web falls in the couch pit and are recycled to the machine chest.

Towards the end of the wire part of the machine, the consistency of pulp rises to about 20 per cent. Further dewatering is carried out by press rolls to raise the consistency to about 55%. The paper is finally dried through an indirect steam dryer to about 94% solids and is collected in rolls as the final product.

5.0 Existing Baseline Environment Scenario :

Baseline environment data for all the components has been collected during the period Dec 2020-Feb 2021. The detail findings are here as under ;

[i] *Meteorology :*

The daily average temperature was recorded to be in the range of 6.0 – 31.0 ºC during the study period. The maximum reading was found to be 31.0 ºC during Feb 21 and the minimum was found to be 5.4 ºC during Jan 21. The average value of temperature was computed to be 17.5ºC

During the study the average relative humidity was found to be in the range of 46 – 84%. The minimum and maximum value was found during Feb 21. The average value of Relative Humidity was computed to be 69%.

No rainfall was observed during the study period.

The wind is predominantly blowing from W&WNW direction. The wind speeds are of the range of 1.0 - 6.0 m/sec. and the calm condition is 13.3 % during the study period. The periodic wind rose diagrams have been provided in Figure 3.4 in Chapter-3.

[ii] *Demographic Profile*

Total population in the Patna Rural CD Block in accordance to the 2011 census data is 1771140 persons, in 308154 number of households. The total male population is 939743 and total female population is 831397. It is mainly dominated by the urban population.

The Scheduled Caste (SC) population is 163676, out of which 86708 are males and 76968 females. The Scheduled Tribe (ST) population is 5185, out of which 2543 are males and 2642 females. The total Scheduled Tribes population is very less.

The prevailing sex ratio in the study area is 884 females per 1000 males.

[iii] *Infrastructure, Facilities and Amenities ;*

- The entire study region has been very well connected with roads to the main town and district head quarter. The entire study area has been very

well connected to the district head quarter & block. Patna Rural has the maximum number of 100 percent villages having pucca approach.

- 100% of population of Patna Rural Block have access to Education Facilities.
- 87.5 % of population of Patna Rural Block have access to Medical Facilities.
- 100 % of population of Patna Rural Block have access to Drinking Water.
- 83.33 % of population of Patna Rural Block have access to Post Office Facilities.
- 58.33% of population of Patna Rural Block have access to Telephone Facilities.
- 66.67 % of population of Patna Rural Block have access to Transport Facilities.
- 20.83 % of population of Patna Rural Block have access to Bank Facilities.
- 95.83 % of population of Patna Rural Block have power supply

[iv] *Topography and Land Use*

Topography of the study area is more or less flat to uneven, with surface level variation of about 1 m. The average height of the ground surface at the proposed plant site is about 51 m. above mean sea level (MSL). Project site falls under Gangetic plains, which is a typical fore deep basin formed due to collision of India and China plates. The present pediogenic and sedimentation processes in this basin are essentially the continuation of those prevailing since Mid Miocene.

[v] *Water Quality*

8 ground water samples & 2 surface water samples were collected & analyzed from the study area.

Ground Water Quality

All the water samples were bearing an agreeable taste. The colour of all the water samples was found to be <5 Hazen unit. Odour of all the water was unobjectionable.

The water samples were found to be free from contaminations due to Fluoride & Boron. The dissolved solids level in the water samples were found in the range of 330 – 442mg/l., which is very much in the permissible limits. The

water sample from Vill. Khaspur was having the minimum TDS while maximum dissolved solids were found at Karanpur.

The chlorides were found to be in the range of 12 – 24 mg/l. The Sulphates were found in the range of 16.4 – 26.8 mg/l. Total hardness values in the range of 236 – 328 mg/l. It is very much within the permissible limits of IS 10500:2012. Total Alkalinity values were in the range of 196– 252 mg/l.

Values of Iron are in range of 0.18 – 0.35 mg/l. & values for Zinc are in range of 0.15 – 0.34 mg/l.
All other parameters have been found to be within the permissible limits prescribed under the IS : 10500 :2012 for drinking water.

Surface Water Quality

The surface water can be best used for Irrigation and domestic purposes.

[vi] Ambient Air Quality *:*

To ascertain the baseline Ambient Air Quality status of the study area, monitoring of AAQ was conducted at 8 locations around the project area. Summary results are as under ;

STN. NO.	LOCATION NAME	24-HOURLY AVERAGE CONCENTRATION (µG/M^3)								CO (MG/M^3)	
		PM_{10}		$PM_{2.5}$		SO_2		NO_X			
		MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
A 1	Project Site	39.2	71.4	24.3	44.3	9.8	16.3	16.4	38.5	412.4	890.2
A 2	Khaspur	30.1	62.2	17.7	46.8	7.6	20.5	14.2	34.2	340.8	750.6
A 3	Mahuli	28.2	68.1	16.7	40.2	8.6	14.1	16.2	35.1	210.4	720.4
A 4	Fatehpur	48.3	103.8	36.8	61.4	6.5	11.6	25.9	40.2	435.3	1052.3
A 5	Sonawapur	26.3	54.8	26.7	52.4	5.8	12.2	14.6	33.2	272.9	927.4
A 6	Karanpur	38.1	65.2	22.8	39.0	8.4	14.1	16.4	30.2	62.0	352.1
A 7	Ramanchak	61.2	110.8	40.1	64.8	7.6	14.6	22.2	40.4	102.6	1040.2
A 8	Begampur	82.1	128.8	50.8	77.2	9.4	23.2	24.2	47.5	880.3	1420.8

It can be observed from the above table the AAQ status around the project area is well within the limits of NAAQS, 2009 except at 3 locations viz. Fatehpur, Ramanchak &

Begampur due to vehicular movement, industrial activities and civil construction works in the area.

[vi] Ambient Noise Level *:*

The maximum daytime L_{eq} was found at Begampur i.e. 68.8 dB(A) and maximum nighttime L_{eq} was also also found at Begampur i.e. 48.8 dB(A). The maximum values may be attributed towards the nearby commercial activities and traffic movements. The minimum value for day time and nighttime was found at Vill. Khaspur i.e. 41.2 and 25.0 dB(A) respectively.

6.0 Environmental Impacts of Proposed Paper Mill Project ;

There are two sources from which the environment of the area can be affected if suitable control measures are not strictly applied. These are, discharge of waste water either on land or in surface water bodies and emissions from the stack. Both these two aspects have been taken into consideration while envisaging the proposed project. After proposed establishment of Paper Mill Project no industrial waste water will be discharged outside project premises. Domestic wastewater will be discharge through septic tank followed by soak pits inside the project premises.

Boiler stack will be equipped with Multi cyclone separator for controlling air pollution and 33 M. height stack for wider dispersion of pollutants.

However, Air Quality Impact prediction shows that due to operation of paper mill project predicted incremental GLCs of Pollutants due to proposed expansion project is not found to be significant to add up on the existing ambient air quality. However, the proposed air pollution control systems will also improve the existing ambient air quality and help in bringing down the concentrations in ambient air quality.

Moreover, green belt will be made more extensive with plantation of additional Dust controlling species for controlling dust emissions.

7.0 Solid Waste Generation and Management

Solid Waste Generation	***Generation (TPA)***	***Management***
Process Solid Waste (Waste Paper Sheet)	**2.4 TPD**	Recycled and reused inside the premises in manufacturing process.
Boiler Ash	**1.9 TPD**	Filling in and around low lying areas
ETP Sludge	**0.8 TPD**	Sludge from ETP will be sold to hardboard/cardboard manufacturers for use as raw materials.

8.0 Impact on Socio Economic Status

Proposed project may change socio economic condition of the nearby areas. As there will be flow of financial and material resources, there remains a large possibility of growth of population in the business, trade, commerce and service sector. The large inflow of financial and material resources would contribute towards changing the socioeconomic environment of the areas as this would introduce a mixed culture emphasizing urban traits in place of traditional, prevalent rural customs. The economic, cultural and technological changes are likely to induce social stress and ethical changes. All these would change the local life style.

9.0 Environmental Management Plan

A comprehensive Environmental Management Plan has been prepared under which the unit will be adopting measures in preserving the environment from degradation. Important among those are Green Belt Development Plan which would act as Noise damper also. The environmental monitoring program on all components of environment has been drawn and indicated in the EMP in detail which is a part of EIA.

SPMPL has adopted all measures for better environmental management. Boiler stack will be equipped with Multi cyclone separator for controlling air pollution and 33 M. height stack for wider dispersion of pollutants, because man needs inhalation every moment, so also is Flora and Fauna dependent on it. SPMPL has developed & maintaining green belt all around the project premises for better environmental management.

An amount of Rs. 25 lakhs(15 lakhs EPM +10 lakhs Recurring) has been allocated for Environment Management after proposed establishment of project. Approx. Rs. 11.0 lakhs will spend on CER activities in phase wise manner after proposed expansion.

10.0 Occupational Health and Safety

SPMPL will adopt all precautionary measures to reduce the risk of exposure of employees to occupational safety and health hazards. Pre & post medical check-ups will be done of all the employees. Employees will be regularly examined and the medical records will be maintained for each employee.

11.0 Rainwater Harvesting

Keeping in mind the importance of water, it is proposed to conserve water by rainwater harvesting by which the subsoil water condition / moisture content is maintained / improved to a great extent. Also it is proposed to harness rainwater from the roof area by collecting the same in a rainwater collection tank of suitable capacity and will be recharged to ground water aquifers.

12.0 Conclusion

- No Industrial Waste water will be discharged to surface or water bodies outside the premises.
- Ground water characteristics are also well within the limits of IS 10500:2012.
- Emissions from Stacks of proposed boiler will be within the limits of E(P) Rules.
- Average Ambient Air Quality within the study area at Project Site is within the National Ambient Air Quality Standards (Nov.'2009).
- Ambient Noise Level of the project area is also well within the limits for Industrial Area.
- Generated solid wastes (Waste Paper Sheets) from project operation will be re-utilized at the source end.
- Good green belt & landscaping will be developed and maintained within the premises.
- Due to modernization cum expansion proposed paper mill project, establishment 100 nos. of persons will get employed in direct mode in different capacities and approx. 50 nos. of persons will be benefitted indirectly in the form of stockiest, dealers and suppliers.
- The modernization cum expansion paper mill project will also add to the state govt. treasury in terms of revenue generated in taxes due to trading of writing paper.

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